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Subject:

Agile Web Pilot Program

FOIA Control Number:

04-405 LK

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DEPARTMENT OF THE AIR FORCE

WRIGHT LABORATORY (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

21 August 95

MEMORANDUM FOR WL/MLKT
ATTENTION: Ms. Chris Lay

FROM: WL/MTII

SUBJECT: Reply to Ben Franklin Request for a 12 Month Extension, #F33615-94-2-44112

1. I concur with the Ben Franklin request for a 12 month no-cost time extension (Reference Ben Franklin letter dated 12 July). This will be beneficial to the Air Force since it will allow us to monitor the progress to the Agile Web program for an additional year. If there are any questions concerning this matter, please call me at x57371.

A handwritten signature in cursive script that reads "George B. Orzel".

GEORGE B. ORZEL
Integration Architecture Branch
Integration Technology Division
Manufacturing Technology Directorate

COOPERATIVE AGREEMENT

MAILING DATE

Between

MAY 18 1994

THE UNITED STATES AIR FORCE

and

NET BEN FRANKLIN TECHNOLOGY CENTER

125 Goodman Drive

Bethlehem, PA 18015

Agreement for

THE AGILE WEB PILOT PROGRAM

Agreement No : F33615-94-2-4412

Total Amount of Agreement: \$4,000,000.00

Total Estimated Government Funding of the Agreement: \$2,000,000.00

Total Estimated Recipient Funding of the Agreement: \$2,000,000.00

Funds Obligated: \$2,000,000.00

Authority: 31 U.S.C. 6305, SAF Order 751.1 and 10 U.S.C. 2513

Effective Date: 94 Jan 01

Purchase Request [ARPA Order] No.: PR FY1133-94-05073 AO B176 date 1 Feb 94

Line of Appropriation: AA 9730400 1302 D13 47WL 3V10 0B1760 00000 63570E
595600 F95600

This Agreement is entered into between the United States Air Force (the Federal Awarding Agency), hereinafter called the "Government," represented by Wright Laboratory, "WL," and NET Ben Franklin Technology Center, hereinafter referred to as the "Recipient," pursuant to and under U.S. Federal Law

FOR THE NET BEN FRANKLIN
TECHNOLOGY CENTER

FOR THE UNITED STATES AIR
FORCE, WRIGHT LABORATORY

Mark Lang 3-15-94
(Signature) (Date)

Mark D. Bennington 16 May 94
(Signature) (Date)

Mark Lang
(Typed Name)

MARK D. BENNINGTON
(Typed Name)

Executive Director
(Title)

Grants Officer
(Title)

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1. Start-Up Plan, dated 2 Feb 94
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COOPERATIVE AGREEMENT FOR
AGILE WEB PILOT PROGRAM TO
NET BEN FRANKLIN TECHNOLOGY CENTER

INTRODUCTION

ARTICLE 1.0 BACKGROUND

In a fully collaborative, government-wide effort called the Technology Reinvestment Project, ARPA, NIST, DOE/DP, NSF and NASA will seek to harness the best talents available to focus on technology innovation, extension, infrastructure, and education and training for product and process technologies of critical importance to both national security and the national economy. To administer the TRP, the agencies involved have formed the Defense Technology Conversion Council (DTCC) via a Memorandum of Understanding of all the participating agencies. The DTCC is chaired by ARPA and is responsible for coordinating and integrating Federal Executive Branch activities for technology reinvestment.

The TRP will accomplish its mission through cooperative, inter-agency efforts that address the technology development, deployment, and education and training needs within both the commercial and defense communities. Concerted efforts will be made to bolster the economic competitiveness of defense-dependent enterprises and increase the availability of dual-use technologies for national security purposes. Execution of TRP programs will be done on a distributed basis, with oversight by ARPA, and with execution by the Military Departments and DoD Agencies, NIST, DOE, NSF and NASA. The United States Air Force, represented by Wright Laboratories, has been designated to execute and administer the Agile Web Pilot Program proposed by NET Ben Franklin Technology Center, a non-profit subsidiary corporation of Lehigh University

1.1 Introduction

This program will focus on the relationships in the Manufacturer-Supplier chain. New pervasive manufacturing philosophies such as Lean and Agile Manufacturing require that suppliers become involved much earlier in the product development cycle than is currently being experienced. Integrated Product Development and Concurrent Engineering practices prescribe that suppliers should take an active part in component design and development. This assumes the supplier has the ability and the technical infrastructure to interact with a manufacturer's design and engineering processes. In many cases, the supplier will support the entire design and engineering function of the component or product, and then assist with its integration into the manufacturer's end product. The manufacturer expects the supplier to meet his needs both in quantity and quality. Smaller suppliers need to provide these services to remain competitive in today's highly competitive market.

The Agile Web program will develop the approaches, and relationships needed to enable the realization of agile manufacturing capabilities. The Web will be a testbed that will utilize current state-of-the-art communication capabilities to establish the communications infrastructure. The Agile Web will not be a technology development program, but will utilize leading edge, commercially available products and new developmental technologies which can be utilized in a complimentary manner. The focus of this program is not new technology; but, the establishment of business practices and procedures to enable a supplier-manufacturer web

The Recipient, along with a number of supplier/manufacturing companies, will work to develop and exercise the capabilities of the Agile Web. The Recipient has already established a network of large and small manufacturers that are interested in participating in the Agile Web activity. The parts they will focus on will be electro-mechanical assemblies which are components currently manufactured by these suppliers.

The Recipient has laid out plans to establish an Executive Advisory Board to review the accomplishments of the Agile Web Program and provide for the implementation of results into commercial applications. In addition, a Government Inter-Agency team will be established to help assist in the development and dissemination of new models and practices for the realization of agile manufacturing. This team will assist the Agile Web Program by making available any applicable government resources or research which can be applied to this effort. The team will also ensure the information and models developed by the Agile Web consider Dual Use for both government and industry purposes.

The information and models developed under the Agile Web program will help bring the concept of agile manufacturing into reality which will not only help keep the private sector strong and competitive, but also provide ways to make government efficient and responsive.

1.2 Term

The term of this Agreement shall be from the agreed upon date of 1 Jan 94 through 1 Jan 96 or unless terminated in accordance with Article 19. If an extension to the period of performance of this Agreement is desired, the Recipient shall submit a request in writing to the Grants Officer. If the request is for an extension of six months or more, include a revised estimate of how the funds will be used during the extension. This Agreement shall be amended in writing subject to mutual agreement of the parties. An extension of time shall not, of itself, entitle the Recipient to additional funds. The Recipient may apply funds against preaward costs incurred at the Recipient's own risk from the agreed upon effective date of 1 Jan 94 up to and including the award date for this Cooperative Agreement

ARTICLE 2.0 STATEMENT OF WORK

The research under this Agreement shall be carried out by the best efforts of the Recipient and in accordance with the Recipient's technical proposal entitled, "The Agile Web Pilot Program," pages 30 through 33, dated 14 May 93, which is incorporated herein by reference and the Start-up Plan attached hereto.

ARTICLE 3.0 ADMINISTRATION AND AUDIT RESPONSIBILITY

3.1 The Grants Office will be:

The Department of the Air Force
Air Force Materiel Command (ASC)
Wright Laboratory (WL/MLKT)
2530 C Street
Wright-Patterson AFB OH 45433-7607
Grants Officer: Mark D. Bennington, (513) 255-7143

3.2 The Grants Administration Office will be:

Office of Naval Research Resident Representative (ONRRR)
536 South Clark Street, Rm 286
Chicago, IL 60605-1588
POC: Jack Mumma, (312) 886-5423

3.3 Audit Responsibility will reside with:

HHS/OIG
Office of Audit Services
National External Audit Review Center
Lucas Place, Room 514
323 West Eighth Street
Kansas City, MO 64105
Phone: 1-800-732-0679

3.4 The Payment Office will be:

DAODE WRIGHT-PATTERSON/FSS-B
1970 Third Street, Suite 5
Wright-Patterson AFB OH 45433-7212

ARTICLE 4.0 COOPERATIVE AGREEMENT PROGRAM MANAGER/PRINCIPAL INVESTIGATOR

4.1 Performance of the work under this Agreement shall be subject to the technical assistance and coordination of the Government Program Manager. Mr. Brian Stucke, or in his absence, as an alternate, Mr. Patrick Price are Program Managers. The Program Managers named in this Article may be changed by written notification to the Recipient

4.2 The Recipient's principal investigator for this Agreement is Dwayne Hansen. The Recipient shall request prior approval from the Grants Officer for the absence for more than three months, or 25 percent reduction in time devoted to the project by the approved principal investigator.

4.3 Notwithstanding any of the provisions of this Agreement, the Grants Officer shall be the only individual authorized to redirect the effort and in any way amend or modify any of the terms of this Agreement

ARTICLE 5.0 USE OF TECHNICAL FACILITIES

To the maximum extent practical, the Recipient agrees to use the technical reference facilities of the Defense Technical Information Center, Cameron Station, Alexandria, VA 22314, and all other sources, whether the United States government or private, for purpose of surveying existing knowledge and avoiding needless duplication of scientific and engineering effort

ARTICLE 6.0 ACCOUNTING PROCEDURES

The Recipient shall implement accounting procedures and financial management systems in accordance with OMB Circular A-110, "Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Learning Education, Hospitals, and Other Non-Profit Organizations," dated 19 Nov 93. For the purpose of this Agreement, the term "allowable expenditures" refers only to those expenditures considered to be allowable in accordance with OMB Circular A-122, Cost Principles for Nonprofit Organizations dated 8 July 1980 as amended. Further, the allowability of any expenditures incurred in the performance of any subaward conducted on a cost-reimbursement basis shall be subject to those Federal cost principles applicable to the particular type of organization concerned. For nonprofit organizations, OMB Circular A-122 applies. For educational organizations, OMB Circular A-21 or A-87 applies. For profit making organizations, the principles of FAR Part 31 apply.

ARTICLE 7.0 GOVERNING LAW/ORDER OF PRECEDENCE

7.1. This Agreement shall be enforced and interpreted in accordance with applicable federal laws and regulations, directives, circulars, or other guidance. When signed, this Agreement will become binding on the Recipient and the Government to be administered in accordance with OMB Circular A-110 (19 Nov 93), OMB Circular A-133, Audits of Institutions of Higher Learning and Other Non-Profit Institutions, (Mar 1990) and OMB Circular A-122 (July

1980 as amended), DoD Grants and Agreement Regulations (DoD 3210.6R dated 4 Feb 94), and as specified herein. In the event of a conflict between the provisions of this agreement and the OMB Circulars and DoD 3210.6R, the OMB Circulars and DoD 3210.6R shall govern.

7.2 Consistent with the intent of this program to test the effectiveness of close teaming relationships to quickly take advantage of an organization's core competency, it is acknowledged that the following procedures comply with OMB Circular A-110, Subpart C, Section 43: 1) when selecting organizations to provide to the web members services of the types intended by this program, the Recipient shall satisfy the need to obtain the best value through competitive bidding by selecting subrecipients and vendors based upon their core competencies, their knowledge about and role in the program as partners, and the value of their services to be provided, without formally bidding such needs to providers outside the program team, unless that is deemed necessary to obtain the services and expertise needed at fair costs; 2) web members that develop or draft specifications, requirements, statements of work, etc., are not excluded from providing services to carry out those requirements; and, 3) when selecting organizations to form virtual firms to manufacture pilot orders, firms may be selected based upon their core competencies, the value of their services to be provided, and distribution of work among the web membership.

ARTICLE 8 0 FISCAL MANAGEMENT

This section provides for the obligation and payment of Government Funds as well as audit procedures.

8.1 Allocation of Recipient Funds

8.1.1 Obligation

8.1.1.1 The Recipient's funding base consists of a combination of cash and in-kind contributions. The total amount of this Cooperative Agreement is \$4,000,000.00. Federal funds in the amount of \$2,000,000.00 are hereby obligated as set forth on page 1 hereof. Payment will be made in advance by treasury check in accordance with OMB Circular A-110, dated 19 Nov 93. One payment of \$2,000,000.00 will be made upon award of this instrument. Payment to the Recipient shall occur upon receipt by the Grants Administration Office of: one original and two copies of a Request for Advance or Reimbursement (SF 270). SF 270 will be forwarded by the Grants Administration Office to the government Payment Office for payment to the Recipient.

8.1.1.2 By signing this Agreement, the Recipient agrees to comply with the requirements of OMB Circular A-110, dated 19 Nov 93, subparagraph 22(b).

8.1.2 Withdrawal of Funds

Immediately upon receipt of federal funds under this Agreement, the Recipient shall deposit the entire amount into an interest bearing account at a bank or savings institution. Recipient shall remit, on a quarterly basis, to the Grants Administration Office for the

term of this Agreement, all interest earned as a result of said deposit. Interest amounts up to \$250 per year may be retained by the Recipient for administrative expense. Remittance shall be made payable to the U.S. Treasury.

8.1.3 Matching

8.1.3.1 The Recipient contributions for the purpose of cost matching may consist of both cash and in-kind contributions. All in-kind contributions must comply with OMB Circular A-110, 19 Nov 93. When actual cost information is not available, valuation of the services of volunteers, employed by organizations other than the recipients, shall be established according to the procedure set forth in OMB Circular A-110, Section 23, by using the average Recipient in-house cost of engineering labor and overheads. The Recipient funds to be used as the basis for the matching requirements expressly exclude any and all funds used to meet matching requirements for any other Federal Grant, Cooperative Agreement or other assistance arrangement.

8.1.3.2 In-Kind Match Documentation: On a quarterly basis, the Recipient will obtain from all participants providing in-kind match documentation verifying the match contributed and/or in-kind costs incurred during the previous quarter. This documentation will consist of a sheet summarizing the activities performed that quarter and totaling the value of allowable in-kind contributions made such as personnel hours contributed and rates, travel expenses, equipment usage, and other direct costs of participation in the project. This quarterly report shall be signed by an authorized person at the contributing organization in a position to know that the in-kind contributions have been made. This process is deemed as an acceptable method of meeting the match documentation requirements of OMB Circular A-110.

8.1.3.3 Program Income: Program income, as defined in OMB Circular A-110, Subpart A, Section 2, Paragraph (x) may be used as cash matching funds to this Agreement, as allowed in OMB Circular A-110, Subpart C, Section 24, Paragraph (b)(2).

8.1.3.4 The Government and the Recipient estimate that the Statement of Work of this Agreement can only be accomplished with a total aggregate resource contribution of \$4,000,000.00 from 1 Jan 94 through 1 Jan 96. The Recipient intends and, by entering into this Agreement, undertakes to cause these funds to be provided. For the purposes of this Agreement, the Cost Share ratio shall be 50% Government and 50% Recipient. Failure of either party to provide its contribution may result in termination of this Agreement or a proportional reduction in funding.

8.1.4 Restrictions on Use of Government Funds

Government Funds provided under this Agreement must be allocated by the Recipient exclusively for the execution and operation of the Statement Of Work of this Agreement. Government funds shall not be utilized to support the Recipient's operations or administration unrelated to this Agreement.

8.1.5 Limitation of Funds

In no case shall the Government's financial obligation exceed the amount obligated to this Agreement.

8.2 Audit Procedures

The Recipient shall ensure that an audit of all activities under this Agreement shall be conducted annually in accordance with the procedures set forth in OMB Circular A-133, March 1990 and the following subparagraphs:

8.2.1 Selection of Auditors

An independent auditor, herein defined as a public accountant or government auditor who meets the standards specified in the Government Auditing Standards developed by the Comptroller General of the United States covering financial audits must annually review Recipient's expenditures.

8.2.2. Scope of Audit and Audit Objectives

The Auditor, selected under Article 8.2.1, shall determine whether: (1) The financial statements of the Recipient present fairly its financial position and the results of its operations in accordance with generally accepted accounting principles; (2) The Recipient has an internal control structure to provide reasonable assurance that the institution is managing Federal awards in compliance with applicable laws and regulations, and has in place adequate controls that ensure compliance with the laws and regulations that could have a material impact on the financial statements; (3) The Recipient has complied with laws and regulations that may have a direct and material effect on its financial statement amounts and on each major Federal program; (4) The Recipient is operating in compliance with its established policies and procedures; and (5) The Recipient has complied with all requirements of this Agreement, with particular emphasis on Article 8.1.3 Matching and paragraph 13.c.(5) of the attachment to OMB Circular A-133, (March 1990).

8.2.3 Government Access to Records

The Agency Head and the Comptroller General of the United States, or any of their duly authorized representatives, consistent with OMB Circular A-110, shall have access to any pertinent books, documents, papers, and records of the Recipient and their subrecipients (except those of \$10,000 or less) and may audit, examine, excerpt from or make transcripts of said pertinent records. Government access to records supporting the Recipient's amounts of matching funds as required by Article 8.1.3 shall be at the Recipient's facility. Records deemed insufficient, by the independent auditor, to verify recorded amounts of matching funds shall result in disallowance of those related amounts. Records, sufficient to permit Government verification of matching funds, as required by Article 8.1.3, shall be maintained and retained by the Recipient at its facility in accordance OMB Circular A-110.

8.2.4 The Recipient will maintain an established accounting system which complies with generally accepted accounting principles, and with the requirements of this Agreement, and appropriate arrangements have been made for receiving, distributing and accounting for Federal funds. This paragraph shall not be construed as requiring the Recipient to establish any other systems extending beyond its current systems to account for costs in accordance with generally accepted accounting principles.

ARTICLE 9.0 DATA RIGHTS

9.1 Title to Data Rights

9.1.1. All rights and title in inventions, whether patentable or not, patent applications and patents as defined in FAR 27.301 and in technical data, as defined in FAR 27.401, generated under this Agreement, shall vest in the Recipient.

9.1.2 The Recipient hereby grants to the Government a non-exclusive, non-transferable, royalty-free, fully paid-up license to use, duplicate or disclose for governmental purposes any data, technology and inventions, whether patented or not, developed under this Agreement.

9.1.3 The Recipient reserves the right to protect, by copyright, original works developed under this Agreement. All such copyrights will be in the name of the Recipient. The Recipient hereby grants the Government a non-exclusive, non-transferable, royalty-free, fully paid-up license to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government, for Government purposes only, any copyrighted materials developed under this Agreement. The Recipient also grants non-exclusive, non-transferable, royalty-free, fully paid-up licenses to project participants to use any copyright materials developed under this Agreement for research and educational purposes.

9.2 Marking of Data

9.2.1. All quarterly, annual and final reports shall be submitted with the following marking, unless such reports contain proprietary information:

"APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED"

9.2.2. Other information to be released as a result of Inter-Agency team meetings or other reviews related to the execution of this Agreement which contains proprietary information, shall have the following marking:

"DISTRIBUTION TO U.S. GOVERNMENT AGENCIES ONLY TO PROTECT INFORMATION NOT OWNED BY THE U.S. GOVERNMENT AND PROTECTED BY A RECIPIENT'S "LIMITED RIGHTS" STATEMENT OR GOVERNMENT PURPOSE"

LICENSE RIGHTS, OR RECEIVED WITH THE UNDERSTANDING IT NOT BE ROUTINELY TRANSMITTED OUTSIDE THE U.S. GOVERNMENT. (Insert determination date - i.e., day information is released). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO THE GOVERNMENT PROGRAM MANAGER WL/MTIA, 2977 P ST SUITE 6, WRIGHT-PATTERSON AFB, OH 45433-7739"

9.2.3. Data received with no restrictive legend are deemed to be furnished with unlimited rights. However, within six months after delivery of such data, the Recipient may request permission to place a restrictive legend on the data at its own expense. The Grants Officer may approve the request if the Recipient: (1) Demonstrates that the omission was inadvertent; (2) Establishes that the use of the legend is authorized; and (3) Relieves the Government of liability with respect to the prior release of the data.

ARTICLE 10.0 INVENTIONS

The clause entitled "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms", (37 CFR Part 401), is hereby incorporated by reference and the clauses in paragraph 401.14 are modified as follows: replace the word "contractor" with "Recipient"; replace the words "agency," "Federal Agency" and "funding Federal Agency" with "Government"; replace the word "contract" with "Cooperative Agreement"; delete paragraphs (g)(2), (g)(3) and the words "to be performed by a small business firm or domestic nonprofit organization" from paragraph (g)(1), paragraph (1), Communications, point of contact on matters relating to this clause is hereby established as AFMCLC/JANT. See Article 30 for reporting requirements. This Agreement shall not be closed out until all invention reporting requirements are met. The Recipient shall forward invention reports, required hereunder, through the Grants Administration office to the Staff Judge Advocate, Patents Monitoring Officer, AFCLC/JANT, Wright-Patterson AFB OH 45433-5000.

ARTICLE 11.0 EQUAL EMPLOYMENT OPPORTUNITY

By signing this Agreement or accepting funds under this Agreement, the Recipient certifies that it is complying with the requirements of: (1) Title VI of the Civil Rights Act of 1964, as implemented by 32 CFR 195, concerning nondiscrimination in activities under this Agreement based on race, color, or national origin; and (2) section 504 of the Rehabilitation Act of 1973, as implemented by 32 CFR 56, concerning access for people with disabilities in recipient programs and activities, including but not limited to those under this Agreement.

ARTICLE 12.0 SECURITY

The Recipient's personnel will not have access to classified United States information under this Agreement. If security restrictions should happen to apply to certain aspects of the proposed Agreement, the Grants Officer will inform the Recipient. The Recipient shall promptly notify the Grants Officer if information is developed which might, if disclosed, affect the national security adversely. Obtain written concurrence from the Grants Officer before disclosing such information. Do not discuss the information over the telephone.

For the term of this Agreement, and for a period of six (6) months after the completion or termination of this Agreement, WL will review publications submitted in fulfillment of requirements of this Agreement for possible inadvertent disclosure of classified proprietary information or information about critical military manufacturing technology.

The parties agree to confer and consult with each other during the term of this Agreement and for a period of six (6) months after the completion or termination of this Agreement prior to publication or other public disclosure of any new results of work under this Agreement to ensure that no Proprietary Information or military critical technology or other controlled information is released. Prior to submitting a manuscript for publication or before any other public disclosure, each party will offer the other party ample opportunity to review such proposed publication or disclosure, to submit objections, and to file applications for letters patent in a timely manner.

Controlled Information. The parties understand that information and materials provided pursuant to or resulting from this agreement may be export controlled, classified, or unclassified sensitive and protected by law, executive order or regulation. Each party is responsible for compliance with all applicable laws and regulations. Nothing in this agreement shall be construed to permit any disclosure in violation of those restrictions.

ARTICLE 13.0 LIABILITY

13.1 Property All property is to be furnished "as is." No party to this Agreement shall be liable to any other party for any property of that other party consumed, damaged, or destroyed in the performance of this Agreement, unless it is due to the gross negligence or willful misconduct of the party or an employee or agent of the party.

13.2 Hold Harmless. The Recipient agrees to indemnify and hold harmless and defend the Government, its employees and agents, against any liability or loss for any claim made by an employee or agent of the Recipient, or persons claiming through them, for death, injury, loss or damage to their person or property arising in connection with the Agreement, except to the extent that such death, injury, loss or damage arises solely from the negligence of the Government or its employees.

13.3 Other Liability. The Government shall not be liable to the Recipient whether directly or by way of contribution or indemnity, for any claim made by any person or other entity for personal injury or death, or for property damage or loss, arising in any way from this Agreement, including, but not limited to, the later use, sale or other disposition of research and technical developments, whether by resulting products or otherwise, whether made or developed under this Agreement, or whether contributed by either party, pursuant to this Agreement, except as provided under the Federal Tort Claims Act (28 U.S.C. 2671 et seq) or other Federal law where sovereign immunity has been waived. The Recipient shall indemnify the government against all such claims or proceedings and shall hold the government harmless for any resulting liabilities and lawsuits provided the Recipient is reasonably notified of such claims and proceedings

13.4 **Infringement.** The Recipient agrees not to hold the U.S. Government responsible for any and all patent infringement cases which may arise under any research projects conducted under this Agreement. In addition, the Recipient shall indemnify the government against all claims and proceedings for actual or alleged direct or contributory infringement of, or inducement to infringe, any U.S. or foreign patent, trademark, or copyright arising under this Agreement and the Recipient shall hold the government harmless from any resulting liabilities and losses provided the Recipient is reasonably notified of such claims and proceedings.

13.5 **Environmental Liability.** The Recipient is solely responsible for achieving compliance with all environmental laws, including the preparation and submission of all licenses and permit applications required under an Federal, State, or local laws or regulations. Recipient shall not name the United States, the United States Air Force (USAF), the Advanced Research Projects Agency (ARPA) or any other government instrumentality or employee as an owner, operator or in any other capacity on any license or permit application required under environment laws unless written consent is first obtained for the United States or other government instrumentality or employee to be named. The Recipient shall not accept issuance of any permit or license which purports to impose upon the United States, ARPA, USAF or any government instrumentality or employee any obligation or liability for any operations or activities covered by such permit or license except upon the prior written consent of the United States government or the instrumentality or employee to be named. The Recipient agrees to hold harmless, indemnify and defend the United States, ARPA, USAF, its employees and instrumentalities from and against any and all liability, cost, claims, fines, penalties and suits of any kind for injury to or death of any persons and for loss or damage to any property occurring in connection with, or in any way incident to the release of any contaminant, or any noncompliance with any Federal, State or local laws or regulations. This responsibility to hold harmless, indemnify, and defend the United States government shall exist even if the release or noncompliance is discovered after the date this agreement expires.

ARTICLE 14.0 WARRANTY

THE RECIPIENT REPRESENTS AND WARRANTS THAT IT WILL CONDUCT THIS AGREEMENT IN ACCORDANCE WITH ITS ESTABLISHED POLICIES AND PROCEDURES. EXCEPT AS SPECIFICALLY STATED IN THIS AGREEMENT, THE PARTIES MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO ANY MATTER WHATSOEVER, INCLUDING THE CONDITIONS OF THE RESEARCH OR ANY UNDER THIS AGREEMENT, OF THE MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR ANY INVENTION OR PRODUCT.

ARTICLE 15.0 NON-ASSIGNMENT

This Agreement may not be assigned by either party.

ARTICLE 16.0 SEVERABILITY

If any Article of this Agreement shall be held illegal or invalid by any court, the invalidity of such Article shall not affect any of the Articles hereof and this Agreement shall be construed and enforced as if such illegal or invalid Article had not been contained herein.

ARTICLE 17.0 OTHER CERTIFICATIONS

The following Certifications, which have been executed by the Recipient prior to award of this Agreement and are on file with the issuing office, are hereby incorporated herein by reference: (1) Certification regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions, 32 CFR Ch.I (7-1-89 Edition), (2) Certification Regarding Lobbying, Certification for Contracts, Grants, Loans and Cooperative Agreements, 31 U.S.C. 1352, (3) Certification Regarding Drug-Free Workplace, Alternate I, 32 CFR, Appendix C to Part 280, and (4) Nondiscrimination Letter of Assurance, 32 CFR Part 195.

ARTICLE 18.0 SUSPENSION AND TERMINATION

18.1 Suspension

Upon the Grants Officer determination that the Recipient is unable to comply with the terms and conditions of this Agreement, the Government shall promptly notify the Recipient of its intent to suspend the Agreement. The Recipient shall provide evidence of compliance with the Agreement within thirty (30) days. If the Grants Officer determines that such evidence has not been provided, the Grants Officer will direct the Recipient to suspend further expenditure of Government funds under this Agreement and at that point, the Recipient has no obligation to continue performance under the Agreement, pending resolution of the issue in accordance with Article 25 (Disputes) of this Agreement.

18.2 Termination

This Agreement may be terminated in whole or in part for any one of the following:

18.2.1 By the Government if the Recipient materially fails to comply with the terms and conditions of this Agreement

18.2.2 By the Government with the consent of the Recipient in which case the two parties shall agree upon the termination conditions including the effective date and in case of partial termination, the portion to be terminated

18.2.3 By the Recipient upon sending to the Government written notification setting forth the reasons for such termination, the effective date, and in the case of partial termination, the portion to be terminated. However, if the Government determines, in the case of

partial termination, that the reduced or modified portion of this Agreement will not accomplish the purposes for which the Agreement was made, it may terminate the Agreement in its entirety under either Article 18.2.1 or 18.2.2 above.

ARTICLE 19.0 NOTICES

All notices [and prior approvals] required hereunder shall be in writing and shall be addressed to the parties identified on the Agreement cover page and Article 3.0. Notice shall be effective upon signature by the Grants Officer.

ARTICLE 20.0 DELIVERY OF REPORTS

All reports and correspondence submitted under this Agreement shall include the Agreement number and be forwarded prepaid. A copy of the letter of transmittal shall be delivered to the Grants Office and the Grants Administration office. The addresses are set forth in Article 3.0 of this Agreement. The complete addresses for other data recipients are as set forth in Attachment 2 of this Agreement.:

ARTICLE 21.0 FOREIGN TRAVEL

In accordance with OMB Circular A-122, Attachment B, 50e, each foreign travel trip requires prior approval from the Grants Officer. The Recipient will provide notice of foreign travel to the Grants Officer at least thirty (30) days prior to departure. However, if instances arise where less than 30 days advance notice is available, the Recipient shall contact the Grants Officer as soon as practical but not later than ten (10) days prior to the departure date. The Grants Officer, after notification, will attempt to expeditiously respond to the request in order to meet travel requirements. If the Recipient travels outside the CONUS in performance of this Agreement, the requirements of the Foreign Clearance Guide (DODD 4500.54, dated 5 Jan 94) must be met.

ARTICLE 22.0 PRE-APPROVAL OF COSTS

22.1 Publication and Printing Costs: In accordance with OMB Circular A-122, Attachment B, 37e and consistent with the Recipient's obligation to publish and otherwise disseminate and deploy research results, the Recipient is hereby authorized to include publication and printing costs related to projects funded under the Agreement as allowable direct costs.

22.2 Participant Support Costs. In accordance with OMB Circular A-122, Attachment B, Paragraph 29 and consistent with the Recipient's plan to assist program participants to learn and implement new concepts of doing business, the Recipient is hereby authorized to include participant support costs related to projects funded under this Agreement as allowable direct costs.

22.3 **Public Information Service Costs:** In accordance with OMB Circular A-122, Attachment B, Paragraph 36 and consistent with the Recipient's obligation to publish and otherwise disseminate and deploy research results, the Recipient is hereby authorized to include public information service costs related to projects funded under this Agreement as allowable direct costs.

22.4 **Rearrangement and Alteration Costs:** In accordance with OMB Circular A-122, Attachment B, Paragraph 38, and in the event that special rearrangement and alteration costs are required, the Recipient is hereby authorized to include special rearrangement and alteration costs related to projects funded under this Agreement as allowable direct costs.

ARTICLE 23.0 PROPERTY MANAGEMENT

23.1 Special Purpose Equipment

Capital expenditures for special purpose equipment purchased with Government funding under this Agreement are hereby authorized as allowable direct costs, provided that the equipment is in direct support of and consistent with the objectives of this Agreement, and does not exceed \$15,000.00. All purchases of Special Purpose Equipment above this amount require prior approval of the Grants Officer

23.2 General Purpose Equipment

Capital expenditures for general purpose equipment, buildings, and land are unallowable as direct charges, except where approved in advance by the Grants Officer.

23.3 Property Title

Property title shall be determined in accordance with OMB Circular A-110 dated 19 Nov 93.

ARTICLE 24.0 SOFTWARE DEVELOPMENT

The requirements of P.L. 101-511, Section 8092 have been waived for this Agreement.

ARTICLE 25.0 DISPUTES

25.1 General

The parties shall communicate with one another in good faith and in a timely manner when raising and attempting to resolve issues under this Article.

25.2 Dispute Resolution Procedures

25.2.1 Any disagreement, claim, or dispute between the Government and the Recipient concerning questions of fact or law arising from or in connection with this Agreement, and, whether or not involving an alleged breach of this Agreement, shall be resolved under this Article

25.2.2 Whenever disputes, disagreements, or misunderstandings arise, the parties shall attempt to resolve the issue(s) involved by discussion and mutual agreement as soon as practicable. In no event shall a dispute, disagreement, or misunderstanding which arose more than three (3) months prior to the notification made under subparagraph 25.2.3 constitute the basis for relief under this Article unless the Commander of Wright Laboratory in the interests of justice waives this requirement.

25.2.3 Failing resolution of mutual agreement, the aggrieved Party shall document the dispute, disagreement, or misunderstanding by notifying the other Party in writing of the relevant facts, identify resolved issues, and specify the clarification or remedy sought. Within five (5) working days after providing notice to the other Party, the aggrieved party may, in writing, request a decision by the Director of the Manufacturing Technology Directorate. The other party shall submit a written position of the matter(s) in dispute within thirty (30) calendar days of receipt of such written position. Any such decision is final and binding unless a party shall within thirty (30) calendar days request further review as provided in this Article.

25.2.4 Upon written request to the Commander of Wright Laboratory, by the aggrieved party, made within thirty (30) calendar days after the decision in subparagraph 25.2.3 above, the decision of the Director of the Manufacturing Technology Directorate shall be reviewed. The Commander of Wright Laboratory may elect to conduct the review personally or through a designee, unilaterally or jointly with a representative of the other party who is a senior official of the party. Following the review, the Commander of Wright Laboratory or designee will resolve the issue(s) and notify the parties in writing. Such resolution is not subject to further administrative review and shall be final and binding.

ARTICLE 26.0 FORCE MAJEURE

Neither party shall be in breach of this Agreement for any failure of performance caused by any event beyond its reasonable control and not caused by the fault or negligence of that party. In the event such a force majeure event occurs, the party unable to perform shall promptly notify the other party and shall in good faith maintain such partial performance as is reasonable possible and shall resume full performance as soon as is reasonable possible.

ARTICLE 27.0 WAIVER OF RIGHTS

Any waiver of any requirement contained in this Agreement shall be by mutual agreement of the parties hereto. Any waiver shall be reduced to writing and a copy of the waiver shall be provided to each party. Failure to insist upon strict performance of any of the terms and

conditions hereof, or failure or delay to exercise any rights provided herein or by law, shall not be deemed a waiver or any rights of any party hereto.

ARTICLE 28.0 REPORTING REQUIREMENTS

28.1 Financial Reporting

28.1.1 Financial Status Reports

The Recipient shall submit Financial Status Reports in accordance with the requirements set forth in OMB Circular A-110. All reports shall be submitted on Standard Form 269 and shall be compiled on an accrual basis. The "Remarks" section of the Standard Form 269 shall include documentation to verify the in-kind contributions from all recipients and subrecipients or third parties in accordance with Article 8.1.3.2. Interim reports shall be submitted within 90 days after the end of each year of research. The final report is required 90 days after the completion date for the term of this Agreement. Addressee and Distribution Requirements: Government Program Manager (1 copy), Grants Office identified in Article 3 of this Agreement (1 copy), Grants Administration Office identified in Article 3 of this Agreement (1 copy).

28.1.2 Report of Federal Cash Transactions

The Recipient shall submit a Report of Federal Cash Transactions in accordance with the requirements set forth in OMB Circular A-110. All reports shall be submitted on Standard Form 272. The report shall be submitted not later than 15 calendar days following the end of each calendar quarter, except that the report covering the final quarter of each calendar year shall be submitted not later than 120 days following the end of that quarter, through the completion of this Agreement. Addressee and Distribution Requirements: Government Program Manager (1 copy), Grants Office identified in Article 3 of this Agreement (1 copy), Grants Administration Office identified in Article 3 of this Agreement (1 copy)

28.1.3 Audit Reports

The Recipient shall ensure that the independent auditor for this Agreement furnishes to the Government annually the results of any audits conducted including, at a minimum, the following: (1) a certified statement from the independent auditor for the Recipient stating the amount of matching funds applicable for each Government Fiscal Year allotment (as defined in Article 8.2 hereof) and a summary of the source of such matching amounts and (2) a certified statement from the independent auditor evidencing that Recipient has complied with all requirements of this Agreement. Addressee and Distribution Requirements: Grants Office identified in Article 3 of this Agreement (1 copy), Grants Administration Office identified in Article 3 of this Agreement (1 copy), and Audit Agency identified in Article 3 of this Agreement (6 copies).

28.2 Invention Reports

In accordance with Article 10.0, the Recipient shall file annual Invention (Patent) Reports as of the close of the fiscal year and at the end of the term for this Agreement. Annual reports are due 60 days after the close of the Government Fiscal Year and final reports are due 6 months after the expiration of the final research period. The Recipient shall use DD Form 882, Report of Inventions and Subcontracts, to file an inventions report. Negative reports are also required. Addressee and Distribution Requirements: AFMCLC/JANT (2 copies), Grants Administration Office identified on Article 3 of this Agreement (1 copy).

28.3 Quarterly Reports

Format for quarterly reports will be determined during the start-up phase of the Agreement. Quarterly reports will be due 30 days after the end of the Agreement quarter. A quarterly report will not be required for quarters when annual reports and the final report are due. Addressee and Distribution Requirements: Program Manager (1 copy) and Agile Web Interagency Team (1 copy each member).

28.4 Annual Reports

The Recipient shall provide the Government an annual report. Format for annual reports will be determined during the start-up phase of the Agreement but will include a benefits report for work funded hereunder. The benefits report shall address, in quantifiable terms, the commercial, governmental, and intangible benefits resulting from Cooperative Agreement funding. The parties agree to informally coordinate content and format for this report in advance of final submittal to assure a satisfactory report. The benefit report is to be submitted at the end of the first year of the Agreement. Addressee and Distribution Requirements: Government Program Manager (3 copies)

28.5 Final Report

Content for the final reports will be determined during the start-up phase of the Agreement. The format shall be according to the ANSI Standard for technical reports (ANSI STD Z39.18-1987). This format is an acceptable DTIC format.

THE AGILE WEB PILOT PROGRAM

START-UP PLAN

2 FEB 94

This document outlines the tasks and plans of the Ben Franklin Technology Center regarding the start-up phase of the Agile Web Pilot Program.

Our activities in this pilot are focused on a group of about 25 manufacturers. While we want to make sure that the things we learn are applicable to the broader industrial base, our client base for this activity is the 25 firms. Because of the uniqueness of our pilot program, many of the planning steps typical of deployment projects are not directly applicable to this effort.

Planning Steps

Below are the initial planning activities. They are in key areas that will help insure a successful startup of the program. Since the Ben Franklin Technology Center has been pursuing Agile Web activities since July 1993, many of these necessary startup activities are already completed.

Target Population

An understanding of the regional manufacturing demographics has already been developed through ten years experience in working with manufacturers in the region and in surveys and studies we have recently done. A summary of this information is provided in the TRP Proposal, page 9.

However, what is important to this program is a detailed understanding of these 25 firms, their capabilities, their needs, and their objectives. We are visiting with each of the companies in the web and spending enough time with them to begin to understand their capabilities and core competencies. We will also gain an understanding of their business challenges and constraints, as well as their views and perspectives on the web and the concepts of agility.

From initial visits, this information has already been collected, organized, and documented. It was distributed to web participants on January 25, 1994 for use throughout the program.

Throughout the program, as we work closely with these web member firms, we will continue to gain even greater knowledge and insight into their needs. We have specific plans in place to do more detailed assessments of the firms. This information will be used to update this documentation.

Delivery Mechanisms

Another uniqueness of this program is that many of the services to be provided to the web are intended to be defined by the web members as they begin working in an "agile" way to respond to pilot customer orders. Thus, the services required will be defined throughout the program. The appropriate delivery mechanisms will depend upon the service to be delivered.

For the direct services of this project, we plan to use the delivery mechanism that Ben Franklin has been using for over ten years. We have already established a "virtual service provider", comprised of a core group of organizations with complementary competencies as the service

delivery mechanism. This group has begun meeting. A description of these organizations can be found on page 12 of the TRP Proposal. We still need to work out the operating and compensation procedures that we will follow with these groups.

As services are defined by the web, the appropriate resources will be pulled from this core group to provide the required services. We can go outside this core group if a required expertise does not exist in the group. This outside expertise will be identified through the networks these core organizations already have established.

This concept of using a core of service providers will also allow us, through the connections and networks of each of them, to identify and leverage existing tools and approaches.

As we go through the project, some technologies and business practices can be of immediate value to manufacturers outside the web. In these cases, we plan to leverage existing delivery mechanisms like MTC's and state economic development programs to deploy what we learn to other manufacturers throughout the country.

Marketing Approaches

The marketing approaches have already been defined and set up.

Most of the target "supplier" companies of the web activities have already committed to participate. The few companies we need to add will be firms that have already worked with the Ben Franklin Technology Center or with current web members.

Several "customer" companies are also committed to participate. In order to identify additional customer companies, we plan to work through the Agile Manufacturing Enterprise Forum (AMEF) and use our own contacts to find firms that are interested in exploring agility and working with the web.

Staffing

At this point, key staffing is complete. We have pulled together a small group of Ben Franklin employees that will administer the program and keep it moving and on track. The staff members are in place, trained, and already pursuing the activities of the project. At this point, the key staff and their estimated levels of effort, are as follows:

Mark Lang	30%
Dwayne Hansen	80%
Ted Nickel	100%
Connie Faylor	75%

We have also allocated portions of other Ben Franklin staff to assist with carrying out the new financial and administrative duties required by Federal regulations.

As time goes on, and the level of activity within the web increases, we may find it necessary to add more staff to support our efforts, or to increase the percentage of Ben Franklin staff time to this activity. However, one of the advantages of the "virtual service provider" concept we are using in this program is that it allows us access to a lot of personnel resources at other organizations as we need them, rather than permanently hiring people at the center.

Sub-Recipient/Vendor Agreements

A key concept of this program, and the essence of agility, involves partnering with and leveraging the core competencies of other organizations to provide needed services to the web. We perceive that some of these partners will act in a sub-recipient role for major development and assistance activities, while others will act more as vendors providing existing products or services to the web. We need to develop appropriate agreements to be used with these sub-recipients and vendors that meet our needs as program managers as well as complies with governing federal regulations.

Client Tracking and Information Management

Since we are working with a small group of firms, sophisticated information systems are not required to manage this project. Information about the firms and the activities carried out with each web member will be maintained in word processing files and database applications as required. At this point, there is no perceived need for specialized hardware or software systems. Information will be shared among the web, as appropriate, by way of minutes, status reports, etc.

All of the service providers are already networked together using Internet and Compuserve. Networking the web members together is the first planned improvement project and is underway, but is not considered part of the startup phase of the program.

Evaluation

We are in the process of developing and clearly defining systems to evaluate our progress and effectiveness. Quarterly reports and briefing meetings with the TRP Integration Team have been established to keep the Team informed of our progress so they can evaluate the program. We have created a quick, convenient client satisfaction survey that will allow the web members to periodically evaluate and assess our services and the overall progress of the web. We are working with the AMEF to define a system to collect and analyze web performance data, such as reductions in lead times or reductions in costs, that are due to the use of technologies and business practices that foster agility. An initial evaluation mechanism is being developed and will be defined by the due date given in the Action Steps section of this plan. But, throughout the project, this system will likely evolve and be improved.

Financial and Management Systems

The Ben Franklin Technology Center will contract to use currently established accounting and financial reporting systems at Lehigh University. We have been using these systems for ten years to manage and administer our state funding. Our people are fully trained in the use of these systems. Our financial systems and procedures are audited by a third party auditor each year.

Ben Franklin staff are currently studying the Federal cost principle circulars to insure we understand the requirements. Work is needed to set up financial and administrative procedures and systems to insure that we will comply with all of these regulations. We have a working relationship with staff at the Lehigh University Office of Research and Sponsored Programs (ORSP). The ORSP has an outstanding track record in the administration of Federal contracts, and will be a valuable resource to the center in this regard. We also plan to use outside accounting and legal expertise as additional resources to insure we have adequate procedures.

Facilities

The facilities of the Ben Franklin Technology Center will be used. Therefore, all offices, computer systems, etc. that at this point we expect to need are already in place.

Operating Plan

An operating plan needs to be developed and approved by the Government through the Grants Officer. This will be accomplished within 90 days of the execution of this Cooperative Agreement.

Action Steps

A summary of the key action items that remain to be accomplished during the startup phase are listed below:

Item	Description	Due Date
1	Develop Sub-Recipient / Vendor Agreements with Service Providers	1 Mar 1994
2	Establish Operational Procedures for Compliance with Federal Regulations	15 Mar 1994
3	Establish Initial Metric, Documentation, and Evaluation System with AMEF	31 Mar 1994
4	Develop and Obtain Approval on an Operating Plan	15 May 1994

LISTING OF DATA RECIPIENTS AND ADDRESSES

Government Program Manager Mr. Brain Stucke
WL/MTIA
2977 P St, STE 6
Wright Patterson AFB OH 45433-7739

AFMCLC/JANT Staff Judge Advocate
Patent Monitoring Office
Attn: AFMCLC/JANT, Bldg 11
2240 B Street, Suite 8
Wright Patterson AFB OH 45433-7112

Agile Web Interagency Team Mr. Steve Trent
WL/MTIA
2977 P St STE 6
Wright Patterson AFB OH 45433-7739

Mr. Michael Hitchcock
WL/MTIB
2977 P St STE 6
Wright Patterson AFB OH 45433-7739

Mr. Leo Plonsky
NAVIRSA
700 Robbins Ave
Bldg 10 2nd Floor
Philadelphia PA 19111-5078

Mr. Troy Strouth
WL/MTEM
2977 P St STE 6
Wright Patterson AFB OH 45433-7739

Mr. Frank Estock
Tobyhanna Army Depot
SDSTO-ME-F
11 Midway Rd
Tobyhanna PA 18466-5075

Mr. Gerald O Stoops
Commander
CECOM
AMSEL-LC-EID (Stoops)
Fort Monmouth NJ 07703-5023



DEPARTMENT OF THE AIR FORCE

WRIGHT LABORATORY (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

FROM: WL/MT

18 JAN 1994

SUBJ: Recommended Exemption from the Use of Ada Per WLR 80-15 for Technology Reinvestment Program Project #2914 - Agile Web Pilot

TO: WL/DOI
ATTN: Mr. R. Taylor

1. It is recommended that Ada be waived for use on the Agile Web Pilot for the reasons specified in the attached MFR, accomplished per Wright Laboratory Regulation 80-15.
2. Any questions concerning this matter should be directed to Mr. Brian A. Stucke at 57371.

1 Atch
Ada Waiver MFR

William J. Schuyler, Directorate

1st Ind, WL/DOI

24 Jan 94

TO: WL/MT

Your recommended exemption from full use of the Ada software programming language is approved, based on compliance with WLR 80-15, 26 June 1992.

RAYMOND L. REINHARD
Chief, Communications-Computer
Systems Division
Operations & Support Directorate

Memo for Record

Subject: Justification for the Selection of a Programming Language for use on Technology Reinvestment Program #2914 - Agile Web Pilot

1. Following is the justification for selection of an American National Standards Institute (ANSI) standard programming language for the subject Research and Development (R&D) effort:

a. Exemption from the full use of Ada is approved on the grounds that all of the effort satisfies the requirements of Section 4 of the Air Force Policy on Programming Languages, 7 August 1990, as interpreted below based on the justification identified in WI Regulation 80-15:

b. This effort extends and integrates software that comes as part of a commercially supported product and the Air Force has no maintenance or other support responsibility for the existing or extended software. **See Paragraph 2 for detailed explanation.**

2. DETAILED EXPLANATION AND RATIONALE:

a. This effort involves the use of network software tools to aid in the integration of and partnering of suppliers and consumers in a manufacturing production chain. The contractor selected for this effort, the Ben Franklin Technology Center (BFTC), will utilize existing sets of commercial network access and network management tools to the extent possible to establish a regional network. BFTC may be required to modify some of their existing network code to accommodate the integration of network and engineering tools; however, conversion of these tools to Ada would not be cost effective, nor would the percentage of alteration or modification of code justify conversion to Ada.

b. The programming languages that are to be used in lieu of Ada will be ANSI standard higher order languages. All of the software will be maintained and supported by the software vendor(s) at any demonstration sites and potential future implementation sites. Therefore, all Life Cycle support considerations are the responsibility of the software vendors.



MICHAEL F. HITCHCOCK
Acting Chief
Integration Technology Division
Manufacturing Technology Directorate



Beat Franklin

Promoting Partnerships for Business Advantage

▲
New Business
Growth

▲
Manufacturing
Solutions/ERP

▲
Supplier
Partnerships

December 23, 1993

Chris Lay
WL/MLKT Bldg 7
2530 C Street
Wright Patterson Air Force Base
Ohio 45433-7607

Dear Chris,

Enclosed is a copy of the addendum
to our TRP Proposal I promised to
send you.

Also, the ACO and Audit Office
recommendations are:

Office of Naval Research
Resident Representative
536 South Clark Street, Rm 286
Chicago, Illinois 60605-1588
Gerald T. Smith
(312)353-8423

HHS Audit Office
Division of Audit Services
P.O. Box 13716
Room 4300
Philadelphia, PA 19101
(215)596-6744

Hope you had a good Christmas!

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

THE AGILE WEB PILOT PROGRAM

Proposal to the Technology Reinvestment Project Addendum

This addendum contains clarifications to the material presented in our TRP proposal entitled "The Agile Web Pilot Program", based upon questions and comments made by the review team at our site visit on August 25, 1993. The section numbers in this addendum correspond to the sections in the proposal where the clarifications are being made.

2.1.3. Target Industry Representatives and Products

The small manufacturers that have already committed to participate as suppliers in the web range from about 20 to about 300 employees, with sales from about \$2.5 million to \$45 million. We expect the additional firms we will recruit will be similar. They were selected, however, based upon their progressive management, their openness to change and trying new ideas, and their strong interest in the web concepts. As a result, they are biased toward the progressive end of the manufacturing population in terms of computer literacy, etc. This bias will help us as we learn how to creatively apply various tools and practices within the web to gain competitive advantages.

Once we gain experience with the tools and practices within the web, we expect to deploy them widely to small and medium-sized manufacturers in eastern Pennsylvania through the powerful network of service providers in the region (Ben Franklin Technology Centers, Industrial Resource Centers, university labs, community colleges, etc.). While the concepts promoted for the agile web are very broad, the implementation is very practical. The tools and techniques that will be used are state-of-the-market applied in very creative ways. They will be very appropriate for small manufacturers and easily adoptable by them. From our experience in working with many small manufacturers, the major reason why they are reluctant to adopt new technologies is that they fail to see the strategic benefits of such technologies and view them as costs instead of investments. While a small percentage of these firms may never invest in new technologies and practices, the quantifiable economic measures of the benefits of the practices and technologies tested in the web will make it much easier for the rest of the less sophisticated manufacturers to look at technology as a strategic advantage and provide the motivation to make the necessary investments. Thus, we expect the experience and tools resulting from the agile web pilot to help us bring more small manufacturers further up the modernization curve.

2.3.4 Agile Manufacturing Enterprise Forum (AMEF)

As was noted in the original proposal, the role of the AMEF is to promote awareness and a deeper understanding of agility; provide a vehicle for interested parties to come together to share experiences and practices; and promote research, development, and demonstration activities of other organizations and firms that relate to agility, with a focus on sharing the role of all these activities in the overall agile vision. Under its charter, the AMEF does not perform demonstration projects such as the agile web. However, it does join with groups performing such activities to contribute knowledge and case studies and to evaluate, document, and disseminate the results with respect to agility. As was noted at the site visit by Dexter Baker, the Chairman of the AMEF Leadership Steering Committee, the AMEF is very interested in associating with the agile web pilot because (1) it focuses on applying the principles of agility "on the street" in a real demonstration and (2) it brings the benefits of agility to the smaller suppliers that are an important component of the overall manufacturing value chain upon which the larger manufacturers depend for more and more product value.

Other federal support of a complementary nature being provided by the federal government is the support for Agile Manufacturing Research Institutes and associated pilot programs. Given the stated mission of the AMRIs and the strong role for NSF and academic institutions in the leadership, these activities will be focused on developing and, to some extent, demonstrating the technologies that help to make agility practical. These technology-related activities are fully complementary to the agile web pilot, which focuses on taking existing technologies and applying them in creative ways to specific business needs to demonstrate agility. In a similar way, the agile web pilot is complementary to a TRP proposal for ValleyNet submitted by Dan Shunk at Arizona State University. ValleyNet proposes to link firms in the southeastern U.S. over high speed networks to examine the benefits of such rapid communications, and any technology developed in that program could potentially be used for the agile web (although the appropriate infrastructure may not be as readily available in Pennsylvania).

2.4.5 Evaluation and Documentation

We fully recognize the need to establish metrics in order to be able to measure the impact of the pilot on manufacturing competitiveness. As soon as this project begins, initial metrics will be identified and baseline data collected. This data will include information on the characteristics or operating practices of the firms, as well as business performance metrics, such as cycle times and defect rates. Data will be collected throughout the pilot that can be used to track improvements made. Because agility is a new concept, as we learn from the pilot experiences, we may need to modify our initial set of metrics to make sure we have meaningful and broadly applicable measures. It is also important to document these measures and define a consistent system to track them over time. With such a system generally available to manufacturers, they could use the system to benchmark over time their own progress in becoming agile as compared to others. We

plan to use the experience gained in documenting this pilot program to develop such a self-evaluation system. An initial version of this Performance Tracking System is planned to be ready in Month 6, as indicated in the milestone chart found on page 34 of the original proposal.

2.4.6 Technical Assistance for System Improvements

As can be noted from the budget, Task 8: System Improvement Projects is where the majority of project funds is being allocated. With the objective of developing the web into a finely tuned manufacturing system, we have to look at each firm individually and as a part of the system. To improve the system in general, we will have to improve each member's internal manufacturing and business operations as well as their systems and business practices to allow them to work as an integral part of the web system. This task is where the needed improvements are actually **implemented** within the web members' operations, after the group has prioritized what is needed to operate more effectively as a web. Many and various improvement projects will be carried out in the course of the pilot, depending upon the priorities identified by the web. In each project, service providers will be in the web members' facilities working closely with them to put in place new manufacturing systems and business practices, or enhance existing ones, to make them a stronger participant in the web and a more competitive manufacturer in the marketplace. Such improvement projects (although without the overall web system approach) have been the core of activity of the Ben Franklin Technology Center for more than ten years, and we will build on this experience and network of service providers to provide services to the web.

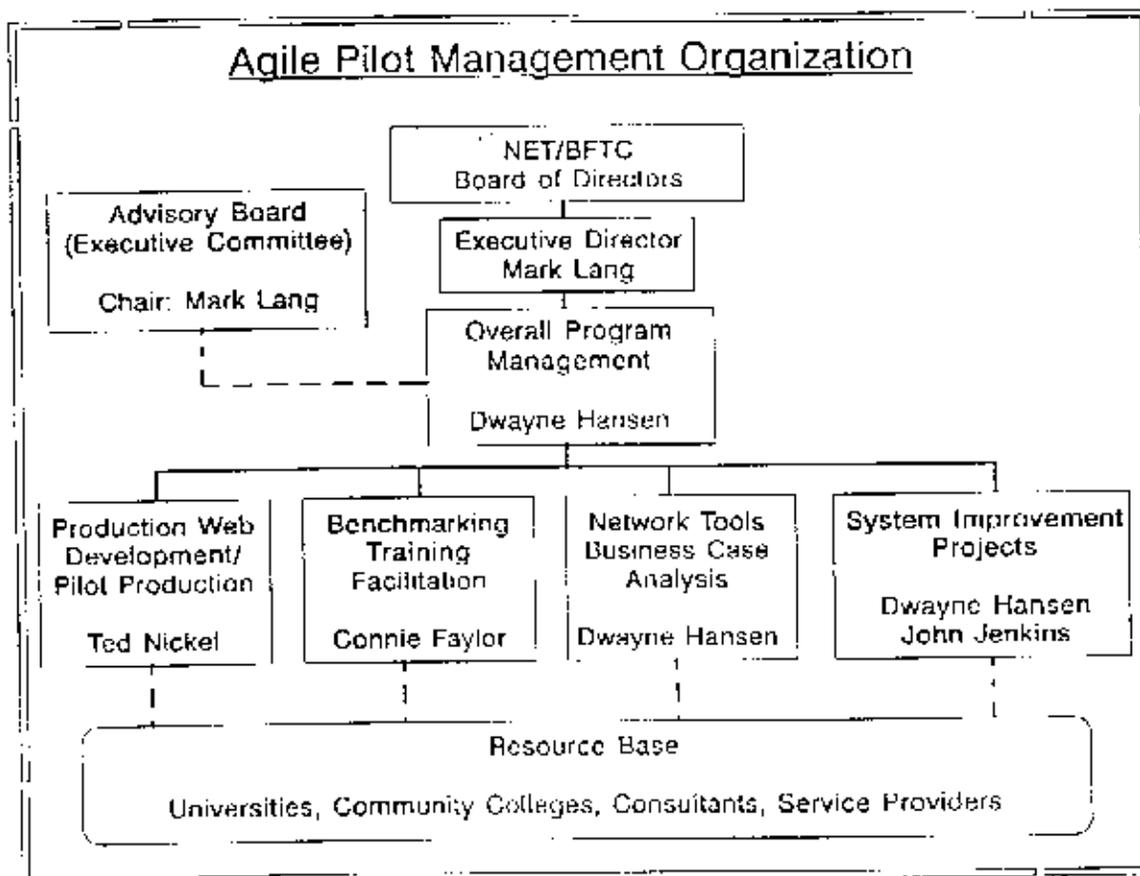
The improvements made in the operations of the web members during this pilot will be directly applicable to the defense industry's supplier base. As the things we learn are deployed and disseminated to defense suppliers, these firms will be able to use these web concepts to better meet the changing needs of defense. They will be able to call upon their web partners to provide higher quality parts in less time to their defense customers. The rapid response they can provide will allow for the required reductions in defense inventories. The agility of these agile firms will allow them to supply commercial needs during times of low defense procurements, yet quickly switch to defense work to meet emergency surge requirements - using the web to find needed capabilities and capacities without making large investments. Having both defense and commercial customers working integrally with the web pilot will insure that the systems and practices put in place and tested will be dual-use and meet both defense and non-defense needs. We also have Tobyhanna Army Depot working with us as a customer to the web. They will focus attention on developing suppliers who are able to meet the current and future needs of Tobyhanna and the depot system for low volume, rapid response parts.

2.5.1 Organization

The applicant, with full responsibility for the program, is the NET Ben Franklin Technology Center (BFTC). The BFTC is governed by a 17 member board, representing large and small companies, education, and labor, with a strong dominance of private sector representatives. This is a policy making board which will have the fiscal responsibility for the program. Mark Lang reports directly to the board, and is the agent of the board for carrying out its policies. Dwayne Hansen reports to Mark Lang and will have the authority to expend TRP and matching funds, under the guidelines set forth by the board.

The Advisory Board will be made up of a representative of each supplier and customer participating in the web pilot. Mark Lang will chair this board to insure that it is active and that it functions properly. The Advisory Board will provide Mr. Hansen with input from the web members on their priorities and how well the pilot program is meeting their needs.

A revised organizational chart is presented below:



2.5.3 Staffing Plans

In order to use funds as effectively as possible, the staffing at the BFTC will be kept to a minimum. The individuals identified in the organizational chart above will be the core staff of the program. Their roles are given in the original proposal and their percent effort is as follows:

Mark Lang	30%
Dwayne Hansen	80%
Ted Nickel	75%
Connie Faylor	50%
John Jenkins	30%

The BFTC has already committed the time of Mark Lang, Dwayne Hansen, and Connie Faylor to develop the agile web concept. However, with the very limited resources currently available to the BFTC for technical and business support services, the development of the web will take a long time without additional funds. The TRP funding will allow Ted Nickel to join the group, buy some time of John Jenkins currently assigned to other Ben Franklin work, add support staff personnel, and provide funding to support an array of technical and business service providers operating under the overall direction of the management team. In this way, we can significantly speed up our efforts in making the web happen and shorten the time to see results, without creating as great a drain on BFTC funds and damaging our regular programs.

A lot of work is going to be required to meet the goals of this pilot program. Rather than hire all of the expertise and resources that will be required, our staffing strategy will allow the program management team to draw upon technical and other resources only as needed. The core staff above will act as coordinators and program managers for their respective responsibilities, and will call upon a rich base of other service providers - industry experts found at universities, community colleges, private consulting organizations, and other agencies - to actually carry out the work. The capabilities and expertise of these third party organizations are more fully described in sections 2.3.2 through 2.3.5 of the original proposal. As part of our arrangements with these third party resources, they will provide their own project managers that will be responsible for managing their day-to-day activities. This model of staff overseeing and guiding outside project managers has been the basis of operation for ten years at the BFTC and has been very successful.

Statement of Work - Task 3: Executive Information Sessions

These Executive Information Sessions differ from, and do not duplicate, the efforts of the AMEF. The activities of the AMEF include conferences and group meetings where issues of agility are treated and discussed. But the main objectives of these activities are to educate and disseminate information, and to explore agility at a more conceptual level. The Executive Information Sessions proposed here are very action and deployment

oriented. The pilot participants will go much beyond the concepts and get into implementing the concepts and evaluating how well these implementation schemes and concepts actual work. These sessions will involve very intensive discussions, working with industry experts and sharing experiences in the context of what is observed and learned from the actual pilot orders.

Submitted as an official addendum by:

Mark Lang
Mark S. Lang
Executive Director
NET Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

8-27-93
(date)

215/758-5210

FOR TRP USE ONLY, DO NOT WRITE IN THIS SPACE

1. Proposal Title: **THE AGILE WEB PILOT PROGRAM**

1b. Activity: **Technology Deployment** 1c. Program: **Regional Tech. Alliance** 1d. Technology Focus Area and Specific Topic:

2. Point of Contact

2a. Name and Mailing Address of Contact:

Mark S. Lang
 Executive Director
 NET Ben Franklin Technology Center
 125 Goodman Drive
 Bethlehem, PA 18015

Mark Lang

4. Name, Organizations, and % Time Commitment of Key Personnel

4a.	Mark S. Lang	30%
	NET Ben Franklin Technology Center	
4b.	Dwayne L. Hansen	80%
	NET Ben Franklin Technology Center	
4c.	Ted Nickel	75%
	Agile Mfg Enterprise Forum	
4d.		
4e.		

2b. Telephone Number:
215/758-5210

2c. Fax Number (if any):
215/861-5918

2d. E-Mail Address (if any):
Internet: :MSL0@Lehigh.edu

2e. Type of Business (SIC Code or other description):
Economic Development

6. Names of Key Organizations Participating

6a.	NET Ben Franklin Technology Center
6b.	
6c.	
6d.	
6e.	

3. Federal Government Cost

8. Matching Funds over Base Period

3a. Base Cost and Duration (months): \$1,000,000 (12mo)

8a. Cash (\$): \$500,000

3b. First Option Cost and Duration (months): \$1,000,000 (12)

8b. In-Kind Contributions (\$): \$678,000

3c. Second Option Cost and Duration (months): N/A

8c. Types of In-Kind Contributions: private sector

3d. Base Period Match Percent Represented by TRP Funds: 46%

8d. Total Matching Funds (\$): \$1,178,000

7. Does This Proposal Involve Participation by Foreign-Owned Organizations? YES NO

9. Identify (if any) any Federal Agency or Entity that was Instrumental in Formulating the Proposal Idea, Team, or Approach:

ABSTRACT

Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risk, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, which we will call "agile manufacturing", through a carefully structured series of pilots carried out through collaboration between a group of large manufacturers, small suppliers, and organizations that can provide business and technical assistance to these two constituencies.

TRP Cover Sheet 2: Proposal Participants

[Use as many copies as necessary to list all participants. Include entities listed on Cover Sheet 1.]

Proposal Title: **THE AGILE WEB PILOT PROGRAM**

a. Name and Address of Participant 1 of 20

NET Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

b. Telephone Number: 215/758-5210

c. Fax Number (if any): 215/861-5918

d. Point of Contact, Organization, and Address:

Mark S. Lang
Executive Director
NET Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
Economic Development

a. Name and Address of Participant 2 of 20

Agile Manufacturing Enterprise Forum
Iacocca Institute, Lehigh University
200 W. Packer Avenue
Bethlehem, PA 18015-1582

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

b. Telephone Number: 215/758-5510

c. Fax Number (if any): 215/694-0542

d. Point of Contact, Organization, and Address:

Rusty Patterson
President AMEF
c/o Iacocca Institute, Lehigh Univ.
200 W. Packer Avenue
Bethlehem, PA 18015-1582

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
Non-profit consortium

a. Name and Address of Participant 3 of 20

Blue Mountain Machine, Inc.
725 State Road
Lehighton, PA 18235

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

b. Telephone Number: 215/377-4690

c. Fax Number (if any): 215/377-6875

d. Point of Contact, Organization, and Address:

Thomas R. Martin
Sales Manager
Blue Mountain Machine, Inc.
725 State Road
Lehighton, PA 18235

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
Precision Machining & Fabricating

a. Name and Address of Participant 4 of 20

Blue Ridge Pressure Castings, Inc.
P.O. Box 208
Lehighton, PA 18235-0208

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

b. Telephone Number: 215/377-2510

c. Fax Number (if any): 215/377-5066

d. Point of Contact, Organization, and Address:

Andrew Behler
Vice-President Operations
Blue Ridge Pressure Castings, Inc.
P.O. Box 208
Lehighton, PA 18235-0208

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
Mfg Brass, Aluminum Die Castings

TRP Cover Sheet 2: Proposal Participants

(Use as many copies as necessary to list all participants. Include entities listed on Cover Sheet 1.)

Proposal Title: **THE AGILE WEB PILOT PROGRAM**

a. Name and Address of Participant 5 of 20
 Cook Specialty Company
 North Second Street, P.O. Box 129
 Green Lane, PA 18054-0129

Check if: (Small Business) (HBCU/MI) (Foreign-owned)
 (Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:
 Tom Panzarella
 President
 Cook Specialty Company
 North Second Street, P.O.Box 129
 Green Lane, PA 18054-0129

b. Telephone Number: 215/234-4535
 c. Fax Number (if any): 215/234-5015

e. E-Mail Address (if any):
 f. Type of Business (SIC code or other description):
 Metal Fabrication Firm

a. Name and Address of Participant 6 of 20
 Electro-Space Fabricators, Inc.
 300 W. High Street
 Topton, PA 19562-0067

Check if: (Small Business) (HBCU/MI) (Foreign-owned)
 (Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:
 William Straccia, III
 President
 Electro-Space Fabricators, Inc.
 300 W. High Street
 Topton, PA 19562-0067

b. Telephone Number: 215/682-7181
 c. Fax Number (if any): 215/682-2133

e. E-Mail Address (if any):
 f. Type of Business (SIC code or other description):
 Metal Fabrication Firm

a. Name and Address of Participant 7 of 20
 General Altronics Corporation
 1200 E. Mermaid Lane
 Philadelphia, PA 19118

Check if: (Small Business) (HBCU/MI) (Foreign-owned)
 (Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:
 Earl Ruckdeschel
 Director of Operations
 General Altronics Corporation
 1200 E. Mermaid Lane
 Philadelphia, PA 19118

b. Telephone Number: 215/233-4100
 c. Fax Number (if any): 215/233-9947

e. E-Mail Address (if any):
 f. Type of Business (SIC code or other description):
 Mfg data communications/radar equip.

a. Name and Address of Participant 8 of 20
 Jade Corporation
 3063 Philmont Avenue
 Huntingdon Valley, PA 19006

Check if: (Small Business) (HBCU/MI) (Foreign-owned)
 (Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:
 Tony Godonis
 Director of Engineering
 Jade Corporation
 3063 Philmont Avenue
 Huntingdon Valley, PA 19006

b. Telephone Number: 215/947-3333
 c. Fax Number (if any): 215/938-7740

e. E-Mail Address (if any):
 f. Type of Business (SIC code or other description):
 Design/Build automated equipment,
 engineering services

TRP Cover Sheet 2: Proposal Participants

[Use as many copies as necessary to list all participants. Include entities listed on Cover Sheet 1.]

Proposal Title: THE AGILE WEB PILOT PROGRAM

<p>a. Name and Address of Participant <u>9</u> of <u>20</u></p> <p>Kingston Metal Specialties Co. P.O. Box 1205 Kingston, PA 18704-0205</p> <p>Check if: (Small Business <input checked="" type="checkbox"/>) (HBCUMI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>David Rollison Corporate Manager of Process Improvement Kingston Metal Specialties Co. P.O. Box 1205 Kingston, PA 18704-0205</p>
<p>b. Telephone Number: <u>717/288-5411</u></p> <p>c. Fax Number (if any): <u>717/288-7580</u></p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): <u>contract mfr, sheet metal component.</u></p>

<p>a. Name and Address of Participant <u>10</u> of <u>20</u></p> <p>Lamm's Machine, Inc. 3216 Berger Street Allentown, PA 18103</p> <p>Check if: (Small Business <input checked="" type="checkbox"/>) (HBCUMI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>Jeffrey Lamm President Lamm's Machine, Inc. 3216 Berger Street Allentown, PA 18103</p>
<p>b. Telephone Number: <u>215/797-2023</u></p> <p>c. Fax Number (if any): <u>215/797-6670</u></p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): <u>mfr of machined parts</u></p>

<p>a. Name and Address of Participant <u>11</u> of <u>20</u></p> <p>The MATCO Group, Incorporated 320 North Jensen Road Vestal, New York 13850</p> <p>Check if: (Small Business <input type="checkbox"/>) (HBCUMI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>John Piseski Vice President, Manufacturing The MATCO Group, Incorporated 320 North Jensen Road Vestal, New York 13850</p>
<p>b. Telephone Number: <u>607/729-8973</u></p> <p>c. Fax Number (if any): <u>607/729-8981</u></p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): <u>mfr circuit boards & assemblies</u></p>

<p>a. Name and Address of Participant <u>12</u> of <u>20</u></p> <p>Micro Tool Company 284 Brodhead Road Bethlehem, PA 18017</p> <p>Check if: (Small Business <input checked="" type="checkbox"/>) (HBCUMI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>David Krisovitch Production Manager Micro Tool Company 284 Brodhead Road Bethlehem, PA 18017</p>
<p>b. Telephone Number: <u>215/882-3740</u></p> <p>c. Fax Number (if any): <u>215/837-8692</u></p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): <u>precision machining, welding, fabricating</u></p>

TRP Cover sheet 2: Proposal Participants

[Use as many copies as necessary to list all participants. Include entities listed on Cover Sheet 1.]

Proposal Title:

THE AGILE WEB PILOT PROGRAM

a. Name and Address of Participant 13 of 20

New Standard Corporation
P.O. Box 420
125 Pinkerton Road
Mount Joy, PA 17552-0420

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:

Bob Fletcher
Engineering Manager
New Standard Corporation
P.O. Box 420
125 Pinkerton Road
Mount Joy, PA 17552-0420

b. Telephone Number: 717/653-1811

c. Fax Number (if any): 717/653-4678

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
contract metal stamping, fabrication

a. Name and Address of Participant 14 of 20

PS Group, Inc.
851 Tech Drive
Telford, PA 18969

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:

Terrance McGinn
President
PS Group, Inc.
851 Tech Drive
Telford, PA 18969

b. Telephone Number: 215/723-1114

c. Fax Number (if any): 215/723-6913

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
factory automation systems design & engineering company

a. Name and Address of Participant 15 of 20

Strick Corporation
P.O. Box 111
Lehighton, PA 18235-0111

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:

Stephen Nelson
General Manager
Strick Corporation, Fabricated
Products Division
P.O. Box 111
Lehighton, PA 18235-0111

b. Telephone Number: 215/386-5956

c. Fax Number (if any): 215/386-2816

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
custom design, fabrication, assembly

a. Name and Address of Participant 16 of 20

Suckle Corporation
733 Davis Street
Scranton, PA 18505

Check if: (Small Business) (HBCUMI) (Foreign-owned)
(Small Disadvantaged Business (SDB))

d. Point of Contact, Organization, and Address:

Donald Symanski
Vice President
Suckle Corporation
733 Davis Street
Scranton, PA 18505

b. Telephone Number: 717/346-3871

c. Fax Number (if any): 717/346-1612

e. E-Mail Address (if any):

f. Type of Business (SIC code or other description):
fabrication, finishing, assembly

TRP Cover Sheet 2: Proposal Participants

(Use as many copies as necessary to list all participants. Include entities listed on Cover Sheet 1.)

Proposal Title: **THE AGILE WEB PILOT PROJECT**

<p>a. Name and Address of Participant: <u>17</u> of <u>20</u></p> <p>Surtech Industries 125 Derry Court York PA 17402</p> <p>Check if: (Small Business <input checked="" type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>Gary Kehr Operations Manager Surtech Industries 125 Derry Court York, PA 17402</p>
<p>b. Telephone Number: 717/767-6808</p> <p>c. Fax Number (if any): 717/764-6271</p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): powder coatings, painting, finishing</p>

<p>a. Name and Address of Participant: <u>18</u> of <u>20</u></p> <p>SI/Baker, Inc. Kesslerville Road Easton, PA 18042</p> <p>Check if: (Small Business <input checked="" type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>Joel Hoffner President/CEO SI/Baker, Inc. Kesslerville Road Easton, PA 18042</p>
<p>b. Telephone Number: 215/253-5045</p> <p>c. Fax Number (if any): 215/250-9677</p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): design/mgr automated equipment</p>

<p>a. Name and Address of Participant: <u>19</u> of <u>20</u></p> <p>IBM Corporation P.O. Box 12195 Research Triangle Park, NC 27709</p> <p>Check if: (Small Business <input type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>Edward Brigham Associate Buyer IBM Corporation Dept 504/Bldg 205 P.O.Box 12195 Research Triangle Park, NC 27709</p>
<p>b. Telephone Number: 919/543-4438</p> <p>c. Fax Number (if any): 919/543-4253</p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): computer manufacturer</p>

<p>a. Name and Address of Participant: <u>20</u> of <u>20</u></p> <p>Texas Instruments c/o Iacocca Institute, Lehigh Univ. 200 W. Packer Avenue Bethlehem, PA 18015-1582</p> <p>Check if: (Small Business <input type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)</p>	<p>d. Point of Contact, Organization, and Address:</p> <p>Scott Wade Texas Instruments Loaned Executive Texas Instruments c/o Iacocca Institute, Lehigh Univ. 200 W. Packer Avenue Bethlehem, PA 18015-1582</p>
<p>b. Telephone Number: 215/758-6118</p> <p>c. Fax Number (if any): 215/694-0542</p>	<p>e. E-Mail Address (if any):</p> <p>f. Type of Business (SIC code or other description): Defense electronics</p>

The Agile Web Pilot Program

Demonstrating the Customer/Supplier Relationships
Needed to Compete in a World of Constant, Unpredictable Change

SECTION 1 - EXECUTIVE SUMMARY

Problem

Today's world-wide, information-based economy is causing firms to deal with an environment of constant, unpredictable change in markets, competition, and customer expectations. Large firms are downsizing to become lean and to focus on their core competencies. As they do, they have a greater and greater need for suppliers who can assume responsibility for more of the total value of products and services, e.g. early involvement in design, integrating entire subsystems, and high performance production capabilities. The defense supply chain is feeling the same pressures as military budgets decline and dual use production is promoted to maintain needed capabilities.

Many firms are trying to forge new ways of doing business, but they are running into barriers. Large firms are finding that many current suppliers are not able to meet the new requirements. Small firms feel the problems of their customers are being forced down on them without the ability to make things better and often without adequate compensation. The traditional "build to print" paradigm of procurement is proving inadequate to achieve the needed results in a timely fashion. However, industry as a whole does not have a good understanding of the new roles of customers and suppliers and the dynamics of the relationships between them that are needed to compete in today's global economy. Our country's ability to compete, and to provide high wage, high skilled jobs for our citizens, is dependent on our success in creating a new flexible, responsive, cost effective manufacturing system and practice in this country that builds on uniquely American skills, culture, and resources.

Delivery Mechanisms

Demonstration Approach. We believe that a giant leap forward in understanding and reaching the new dynamic can be made by creating and building upon a unique test bed that represents a small vertical slice of the entire manufacturing value chain. We propose to develop, demonstrate, and evaluate the new manufacturing system and practice, which we will call "agile manufacturing", through a carefully facilitated series of pilots carried out through open ended collaboration between a group of large customers, small suppliers, and associated organizations.

In simplified form, the pilots will work as follows:

We will seed the test bed by teaming appropriate executives from small suppliers and large customers, and have them develop their best concepts about new ways of working together and using technology for mutual advantage. The core group of suppliers will all come from eastern Pennsylvania, and they will form a regional "web" of qualified manufacturers who work flexibly together and use agile tools and practices to be more responsive to specific customer needs. The customers will examine how they can partner with the firms in the agile web to obtain advantages in cost, cycle time, or other benefits.

We will then implement reasonable changes in technology and practice among the firms on the demonstration team as needed to try out new approaches that come out of the team's collaboration. The customers on the team will select appropriate products and associated parts and subassemblies, and, following the approach developed by the team, test the ability of the agile web to source these parts in a more competitive manner. Different members of the web will pool their resources and expertise as "virtual firms" to best respond to these specific customer orders. If the web meets or exceeds requirements, the parts will be procured to complete a cycle of the pilot.

The team will carefully evaluate everything that transpires in the cycle, refine the agile approaches, implement changes to be even more responsive, and proceed through another procurement cycle. This iterative pilot process will continue, with a variety of parts being done at the same time with somewhat different participants, to evolve the tools, approaches, relationships, etc. needed to realize advantages from agility. Our goal is a manufacturing system where everyone wins, e.g. where the customers have better, more cost effective products to offer; where the suppliers and their employees profit by providing higher value; and where all parties benefit from the spirit of teamwork across corporate boundaries.

Demonstration Parts. We anticipate that the parts submitted to the web for trial orders initially will be either mature products which are currently sourced on a regular basis from existing suppliers or products made in-house which might be better outsourced. This will give the team an easy way to evaluate the competitiveness of the web, and parts can be dual-sourced for a period of time to allow the customer to develop confidence in the process and the partners. We expect that, once some experience is gained, customers will want to use the process for new products, where great advantages can be gained through early design participation, shorter product development/production cycles, more efficient production methods, etc.

Facilitation and Support. To insure the best opportunity for success, we will provide extensive facilitation and support for the demonstration team so that the industry participants can focus on discovering, developing, and evaluating improved business practices. Program staff from the Ben Franklin Technology Center (BFTC) will seed the team with ideas, arrange for knowledgeable speakers, keep the communications alive between meetings, broker relations among the team members as necessary, and generally coordinate the entire process. Once the team has identified approaches it wants to try, technical consultants will be brought in to help determine what technology tools will help and then work with the firms on the team to implement those tools. Furthermore, some tools will be developed and implemented to help the group act more effectively together, such as a capabilities database that helps firms identify appropriate partners in the web and computerized assessment software that can be used to track the progress of each team member.

Another outside party, the Agile Manufacturing Enterprise Forum (AMEF), will share information about what others are doing and thinking relative to agility and new customer/supplier relationships with the team, so that we are always building upon the experience of others. In addition, industry executives loaned to the AMEF will document the success of the demonstration from the perspective of a knowledgeable third party.

Issues. The demonstration team recognizes that many issues remain to be addressed, such as how to develop trust among the web and between the web and its customers, how to recoup design costs, how will the web's services be marketed, who is

accountable for the web, what will happen if two or more web members are competing on a given job, how members will be "certified" for web participation, and how we will get around defense regulations that prevent best practices. These will all be handled by the team process as we go forward.

Deliverables. During the first year we plan to complete 10 test orders and their evaluation, and begin to document the process and test tools that are being developed for support. By the end of the second year, we expect to go through 3-4 complete iterations of a variety of product types, advancing our knowledge and approach by leaps each time. We will document the practices that work and the results to be expected for the benefit of the participants, and share the results with others through the participating organizations. By the end of the pilot, the team members will have experience and new supplier relationships that can continue to be tapped for competitive advantage. Finally, we plan to develop some practical information and tools that can be shared with other manufacturing assistance organizations to start similar regional webs, and we hope to see a series of associated regional pilots develop throughout the country.

Target Population and Need

Because we want to develop an agile manufacturing system capable of servicing a broad range of industries, we have chosen not to target a single industry. However, we have decided to focus on a limited range of products and a limited number of firms for the demonstration. The products will be small electrical, mechanical, and electro-mechanical parts.

For the demonstration team, up to approximately eight large customers, with a mixture of commercial and defense interests, are being recruited. At this point, we have at least verbal commitments from IBM and Texas Instruments, with others under discussion. Tobyhanna Army Depot will also be acting as a customer to the web to evaluate the power of agility to address the procurement of spare parts. Up to approximately 20 small suppliers, with various capabilities that primarily complement each other, are being recruited. At this time, 15 firms have committed to participate. After some experience is gained, we will be able to expand this membership, and to share our results with many more firms.

Technology Sources

Leadership and fiscal management will be provided by the BFTC based at Lehigh University. The BFTC, one of the oldest and best known state technology programs, has assisted several hundred firms over ten years from small machine shops to a modern Ford Electronics plant, and it has been credited with helping to create and retain 8900 jobs and commercialize 170 products and processes in that time. The BFTC has supported several activities in the last year, including pilot procurements over EDI and connecting small firms over phone lines, that lay the groundwork for this demonstration.

BFTC staff will draw on the skills of a rich network of technology and training resources (universities, community colleges, and specialized firms) to provide assistance with bringing all the team members to a unified understanding of agility and associated modern manufacturing tools, providing technical assistance to implement improvements at firms that are web members, and developing tools that are needed to facilitate working together within the web.

The Agile Manufacturing Enterprise Forum (AMEF), an industry-driven consortium which is the leading advocate and knowledge source about agility, is

participating to share its on-going expertise and knowledge of best practices, and to help us evaluate and document the results of the demonstration. The Association for Manufacturing Excellence (AME), a professional association with 5800 members and extensive professional development programs on modern manufacturing practices, is also participating both to bring experiences and to serve as a vehicle to disseminate the results.

Management Plan

The coalition of parties that is central to this pilot program will be structured informally through a memorandum of understanding. Formal leadership and fiscal management will be handled by the NET Ben Franklin Technology Center (BFTC), a subsidiary corporation of Lehigh University managed by its own private-sector dominated board and designated and funded by the Commonwealth of Pennsylvania as a regional state assistance organization. The BFTC will set up an advisory board made up of one representative from each participating firm, and this group will elect an executive committee to handle issues on behalf of the full membership. The members of the advisory board and the executive committee who are from the small firms in the regional web will be restructured as the governing entity for the web as it develops.

The program will be evaluated in three ways. First, specific commercial measures (e.g., response time, defect rate, new sales) will be tracked to evaluate the impact of the agile approach as experience is gained. Second, we will set up a process to evaluate metrics which show how the participating firms have implemented agile procedures and technologies. Finally, we will use feedback from the team members and their willingness to continue to commit valuable resources to the effort.

Coordination and Elimination of Duplication

Keeping within the spirit of agility, this demonstration program has been carefully designed to avoid duplication of efforts. The pilot is part of Pennsylvania's overall strategy that combines developmental activities under the Ben Franklin Partnership with consultations on off-the-shelf technologies through the IRCs. Furthermore, most of the services are being delivered by partnering with local resource providers, as noted above. Finally, we recognize that there is a high level of interest in topics that touch agility, including manufacturing networks, industry supplier chains, and enterprise integration. With the broad perspectives brought to our demonstration team with its various members, we believe that we will be aware of all other work of any importance that is useful, and we plan to take advantage of everything we can get.

Accessibility of Services and Dissemination

Several of the associated organizations who are participating in this program are very well positioned to help disseminate the results. Within Pennsylvania, the BFTC is part of a rich network of service organizations anchored by four Ben Franklin Technology Centers and eight Industrial Resource Centers (IRCs). This network reaches hundreds of manufacturers in Pennsylvania each year. We plan to disseminate the information by offering awareness programs for general information, and using the resource providers who assisted with the demonstration program itself to provide what they learned to others.

For national dissemination, the goal is to widely share the models, case studies, and results information derived and documented as part of the program. The AMEF, with its extensive contacts and array of programs, will be the primary vehicle to accomplish this. AME will also be including program successes and lessons in future educational programs. Finally, we plan to document the results in a form intended for transfer to other regional

service organizations, and we hope to encourage such organizations to set up their own regional webs, building upon our experience.

Defense Conversion/Dual Use Impacts

The issues addressed by this proposal are key to the future of a strong defense and commercial supply base. The defense industry is going through significant restructuring. Both defense primes and the depot system have urgent needs for capable suppliers, and the agile web creates extremely capable virtual suppliers that provide the value of essentially the entire web on demand. The ability for defense firms to work together, and benefit from some of the tools of agility, goes a long way toward making them more competitive in the commercial marketplace, thus helping them achieve dual use status. Finally, the results of this demonstration program are expected to set a new benchmark for what can be accomplished when the value chain really works together, and the case studies themselves should attract a lot of attention and encourage many more people to move forward before they are left behind.

Funding, Budget, and Cost Share

Support of \$2,000,000 over two years is being requested from TRP, structured as a base year and one option year. The BFTC is committing matching cash of \$1,000,000 over the two years, all derived from state appropriations. The remaining match is primarily from the corporate participants for their costs of participation and for the trial pilots, and is conservatively estimated at \$1,356,000. Once the web has established its success, we anticipate that it will be self supporting.

The Agile Web Pilot Program

Demonstrating the Customer/Supplier Relationships
Needed to Compete in a World of Constant, Unpredictable Change

SECTION 2 - PROPOSAL BODY

2.1 Target Population and Need

2.1.1 Overall Need

The issue being targeted by this proposal is the rapidly increasing need for customer and supplier firms in the manufacturing value chain to partner in new ways for mutual advantage. The driving factors have become all too apparent. Today's world-wide, information-based economy is causing firms to deal with an environment of constant, unpredictable change in markets, competition, and customer expectations. High quality and low cost are no longer competitive advantages; rather, they are merely minimum entry requirements. The commercial marketplace is demanding customized products and services at low cost and with quick concept-to-market cycle times. Shrinking military budgets are forcing the defense sector away from traditional practices which depend upon dedicated suppliers and unique procurement arrangements to "dual use" approaches designed to address similar issues of cost and cycle time.

To meet these new competitive threats, large firms are downsizing to become lean and to focus on their core competencies. Such downsizing makes the large firms more and more dependent on competent and responsive suppliers who can assume responsibility for more of the total value of products and services. The traditional procurement paradigm of "build to print" is proving inadequate in these circumstances. Increasingly, arms-length relationships between customers and suppliers are giving way to discussion and experimentation with longer-term, alliance-based relationships, often involving value-added services, inventory distribution management, design responsibilities, market access, and numerous other forms of customer perceived value.

Unfortunately, while there are many examples of new customer/supplier relationships being tried, not enough of them are realizing the kinds of benefits that are possible (and needed!!). **The biggest issue appears to be a failure to address the perspective of the entire value system.** For example, let us describe several weaknesses that are frequently encountered:

First, many large firms are asking their suppliers to take on more responsibility, for example, for production of subassemblies versus simple components or tasks. **Key suppliers are acting as "integrators" to coordinate the work of several small firms on behalf of the customer.** In many cases, rather than adding value by solving problems, these arrangements are simply passing the problems down lower in the manufacturing chain. For example, while developing this proposal, one small machine shop executive told us his firm is now required to procure castings, machine them to specifications, and provide them on a just-in-time basis to his customer. However, to be cost effective, the small shop must order castings in much larger quantities than needed to fill orders at the rate his customer releases them. The supplier pays to store the castings until they are needed, and runs the risk of getting stuck with them if further orders do not develop. This arrangement brings no real gains to the system; it merely passes the cost and effort of integrating components from the customer to the machine shop. Examples like this appear to be very common.

Second, many large firms that have recently downsized are seeking the participation of their suppliers earlier in the design cycle. This is where opportunities for cost savings and enhancing of functionality are greatest because they can be designed into the product. Unfortunately, many small firms don't have all the skills, knowledge, and capital equipment needed to respond to these requests. Furthermore, the small suppliers' resources are too tight to cover time spent up front for design assistance without a guarantee of getting the order. In our discussions, large firms frequently told us that suppliers they have used for years are not able to participate as design partners--and those mega-suppliers who can participate are not as responsive and cost competitive as the specialized small suppliers.

Finally, large firms working with their supplier base tend to impose their own brand of operating practices and culture on the suppliers. As a result, the suppliers find themselves having to provide the same value in very different ways for different customers--thereby driving up costs and limiting responsiveness for all. No single firm has an incentive to solve this "system" problem. Some progress is being made by various industry consortia, but the process tends to be slowed by disagreements and debates among the large firms in a given industry about the "best" ways of standardizing practices.

Addressing these and other issues associated with the whole manufacturing chain will require both technological and business process changes within and among companies at all points in the chain. Fortunately, there is greater and greater recognition in this country of the need to change from traditional build-to-print relationships among customers and suppliers to something that is substantially more flexible and interactive. Unfortunately, industry doesn't have a good handle on the nature of the changes that are needed. The secrets are buried within the rich fabric of diverse operating practices, capabilities, skills, and experiences of many small and large firms at all points in the manufacturing chain, and in the complex ways all these elements interact or could interact to address a particular customer requirement.

2.1.2 Target Approach

To address a complex systems issue such as new customer/supplier paradigms, the typical approach is to carefully study current practices, evaluate the research for areas of improvement, and test any hypotheses that result. This is a useful approach, and we support the many on-going and planned activities of this nature. However, we believe that we can make substantially more progress through a unique partnership demonstration that builds upon such benchmarking activities. We propose to develop, demonstrate, and evaluate the dynamics of the new manufacturing system and practice, which we will call "agile manufacturing", through a carefully structured series of pilots carried out through collaboration between a group of large customers, small suppliers, and associated organizations.

The details of the program are described below under "delivery mechanisms". However, the basic approach is to bring together a selected team of competent and articulate representatives from all parts of the manufacturing chain, identify some real customer needs for specific products or subassemblies (business cases), and facilitate intensive sharing among the customers and suppliers to respond to those specific cases in new ways that benefit everyone. We are taking a small, vertical section of the manufacturing system and, through extra facilitation and assistance, creating a test bed to demonstrate agility while addressing specific business cases.

2.1.3 Target Industry Representatives and Products

Our goal is to understand and demonstrate the impact of new agile customer/supplier interactions which characterize a manufacturing system capable of meeting the needs of many industries, and for both defense and commercial applications. One of the benefits of agility, as conceived, is the flexibility for manufacturers to meet the needs of a broad range of customers and industries by combining core competencies of different organizations or departments as required into "virtual firms". This approach gives suppliers more opportunities to develop, utilize, and amortize their investments and skills. It contrasts with traditional views of more structured ties between large firms and their supply bases such as, for example, in the auto industry and the Japanese kiretsus.

Because we need to understand the dynamics of different industries to achieve our goal, we have chosen not to target a single industry. However, we recognize the need to narrow the scope of the pilots so we can achieve a depth of understanding in some reduced range of activities. Thus, we have decided to focus on a limited range of products and a controlled group of companies.

The initial members of our team decided to focus on the production of small electrical, mechanical, and electro-mechanical assemblies for the demonstration pilots. These products are of sufficient complexity to benefit from creative partnering of customers and suppliers. Such assemblies are frequently outsourced by larger firms because their production is not among the firms' unique core competencies. They are also very common, so any benefits we obtain will be widely applicable. Finally, they are a type of manufactured component where small, low overhead firms might be expected to be more competitive and to add substantial value.

The selection and recruitment of industry participants is very important because our team approaches won't succeed unless we have all appropriate perspectives represented. We decided to target about eight large customer firms, with a mixture of defense and commercial interests. Four such firms have given strong verbal interest, but they are still negotiating final commitments with their senior management. The defense customers (such as Texas Instruments) bring an understanding of defense procurement and its unique requirements and regulations, as well as the perspective of rapidly changing demands being placed on them with shrinking military budgets and new defense priorities. The commercial customers (such as IBM) bring the perspective of very intense cost and cycle time pressures to stay competitive in world markets. The electronics industry is particularly well represented, perhaps because of the strong pressures on this critical industry. Finally, to broaden our impact on defense needs, we have included an Army repair depot, Tobyhanna Army Depot, as a customer. Tobyhanna is a Process Validation Enterprise in the joint services Flexible Computer Integrated Manufacturing (FCIM) program, and it brings the perspective of new approaches to the procurement of repair parts for defense applications.

We plan to recruit about 20 small firms for this proposed program, of which 15 are already committed. These firms have all been selected for their progressive management. They bring a range of capabilities in metalworking and electronics that are anticipated to be needed as we pilot small electro-mechanical assemblies. To promote intensive collaboration among the suppliers, and to take advantage of regional advantages (discussed below), we have selected all of the suppliers from the same geographic region. This allows us to build upon a type of regional alliance we call an "agile web".

As we recruited firms for the program, and as the idea of a regional alliance began to take shape, another category of participant emerged. There are many small and

medium-sized manufacturers who sell directly to the end user, and many of these smaller customer firms have the same need as large customers for flexible and responsive suppliers to help them be competitive and meet changing customer demands. We plan to accept a few of these firms (such as SI/Baker) to act as customers for our agile web so that we can evaluate their impact on the system.

2.1.4 Characteristics of the Target Region

The Commonwealth of Pennsylvania, and particularly eastern Pennsylvania, has been chosen as the site for the regional alliance we are calling an agile web. There are many reasons why Pennsylvania is a good choice. Manufacturing plays a large role in the state's economy relative to other states. Pennsylvania was one of the first states to create public/private partnerships to address its manufacturing base, and we can build upon a robust assistance infrastructure already in place. Finally, the state is typical of those transitioning from mass production and heavy industry to a diversified manufacturing base.

Pennsylvania has traditionally been strong in manufacturing. Today, there are over 18,000 manufacturers in the Commonwealth employing over 1.2 million people. More than 22% of the gross state product is attributed to manufacturing. Presently, the larger firms are reducing employment, but more smaller manufacturers are being formed. For example, over the last five years (1988-1992) in northeastern Pennsylvania, the total employment in manufacturing industries has declined by about 10%, but the number of manufacturing firms has grown by about 3%.

The industry in Pennsylvania is very diverse. No more than about 12% of the manufacturers are identified with any one standard industrial classification (SIC) code. Even within SIC codes, the firms are distributed in a very vertical fashion. For example, in electronics, the region is home to chemical suppliers, connector manufacturers, circuit board shops, microchip manufacturers, component producers, subsystem producers, chassis manufacturers, system integrators, and instrument manufacturers. Over 85% of the manufacturers have less than 100 employees. This diversity of capabilities in the same geographic region makes the area ideal for a pilot that examines how to supply a broad range of industries and customers.

A detailed telephone survey of 400 small manufacturers in eastern Pennsylvania conducted by the Ben Franklin Technology Center (BFTC) in 1991 gives significant insight about the target market. The respondents overwhelmingly identified (1) delivery time, (2) product quality, and (3) better customer/supplier communications as the issues driving them. Fifty-two percent (52%) of those surveyed said they are requiring more value added from their suppliers, with about 18% already trying to bring their suppliers into their engineering and design process. These are all issues that this demonstration program is designed to address.

It is clear from the survey that most small manufacturers in the region are trying to address new customer demands by working harder at their traditional way of doing business rather than adapting new practices and technologies. More than 60% said they have implemented or are planning to implement formal quality systems, but most identified loosely structured, in-house approaches as their standard--indicating a high interest in quality but a low level of understanding of successful quality approaches. Most customers are not using any automated technologies/processes. For those that do, the most frequently used are CAD (32%), MRP (31%), JIT (31%), and TQM (27%), while the least frequently used are CALS (6%), CAM/CNC integration (10%), and CAD/CAM integration (13%). These results are probably typical of many regions in the United States, and they demonstrate the need for outreach and assistance to help these firms modernize.

Of particular relevance to this proposal, about 46% of the customers and 59% of the suppliers (firms who sell 50% or more of their work to others for inclusion in larger products) expressed at least moderate interest in working together with other firms in strategic business relationships. This is an unexpectedly high response from small firms, who have traditionally been very secretive and unwilling to share with each other. It reflects a new openness observed by the BFTC staff within the management of small manufacturers that results from the enormous pressures they are experiencing and their inability to cope with those pressures in traditional ways.

As one can see from the information, the manufacturing base in Pennsylvania is well suited and ripe for the kind of ambitious pilot in new manufacturing practices proposed here. In addition, many of the firms are already connected to some modernization activity as a result of assistance from the rich array of state-sponsored modernization programs. The BFTC and its associated extension partners have worked with about 500 manufacturers in northeastern Pennsylvania in the last five years. These established contacts, and referrals from those firms, have been used to hand-pick firms who are suited to develop and demonstrate new practices during the pilot program. The results will be shared with many others in the region to expand the benefits and make the web even more robust.

2.2 Defense Conversion, Dual-Use Impacts

2.2.1 Improved Defense Supply Base

The issues addressed by this proposal are at the heart of what is needed to insure a strong defense supply base in the future. The kinds of restructuring mentioned above are very prevalent in the defense industry. Large prime contractors are consolidating and downsizing to core competencies, or getting out of defense altogether. As they do, they are trying to bring their suppliers into the process earlier, often at the bid preparation stage, to take advantage of supplier capabilities. The customers would like to push some of the required investment down to their suppliers. The need for competitive advantages from these new relationships is acute because of the inefficiencies and extra overhead traditionally built into the defense contracting system. Unfortunately, the primes are running into the barriers described above, and they will greatly benefit from the new practices developed by this proposed program. Defense primes are showing great interest in our goals, and we are including several large defense primes and some defense suppliers in the demonstration to be sure we can satisfy their unique needs.

This program will also improve the government's process for repair parts procurement through the depot system. As part of its role in the joint services FCIM program, Tobyhanna Army Depot is trying to develop the capability to quickly and cost effectively provide electronic components of a given general type. At present, Tobyhanna must not bid many parts because it does not have the capability to do the complete job. Furthermore, the depot is being challenged to deliver in 30 days parts that have traditionally taken an average of 300 days to procure. The agile web, in partnership with Tobyhanna, will be capable of meeting a broad range of these needs.

Finally, based on figures obtained from the National Technical Information Service, there were 363 prime contractors with \$286.1 million in defense contracts in northeastern Pennsylvania in 1991. Many more small manufacturers do defense work as subcontractors. All these firms will benefit greatly from the techniques and lessons learned in this

demonstration project as they are deployed widely in Pennsylvania through the network of assistance organizations (see "technology sources").

2.2.2 More Competitive Dual-Use Suppliers

At least for smaller defense suppliers and prime contractors, the issue of defense conversion is really tied to competitiveness. Many of these firms have developed unique technologies and products under defense sponsorship, but the products cannot be sold in the commercial marketplace because of high cost. Helping these suppliers with product and process improvements can lead to very competitive products that take advantage of defense-developed technologies. For example, the BFTC helped a vehicle manufacturer develop in-house capabilities for producing custom truck cabs. This led to expanded business for production of commercial fire trucks that took up the slack of declining defense business. Interestingly, the improvements also made the firm much more competitive for defense contracts, and one was recently awarded in excess of \$100 million.

Of relevance to this proposal, the new business and technology approaches developed in this demonstration project with BFTC assistance will be very helpful in reducing costs and increasing responsiveness for defense-oriented firms. The benefits gained through the web will also multiply any specific product and process improvement gains. Combining several such suppliers within an agile web creates a very robust supply base. The firms in the web can build upon each other's capabilities, both horizontally (quantity) and vertically (capability), to provide a rich array of capabilities that can be flexibly scaled and adjusted to the customer's needs. They can also work together to smooth out demands on any one firm. The web will be able to provide unique capabilities for future defense needs, and, at the same time, flexibly address similar commercial applications.

2.2.3 Job Creation Impact

Looking at the benefits from a job creation perspective, the advantages gained by the web participants as they learn to work together more effectively will make them very strong candidates for growth. The kinds of advancements in technology and practice that we plan to introduce to the web firms, such as high performance work organizations and enterprise integration, are improvements that leverage employees to be more productive. In a survey conducted by the Pennsylvania Economy League, it was shown that jobs created and retained by past BFTC assistance to individual firms pay 35% more than the average for the region. Furthermore, the study showed that the personal taxes paid by these employees bring in more to the state annually than is appropriated to the BFTC to pay for the assistance efforts.

The BFTC has observed a two step improvement. First, sales per employee go up as people and organizations become more productive. Then, actual employee growth occurs as sales rise even faster due to the competitive edge brought by the improvement. The combined benefits of individual firm improvements and the value of system improvements through the web will bring even greater competitive advantage, leading to expansion of employment at the firms in the web and at their customers who benefit from the improved capabilities made available.

2.2.4 Impact of Case Study

Finally, great value can result from the demonstration of substantially improved capabilities through the web approach. One of the biggest barriers to change in both defense and commercial firms is entrenched management culture. People are not willing

to try something unless they are sure it will work. Showing what can be achieved (setting a new benchmark) is exactly what is needed to get more firms to make the commitment to fundamental change. One executive of a Fortune 50 firm has already noted that the greatest value for him of the proposed pilot will be the case study that he can use to encourage his own firm to change.

This proposed program will serve a similar demonstration purpose in the context of manufacturing modernization programs. Because so many small U.S. manufacturers are very far behind best practices, most modernization assistance agencies limit their objectives to bringing such firms modestly up the competitiveness curve. While we agree that assistance agencies must consider where their clients' are coming from, we do not believe that such small, incremental improvements are adequate to maintain a strong manufacturing and defense base in this country. It is time to attack the issues more boldly in an attempt to move the U.S. significantly ahead of its competitors in other countries. This pilot program will serve as a model of such an approach, and the results can provide valuable information, techniques, and case studies to be deployed through other modernization assistance activities.

2.3 Technology Sources

The development activity in this proposal involves pulling together, refining, and creatively applying appropriate state-of-the-market technologies and business practices. We need very broad knowledge and experience in leading practices and technologies, as well as the ability to engineer and integrate them as needed. For that reason, we have assembled a very robust team with extensive and varied experiences in both the technology and practice of manufacturing.

2.3.1 Ben Franklin Technology Center (BFTC)

The team begins with leadership and facilitation provided by the BFTC. The BFTC brings expertise and experience in modernization efforts appropriate for any size firm and industry, and a history and reputation for forging linkages and partnerships among various private, academic, and public organizations in Pennsylvania. By combining appropriate educational institutions with selected private consultants, small firms, and other outside resources such as vendors, the BFTC will be able to harness necessary technology skills as they are needed.

Based on published studies and numerous comments expressed by visitors from all over the world, the BFTC is one of very few organizations in the country that has successfully forged linkages between academic researchers and private sector firms that regularly produce commercialized products and processes. The BFTC has learned how to identify the right people, interest level, and expertise in the institutions, and how to manage joint development engagements so the academic/private teams build upon each others' skills to produce results that neither could have done on their own. Successful partnerships have, for example, helped to design and justify a major, state-of-the-art electronics plant for Ford Motor Company, helped an electronics component manufacturer reduce cycle time, from 22 days to 3 hours, helped a cryogenic systems manufacturer increase sales by 50% in only two years, and helped a 20-employee systems fabricator establish in-house PC-CAD capabilities linked electronically to major customers throughout the country. In the last 10 years, the BFTC has worked with about 375 firms to assist with fundamental product and process changes, and more than 70% of the development efforts have resulted in commercialized products and processes.

The BFTC recognized early that technologies don't add much value unless firms also address the "soft" manufacturing practice issues. The center developed special team-training approaches to quality management training which have been successful in providing measurable results to almost all the firms that go through the program. It also includes assistance in teaming, empowerment, work practices, etc. in all its engagements.

Finally, the BFTC has been leading and supporting a number of activities that lay the groundwork for the agile web over the last two years. During this time the BFTC has, for example, (1) linked PC-based CAD and CAM systems at several small machine shops and metal fabricators over simple dial-up phone lines so the firms could work together more easily, (2) facilitated a pilot procurement with Tobyhanna Army Depot done electronically with small firms in northeastern Pennsylvania using EDI capabilities for exchange of purchasing information and CAD drawings, (3) supported a study of computer system integration issues at small firms, and (4) begun to form a certified group of electronics suppliers and an associated electronic database that can be used by Tobyhanna Army Depot to intelligently bid for work done jointly by Tobyhanna and various of the firms in the group.

2.3.2. BFTC Network of Resources

The BFTC operates with a rich network of resources and assistance organizations. The examples below demonstrate that there is a robust network of appropriate expertise which is already linked through well-developed relationships:

Lehigh University. Engineers at Lehigh University's nationally known engineering programs are frequent partners in BFTC engagements. In particular, the CIM Lab, under Dr. Emory Zimmers, Jr., provides a team of university professors, research engineers, consultants, graduate students, and undergraduate students with extensive experience and well-equipped laboratories for all types of manufacturing. In the last 10 years the CIM Lab has handled more than 130 university/industry joint R&D projects, totalling more than \$12,000,000, on such topics as CIM, plant layout, finite element analysis, design for manufacturability, factory floor simulation, and cell design.

University of Scranton CALS Shared Resource Center. The CALS Shared Resource Center provides a team of full-time staff and faculty associates and a laboratory with multiple hardware/software platforms to support computer networking, CAD data translation, and assistance with CALS and other requirements for electronic data transfer. They provide outreach/consulting services to small and medium-sized suppliers plus education and training on CALS standards and related technology initiatives such as EDI, flexible computer integrated manufacturing, concurrent engineering, and agile manufacturing. In addition, the center's program manager, Mason Linn, formerly Senior Civilian at Tobyhanna Army Depot, and its outreach consultant, William Morris, former Director of Maintenance for Tobyhanna, bring a wealth of knowledge about the military procurement process.

Northampton Community College (NCC). NCC is a fast growing community college in Bethlehem, PA that provides an extensive array of specialized industrial training programs and laboratory experiences. One unique facility, the National Training Center for Microelectronics, provides a team of industry specialists, instructors, and consultants with extensive knowledge related to the development of manufacturing processes and the deployment of quality systems in assembly-level packaging and interconnection technologies, as well as a complete state-of-the-art laboratory. The microelectronics program attracts students from all over the country and the world, and it has provided on-site training for such firms as Digital Equipment Corporation, AT&T, and Siemens.

Other Ben Franklin Centers. The BFTC is one of four regional Ben Franklin Technology Centers within Pennsylvania. Each has a program of assistance to some combination of early stage firms and established manufacturers according to the needs of its geographic region. Each also has an extensive network of technology and outreach sources which it uses to respond to a wide range of customer needs. Ties between the centers are mature and very strong, and they can be used to bring in expertise and resources from other areas of the state and through other national contacts.

Industrial Resource Centers (IRCs). Outreach of the BFTC in Pennsylvania is enhanced through close ties to sister organizations called IRCs, located throughout the state, which provide short-duration advice and assistance with modernization issues, mostly using private consultants in the region. The eight IRCs maintain databases of screened consultants with a wide variety of capabilities, and they have more than 50 engineers on staff statewide who visit firms to provide advice and arrange for appropriate consultants. The IRCs have assisted almost 2000 firms in Pennsylvania in the last five years.

2.3.3 Technology Firms

The BFTC also has strong relations with small, technology oriented firms in the region, many of which were started with BFTC assistance. These firms can be tapped for consulting expertise and products that might be useful in the pilots. Some particularly interesting products and services include:

Datamatix. This firm provides a value-added computer network oriented around defense procurements. Its services include notification of Defense Logistics Agency (DLA) Requests for Proposal, access to detailed information on past DLA contracts, EDI, and e-mail. It can provide network services for the demonstration program, and may want to collaborate on various software tools that might be offered over its network.

American Information Systems (AIS). This firm has developed software that helps firms perform self evaluations against any standard criteria. Users are able to compare and tabulate evaluations done by many persons in a given firm, or among various firms by sharing results in a common database. Suggestions for further assistance are provided in areas where scores are deficient. At present, versions for Malcolm Baldrige and ISO-9000 criteria are available. AIS has committed to develop a version of the software with specific agility criteria to be defined by the demonstration pilots.

Technology Systems Corporation (TSC). TSC is a consulting firm spun out of Lehigh University that is one of the leading advocates of modern manufacturing management based on a combination of total quality management principles and management by resource constraints. The principals have many years of experience in manufacturing strategy and production techniques, and they are doing work for such prestige clients as Ford Motor Company, Alcoa, Boeing, General Foods, IBM, and Westinghouse.

2.3.4 Agile Manufacturing Enterprise Forum (AMEF)

The AMEF is an industry-led consortium that focuses on promoting and understanding agility. As the original researcher of the agile vision and the prime promoter and educator of it, the AMEF is an excellent source of information, guidance, and linkages to interpret and understand agility and the opportunities it provides. The AMEF presents a yearly conference and conducts numerous seminars, focus groups, and individual and small group interactions on agility every year using a combination of loaned

executives, staff, and contractors. All the ideas and examples generated by these AMEF programs will be available to our demonstration team. The AMEF Supplier Support Group has already developed an in-depth conceptual view of different types of customer/supplier interactions that will co-exist in the future to handle different situations.

The AMEF is particularly interested in the role of agility with small manufacturers, and thus the agile web pilot program will receive a high level of attention within the Forum. Note that the Director of the BFTC is the chairman of the Small Business Subcommittee of the Review and Prioritization Board associated with the AMEF. He has been active within the Forum in promoting small business participation. Finally, the AMEF is working with Lehigh University, Arizona State University, and MIT on an Agile Manufacturing Research Institute proposal. This demonstration program is very complementary with the program being proposed there, and coordination of the activities is planned.

2.3.5 Association for Manufacturing Excellence

The Association for Manufacturing Excellence (AME) is a professional organization with a mission of promoting excellence in manufacturing. As a non-profit organization with 5800 individuals (not companies) as members, the AME's primary activities are presenting workshops, seminars, conferences, and publications that aid manufacturers in improving productivity. The AME's recent activities have included work on benchmarking, time to market, employee empowerment, self-directed work teams, and activity based accounting. The organization and its members bring a wealth of information on best practices, some well developed training programs and materials, and the ability to develop new training programs and offer them widely throughout the country.

2.3.6 Other Team Members

Other members of the proposal team bring valuable experience and expertise to the proposed program. As noted earlier, many of the small firms have participated in recent modernization programs to upgrade their own capabilities, and these experiences and successes can be shared with the group. Furthermore, all of the large firm participants are already experimenting with asking suppliers to do more of their manufacturing and assembly work.

2.3.7 External Linkages

The BFTC and Lehigh University have extensive linkages in the economic development and academic communities throughout the country that can be tapped when needed for additional information and sources of technology. In particular, CAM-I, which has been examining customer/supplier relationships from the perspective of larger firms for about two years, has agreed to exchange information derived from some similar activities with our demonstration team. Also, through Lehigh University's Iacocca Institute, the BFTC is tied to a formal working agreement with the Microelectronics and Computer Technology Corporation (MCC) and its Enterprise Integration Network Program. The MCC program is a good source of information on enterprise integration issues and demonstration programs. The AMEF and its corporate members, together, have ties to almost every other industry consortium and initiative that is active, including the National Center for Manufacturing Sciences (NCMS) and Sematech.

BFTC personnel have also had discussions with other regional assistance organizations about collaborating on activities generally related to agility, networking, and linking firms together. Discussions have been most extensive with a southwest group

including Arizona State University, New Mexico State University, and Sandia Laboratories; with a South Carolina group consisting of the University of South Carolina and the Southeast Manufacturing Technology Center; and with a consortium effort under the auspices of CAM-I. We have all agreed to keep in communication and share information to coordinate our activities as much as possible, and we hope to do something jointly in the future.

2.4 Delivery Mechanisms

2.4.1 Background

As described earlier in the section on "target population and needs", the pressures of competing in a world of constant, unpredictable change, and the corporate downsizing that is occurring as a result, are leading many manufacturers to reconsider the relationships that have traditionally governed customer/supplier interactions in the United States. In assembling the participants for this proposal, we heard from many large firms that they now need more from their suppliers than ever before, and they are having a hard time getting it. We also heard from many small suppliers that they are very aware of their customers' needs, but feel they are being forced to take on problems from their customers without the ability to make things better and often without adequate compensation.

Some of the best conceptual ideas and framework about how to change the manufacturing system in a way that will benefit everyone have come from the Department of Defense sponsored study which looked at manufacturing in the 21st century and coined the term "agile manufacturing". The ideas in this study have been embraced, promoted widely, and extended by an industry consortium called the Agile Manufacturing Enterprise Forum (AMEF). However, despite some very good beginnings, there are still many practical questions about precisely how customers and suppliers, especially small suppliers, can collaborate in fundamentally new ways so that everyone benefits.

This proposal has been born out of a desire of several parties to take a giant step beyond where conceptual studies based on benchmarking of current practices have taken us. The next level of understanding will come only from real pilot demonstrations. However, in this case, we are not ready for traditional pilots because we don't have a good handle on the detailed model to be demonstrated. Thus, we are proposing to proceed through an intensive, open ended collaboration among a relatively small group of articulate and forward thinking firms chosen to represent all stages of the total manufacturing system.

2.4.2 Agile Web Concept

Central to this approach is the concept of an "agile supplier web". The web is visualized as an alliance of mostly small and medium-sized suppliers in a single geographic region. The firms agree to work together, in our case with outside assistance and facilitation, to identify and creatively apply technologies and practices, both within and among the firms, that will help them be more responsive to their customers. Different members of the web will come together for specific business opportunities as "virtual firms", acting much like a single supplier with much greater capabilities than any of the individual members. Because of advantages described in the "target population and needs" section of this proposal, the proposed pilot web will be based in eastern Pennsylvania.

The web concept is a rich model for this demonstration program. It is similar to the Danish or Italian manufacturing networks in its linking of complementary firms to gain access to their combined capabilities. However, the web concept goes much further. Building upon conceptual models and benchmarking studies related to agility (whether or

not they associate with the term "agile"), and under the guidance of the demonstration team, we will implement technologies and practices that will make the firms in the web more competitive by themselves and as interlinked virtual firms. We will also evaluate how these changes facilitate the web's ability to provide higher value, and use the results of the evaluation to refine and improve the tools for even higher value. Thus, the web becomes a test bed where agile practices are evaluated in a controlled environment. We anticipate that, after some experience is gained, the firms in the web will develop enhanced ways of working together that are more akin to sharing of expertise and resources than to traditional subcontractor relationships.

2.4.3 Demonstration Pilots

We are partnering a number of large and small customers with the small suppliers in the web for this demonstration program. These customers bring the ability to utilize the concepts in the "real world" as seen from their perspective, to document the benefits of the web in meeting their needs compared to that of other suppliers and approaches, and to be part of the test bed that further develops the concepts and practices. The large customers will identify appropriate products and associated parts and subassemblies where they need assistance. Appropriate suppliers in the web will work together to source the parts in a more competitive manner, taking advantage of the new approaches and technologies. The demonstration team will carefully evaluate everything that transpires in the cycle, refine the agile approaches and implement changes to be even more responsive, and proceed through another procurement cycle. In this way, we quickly evolve to a powerful solution.

Recognizing that agility can't be fully realized unless it is applied across the entire manufacturing chain, we are creating a controlled test bed to demonstrate agility within a small vertical section of the value chain. It is a strong demonstration test bed because (1) we include progressive small firms who can change fairly quickly, (2) we include large customers committed to collaborate and share information to obtain higher value from their suppliers, and (3) we provide business and manufacturing experts to work with all the firms in a coordinated manner to raise their implementation of modern technologies and practices.

A key advantage of this demonstration program is the fact that the large customers will actively collaborate with small suppliers in the web to develop win-win scenarios. The large and small firms working together will examine all stages of the design/production cycle to see how they can work together to provide a better ultimate solution. This kind of open collaboration between customer and supplier(s) is rare in practice, and we plan to take advantage of the teaming to suggest ways to get around the barriers preventing effective operation of the manufacturing system. Our goal is for the large firms to have better, more cost effective products to offer; for the suppliers and their employees to profit by providing higher value; and for all parties to benefit from the spirit of teamwork across corporate boundaries.

Because of the close collaboration made possible with the test bed, we expect to see results that, under normal circumstances, might take many years to evolve. We have purposely included a variety of customer firms in the demonstration, representing various industries, both commercial and defense perspectives, and even a supply depot. By bringing these diverse perspectives to the table, we hope to develop approaches that are applicable to a wide range of customer/supplier situations, including dual commercial and defense use.

Once experience is gained and benefits are proven, the web will be prepared to provide all of its customers similar competitive advantages. It will serve as a new

benchmark of what can be achieved. Furthermore, we will have documented business cases demonstrating the practices used and the value that resulted. In the long run, we expect to grow the original web, add additional webs in other locations, and share the techniques for others to use.

2.4.4 Facilitation and Benchmarking for Demonstration

The industry participants are clearly in the driver's seat for this demonstration program. However, one of the reasons they are willing to participate in an ambitious pilot program is the promise of significant facilitation assistance and technical assistance through the BFTC.

The facilitation role envisioned is one of educator, convener, process facilitator, program manager, fiscal manager, and communicator. We want to create an environment that is a good test bed for agility--one where the innovative, progressive demonstration team members are empowered and enabled to concentrate on creating ways of addressing their needs where everyone wins. BFTC staff members with appropriate industry experience will provide the leadership and support necessary to seed the group with ideas and keep the process moving, so that the industry participants can focus on discovering, developing, and evaluating improved business practices. The staff will maintain momentum between meetings by regularly communicating and sharing information and soliciting comments. Finally, the BFTC staff will coordinate all other program resources, and will network with other outside technology sources as necessary.

Another important aspect of the facilitation role is integrating conceptual research and benchmarking on agility into the group process. We want the very best information on what others are doing and thinking relative to agility and new customer/supplier relationships to be available to the team on a continuing basis. The team can then combine and build upon this information to develop the best techniques to pilot. The AMEF is tasked to assist this effort by coordinating and sharing information and activities of its many focus groups and projects, seeking and sharing information over a computer bulletin board (AgileNet), and doing additional research and benchmarking as required. The AMEF can also provide over-the-shoulder guidance and critique our progress. In addition, we plan to build on the experience the Association for Manufacturing Excellence (AME) has gained in working with its 5800 members on topics of interest to the demonstration program. We plan to invite other appropriate persons, such as David Armacost, the facilitator for a manufacturing network in Okaloosa County, Florida, to participate in specific group sessions to share experiences.

We know that the biggest barriers to agility lie in the management and people domains rather than limitations in technology. We expect to begin the demonstration by introducing and discussing new management approaches, including high performance work organizations and managing by constraints. These techniques, along with information from the agile studies and benchmarks available, will guide the formulation of practices to be used initially in the pilot procurement cycles. After the basic practices and methods of operation are developed, we will bring in technical advisors to identify how various technologies will leverage the practices. We will provide assistance to refine and implement technologies as required. Thus, we will always be using the business needs to pull technology, rather than implement a given technology with the hope that it will help.

The facilitation activity is expected to be very important in the early stages of the pilot program. There should be less need for this support as experience is developed, and other vehicles to sustain the activity without outside support will be developed. Our goal is

to have the web become a commercially successful vehicle that can support itself, although this may take more than two years.

2.4.5 Evaluation and Documentation

Because of the intensive collaboration involved in this demonstration program and the focused drive toward practical results, we expect to develop significant information about barriers, successes, and many nuances of new approaches to customer/supplier interactions that bring substantial advantage. To capture and disseminate this information, we are partnering with the Agile Manufacturing Enterprise Forum (AMEF). As noted under "technology sources", this industry-led group, associated with Lehigh University, is in a good position to help evaluate the demonstrations, add what we are learning to concepts and best practices developed by others, and make the results available to a wide audience. The AMEF will participate regularly in this program over the entire two years of operation. They will provide executives with significant manufacturing experience who have been loaned to the AMEF, supplemented by faculty and students, to evaluate and document all relevant information learned in the pilots. We also expect the AME to use its experience with the demonstration team to develop/modify its training programs to provide new products which can be offered to others throughout the country.

2.4.6 Technical Assistance for System Improvements

Because the implementation and evaluation of new manufacturing practices and technologies is an important part of this demonstration program, we are including resources to assist particularly the small firms in the web with such modernization activities. The assistance will include educational programs, individual company training, short-term consulting assistance, longer term product and process modernization assistance, and expertise to deal with systems implementation and integration issues that will inevitably arise when we implement various tools such as EDI and CAD data exchanges. We plan to begin by having an experienced consulting team visit and briefly assess each firm's status relative to known technologies and practices. This will provide a good basis to plan any necessary improvements. The technical assistance resources will be managed by the BFTC staff, and drawn primarily from resources used frequently by the BFTC in the past, such as those listed under "technology sources". This type of assistance is exactly what the BFTC and its sister organizations have been doing for many years.

2.4.7 Tool Development

In addition to providing technical assistance to individual firms in the demonstration, resources will also be brought in to develop and implement any technology tools needed to facilitate new agile relationships and practices among the team members. For example, we will probably want to evaluate a database of member capabilities to facilitate the formation of virtual firms. The BFTC has experimented in the past with databases to match customers and suppliers, an activity which led to a stand-alone non-profit organization, the Matchmaker Program, which performs these matchmaking services in eastern Pennsylvania. We know from our experience that capabilities databases are much more difficult in practice than may be apparent, but we will build on BFTC's past experience.

We also believe that developing means for firms to self assess their capabilities and compare to others will prove valuable. We find that smaller firms frequently have a hard time finding how they shape up relative to others. Fortunately, in 1992-93 the BFTC sponsored a small firm to develop a computer program that assists self assessments. We plan to take advantage of that program by developing some simple agility criteria (building

on work already done by the AMEF) and adding these criteria to the Malcolm Baldrige and ISO-9000 criteria already coded in the software. We plan to use this effort as one way of continually evaluating our impact on the firms in the web.

Other tools to enhance operation of the web will be developed as needs are identified. However, we plan to focus any development activities on practical, straightforward ways to get the job done rather than striving for elegant solutions. For example, to insure communication of CAD data among various systems, we could develop procedures to use in creating the drawings along with simple data translation tools, rather than develop a universal data translator.

To give us the opportunity to move more quickly with the pilot procurements, we plan to contract with various local partners (mostly educational institutions) to act as service centers to provide access to technologies such as CAD data translation, EDI, etc. until the capabilities can be implemented as needed within each firm.

2.4.8 Issues to be Addressed

The demonstration team recognizes that many issues remain to be addressed. To achieve our ambitious objectives, we will need to work most of these out as we go along. Some of the issues already identified, and early thoughts about how to deal with them, follow:

Trust Issue. One of the most important issues will be developing trust among the firms in the web and between the web and its customers. Everyone must be willing to support each other, to share information on capabilities and pricing that is not normally discussed with others, and to try new approaches with no guarantee of success. BFTC experience in similar collaborative activities has shown that the key success factor is starting with a common vision and commitment that is truly shared and endorsed by all parties. Thus, we plan to have some intensive early sessions to finalize the vision and insure that everyone is fully committed to the venture. This will be an issue that must continually be addressed through the collaborative process.

Size of Demonstration Team. Appropriate sizing of the web membership is another issue. To keep things manageable, we expect to begin with no more than 20 small supplier firms--all chosen by the BFTC or peers in the web as being more progressive than most firms in the region. We may need to expand the membership as we move forward to bring in capabilities that are needed by the web to fill customer orders. Depending on the situation, we could take in more members who fully participate in the web, or we could go to an inner core that fully participates in the demonstration and an outer core that participates with and benefits from lessons learned by the web members but is not part of the demonstration team.

Similarly, we expect to limit the number of customers fully participating in the demonstration team to about eight firms. However, as we begin to see successes, we expect many other customers to want to utilize the web and benefit from what is being developed. At this point, we believe that more customers can only enrich the demonstration, so we will encourage additional participation in the form of procuring products and services from the web. We will probably still want to limit the number of large customers who fully participate on the demonstration team.

Demonstration Products. One of the keys to getting the demonstration started is identifying some real products or subassemblies that firms are willing to put through the pilot process. The initial proposal team discussed this issue, and identified three basic

types of opportunities that might qualify. First, while we are still testing the approaches, the large customers will want to submit products where the performance of the web does not put them at significant risk. Examples might be systems and components that are mature and presently supplied on a regular basis by known suppliers, as well as components manufactured in-house using older technologies and/or processes that are not compatible with those used for newer products. In both cases, we would have readily available baseline data to use in comparing the performance of the web. The customer would benefit if the web can take over the production and provide price or other advantages, and the customer can dual-source the parts in question until confidence is gained in the web.

As a second category of demonstration product, the web members themselves could bring opportunities to the group. Members could begin to seek assistance to bid on complex assemblies where they do not have all the required capabilities, or they could look to replace some of their own suppliers in a way that gives them more value in terms of cost, response time, quality, etc. This activity will naturally grow as success is forthcoming. Third, the large customers want to use the web to help with new products currently in the conceptualization stage. One has the best opportunity for large added value when choosing this kind of early participation, although we will most likely have to develop some trust among the members before anyone is willing to risk this application.

Recouping Design Costs. Small suppliers, in particular, wonder how they will be able to recoup up-front costs incurred for design consultation when production orders are not received. This appears to be a major current barrier to widespread collaboration between large firms and small suppliers, particularly in the case of defense contractors who want suppliers to collaborate at the bid stage with no guarantee of any award. This is precisely the kind of issue that we hope the team can solve through sharing of perspectives and opening up for creative alternatives.

Web Organization. There are several issues that arise as a consequence of the web approach. For example, how will the web's services be marketed? Who will be accountable to the customer when several firms participate in a procurement? Who is selected to do work when there are several firms in the web with similar capabilities? Again, these issues will have to be addressed through collaboration among the parties. Because these issues also arise in simple manufacturing networks, we may be able to benefit from their experience.

Certifying Members. We anticipate the need over time for some kind of a "certification" process. It will be necessary to find a way to quickly gain confidence that another web participant has at least certain basic capabilities and systems without taking time to get to know the firm in detail. Small firms tend to view certification in a negative way because of the way dominant vendors in certain industries have handled their own certification programs in the past. Thus, this is a delicate issue. We need to work out something in collaboration with all participants. The computer-assisted self-assessment program mentioned under tools help us get around the concerns.

Defense Regulations. Finally, we recognize that defense procurement regulations and procedures, as currently implemented, will not permit many of the more effective practices that we expect to emerge. In some cases, we may jointly identify ways to work around the regulations. It is our understanding that Congress has granted the Department of Defense the ability to waive regulations for pilot activities of this nature, and we plan to seek such waivers for this demonstration project if necessary.

2.4.9 Deliverables

The goal of this demonstration program is to have all participants gain practical working experience in new agile customer/supplier relationships, to gain knowledge of the characteristics of those relationships and the associated prerequisites, and to have access to information which will improve the ability of their organizations to compete in the global environment. Because this is a live pilot and not a study, the members of the demonstration team should all realize improved competitive advantage as a result of participation. The large customers should be able to procure materials and services for product design, manufacture, and field support which delight their customers. The suppliers should be able to provide much higher value to customers, and thus develop increased business and profits. Finally, the experience gained by the participants will be made available to others interested in accomplishing the same outcomes.

The following specific deliverables are anticipated:

- (1) Models that define the types of relationships, practices, and results associated with given agile practices (best practices, work arounds, barriers, etc. taken from the demonstration)
- (2) Case studies and other anecdotal experience that bring the models to life and validate them.
- (3) Assessment criteria, guidelines, and performance measures that can be used as a self assessment of agility.
- (4) Planning and support information (case studies) to help other assistance organizations build similar webs using the experience of this program.
- (5) A working agile supplier web, which practices new, more responsive relationships to provide superior competitive results.

2.4.10 Patent Policy

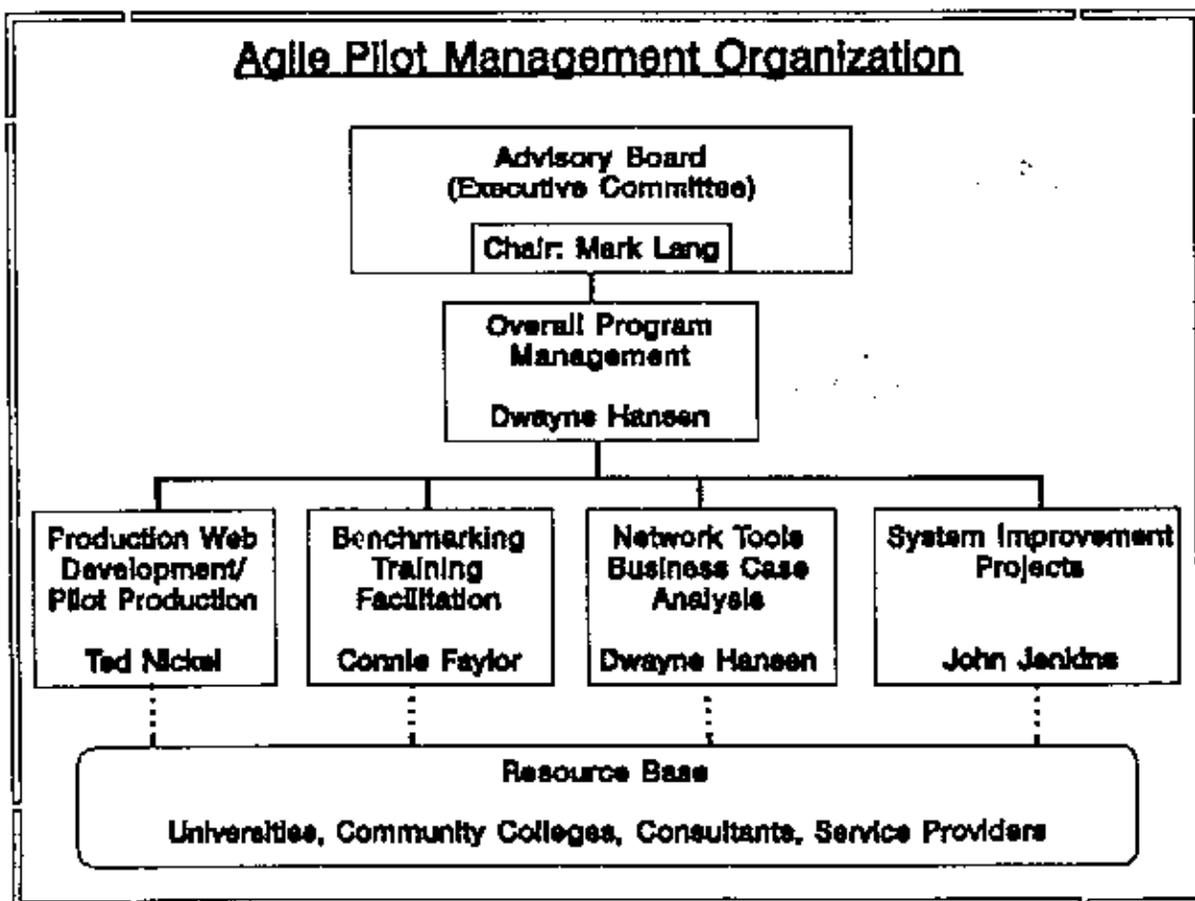
Because the activities in this demonstration program are aimed at creatively applying practices and technologies rather than research, patent and royalty policies are not expected to be a big issue. If the issue should arise in association with a technical assistance activity carried out in partnership with a college or university, the BFTC will follow the patent policies of the respective institution. Technology that is contributed or made available to the program will remain the property of the developer. If program funds pay for more than 20% or so of the development costs of a particular tool, the developer will retain ownership but will be required to pay a modest royalty to the BFTC for use in this program and similar activities. In all cases, we will insure compliance with applicable federal policies.

2.5 Management Experience and Plans

2.5.1 Organization

The agile web pilot program is proposed to be implemented through collaboration between an alliance of small firms in eastern Pennsylvania, a number of larger customer firms from various parts of the country, and other representatives of non-profit consortia and organizations with an interest in the project and its results. Initially, the coalition of players will be structured informally through a memorandum of understanding and commitment from each of the players. Formal leadership and fiscal management will be provided by the NET Ben Franklin Technology Center (BFTC), a non-profit 501(c)3 corporation -- the eligible proposer -- that is a wholly owned subsidiary of Lehigh University.

The proposed management organization is diagrammed below:



The BFTC will form an advisory board consisting of one representative from each firm on the demonstration team. This board will be chaired by Mark Lang, Executive Director of the BFTC, who will commit 30% of his time for developing the program and interfacing with other national and state groups. Other representatives associated with the project will participate in the advisory board meetings, but have no formal representation. Because this advisory board could grow to 30+ members, the board will be asked to elect an executive committee consisting of a balanced subset of the large and small firm representatives which can act for the full board when needed.

Overall programmatic and fiscal management will be the responsibility of Dwayne Hansen (80% time), the Director of Manufacturing Initiatives at the BFTC. Ted Nickel (75% time), an IBM executive loaned to Lehigh University, has agreed to come on board if this program is funded, and he will be responsible for facilitating and building the production web and overseeing the pilot production activities. Mr. Nickel will insure that the web identifies and works through the barriers and defines the processes and procedures it will follow in production. He will also act as a liaison to insure communication between the customers and suppliers, and to monitor and document the web production events.

Connie Faylor, Manager of Quality Partnerships at the BFTC, will be responsible for the Executive Information Exchange Sessions, Benchmarking, and any Training tasks (as outlined in the Statement of Work). The development of Network System Support Tools and the Benchmarking activities will also be overseen by Mr. Hansen. The arrangement and monitoring of the System Improvement Projects will be handled jointly by Mr. Hansen and John Jenkins, Manager of Technical Programs at the BFTC. Supporting this small organizational structure, and carrying out most of the actual work, is a large resource base made up of universities, community colleges, consultants, and other service providers with which the BFTC has already established successful working relationships.

The intent of the BFTC is to act primarily as a facilitator and supporter of the alliance as operated by the advisory board, while retaining full responsibility for management of the demonstration program and funding. As the program proceeds, we plan to formalize a structure that will allow the alliance activities to continue past the end of the pilot program under the management of the participating firms. Depending on the wishes of the participants, this continuing alliance may include all the participants, or it may include only the small suppliers in eastern Pennsylvania that make up the regional web.

2.5.2 Experience of Key Management

Mark Lang has been with the BFTC since its inception in 1983, serving as its Executive Director since 1986. He has a BS in Physics, a Ph.D. in Acoustics, and experience with a wide range of technologies particularly related to computers and electronics. In ten years at the BFTC, Dr. Lang has gained significant experience with small business and manufacturing, and he has married this experience with his technical knowledge to initiate several innovative products and services that help BFTC clients jump ahead of their peers.

Dwayne Hansen has 7 years experience at the BFTC. He began working to build partnerships between industry and academia, develop technology transfer activities, and monitor their progress. Through this experience he has gained an understanding of the environment, the culture, and the struggles of the manufacturers in the region. For a time, he was Director of Operations, and responsible for managing the day-to-day internal operations of the center. For the last 3 years, Mr. Hansen has been focusing on a special initiative for the BFTC aimed at helping small and midsized manufacturers gain the competitive advantages available from strategic partnering. This proposal is the outgrowth of that work. His BS and MS in engineering and MBA give him a broad background to be able to understand both the technological and the business issues regarding agility.

Ted Nickel has been on the staff of the Lehigh University Iacocca Institute since 1991 when he came as the IBM Executive in Residence. He was the IBM representative on the original industry executive team that authored the "21st Century Manufacturing Enterprise Strategy" report which introduced the vision of Agile Manufacturing. Mr.

Nickel joined IBM in 1962 at Endicott, New York as an engineer. He has held various management positions in development and manufacturing within IBM and was the manager of Endicott Printer Products at the time of his appointment to Lehigh. Mr. Nickel holds both BS and MS degrees in electrical engineering.

Connie Faylor has worked for the BFTC for over 5 years. In that time she has developed and initiated several training programs for the center in the area of quality and continuous improvement. These are very practical, tool-based programs that have been used by manufacturers, service firms, government, and educational institutions. Prior to joining the BFTC, she was a Quality Assurance Section Manager for Mack Trucks. She also developed employee training courses in SPC and group problem-solving at Mack. Ms. Faylor received her BS in Management and her MBA from Lehigh University. She is also serving as a 1993 Baldrige Examiner and serves on the Board of the Pennsylvania Quality Leadership Foundation.

John Jenkins is currently the Manager of Technical Programs at the BFTC. He has been with the center for 4 years working with manufacturing companies in projects related to the development and application of technology. This involves determining needs, identifying appropriate expertise and resources, developing projects to address those needs, and monitoring those activities to insure success. Prior to his work at the BFTC, Mr. Jenkins spent 4 years as a research engineer at Lehigh University's CIM Lab working on various technology application projects with industry. Mr. Jenkins has a BS in Design Engineering.

2.5.3 Staffing Plans

In order to use available funds as productively as possible, we propose staffing this program in much the same way we suggest our manufacturing clients do. We plan to enhance our core competencies of building partnerships and managing initiatives by teaming with others that have needed skill sets and expertise. We will partner with universities, community colleges, consultants, and other service providers to carry out much of the work outlined in this proposal. Preliminary arrangements have been made with the following resources (see "technology sources"): Lehigh University CIM Lab, the National Training Center for Microelectronics at Northampton Community College, the University of Scranton CALS Shared Resource Center, American Information Systems, Technology Systems Corporation, and Datamatix.

2.5.4 Evaluation Plans

We plan to evaluate our progress and success in three different ways. First, we believe it is important to track meaningful commercial and economic measures that show the web system is better able to meet customer needs. Ultimately, we want to evaluate measures such as market share, new sales, and sales per employee. However, the pilot won't last long enough to give us clear trends. Thus, we will evaluate more near term economic measures, such as response time and defect rates. We also want to compare the response of the web, in terms of cost, for example, to that of other alternative suppliers. As soon as the project begins, activities will be started to select the most effective measures and how we might collect data to track them.

The second way we will evaluate ourselves is to look at what this project does to help individual firms put in place business procedures and technologies that make them more agile. A lot of work has gone on at the AMEF looking at metrics of agility. We will take advantage of this work to establish a mechanism to periodically assess the web members and their measured progress toward agility.

The third evaluation method will be through feedback from the customers and suppliers in the web. These companies are contributing their very valuable resources of cash and time to support this project because they believe it is the right thing to do and they will gain a return on their investments. If the program is not achieving its objectives or not moving as rapidly as it should, these companies will be the first to let us know. They will not continue to invest time and money in a program that is not providing value to them.

In addition to the internal measures already noted, we plan to have representatives from the AMEF and AME participate fully in all substantive events of the demonstration project. Part of their role will be to critique our progress and suggest alternatives to consider. This continuous presence of an "outside party" is expected to help keep us focused on our goals.

2.5.5 Provision for Related Activities

Because of the complexity of issues addressed by this program and the ambitious goals, we have decided to proceed with a single regional alliance or web augmented by larger firms and other organizations from throughout the country. As noted under "technology sources", BFIC personnel have had discussions with similar assistance organizations in other locations about collaborating on a multi-regional agility pilot program. Given the short lead time, a well structured multi-regional approach could not be completed in time for this solicitation. However, we plan to keep in contact with these groups and others as the project progresses. It is our hope that, once we have gained some experience in this pilot program, a multi-regional effort can be formulated as a follow-on effort.

2.6 Funding, Budget, and Cost Share

This proposal is requesting \$2 million over two years from the TRP Program. We strongly believe that it will take at least two years to develop this web and test it sufficiently to meet the objectives of the pilot. To meet TRP requirements, we are proposing a base period of one year, with an optional period of second year. A complete cost proposal has been submitted with this technical proposal, and it describes the program budget and match in detail. Some highlights follow:

2.6.1 Source of Match

It is important to note that we have substantial cash match for the program, and the majority of the cash (\$1,000,000 over two years) comes from Commonwealth of Pennsylvania funds allocated to the BFIC and approved by the BFIC's Board of Directors for the agile web pilot program. This demonstration program is a very important component of the BFIC's strategy for improving manufacturing competitiveness in the region.

The match provided by the private sector participants also reflects a strong commitment on their part. The small suppliers are committing a portion of their senior management time to this endeavor--something which is very difficult for them to do unless it is clearly an investment with strong expected returns. The amounts specified are based on minimum expected participation, and they could grow if firms participate in many trial orders. The large customers are committing cash and in-kind resources that reflect their solid interest. The cash will be used as appropriate to support trial orders coming from the respective firms. The in-kind represents the commitment of senior management to

participation on the demonstration team. It is important to note that the large customers are agreeing to open their procurement process on real orders to work with the web, something which we rarely see.

Tobyhanna Army Depot is contributing technical assistance valued at over \$400,000 to the program. The depot will act as a customer to the web, and provide substantial technical and procurement support related to procuring repair parts on a timely, cost effective basis.

2.6.2 Use of Federal Funds

The federal funds sought in this proposal are intended to partially cover the costs of the intensive facilitation efforts and the extra training and technical assistance that will be required. Costs of the technical assistance have been estimated by comparing costs incurred in past BFTC projects with the level of support anticipated. To make sure that we purchase only the resources that prove to be relevant and necessary, the arrangements we have with our service partners give us great flexibility to acquire services as needed from the appropriate provider. As part of their commitment, the company participants are paying for the full costs of their participation and any equipment needed.

2.6.3 Future Support

After a certain maturity is achieved, much of the extra facilitation for the web will no longer be needed. Methods should emerge to cover any costs of the web that need to continue after the web successfully implements changes that make it more competitive, and attracts new business. Some type of follow-on program is likely to be desirable, but the best way to structure it cannot be determined today. However, within 4-5 years, we do not expect to have any additional need for government support.

2.7 Accessibility of Services and Documentation

The plans and partners for this program have been selected, in part, to provide a built-in means to widely disseminate the results and benefits of the activities. The demonstration team includes not only appropriate companies but also a regional assistance organization (BFTC), a national professional association (AME), and a national consortium of industries (AMEF). Each plays a specific role in providing access to the services and results of this program. As noted earlier, agreements to share information with other similar organizations are also in place.

2.7.1 Regional Access and Dissemination

In Pennsylvania, particularly eastern Pennsylvania where the pilot web is based, the BFTC, its associated service organizations, and the participating resource providers are in position to directly assist other regional firms with the results of this demonstration program. As noted under "technology sources", the BFTC is part of a rich web of assistance organizations throughout Pennsylvania anchored by four Ben Franklin Technology Centers and eight Industrial Resource Centers. This network reaches hundreds of manufacturers in Pennsylvania each year.

We plan to use this network to disseminate program results in several ways. First, we will spread awareness of the program and its results through special meetings and seminars--offered both directly to firms (possibly under the auspices of such groups as manufacturers associations) and to other economic development organizations (such as

industrial development agencies and utilities). The goal is to make more people aware of what is happening, and use the success stories from the demonstration program to generate demand for similar services that will take firms much further up the modernization and productivity curve than they might have even thought possible. Second, we will use the resource providers who participate in the pilot to serve new customers by providing what they have learned to additional clients. This is another powerful benefit of our decision to partner with existing resources for services. Finally, we will set up opportunities for resource providers from other parts of the state to visit and learn from the providers who participated.

Everything is already in place to serve firms in eastern Pennsylvania in the way described above. Three IRCs in the region (Manufacturers Resource Center, Northeast Pennsylvania IRC, and Delaware Valley IRC) have been briefed and will be kept fully informed as the demonstration proceeds, and the resource providers for the pilot are located where they can easily service the eastern PA region. In fact, we plan to use this approach, under the direction of the web leadership, to gradually grow the membership of the web so that it becomes even stronger. There are more than 5000 small (5-499 employee) manufacturing firms in this region. (The BFTC is a participant with two area IRCs in a TRP proposal under manufacturing extension which could help recruit firms and deploy the results of this pilot if funded.) The rest of the Ben Franklin/IRC network in the state has also been made aware of the pilot submission, but additional resources will need to be developed in their local regions before substantial transfer activities can occur.

2.7.2 National Dissemination

At the national level, the goal is to widely disseminate the models, case studies, and results information so that other firms and organizations can build upon our results for their own activities. The primary vehicle for national dissemination of the pilot's results and conclusions is the Agile Manufacturing Enterprise Forum (AMEF). The AMEF is a key partner in this endeavor, serving as the primary evaluator and documentor of the pilots. As noted under "technology sources", the AMEF is ideally situated to take the lessons from this demonstration program, combine them with information from other applicable activities, and share the results broadly throughout the country--both directly and through its extensive ties with other consortia and organizations.

Many of the demonstration team members and associates are also connected to other industry organizations that can serve as dissemination vehicles. As noted earlier, CAM-I and MCC have both shown interest in this pilot and agreed to share information. The Association for Manufacturing Excellence (AME), whose Director of New Programs Robert Hall is participating, also provides a number of communication vehicles to its network of 5800 members in manufacturing and procurement.

To make sure that small manufacturers throughout the country are given the best opportunity to benefit, the program plan specifically calls for us to document the results of the pilot in a way that is intended to help other regional assistance organizations implement similar regional webs. The BFTC has already discussed this program with several other assistance organizations which target small manufacturers, including coalitions of these organizations represented by the Modernization Forum (Jack Russell) and the National Coalition of Advanced Technology Centers (Elizabeth Smith). While these discussions have been necessarily tentative at this stage, all have expressed interest in our ideas and approach. We plan to keep them informed as the pilot progresses, and have them help us interest their respective members and others to benefit from our results after the conclusion of the pilot. If we can stimulate such activity, it will be the best way to see

the results of this program really take hold among small manufacturers in other regions of the country.

2.7.3 Benefits of the Pilot to Dissemination

Finally, we would like to suggest that the availability of concrete, well documented results involving small firms practicing agility will be a very strong boost to dissemination of the results. As discussed in section 2.2.4, both small and large firms are reluctant to take risks with unproven approaches. If our results are anything like we expect, they should generate very strong interest and attention from all sizes of firms--and boost the demand for all types of modernization services. Our results should also encourage modernization programs to try some of our approaches to help firms leap rather than crawl forward.

2.8 Coordination and Elimination of Duplication

2.8.1 Regional and State Coordination

As noted under the "accessibility of services" section, the BFTC is part of a well developed service network in the Commonwealth of Pennsylvania. The role of the Ben Franklin Technology Centers in the overall strategy is to support product and process innovation and fundamental change in manufacturing, while the role of the Industrial Resource Centers (IRCs) is to support wider use of off-the-shelf technologies and practices. By leading this pioneering effort to carry our region to the next generation of manufacturing, the BFTC is fulfilling one of its designated roles in the state's strategy. As we develop expertise, lessons, and specific tools that can be shared, we enhance the resources available for dissemination by this powerful statewide network. A letter provided by the Pennsylvania Secretary of Commerce in the cost proposal verifies our role and the support of the Commonwealth.

2.8.2 Use of Existing Resources

As described in the management plan, this demonstration program has been designed to take advantage of the rich array of resources and organizations that exist in eastern Pennsylvania. The management model is that of a "virtual service organization", where appropriate organizations partner together as needed to assemble the resources required for any particular activity. Using this approach, we will be able to determine which technology and practice issues are important for our business cases, and then tap the appropriate expertise and resources. As noted, we are also partnering with other existing regional and national organizations to outreach to others and disseminate and document our results. In every case, we will be building upon a strength of an established organization, rather than developing something new.

2.8.3 Related National Activities

Issues of customer/supplier relationships have received much attention in the past several years. Thus, there are many activities that are at least loosely related to the subject of this demonstration program. Some activities that might provide insight include:

Manufacturing Networks. During the past about five years, we have seen a high level of interest in manufacturing networks in the United States, mostly based on experience in Italy and Denmark. Such individuals as Stuart Rosenfeld, Richard Hatch, and Paul Sommers have been extensively involved in pilot programs. Michigan, through the Michigan Modernization Service, sponsored a series of pilots a few years ago whose

results were carefully documented. A network based in Okaloosa County, Florida has received a lot of attention, as has a program sponsored by the National Tooling and Machining Association (NTMA) in the Syracuse, NY area. These activities, and others like them, provide insight into the issues of getting firms to work together and pool their resources. However, they generally do not involve the kinds of changes in technology and practice, or the full collaboration of large customers, planned for this program.

Industry Supplier Chains. Several programs are underway in the U.S. that focus on a particular industry and its supply chain. The Industrial Technology Institute has major efforts underway in the automobile and furniture industries in Michigan. Of particular interest is an extensive benchmarking program for the metalworking industry. The Massachusetts Institute of Technology (MIT) has done some things to look at the aerospace industry and its suppliers. There are numerous other initiatives in regions of the country where you find a major customer and a number of its key suppliers located in close proximity, including one in Arizona where the BFTC has established a linkage. Most of these industry activities focus on identifying a particular technology or practice, and examining its impact down through the supplier chain. (Most advanced technologies are not making it past the first level suppliers.) The activities are still in progress, for the most part, and they bear following to see what can be learned.

Enterprise Integration. There is a large amount of activity in this country related to enterprise integration. The Microelectronics and Computer Technology Corporation (MCC) has a major activity underway, and other consortia such as the National Center for Manufacturing Sciences (NCMS) are very involved. The focus is generally on the information technologies and standards which link firms together. Any practical results and tools that come out of these activities will be important to our agile pilot because information technologies are key facilitators of agile practice. Many of the existing enterprise integration efforts involve a sophisticated level of research, which will not be as applicable to small firms. However, it is important to keep in touch with these developments so appropriate ways of interfacing the high end tools and standards with smaller suppliers can be developed.

It can be assumed that these items are only a small sampling of things underway that might overlap in some way a pilot with the broad impact of the one proposed here. We will continue to follow all of these efforts and others as much as possible, building upon our partners such as the AMEF to help us keep in touch with the most appropriate activities.

SECTION 3 - STATEMENT OF WORK

In order to realize the goals and objectives of this agile production web pilot program, the following tasks must be accomplished. The budgets for each task are found in the cost proposal.

Task 1: Project Facilitation/Oversight

The Ben Franklin Technology Center (BFTC) will provide oversight for the entire pilot program and facilitate activities so that the process comes together more quickly. Facilitation of the team process, described in task 2, will be very important. The role of BFTC will include seeding the web with ideas, arranging for speakers and experts in special topics to attend meetings to stimulate discussion, and making sure the team members and customers learn of each other's capabilities and develop trust in each other through the meetings and such things as plant visits and customer visits, etc. All during the pilot program, BFTC will organize and call periodic meetings, facilitate regular communication

among the web members, and serve as a broker between the customers and suppliers when required.

As part of its overall management of the program, BFTC will also insure that federal reporting and financial requirements are being met, coordinate the efforts to gather data from other activities around the country to avoid duplication of effort, insure that the experiences of the group and the lessons learned are being documented adequately, etc. Once priorities have been set, arrangements will be made to provide the business and technical assistance needed by web members. Sub projects will be designed, resource people will be found to carry out those sub projects, and the sub projects will be monitored to insure the goals of the agile production web are being met.

Task 2: Production Web Development, Planning, and Execution

This task addresses the process required to organize the web and the demonstration and then keep them going. Initially, the web members and customers will need to meet together frequently to accomplish several things: first, to discuss goals and objectives and firm up a common mission; second, to gain a good understanding of agility, its components, and the web concepts, and discuss how they relate to small businesses in the value chain; third, to raise issues that need to be addressed regarding how the web should work, and what the barriers and bottlenecks to success are; and fourth, to identify business practices, new operating paradigms, and technologies that can address these issues and foster the effective operation of the web.

As the work progresses through system improvement projects and pilot production work, the firms will need to continually communicate in "real-time" to work through problems and issues that come up in production. Web members will also need to meet for mid-course evaluations of how the web is working and to make course corrections as things are learned through the experience of what works and what doesn't. Finally, web members will want to discuss the economic benefits of the production web concept, analyze the success they are actually seeing, and look for opportunities for everyone to win even more.

Task 3: Executive Information Exchange Sessions

In order to help the executives of the group come to a better and unified understanding of the concepts of agility and the necessary shifts in their paradigms of running a business, we plan to provide executive sessions that will enable the exchange of ideas and information among project participants.

At this point, we plan to carry out sessions for the upper and middle management of participating firms on developing a manufacturing improvement strategy. The seminar will provide overviews and discussions of many of the current improvement methods like TQM, re-engineering, JIT, benchmarking, etc. While the web members are all very progressive companies, and may all be familiar with these ideas, the sessions will put everyone on the same level of understanding. It will also provide a framework on how the web can prioritize its own improvement process. AME is a partner in this project to provide this program. We also plan to provide sessions to explore the nuances of doing business within manufacturing networks. The program will focus on going beyond "lean manufacturing" and becoming flexible to better meet customer needs and improve the supply chain. This session will also be facilitated by AME.

As we look to improve the system, an understanding by web participants on how to identify and remove bottlenecks in the system is critical. Training in the Theory of Constraints and system simulation will also be provided to project participants. This

training will be offered by TSC. As the pilot program progresses, needs for other information exchange sessions will be identified. Arrangements with appropriate experts will be made to conduct similar information exchange sessions on those topics.

In order to later disseminate what is learned in this agile web experiment, a training program will be developed that addresses the issues uncovered during this pilot program, the process of resolving them, the solutions implemented, and the effectiveness of the solutions. AME will participate in the program to document the processes followed and develop a training program to be offered to others in the future.

Task 4: Establishment of Electronic Infrastructure

One of the first things we need to do is establish electronic connections among the members of the web and the customers to the web. We plan to look at options such as a commercial Value Added Network (VAN), dialup TCP/IP, or other networks such as Internet or EInet as a possible medium for these connections. The network will provide a mechanism to exchange e-mail messages, send and receive EDI transaction sets to conduct business, as well as exchange product definition data and drawings electronically. The CAIS Shared Resource Center will assist the web in understanding and learning how to use EDI and in exchanging product definition data through training and on-site assistance in establishing connections to the network.

Task 5: Benchmarking

A key to insure that we do not duplicate the efforts of others and that we can learn from past activities of others is to continually educate ourselves on what else is going on in the areas of agility and customer/supplier relations. This information then needs to be summarized and presented to the members of the web so that it can be factored into our activities. The BFTC will leverage the Agile Manufacturing Enterprise Forum (AMEF) to capture information gathered by the AMEF and do other additional work as necessary.

Task 6: Business Case Analysis

To quantify the economic benefit of applying concepts of agility to a web of suppliers, business case analyses will be carried out during the project. Initially, appropriate metrics will be identified that can be used to help quantify the economics of agility. Additionally, an initial assessment of the web members will be made to understand where each firm stands with respect to agility characteristics to serve as a reference point showing a firm's progress over time, as well as to capture the capabilities and expertise of each company.

Baseline data will be collected at the beginning of each technical assistance sub project, and performance data will be collected along the way and after improvements are implemented and tested in practice. This data will then be analyzed to show the reduction in costs, lead-times, and increases in quality that can be achieved through agile webs. We propose to use the expertise of the loaned executives at the Agile Manufacturing Enterprise Forum to manage and carry out this task.

Task 7: Network System Support Tools

There is a need to develop network and computer-based tools that can be used to support the objectives of the production web and enable the web to better respond to customers. At this point, we propose the following:

One tool is a software product that will be a repository for the data collected throughout the program, as well as an analysis tool to identify weaknesses and areas for improvement in the system. American Information Systems (AIS) has a product for rating companies' performance against quality standards. This product will be modified to address the specific needs of the web, and be used to collect performance measures of the system and analyze improvements over time of these measures.

Another network tool is a capabilities directory of the suppliers in the web. More than just a listing of company name, address, and SIC code, this directory will provide detailed information on the core competencies, expertise, processes, ratings on such things as quality systems, and other capabilities of the firms. The directory will then be used (1) by customers to quickly find suppliers with specific capabilities, and (2) by suppliers to quickly locate other web members with which they could team in a virtual firm to respond to new market opportunities. The need for this directory is minimal while the number of firms in the web is small because the firms will know each other and their capabilities. In the long term, as the web of firms becomes large, this directory will become a critical asset to the web. Thus, we should develop the tool while the web is of a manageable size.

We perceive that other tools will be identified later as the web members work through the pilot project. When they are, resources will be located and funds allocated to their development.

Task 8: System Improvement Projects

As opportunities for improvements in the supplier web are identified, new business practices, procedures, or technologies will need to be implemented. The customers and suppliers in the web will select the priorities they feel will most allow the system to work more efficiently. Then, we will bring in technical experts to see how to best accomplish these priorities using technology. Likely possibilities for sub projects are:

- (1) establish electronic communication among the team;
- (2) establish electronic exchange of drawings and part definition data;
- (3) set up a system to share production schedules to look for available capacity across the web;
- (4) work within specific companies to improve the cycle times within their shops; and
- (5) develop programs to help firms implement the 'soft' issues revolving around agility.

Task 9: Pilot Production Using the Web

To evaluate and validate the impact of new agile business practices and system improvements, the customers to the system will place orders for real assemblies they need to have manufactured. Subsets of the web members will combine their capabilities to fill each customer order. There will be ongoing collaboration between the customers and suppliers, facilitated by BFTC staff, on possible design changes or process changes to best manufacture the part. In this way, we can gain real-world experience on how "virtual corporations" are formed, what is required to support their formation, how they work, and what is required to make them work.

The number of orders from each customer will vary depending upon the complexity of the assembly, availability of resources, etc. Our objective is to process several orders from each customer, with time in-between to review our effectiveness (Task 6), select new system needs, and upgrade the entire system (Task 7).

Significant Events and Milestones

In order to checkpoint progress along the way in comparison to our plan, the following milestones have been identified during our two-year effort.

Month 2

Establish network connections for all participants.
 Identify and Prioritize Barriers to Web Concept. Make plans to address the major ones.
 Identify the products to be ordered from the system.
 Identify first round of System Improvement Projects.
 Identify first set of Network System Support tools.

Month 3

Finalize building the group of suppliers and customers.
 Complete Improvement Methods, Manufacturing Networks, and Theory of Constraints Training.
 Receive first orders for product from the Customers.
 Begin first round of System Improvement Projects.

Month 6

Complete Performance Tracking System.
 Submit interim report on progress-to-date to funding agency.

Month 9

Complete beta version of Capabilities Database.

Month 12

Plan to have filled 10 customer orders by this point.
 Prepare interim report on progress to funding agency.

Month 15

Have Capabilities Database in use by customers and web members.

Month 18

Begin developing plans for future work and the organization of the web.
 Prepare interim report on progress to funding agency.

Month 21

Complete plans for future work and the organization of the web.
 Plan to have 25 customer orders filled by this point.

Month 24

Complete all improvement projects, network tools, and final report.

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TRP Cover Sheet 2: Proposal Participants

(Use as many copies as necessary to list all participants. Include entities listed on Sheet 1.)

Proposal Title:

THE AGILE WEB PILOT PROJECT

a. Name and Address of Participant <u>17</u> of <u>20</u> Surtech Industries 125 Derry Court York PA 17402		d. Point of Contact, Organization, and Address: Gary Kehr Operations Manager Surtech Industries 125 Derry Court York, PA 17402	
Check # : (Small Business <input checked="" type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)		e. E-Mail Address (if any):	
b. Telephone Number: 717/767-6808		f. Type of Business (SIC code or other description):	
c. Fax Number (if any): 717/764-6271		powder coatings, painting, finishing	

a. Name and Address of Participant <u>18</u> of <u>20</u> SI/Baker, Inc. Kesslerville Road Easton, PA 18042		d. Point of Contact, Organization, and Address: Joel Hoffner President/CEO SI/Baker, Inc. Kesslerville Road Easton, PA 18042	
Check # : (Small Business <input checked="" type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)		e. E-Mail Address (if any):	
b. Telephone Number: 215/253-5045		f. Type of Business (SIC code or other description):	
c. Fax Number (if any): 215/250-9677		design/mfg automated equipment	

a. Name and Address of Participant <u>19</u> of <u>20</u> IBM Corporation P.O. Box 12195 Research Triangle Park, NC 27709		d. Point of Contact, Organization, and Address: Edward Brigham Associate Buyer IBM Corporation Dept 504/Bldg 205 P.O.Box 12195 Research Triangle Park, NC 27709	
Check # : (Small Business <input type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)		e. E-Mail Address (if any):	
b. Telephone Number: 919/543-4438		f. Type of Business (SIC code or other description):	
c. Fax Number (if any): 919/543-4253		computer manufacturer	

a. Name and Address of Participant <u>20</u> of <u>20</u> Texas Instruments c/o Iacocca Institute, Lehigh Univ. 200 W. Packer Avenue Bethlehem, PA 18015-1582		d. Point of Contact, Organization, and Address: Scott Wade Texas Instruments Loaned Executive Texas Instruments c/o Iacocca Institute, Lehigh Univ. 200 W. Packer Avenue Bethlehem, PA 18015-1582	
Check # : (Small Business <input type="checkbox"/>) (HBCU/MI <input type="checkbox"/>) (Foreign-owned <input type="checkbox"/>) (Small Disadvantaged Business (SDB) <input type="checkbox"/>)		e. E-Mail Address (if any):	
b. Telephone Number: 215/758-6118		f. Type of Business (SIC code or other description):	
c. Fax Number (if any): 215/694-0542		Defense electronics	

The Agile Web Pilot Program

COST PROPOSAL

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Section 1 : Total Proposed Cost

Base Year Budget of Projected Expenses

	Year 1 Budget
Task 1: Project Oversight / Facilitation	
Personnel	\$240,000
Travel	\$7,500
Phone / Fax	\$5,700
Materials / Supplies	\$2,100
Postage	\$2,100
Audits	\$5,400
Meetings	\$3,000
Documentation / Reports	\$5,400
Task 2: Production Web Development, Planning, and Execution	
Suppliers' Activities	\$265,800
Customers' Activities	\$92,500
Task 3: Executive Information Exchange Sessions	
Improvement Methods	\$7,500
Manufacturing Networks	\$4,200
Course Development	\$5,400
Theory of Constraints	\$30,000
Other Sessions are Required	\$9,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$30,000
Task 5: Benchmarking	
Benchmarking	\$85,000
Task 6: Business Case Analysis	
Assessments/Performance Metric	\$15,000
Data Collection/Analysis	\$85,000
Task 7: Network System Support Tools	
Performance Tracking System	\$60,000
Capabilities Directory	\$90,000
Future Tools	\$60,000
Task 8: System Improvement Projects	
Service Providers/Service Centers	\$797,700
Task 9: Pilot Production Using the Web	
Customer's Activities	\$92,500
Suppliers' Activities	\$177,200

	\$2,178,000

Optional Year Budget of Projected Expenses

	Year 2 Budget
Task 1: Project Oversight / Facilitation	
Personnel	\$252,000
Travel	\$7,500
Phone / Fax	\$5,700
Materials / Supplies	\$2,100
Postage	\$2,100
Audits	\$6,000
Meetings	\$3,000
Documentation / Reports	\$5,400
Task 2: Production Web Development, Planning, and Execution	
Suppliers' Activities	\$265,800
Customers' Activities	\$92,500
Task 3: Executive Information Exchange Sessions	
Improvement Methods	\$0
Manufacturing Networks	\$0
Course Development	\$12,900
Theory of Constraints	\$0
Other Sessions as Required	\$9,000
Task 4: Establishment of Electronic Infrastructure	
Network Services	\$30,000
Task 5: Benchmarking	
Benchmarking	\$85,000
Task 6: Business Case Analysis	
Assessments/Performance Metric	\$0
Data Collection/Analysis	\$85,000
Task 7: Network System Support Tools	
Performance Tracking System	\$0
Capabilities Directory	\$50,000
Future Tools	\$90,000
Task 8: System Improvement Projects	
Service Providers/Service Centers	\$894,300
Task 9: Pilot Production Using the Web	
Customers' Activities	\$92,500
Suppliers' Activities	\$177,200
	=====
	\$2,178,000

Notes and Explanations

Task 1: These expenses are personnel and direct costs incurred by the Ben Franklin Technology Center in carrying out its responsibilities in this program. No indirect costs, such as light, heat, rent, etc., are being charged to the program.

Tasks 3 through 8: The activities to be done as part of these tasks will be performed by organizations other than Ben Franklin. These organizations will be treated as sub-contractors and will be managed by the Ben Franklin staff.

Tasks 3, 7, and 8: Since the basis of the pilot is to have the web members and customers identify and prioritize needs, and then to define and implement solutions to meet those needs, money is being reserved for activities yet to be determined. The "Task 3: Other Sessions as Required", "Task 7: Future Tools", and "Task 8: System Improvement Projects" fall into this category. Costs of the technical assistance have been estimated by comparing costs incurred in past BFTC projects with the level of support anticipated.

Tasks 2 and 9: These budgeted expenses are those incurred by the customers and members of the supplier web as they participate and fulfill their roles in this project.

Section 2 : Cost to the Government

Base Year Budget with Cost to Government

	Year 1 Budget		Cost to Government
	-----		-----
Task 1: Project Oversight / Facilitation			
Personnel	\$240,000		\$160,000
Travel	\$7,500		\$5,000
Phone / Fax	\$5,700		\$3,800
Materials / Supplies	\$2,100		\$1,400
Postage	\$2,100		\$1,400
Audits	\$5,400		\$3,800
Meetings	\$3,000		\$2,000
Documentation / Reports	\$5,400		\$3,600
Task 2: Production Web Development, Planning, and Execution			
Suppliers' Activities	\$205,800		
Customers' Activities	\$92,500		
Task 3: Executive Information Exchange Sessions			
Improvement Methods	\$7,500		\$5,000
Manufacturing Networks	\$4,200		\$2,800
Course Development	\$5,400		\$3,600
Theory of Constraints	\$30,000		\$20,000
Other Sessions are Required	\$9,000		\$6,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$30,000		\$20,000
Task 5: Benchmarking			
Benchmarking	\$85,000		\$40,000
Task 6: Business Case Analysis			
Assessments/Performance Metric	\$15,000		\$10,000
Data Collection/Analysis	\$85,000		\$40,000
Task 7: Network System Support Tools			
Performance Tracking System	\$60,000		\$40,000
Capabilities Directory	\$90,000		\$60,000
Future Tools	\$60,000		\$40,000
Task 8: System Improvement Projects			
Service Providers/Service Centers	\$797,700		\$531,800
Task 9: Pilot Production Using the Web			
Customer's Activities	\$92,500		
Suppliers' Activities	\$177,200		
	-----		-----
	\$2,178,000		\$1,000,000

Optional Year Budget with Cost to Government

	Year 2 Budget	Cost to Government
Task 1: Project Oversight / Facilitation		
Personnel	\$252,000	\$168,000
Travel	\$7,500	\$5,000
Phone / Fax	\$5,700	\$3,800
Materials / Supplies	\$2,100	\$1,400
Postage	\$2,100	\$1,400
Audits	\$6,000	\$4,000
Meetings	\$3,000	\$2,000
Documentation / Reports	\$5,400	\$3,600
Task 2: Production Web Development, Planning, and Execution		
Suppliers' Activities	\$265,600	
Customers' Activities	\$92,500	
Task 3: Executive Information Exchange Sessions		
Improvement Methods	\$0	\$0
Manufacturing Networks	\$0	\$0
Course Development	\$12,900	\$8,600
Theory of Constraints	\$0	\$0
Other Sessions as Required	\$9,000	\$6,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$30,000	\$20,000
Task 5: Benchmarking		
Benchmarking	\$85,000	\$40,000
Task 6: Business Case Analysis		
Assessments/Performance Metric	\$0	\$0
Data Collection/Analysis	\$85,000	\$40,000
Task 7: Network System Support Tools		
Performance Tracking System	\$0	\$0
Capabilities Directory	\$80,000	\$40,000
Future Tools	\$90,000	\$60,000
Task 8: System Improvement Projects Service Providers/Service Centers	\$894,300	\$598,200
Task 9: Pilot Production Using the Web		
Customers' Activities	\$92,500	
Suppliers' Activities	\$177,200	
	=====	=====
	\$2,178,000	\$1,000,000

Notes and Explanations

The federal funds sought in this proposal are intended to partially cover the costs of the intensive facilitation efforts and the extra training and technical assistance that will be required. To make sure that we purchase only the resources that prove to be relevant and necessary, the arrangements we have with our service partners give us great flexibility to acquire services as needed from the appropriate provider.

As part of their commitment, the company participants are paying for the full costs of their participation and any equipment needed (included in Tasks 2 and 9). The only exception to that might be the purchase of EDI and e-mail software in Task 4.

It is expected that these funds will also be used mainly to cover personnel and direct expenses of those providing the services. The only exception to that might be the purchase of EDI and e-mail software in Task 4.

The inkind match in Tasks 5 and 6 are from the AMEF. They are committing 20% of a loaned executive to work on these tasks.

Section 2 : Fund Matching and In-kind Contributions

Base Year Budget with Cost to Government and Matching Contributions

	Year 1 Budget	Cost to Government	Private Match Cash	In-kind	State Cash Match
Task 1: Project Oversight / Facilitation					
Personnel	\$240,000	\$160,000			\$80,000
Travel	\$7,500	\$5,000			\$2,500
Phone / Fax	\$5,700	\$3,800			\$1,900
Materials / Supplies	\$2,100	\$1,400			\$700
Postage	\$2,100	\$1,400			\$700
Audits	\$5,400	\$3,600			\$1,800
Meetings	\$3,000	\$2,000			\$1,000
Documentation / Reports	\$5,400	\$3,600			\$1,800
Task 2: Production Web Development, Planning, and Execution					
Suppliers' Activities	\$265,800			\$265,800	
Customers' Activities	\$92,500			\$92,500	
Task 3: Executive Information Exchange Sessions					
Improvement Methods	\$7,500	\$5,000			\$2,500
Manufacturing Networks	\$4,200	\$2,800			\$1,400
Course Development	\$5,400	\$3,600			\$1,800
Theory of Constraints	\$30,000	\$20,000			\$10,000
Other Sessions are Required	\$9,000	\$6,000			\$3,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$30,000	\$20,000			\$10,000
Task 5: Benchmarking					
Benchmarking	\$85,000	\$40,000		\$25,000	\$20,000
Task 6: Business Case Analysis					
Assessments/Performance Metric	\$15,000	\$10,000			\$5,000
Data Collection/Analysis	\$85,000	\$40,000		\$25,000	\$20,000
Task 7: Network System Support Tools					
Performance Tracking System	\$60,000	\$40,000			\$20,000
Capabilities Directory	\$90,000	\$60,000			\$30,000
Future Tools	\$60,000	\$40,000			\$20,000
Task 8: System Improvement Projects					
Service Providers/Service Centers	\$797,700	\$531,800			\$265,900
Task 9: Pilot Production Using the Web					
Customer's Activities	\$92,500			\$92,500	
Suppliers' Activities	\$177,200			\$177,200	
	<u>\$2,178,000</u>	<u>\$1,000,000</u>	<u>\$0</u>	<u>\$678,000</u>	<u>\$500,000</u>

Optional Year Budget Including Cost to Government and Matching Contributions

	Year 2 Budget	Cost to Government	Private Match		State Cash Match
			Cash	In kind	
Task 1: Project Oversight / Facilitation					
Personnel	\$252,000	\$168,000			\$84,000
Travel	\$7,500	\$5,000			\$2,500
Phone / Fax	\$5,700	\$3,800			\$1,900
Materials / Supplies	\$2,100	\$1,400			\$700
Postage	\$2,100	\$1,400			\$700
Audits	\$6,000	\$4,000			\$2,000
Meetings	\$3,000	\$2,000			\$1,000
Documentation / Reports	\$5,400	\$3,600			\$1,800
Task 2: Production Web Development, Planning, and Execution					
Suppliers' Activities	\$265,800			\$265,800	
Customers' Activities	\$92,500			\$92,500	
Task 3: Executive Information Exchange Sessions					
Improvement Methods	\$0	\$0			\$0
Manufacturing Networks	\$0	\$0			\$0
Course Development	\$12,900	\$8,600			\$4,300
Theory of Constraints	\$0	\$0			\$0
Other Sessions as Required	\$9,000	\$6,000			\$3,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$30,000	\$20,000			\$10,000
Task 5: Benchmarking					
Benchmarking	\$85,000	\$40,000		\$25,000	\$20,000
Task 6: Business Case Analysis					
Assessments/Performance Metric	\$0	\$0			\$0
Data Collection/Analysis	\$85,000	\$40,000		\$25,000	\$20,000
Task 7: Network System Support Tools					
Performance Tracking System	\$0	\$0			\$0
Capabilities Directory	\$60,000	\$40,000			\$20,000
Future Tools	\$90,000	\$60,000			\$30,000
Task 8: System Improvement Projects					
Service Providers/Service Centers	\$894,300	\$596,200			\$298,100
Task 9: Pilot Production Using the Web					
Customers' Activities	\$92,500			\$92,500	
Suppliers' Activities	\$177,200			\$177,200	
	-----	-----	-----	-----	-----
	\$2,178,000	\$1,000,000	\$0	\$678,000	\$500,000

Combined Two Year Budget

	Total Budget	Cost to Government	Private Cash	Match In-kind	State Cash Match
Task 1: Project Oversight / Facilitation					
Personnel	\$492,000	\$328,000			\$164,000
Travel	\$15,000	\$10,000			\$5,000
Phone / Fax	\$11,400	\$7,600			\$3,800
Materials / Supplies	\$4,200	\$2,800			\$1,400
Postage	\$4,200	\$2,800			\$1,400
Audits	\$11,400	\$7,600			\$3,800
Meetings	\$6,000	\$4,000			\$2,000
Documentation / Reports	\$10,800	\$7,200			\$3,600
Task 2: Production Web Development, Planning, and Execution					
Suppliers' Activities	\$531,600			\$531,600	
Customers' Activities	\$185,000			\$185,000	
Task 3: Executive Information Exchange Sessions					
Improvement Methods	\$7,500	\$5,000			\$2,500
Manufacturing Networks	\$4,200	\$2,800			\$1,400
Course Development	\$18,300	\$12,200			\$6,100
Theory of Constraints	\$30,000	\$20,000			\$10,000
Other Sessions as Required	\$18,000	\$12,000			\$6,000
Task 4: Establishment of Electronic Infrastructure Network Services	\$60,000	\$40,000			\$20,000
Task 5: Benchmarking					
Benchmarking	\$170,000	\$80,000		\$50,000	\$40,000
Task 6: Business Case Analysis					
Assessments/Performance Metric	\$15,000	\$10,000			\$5,000
Data Collection/Analysis	\$170,000	\$80,000		\$50,000	\$40,000
Task 7: Network System Support Tools					
Performance Tracking System	\$60,000	\$40,000			\$20,000
Capabilities Directory	\$150,000	\$100,000			\$50,000
Future Tools	\$150,000	\$100,000			\$50,000
Task 8: System Improvement Projects					
Service Providers/Service Centers	\$1,892,000	\$1,128,000			\$564,000
Task 9: Pilot Production Using the Web					
Customers' Activities	\$185,000			\$185,000	
Suppliers' Activities	\$354,400			\$354,400	
	=====	=====	=====	=====	=====
	\$4,356,000	\$2,000,000	\$0	\$1,356,000	\$1,000,000

Sources and Amounts of Cash and In-kind Contributions (6)

	<u>Cash</u>	<u>In-kind (1)</u>
NET Ben Franklin Technology Center	\$1,000,000	(2)
Agile Manufacturing Enterpr. Forum		\$ 100,000
Blue Mountain Machine, Inc.		65,000
Blue Ridge Pressure Castings, Inc.		60,000
Boeing Helicopter	(3)	50,000 (3)
Cook Specialty Company		45,000
Electro-Space Fabricators, Inc.		60,000
General Altronics Corporation		73,000
IBM/Research Triangle Park	(3)	50,000 (3)
Jade Corporation		30,000
Kingston Metals		50,000 (4)
Lamm's Machine, Inc.		68,000
The MATCO Group, Incorporated		60,000
Micro Tool		5,000
New Standard Corporation		25,000
PS Group, Inc.		40,000
Rockwell International	(3)	50,000 (3)
SI/Baker, Incorporated		10,000
Strick Corporation		23,000
Suckle Corporation		30,000
Surtech Industries		2,000
Texas Instruments		10,000
4 More Customers to the Web		200,000 (5)
5 More Suppliers		250,000 (5)
	=====	=====
	\$1,000,000	\$1,356,000

Note (1): In-kind contributions were determined as the value of the time the company personnel will spend in their participation in the project over the 24 month period. The numbers are conservative, and could increase depending upon the number of orders the web processes and the nature of the system improvement projects undertaken.

Note (2): The cash match will be provided over two years from the yearly allocation the Ben Franklin Technology Center receives from the Commonwealth of Pennsylvania.

Note (3): These customer firms have agreed to participate in the project, but were unable to furnish commitment letters in such a short period of time. Their in-kind match is conservatively estimated at \$50,000. We also expect that these firms will provide cash match to be used for trial orders.

Note (4): These supplier firms have agreed to participate in the project, but are unable to furnish commitment letters in such a short period of time. Their in-kind match is being conservatively estimated at \$50,000.

Note (5): As we continue to interest other firms in our program to reach our objective of 8 customers and 20 suppliers, these firms will also contribute match to the project.

Note (6): It is felt that two years is really needed to be able to adequately carry out the pilot program. Therefore, all match commitments are for a period of two years - the base period and a 1 year option.

Evidence of Matching Fund Availability - Commitment Letters

Pennsylvania Department of Commerce
NET Ben Franklin Technology Center
Agile Manufacturing Enterprise Forum
Blue Mountain Machine, Inc.
Blue Ridge Pressure Castings, Inc.
Cook Specialty Company
Electro-Space Fabricators, Inc.
General Altronics Corporation
IBM Corporation
Jade Corporation
Lamm's Machine, Inc.
The MATCO Group, Incorporated
Micro Tool
New Standard Corporation
PS Group, Inc.
SI/Baker, Incorporated
Strick Corporation
Suckle Corporation
Surtech Industries
Texas Instruments



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF COMMERCE
HARRISBURG

OFFICE OF SECRETARY

July 22, 1993

Dr. Lee Buchanan
Director
The Advanced Research Project Agency
Technology Reinvestment Program
3701 North Fairfax Drive
Arlington, Virginia 22203-1714

Dear Dr. Buchanan:

On behalf of the Commonwealth of Pennsylvania, I am pleased to support this proposal for an Agile Production Web Pilot Project developed under the leadership of the Northeast Tier Ben Franklin Technology Center.

This project takes on the challenge to look at what is required to move our small and mid-sized manufacturing base into the 21st century through the implementation of agile manufacturing characteristics and methodologies. While difficult to do, it is greatly needed by our manufacturing industry. What will be learned by the pilot application of these concepts into business situations will be of immense value to the economic development community in our state and in the country.

Favorable consideration of this proposal will greatly enhance the Commonwealth's ability to accelerate our activities in industrial modernization and manufacturing competitiveness. The results of this activity will be disseminated to manufacturers across the state through Pennsylvania's rich network of technology assistance programs anchored by the Ben Franklin Partnership and Industrial Resource Centers to broaden the impact of the work.

The Department of Commerce remains committed to continue to support these activities. We hope that you and your colleagues look favorably upon this proposal.

Sincerely,

A handwritten signature in cursive script, appearing to read "Andrew T. Greenberg".

Andrew T. Greenberg
Secretary



Promoting Partnerships for Business Advantage

July 21, 1993

Dr. Lee Buchanan
Director
Advanced Research Projects Agency
Technology Reinvestment Program
3701 North Fairfax Drive
Arlington, VA 22203-1714

- ▲ New Business Growth
- ▲ Manufacturing Competitiveness
- ▲ Community Partnerships

Dear Dr. Buchanan:

I am pleased to submit this proposal entitled "The Agile Web Pilot Program" for funding consideration under the ARPA Technology Reinvestment Program.

In the 10 years of existence of the Ben Franklin Technology Center, we have been providing assistance to small and mid-sized manufacturers to help them apply technology in appropriate ways to improve their competitiveness. In the course of our experience, we have gained great insight into the nature and culture of these companies. We have also seen the trends that are moving the manufacturing environment to one characterized by constant change.

The ideas and concepts presented in this proposal are the outcome of our continuing efforts to use our experience and understanding of the market to develop better ways to assist our clients. We feel very strongly that the agile web concept will provide the new approach to manufacturing needed for the U.S. to regain its competitiveness and world leadership. This pilot project will give us practical experience with this new paradigm that will help the industry advance towards agility at a more rapid pace.

We are committing \$1,000,000 over two years to this activity. These funds will come from our yearly allocation, received from the Commonwealth of Pennsylvania, to carry out our mission of fostering manufacturing competitiveness and economic growth in our region.

We look forward to a favorable decision on our funding request.

Sincerely,
Mark Lang
Mark S. Lang
Executive Director

Agile Manufacturing Enterprise Forum

Iacocca Institute

Lehigh University
200 W. Packer Avenue
Bethlehem, PA 18015-1582
(215) 758-5510
(215) 694-0542, fax

Rusty Patterson
President AMEF

July 22, 1993

Dwayne L. Hansen
Director, Manufacturing Initiatives
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

We are gratified to see such a strong pilot program that will look at the practical issues and gain hands-on experience in implementing agile concepts and building virtual firms. We are also pleased to see the significant involvement of small firms in the pilot. We all know that small businesses play a crucial role in the overall manufacturing value chain, and it is important for them to participate in activities such as this in a meaningful way.

We are very anxious to work with you in gathering benchmark data on other activities around the country, disseminating information learned in your program, and performing the business case analyses of the activities of the web. We will also help to critique your activities as a way of sharing our expertise and experience. The kind of activity proposed for this demonstration program is key to the AMEF being able to fulfill its mission of promoting agility because it will provide quantifiable and anecdotal evidence of the benefits of this new paradigm of manufacturing.

Please let us know if there are other ways in which we can assist.

Sincerely,





725 State Road • Lehighton, PA 18235

(215) 377-4690 • Fax (215) 377-6875

July 20, 1993

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

Having reviewed the literature entitled 21st Century Manufacturing Enterprise Strategy Vol. 1 & 2 and attending the Agile Web Pilot Program Meeting on July 8, 1993, we at Blue Mountain Machine, Inc. feel very optimistic that the program will enable us to expand our business opportunities in the Northeast Region through the use of the Agile Web we will help to develop.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$ 625.00/week.

We are excited about the potential this project has in advancing manufacturing and competitiveness, and are pleased to be part of this activity.

Sincerely,

A handwritten signature in cursive script that reads "Thomas R. Martin".

Thomas R. Martin,
Sales Manager

A handwritten signature in cursive script that reads "Larry Graver".

Larry Graver,
Secretary/Treasurer

LG/lm

BLUE RIDGE PRESSURE CASTINGS, INC.
BRASS, ALUMINUM AND ZINC DIE CASTINGS



P. O. BOX 208
LEHIGHTON, PENNSYLVANIA 18235 0208

TELEPHONE 1-215-377-2510
FAX 1-215-377-5066

July 21, 1993

Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

ATTENTION: Mr. Dwayne L. Hansen
Director of LINC Partnership

Dear Dwayne,

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

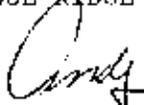
The Web concept and the merits of suppliers who have aligned themselves with appropriate partners is being recognized by our customer base. Web partners will have significant advantage through implementation of agile methods over those suppliers using conventional sub-contract mentality. It is in the building of the appropriate networks that Ben Franklin will assist in accomplishing this endeavor.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$60,000.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Yours very truly,

BLUE RIDGE PRESSURE CASTINGS, INC.


Andrew D. Behler, P.E.
Vice-president Operations

ADB:amr



Cook Specialty Company
North Second Street P.O. Box 129
Green Lane, Pennsylvania 18054-0129
215/234-4535 Fax 215/234-5015

* WIRE PRODUCTS
* WELDED ASSEMBLIES
* STAMPINGS
* TUBE FABRICATION

7/21/93

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18051

Dear Dwayne:

Cook Specialty Company supports your initiative for an Agile Production Web Proposal submitted for ARPA funding as part of the Technology Reinvestment Project (TRP). We wish to stay involved in the consortia which the Ben Franklin Technology Center (BFTC) has organized and are appreciative of its efforts thus far. We agree and are in full support of the BFTC being the prime organizer and funding recipient.

As an associate of the production web, we will commit both management and production resources in order to implement the project objectives. All designated personnel will work closely with other key web associates, suppliers and customers in order to foster a strong agile manufacturing supplier base. An estimate of the in-kind contribution we will be committing amounts to approximately \$45,000.

We are enthusiastic about our involvement in this program and feel it will benefit the Lehigh Valley area. The project should provide a strong basis for quantifying the agile manufacturing concept and advance the manufacturing competitiveness in the region.

Sincerely yours,

Thomas A. Panzarella/BAF

Thomas A. Panzarella
President



July 22, 1993

Dwayne L. Hanson
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

Our corporate philosophy, as stated in our corporate brochure "An Overview of Quality Precision Sheet Metal Fabrication" closely parallels the objective of the web

A PARTNERSHIP APPROACH

Electro-Space Fabricators was founded with our customers in mind. Our personnel, equipment and commitment to quality enable us to become true partners with our customers in terms of designing, developing and manufacturing products which go beyond meeting specifications to providing value-added benefits within any given budget. To us, early vendor involvement is the key to making each end product as competitive as possible, to give our customers the edge in their markets.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of the in-kind commitment to be \$60,000.00.



Page 2
Dwayne L. Hanson
July 22, 1993

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be parts of this activity.

Sincerely,

ELECTRO-SPACE FABRICATORS, INC.

A handwritten signature in cursive script, appearing to read "William J. Straccia III".

William J. Straccia III
President

WJS/hab



Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

July 22, 1993

Dear Dwayne:

General Atronics Corp. (GAC) enthusiastically supports the Agile Production Web Proposal being submitted by the Ben Franklin Technology Center to ARPA under the Technology Reinvestment Project. We support the valuable role the Ben Franklin Technology Center is playing in organizing this activity, and we believe that funding of this proposal will provide valuable resources to defense suppliers, increasing their competitiveness in both the commercial and military markets.

GAC manufactures various electro-mechanical assemblies including circuit card assemblies, electronic chassis, and rack and stack equipments, with specialized skills & capabilities in Data Terminal Communications and Radar Equipments using the latest in Digital Signal Processing (DSP) Technology. We are interested in accessing the technology resources available through the Agile Production Web to assist us in transitioning our primarily military product lines and technologies to a mixed commercial and military environment.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$73,000.

GAC is pleased to be a part of the Agile Web Production activity. We believe that this technology investment will prove invaluable in enabling us to enhance, improve, and gain the information, techniques and skills needed to maintain our productive viability as we transition to a combined commercial and military manufacturing environment. In addition, we are excited about the potential this project has in advancing the productive competitiveness of our entire manufacturing community.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Earl J. Ruckdeschel', is written over the typed name.

Earl J. Ruckdeschel
Director of Operations
EJR/lam



International Business Machines Corporation

P.O. Box 12195
Research Triangle Park, N.C. 27709

Mark Lang
Executive Director
Ben Franklin Technology Center
Lehigh University

7/22/93

Dear Mr. Lang:

Thank you for inviting IBM to attend your July 8th meeting to discuss Agile Manufacturing/Virtual Firm concepts and begin the development of a "Production Web." We are very excited to participate in this supplier support group. The IBM PC Company is continuously searching for ways to reduce the complex logistics of managing a supplier base.

As I recently discussed, the objectives of "Production Web" are directly related to the IBM PC Company procurement strategy to develop a "Full Service" supplier base. We have discovered that we have much to learn and refine in our strategy. We welcome the opportunity to continue discussions with your group with the objective of developing practical applications.

Please feel free to contact me to discuss how we can proceed.

Sincerely,

A handwritten signature in cursive script, appearing to read "Edward P. Brigham", is written over the typed name.

Edward P. Brigham

Lamm's Machine, Inc.

3216 Berger Street • Allentown, Pa. 18103

Tel. (215) 797-2023

Precision Tools, Jigs, Fixtures, Production

DWAYNE L. HANSEN
DIRECTOR, LINC PARTNERSHIP
BEN FRANKLIN TECHNOLOGY CENTER
125 GOODMAN DRIVE
BETHLEHEM, PENNA. 18015

JULY 20, 1993

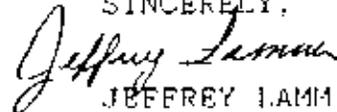
DEAR DWAYNE:

THIS LETTER CONFIRMS OUR SUPPORT AND INVOLVEMENT IN THE AGILE PRODUCTION WEB PROPOSAL BEING SUBMITTED TO ARPA UNDER THE TECHNOLOGY REINVESTMENT PROJECT. WE ARE APPRECIATIVE OF THE ROLE THE BEN FRANKLIN TECHNOLOGY CENTER HAS PLAYED IN ORGANIZING THIS ACTIVITY, AND ARE IN FULL SUPPORT OF YOUR ORGANIZATION BEING THE LEAD ORGANIZATION AND RECIPIENT OF FUNDS IN THIS EFFORT.

THE INVITATION TO THE FIRST MEETING OF THE AGILE MANUFACTURES AND CUSTOMERS WAS A HONOR AND A PLEASURE FOR OUR COMPANY. WE EAGERLY LOOK FORWARD TO OUR PARTICIPATION IN THE PROGRAM AND PLEDGE EVERY EFFORT TOWARDS ITS SUCCESS.

LOOKING AT THE FORMAT OF THE PROGRAM, WE BELIEVE THE CONCEPT WILL REVOLUTIONIZE MANUFACTURING IN ALL ASPECTS OF INDUSTRY AND HAVE A PROFOUND AFFECT ON HOW BUSINESS WILL BE CONDUCTED IN THE FUTURE. WE AT LAMM'S MACHINE ESTIMATE THE VALUE OF THIS IN-KIND COMMITMENT TO BE IN THE RANGE OF \$68,000.00.

SINCERELY,



JEFFREY LAMM
PRESIDENT

THE MATCO GROUP
Incorporated

320 NORTH JENSEN ROAD
VESTAL, NEW YORK 13850

PHONE (607) 729-8973
FAX (607) 729-8981

July 21, 1993

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

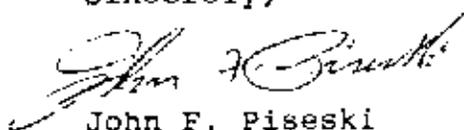
This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

As a contract manufacturer, we subscribe to the Web concept with our customers. We use the term "Partnership" and with our larger customers and suppliers we document partnership agreements. We look forward to working with the customers and suppliers of the Web group to keep the business within Pennsylvania and will appreciate the opportunity to bid upon future bare board and board assembly business.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment of our management personnel to be in the range of \$30,000/yr.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Sincerely,



John F. Piseski
Vice President, Manufacturing

JFP:tpc

cc: B. Smith

Micro Tool Company, Inc.

Precision Manufacturing

July 22, 1993

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

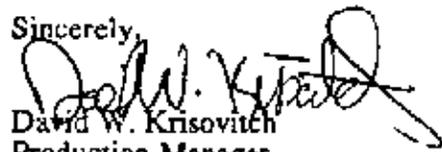
This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity and are in full support of your organization taking the lead and being the recipient of the funds in this effort.

The web concept shows the potential for having the flexibility to meet the tough manufacturing demands of the future. Our company, as a contract machine shop, will fit nicely into this type of organization due to our expertise in turning around products in short times for multiple customers.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$5,000.

We are excited about the potential this project has in advancing manufacturing competitiveness and are pleased to be part of this activity.

Sincerely,


David W. Krisovitch
Production Manager

cc: MTC file



**NEW STANDARD
CORPORATION**

July 22, 1992

Mr. Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization and recipient of funds in this effort.

Through our involvement in this effort, we feel we will be exposed to concepts and challenges which will help us to improve our business approach. As we work with the other companies, there will be the opportunity to share ideas, best demonstrated practices, and experience. This learning/growing experience will not only benefit the companies directly involved, but can also be shared with other companies. This will allow them to model our successes and avoid our mistakes.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$25,000.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Sincerely,

Bob Fletcher
Engineering Manager

■ 125 Pinkerton Road
P.O. Box 420
Mount Joy, PA 17552
717-653-1811
FAX 717-653-4675



PS GROUP, INC.

HILLTOWN INDUSTRIAL PARK • 851 TECH DRIVE • TELFORD, PA 18969-1183

(215) 723-1114 • FAX (215) 723-6913

July 21, 1993

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne,

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

As a System Integrator we will benefit by the involvement with other members of the coalition.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$40,000.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Very truly yours,


Terrance E. McGinn
President



SI / BAKER, INCORPORATED
KESSLERSVILLE ROAD, EASTON, PENNSYLVANIA 18042
PHONE (215) 253-5045 FAX (215) 250-9677

July 21, 1993

Mr. Dwayne Hansen
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

RE: Agile Web Pilot Program

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

SI/Baker is willing to commit to this program as an OEM. We are, however, not in the category of a large firm. We are a joint venture company, equally owned by SI Handling Systems of Easton, PA and Automated Prescription Systems of Pineville, LA. SI/Baker anticipates sales of approximately \$6,000,000.00 in this fiscal year from the sale and installation of Automated Prescription fulfillment systems for the managed care pharmacy market. The firm was incorporated on March 1, 1993 and has its offices in Easton, PA.

SI/Baker is prepared to participate at the senior executive level, in the meetings and advisory functions of the program. We expect the value of this commitment to equal \$10,000.00 per year.

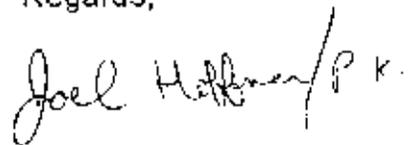
In addition, we will purchase products from the web that meet the specifications, quality, delivery, and cost requirements of applications for our market. The product of immediate interest to SI/Baker is an automated prescription vial labeling system. We believe that up to 25 units per year at a cost of \$25,000.00 each will be purchased from the Web.

The automated vial labeling system is a computer controlled electromechanical device and printer which selects, orients, singulates, and transports a prescription vial to a print station where a label is printed and automatically applied. After printing, the vial is automatically ejected into a tote box. The entire cycle must be accomplished in approximately 2 seconds.

This system does not currently exist; however, proven components are available for integration into the system. The supplier companies in the program would be expected to heavily participate in the product design cycle. Our hope would be that this participation would lead to a more effectively manufactured machine; therefore, being less costly and of high quality.

SI/Baker looks forward to participation in the program. Please advise me of how I can help at this point.

Regards,

A handwritten signature in black ink that reads "Joel Hoffner/P.K." The signature is written in a cursive style with a large initial 'J' and a distinct 'P.K.' at the end.

Joel Hoffner
President/CEO

Attachment

cc: Len Yurkovic (SI)
Rusty Baker (APS)
Gene Fellows

C:\WORDWIN\BFTC002.LTR



STRICK CORPORATION
STRICK FINANCE CO.

225 Lincoln Highway
Fairless Hills
Pennsylvania, USA
19030 0709
215.216.1600

July 19, 1993

Mr. Dwayne Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

We expect that the web program will benefit the Lehigh operation by improving our ability to compete for business requiring expertise or facilities outside our normal range of operations. This will be achieved by forming working agreements with other high quality, progressive manufacturers to share resources in a way which will benefit Strick, the other suppliers, and the customer.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$ 23,000.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Sincerely,


Stephen K. Nelson
General Manager

FABRICATED
PRODUCTS DIVISION

P.O. Box 111
Lehigh, Pennsylvania
18155 0111
717.896.5955
FAX 717.896.2900



SUCKLE CORPORATION

733 Davis Street, Scranton, Pennsylvania 18505

Donald G. Symanski
Vice President

July 20, 1993

Mr. Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

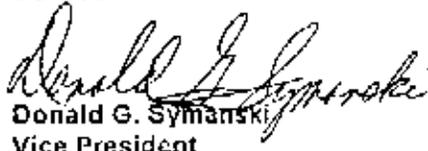
This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

I believe that this initiative will open up new technology and new opportunities for those participating in the project and that it will significantly benefit the economy of the region in the long term.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$30,000.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Sincerely,
SUCKLE CORPORATION


Donald G. Symanski
Vice President

DGS/db

Surtech

INDUSTRIES
INGENUITY • VERSATILITY • QUALITY

July 21, 1993

Dwayne L. Hansen
Director, LINC Partnership
Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015

Dear Dwayne:

This letter confirms our support and involvement in the Agile Production Web Proposal being submitted to ARPA under the Technology Reinvestment Project. We are appreciative of the role the Ben Franklin Technology Center has played in organizing this activity, and are in full support of your organization being the lead organization and recipient of funds in this effort.

Surtech is excited about the "Web" concept. We see several major benefits which can be derived from developing Agile Manufacturing systems.

They are:

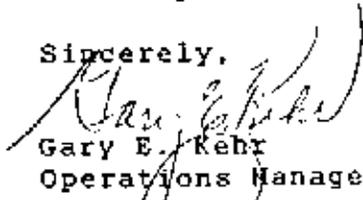
- (1) Better Communications
- (2) Shared development responsibilities
- (3) Shortened leadtimes
- (4) Higher quality - lower cost
- (5) Customer satisfaction
- (6) Capable of competing in a World Market

Our specialty is coatings we are committed to be the best, thru constant improvement, research, and development.

As a member of the production web, we will assign key management personnel to work closely with the web partners and customers in carrying out the objective of the project to build a cohesive and agile supplier base. We estimate the value of this in-kind commitment to be \$2,000.00.

We are excited about the potential this project has in advancing manufacturing competitiveness, and are pleased to be part of this activity.

Sincerely,


Gary E. Kehr
Operations Manager

ALTERNATE DEPLOYMENT PILOT PROJECT

QUARTERLY REPORTING GUIDELINES

_____ **AGILE WEB PILOT PROGRAM** _____

Organization Name

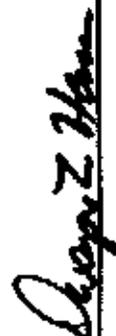
_____ 10/1/94 _____ TO _____ 12/31/94 _____

Reporting Period

Quarterly Report Number _____ 94-4 _____

_____ January 30, 1995 _____

Date of Submission

_____  _____

Director's Signature

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GENERAL INFORMATION

1.1 PILOT INFORMATION

- a. Pilot Name: AGILE WEB PILOT PROGRAM
- b. Pilot Acronym: _____
- c. Date Established: 1/1/1994
- d. Pilot Director: Dwayne L. Hansen
- e. Director's Telephone Number: 610/758-5238

1.2 PUBLIC ACCESS

- a. Mailing Address: Ben Franklin Technology Center
125 Goodman Drive
Bethlehem PA 18015
- b. Street Address (if different): _____
- c. Phone Number: 610/758-5200
- d. Fax Number: 610/861-5918
- e. E-Mail: Dwayne@net.bfp.org

Description of the geographic area in which the Pilot Service focuses its resources
 Participants in the pilot are located in Northeast Pennsylvania and heading New York state, but results from the pilot can be deployed to help small
 and midsize manufacturers across the country.

1.5 TYPE AND NUMBER OF TARGETED MANUFACTURING ESTABLISHMENTS IN TARGET REGION

	<u>Number of Establishments Targeted:</u>	<u>Number of Establishments Targeted:</u>
20XX Food & Kindred Products		30XX Rubber & Misc. Plastics Products
21XX Tobacco Products		31XX Leather & Leather Products
22XX Textile Mill Products		32XX Stone, Clay & Glass Products
23XX Apparel & Textile Products		33XX Primary Metals Industries
24XX Lumber & Wood Products		34XX Fabricated Metal Products
25XX Furniture & Fixtures		35XX Industrial Machinery & Equipment
26XX Paper & Allied Products		36XX Electronic & Other Electric Equipment
27XX Printing & Publishing		37XX Transportation Equipment
28XX Chemicals & Allied Products		38XX Measuring & Controlling Devices
29XX Petroleum & Coal Products		39XX Misc. Manufacturing Industries
XX		XX

Pilot Version 1.0, 15 Apr 94

PILOT SERVICE STAFFING

1.6 NUMBER OF PERSONNEL

0000a. Field Agents or Field Engineers:
 00000000 Provide direct service or outreach in the field

0000b. Technical Specialists:
 Serve pilot needs, utilizing their own expertise

0000c. Management or Support Staff:
 Support pilot but do not provide pilot service

0000d. Total Personnel:
 Summary of a-c above

	<u>Full Time</u>	<u>Part Time</u>	<u>Full Time Equiv. (FTE)</u>
0000a.	1	0	1
0000b.	0	0	0
0000c.	2	2	4
0000d.	3	2	5

1.7 CONTRACTED SERVICES

00000a. Consultants Contracted for Client-related Services

00000b. Consultants Contracted for Pilot Assistance

00000c. NPOs Contracted for Client-related Services

00000d. NPOs Contracted for Pilot Assistance

	<u>Quarter</u>	<u>Cumulative</u>
00000a.	0	1
00000b.	0	5
00000c.	0	1
00000d.	1	5

NOTE: ENTER NUMBER — NOT DOLLAR VALUES — OF CONSULTANTS OR NPOs CONTRACTED.
 "NPOs" REFER TO NON-PROFIT OR NOT-FOR-PROFIT ORGANIZATIONS.

MISSION, SERVICES AND PLANS

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, which we will call "agile manufacturing", through a carefully structured series of pilots carried out through collaboration between a group of large manufacturers, small suppliers, and organizations that can provide business and technical assistance to these two constituencies.

2.2 PROGRESS AND PLANS

With this report, we have completed the first full year of the Agile Web Pilot Program. Progress this quarter has been very exciting. In our last report, we indicated that we were performing an in-depth study of the web members' capabilities and core competencies as well as developing a marketing strategy for the Web. We have worked to finish these activities and analyze our findings. Combining what we have learned in these activities with insights and observations gained through our efforts over the last year (discussions with Web members and potential customers to the Web, Web members working together to bid on pilot orders, the Web simulation activity, etc.), a vision is beginning to crystallize on how a collaborative web of manufacturers can do things differently to create new synergy and value for their customers. The result has been a decision to pursue setting up a new business that would play some key roles in the operation of the Agile Web. A lot of effort has gone into discussing roles, responsibilities, options, and the pros and cons of setting up this type of entity, which is described in this report.

The Agile Web Pilot Program is an effort to set up an "infrastructure for collaboration" that will enable small to midsize manufacturers to transition into agility. It is an R&D, "learn as we go" effort where definite milestones and concrete performance metrics are difficult to define. But, in order for us to really break out of the business-as-usual mindset and discover new and unique business practices, we need something new around which to focus our efforts. Thus, we feel this new business entity is critical to moving the Web forward and meeting the objectives of our TRP program. It also provides our Web members with a long-term vehicle to continue collaboration after the TRP program funding has ended.

This 4th quarter report of the progress made is divided up into several areas of focus. These are: New Business Practices - Agile Web Structure; Cultural Issues of the Web, Understanding Strengths, Weaknesses, and Core Competencies; Pilot Projects; Executive Information Sessions; System Improvement Projects; Program Management; and Program Administration.

MISSION, SERVICES AND PLANS

2.2.1 NEW BUSINESS PRACTICES - AGILE WEB STRUCTURE

Progress: As we have pushed forward in this program, we have come to the conclusion that a unique, new form of a permanent organization is required for the Web to get beyond the benefits of simply pooling our members' capabilities. The concept of a new company will further support our TRP program strategy of learning and developing new business practices in the context of real business opportunities. The opportunity to define how a group of manufacturers and this new, unique company will work together by necessity will keep the focus on developing new business practices that bring long-term competitive advantage. We feel it also provides an added benefit of helping attract new business opportunities from which we can learn.

We envision a for-profit company being established to provide the following value-added services to the Web:

- fulfill the strategic marketing role for the Web, looking for new niches and making sure the Web adjusts to future changes in the market
- screen and pursue appropriate business opportunities for the Web
- serve as the single point of contact for customers to get access to Web competencies
- be fully knowledgeable and up-to-date with all of the core competencies of each of the Web members, especially as the membership grows or members come in and out of the Web
- be able to creatively package these core competencies for specific customer opportunities
- be the entity charged with making the day-to-day decisions on which firms should be teamed to meet the needs of the customers
- look for and suggest new business practices and creative ways of combining core competencies, as well as identify improvements that need to be made within Web member firms or across the Web.
- identify lacking core competencies in the Web and look for new firms that could fill those voids

Our approach to setting up this organization is to treat it as any new business opportunity and develop a business plan around which the entity can be established and run. Significant work from the BFTC staff has been put into developing this business plan. This approach has been very useful in helping us identify key issues facing the Web and outlining proposed solutions to these challenges. We have defined the characteristics that this entity must exhibit so that it can effectively perform the roles and provide the unique competencies noted above. This entity must:

- create an environment of mutual support between the Web and its members so that they see greater business advantages in working together rather than individually
- provide a basis for legal protection without losing flexibility nor the ability for the system to respond quickly and creatively

MISSION, SERVICES AND PLANS

- operate with a minimum amount of cost
- be able to generate its own revenues to cover its operating costs, with excess revenues being passed on and shared by the web members

We have also identified what we believe to be a very unique market niche that the Web can target. We believe that the Web is positioned to provide high value, wide capability, design and manufacturing services, particularly to customers that need:

- easy access, through a single source, to capabilities that can solve a wide variety of problems
- collaborative refinement of the entire product
- initial manufacturing of the product to be done without interrupting existing production lines
- constant product enhancement, refinement, and customization

Investigation into the market points us to the following possible customer bases

- Fortune 500 companies that do significant development of new products with special high-end features or high customization
- Midsized manufacturers that need expertise to refine or redesign their product and want to focus on providing enhanced customer services
- Startup firms that have new, promising products that they need to get to market very quickly and they want to reduce or delay capital investments

The strengths of the Agile Web come from the fact that the Web members can provide a proven range of capabilities and are accustomed to providing extra services to their customers coupled with a Web organization with complementary competencies that can provide a high level of integration to the customer.

Plans: In January, we will present to the Web members a draft business plan on the Agile Web which outlines our best thinking on the issues raised by creating such an entity. We will divide the representatives from the Web member companies into committees to review the plan, discuss and resolve the key issues, finalize the plan, and commit to support it. While we hope this is not the case, we fully recognize that some of the Web members may decide to drop out of the Web when the plan is finalized.

With the business plan written and approved by the Web members and all of the issues worked out, we can then move quickly to set the new company up and try the new approaches out.

MISSION, SERVICES AND PLANS

2.2.2. CULTURAL ISSUES OF THE WEB

Progress: In the last quarterly report, we indicated significant changes in the way some of the Web members are looking at agility and how they are beginning to collaborate in new ways to meet customer needs. We continue to see progress and improvements in this area.

- The "Web Simulation" which we held in October (see Section 2.2.5) turned out to be an excellent forum for the Web members to learn from the experience, and from each other. We have observed an increasing shift to "win-win" thinking as a result of the simulation, with more participants recognizing how all can benefit if we work together. Some have become very firm in the position that if the Web members do not share among themselves sensitive information, such as cost data, they will not be able to truly package the best solution for a customer. Others became even more aware that a key competitive advantage of the Web is offering to the customer value-added that goes beyond just lower price.
 - Many Web members are measuring the level of commitment of others based on how consistently they attend Web meetings and what from level of the organization are those that attend. If a Web member sees that another company is willing to make the time to fully participate in Web activities, that member is more assured that the other company is behind the agility concepts and is willing to expend the effort required to make the Web work.
 - As a result of the Business Practices Review mentioned below, areas where some of the Web members are particularly strong have been identified. These firms have expressed a willingness to present to the other Web members details on their strengths in an effort to help their fellow Web members learn how they can improve in these areas.
 - As a demonstration of confidence in the group, one Web member has decided that it is time for him to bring a potential project from one of his current customers to the Web. He now feels that he can depend upon some of the other Web members to stand behind their commitments.
- Plans:** There are many questions that still remain regarding who the Web will operate and how the Web members will interact. Through the business plan we are finalizing answers to many of these questions. Our process of making the Web members an integral part of defining these business practices will give us all more confidence that these practices will work.

We have recently been talking to companies that are interested in joining the Web to provide needed core competencies. Through this process, we should learn more about what is required for new members to become comfortable with the Web concepts. We will also be able to observe the process required for the new members to become integrated into the Web.

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2.2.3 UNDERSTANDING STRENGTHS, WEAKNESSES, AND CORE COMPETENCIES

Progress: Significant progress has been made in this area, and the information gathered and the learning that has taken place has helped shape our vision of the Web.

- Dr. Roger Nagel of Lehigh University is nearly done with analyzing the information he learned about the core competencies of the Web members. He is devising a method to present the combined core competencies of the entire Web. Through interim presentations and the continual involvement of Dr. Nagel in our process, a lot of this information has been used in the development of the new Agile Web organization and its business plan.
- During this quarter, Jack Mitchell and Associates (JM&A) have completed their analysis of each Web member's operations and presented their individual findings to most of the Web members. A few presentations remain to be made during January, as well as a final report summarizing the strengths and weaknesses from the perspective of the entire Web. Again, while not complete, through presentations and continual involvement of JM&A, this information has been used in the development of new Agile Web business plan.

Plans: To continue making progress in this area, our plans are to do the following during the next quarter of the program:

- Dr. Nagel will finalize his analysis of each firm's core competency and summarize the data to present the core competencies of the entire Web. He will again meet with each of the Web members individually for final verification of his conclusions. The final results of this activity will then be folded into our strategy and plans to market the Web.
- Mitchell and Associates will finish the presentation of their company specific findings to the remaining Web members. A final report of the findings from the perspective of the entire Web will also be given. This information will also be used in our strategy and plans to market the Web, to discover how we might "integrate" these firms to operate as virtual organizations, as well as to identify improvements that need to be made to enhance the capabilities of the Web.

2.2.4 PILOT PROJECTS

Progress: A key strategy of this pilot is to learn from experience as Web members work together on real orders. To date, we have worked on 16 different pilot projects. Four are closed out. Five projects are new this quarter. Twelve of the 16 remain active and are discussed below. Even though we have not yet moved to production in any of these opportunities, they have been extremely valuable. They have helped us learn what types of opportunities are, and are not, good candidates for the unique competencies of the Web. We have also observed how the Web has evolved in doing business. The fact that Web members can refer to actual, concrete examples of

MISSION, SERVICES AND PLANS

having worked together on past opportunities has made our discussions on operations, core competencies, target markets, unique services, etc., much more effective and meaningful. Below is a status of the projects that are still open.

- Tobyhanna Turn Signal-Replicate: A proposal has been developed by the Web and submitted to Tobyhanna. Tobyhanna is waiting for some housing molds to be made and will then make decisions on the production of the units.
- Tobyhanna Turn Signal-New Design: Work is progressing on the redesign of the turn signal. Tobyhanna has required that the work be completed by June of 1995.
- MagiKitch'n New Product: We are still waiting for MagiKitch'n to complete field testing and release the first version of its new product. At that point, when they are ready to begin work on design modifications for the second version of the product, the Web will develop a proposal on how we might be able to provide collaborative design and manufacturing services.
- Tobyhanna Head Lamp Tooling: The Web is waiting for word from Tobyhanna that funds are available for the manufacture of tooling.
- IBM/RTP Network Controllers: IBM did not select the Agile Web as a supplier for these network controllers. While the Web was extremely competitive with a bid from another potential domestic supplier, a bid from an off-shore supplier was selected. The two domestic bids had to include the cost of new tooling, while the off-shore bid was able save significant costs by obtaining existing tooling from the former off-shore supplier. This experience has reinforced our previous conclusions that in a "resupply" mode, it is difficult for the Web to offer the real value-added that comes from a Web. However, we have also seen that, while our target market is not at the resupply end, the Web still can compete effectively on price.
- APD Cryogenics: A lot of interaction among Web members and the customer has taken place. Several Web members have been working to identify what the customer needs, the role each participating Web member might take, and estimated costs. A need for a design modification has arisen, possibly giving the Web another opportunity to support the customer through a collaborative design project. Some other higher priority issues with the product have arisen that the customer needs to address first before they can continue with the Web.
- Magnetic Windings - New Product: After a lot of communication between the customer and a member of the Web, the customer has decided that new product idea is not something they want to pursue. Thus, this pilot project is closed. Our experience does serve to reinforce the risk of targeting the new product development market. These new product ideas do not always make it to the market.
- Armstrong Flooring: This new opportunity involves a firm looking to automate a currently labor intensive operation in their plant. This contract R&D work to design and build machinery to automate this process appeared to be an ideal opportunity for the Web, and

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so the prime contractor to Armstrong contacted the Web. This project could give the Web the opportunity to pull the core competencies of several Web members into a collaborative design process that should give the customer the best solution. Initial meetings have been held with an appropriate member of the Web and the prime contractor who submitted a proposal to Armstrong. We are waiting for a response.

- Blackberry Technologies: We have undertaken another new opportunity with a new start-up venture that has developed a braking device for wheelchairs. They have begun selling the product and are manufacturing the units themselves. Orders are beginning to exceed their manufacturing capacity. The customer also feels that some redesign can reduce the cost of manufacture of the product. They have been put in contact with one of the Web members to look into the cost and performance advantages of casting certain components of the brake assembly. Work continues to examine this option. This pilot project is a good example of a market niche for the Web in providing manufacturing services to start-up companies, which can give them access to collaborative design services and reduce their capitalization requirements.

- Intelevision. A third new opportunity is with another start-up venture looking for manufacturing assistance. Intelevision has developed a new electronic device that can block incoming cable TV signals as selected by the user. This company does not have manufacturing capabilities. Many of the components in the current design are off-the-shelf. Opportunities exist to design custom components to replace the off-the-shelf ones, allowing for reductions in manufacturing costs. We are at the beginning stages of identifying the appropriate configuration of Web members that can participate in this project to best meet the customer's requirements. There are two other opportunities we are pursuing. They are at very early stages, and will be reported on in the next quarterly report.

Plans: Since learning while working on pilot projects is a core strategy of the program, we continue to look for more design and production opportunities. We are confident that the benefits accrued from setting up an Agile Web company and executing our marketing strategy in our defined niches will provide us with the work that we need. We are also aware that the greater risk inherent in new product development and the longer sales cycle as compared to resupply make it more difficult to close a deal. For this reason, we are continuing to pursue production opportunities that may occur as Web members begin bringing business opportunities to others in the Web.

2.2.5 EXECUTIVE INFORMATION SESSIONS

Progress: Since none of our pilot projects had yet reached the production phase, we decided to develop an activity that would "simulate" the entire process from the receipt of an RFQ to the shipping of product. With the help of two local organizational development consultants, Flavio Corrocher and Denny Martin, we developed a one-day workshop to provide this type of simulation. We held a "dry run" of the workshop using people from our core service providers. This allowed us to work out any unforeseen logistical issues as well

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as give these people first-hand insight into the issues of formation and execution of a virtual firm. Taking what we learned from the dry run to enhance the workshop, we held it again with representatives from the Web members.

A fictitious customer informed the Web of a need for the manufacture of a paper product. The operations required to manufacture this product were cutting the raw paper stock, folding the paper into left-hand and right-hand components, assembling these two components into the finished product, and then painting portions of the product with markers. Each participant was then given a profile of a fictitious company of which they were to act as CEO. These profiles contained such information as the firm's core competencies, current business conditions, cost structures, profit margins, etc. There were "competitors" within the group. The group was then charged with coming up with a proposal to the customer to manufacture the paper product.

The group worked together to try to find the optimal solution for the customer, working out which firm would do what portion of the work for how much money, with each firm being allowed to share as little or as much information about their fictitious firm as they wished to share. Upon reaching a proposal acceptable to the customer, the firms involved in the production phase then began to make "product" in such as way as to meet production schedule requirements and product specs.

After these activities, the Web members had a chance to discuss the events of the day, noting their observations and lessons learned. Below are some of the key points discovered:

- To truly come up with the optimal collaborative solution for the customer, sharing of information, such as cost structures or currently available production capacity, is essential
- Trying to give every member of the "Web" some portion of the work may not result in the best solution for the customer
- An important issue in making a Web work is to define the process to make key decisions quickly
- Once into production, good communication and collaboration is critical to provide quality products and can result in cost-saving improvements to the production processes
- A good interface with the customer is absolutely essential in understanding needs and proposing value-added beyond the "build-to-print" services
- The role and the skill set of a coordinator is also very critical and influential in getting the group to come to a good solution quickly
- Participation in the Web is an investment in learning how to prosper in the business environment of the future

Plans: This experience gave us an opportunity to "try out" some ideas we had been considering in the development of Agile Web. Thus, many things discovered or discussed in the simulation have been worked into the Agile Web business plan as proposed ways of operating the Web.

MISSION, SERVICES AND PLANS

2.2.6 SYSTEM IMPROVEMENT PROJECTS

Progress: We have seen that the key to developing new, agile business practices is really about changing cultures and paradigms. Merely introducing technology does not necessarily lead to innovative, agile ways of doing business. While technology is not our major focus, we are making progress on putting technologies in place that can support the cultural shift to agility. These efforts are laying the groundwork and developing experience on several tools that we expect to become more important as we proceed.

- **EDI.** With the assistance of the Electronic Commerce Resource Center (ECRC) at the University of Scranton, we have been running some "test" orders through the Web to give members some hands-on experience in using the EDI and Email capabilities we have provided them. We upgraded each Web member's Supply Tech EDI software to allow multiple trading partner records. Through the test, participating companies created and exchanged Requests for Quotes, Bids, Technical Specifications, Purchase Orders, Purchase Order Acknowledgments, Purchase Order Changes, Shipping Notices, and Invoices using overlays created by the ECRC. Email was used frequently throughout this test for participants to update everyone on their status and describe any problems they were experiencing or questions they had. The test has been an excellent way to (1) identify areas where more training might be required, (2) shake any glitches out of the system, and (3) give personnel at the Web member sites more confidence in using these electronic tools. This, and continued practice runs will better prepare the Web to use the tools when responding to customer opportunities. In fact, several Web members that had no experience with EDI before their involvement the Web are now using EDI with their major customers outside of the Web.

- **Electronic Banking:** We are continuing to work with Meridian Bank on looking at creative things that could be done in the area of financing and banking that would support a Web environment. With the needed focus on developing the Agile Web business plan and the greater involvement needed by the Web members, we have postponed the workshop so as to not overload the Web members with too many activities going on at once.

- **PC Teleconferencing.** We are continuing to look at options into the use of teleconferencing on a PC, and how this technology might be used to improve the Web's agility. No decisions on implementation have been made at this point.

Plans: With the efforts to develop the business and establish the new Agile Web company, we will continue to pursue these activities as time will allow. We also expect that the completion of the Business Practice Reviews will help us identify and prioritize additional improvement projects.

MISSION, SERVICES AND PLANS

2.2.7 PROGRAM MANAGEMENT

Progress: The Advisory Committee (composed of 5 of the Web participants) and our Strategy Team (made up of the Ben Franklin Staff and representatives from some key service providers) continue to meet and are the key source of ideas and plans to move the program forward. We have invited the consultants we are working with to these meetings as appropriate to make sure what they are doing is fully integrated to the plans of the Web.

We have also tried some new approaches to making our time with the Web members more effective by holding informal breakfast meetings with subsets of the Web membership to get into more in-depth discussions and gain more significant feedback from the Web members.

Plans: Not all of the current company representatives to the Web are the CEO or President of the firm. At the suggestion of many of the Web members, we are planning to form a President's Council made up specifically of CEO's. This will insure buy-in into Web strategy and plans at the highest decision making level, which is critical as we move ahead.

We are also forming sub-committees of the Web membership charged with working out solutions to some of the more difficult issues regarding (1) how the new Agile Web organization will be formed, (2) how it will operate, and (3) how to carry out the marketing strategy.

2.2.8 PROGRAM ADMINISTRATION

Progress: We continue to coordinate and communicate with other consortia activities as mentioned in the last report, such as CommerceNet, Kansas Manufacturers Association, Minnesota Technology Defense Conversion, Winrock International in Arkansas, the ASU Pathfinder activities, and University Patents Agility pilot. This sharing of what each group is doing and learning will help all groups improve our programs and increase our successes.

Plans: We will also be meeting soon with people at Texas Instruments involved with the AIMS project to see how we can collaborate for the benefit of both programs.

2.3 NEW SERVICES AND CHANGES IN OPERATION

The Visual Assessor Agility Module described briefly in our previous report promises to be a useful tool to helping firms relate business practices to agility, assess their own businesses, and track improvements over time. The Web Simulation, described in Section 2.2.5, is also expected to be a very useful tool in helping firms learn key concepts in agility and teaming.

MISSION, SERVICES AND PLANS

2.4 METRICS, METHODS, AND OTHER ACTIVITIES

Nothing new regarding the issue of assessing the pilot activities has taken place during this reporting period.

QUARTERLY ACTIVITIES BY TYPE

**3.1 ACTIVITIES INITIATED --
DELIVERY TYPE BY COMPANY SIZE
(In Employees)**

	<u>1-19</u>	<u>20-99</u>	<u>100-249</u>	<u>250-499</u>	<u>>500</u>	<u>Qtr. Total</u>	<u>Cum Total</u>
a. Initial Meetings: <i>Substantive discussions on needs and projects.</i>	<u>1</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>0</u>	<u>13</u>	<u>75</u>
b. Informal Engagements (IEs): <i>Assistance with a limited scope.</i>							
c. Formal Assessments (FAs): <i>Structured diagnostic analyses with project recommendations.</i>	<u>0</u>	<u>4</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>11</u>	<u>31</u>
d. Technical Assistance Projects (TAPs): <i>Activities contracted to resolve specific problems or transfer new or existing technology or techniques.</i>							<u>15</u>
e. Referred TAPs: <i>Pilot refers a TAP to another service provider with little or no involvement in the project execution.</i>							
f. Other Activity Not Elsewhere Classified: Specify: <u>Virtual Firms</u>							<u>20</u>
g. Other Activity Not Elsewhere Classified: Specify: <u>Training</u>	<u>1</u>	<u>6</u>	<u>8</u>	<u>3</u>	<u>0</u>	<u>18</u>	<u>37</u>
h. Other Activity Not Elsewhere Classified: Specify: _____							

NOTE: PROJECTS WHICH INCLUDE ASSISTANCE TO SMES MUST KEEP TYPES a - e., WHILE ADDING "OTHER ACTIVITIES", AS APPROPRIATE. PROJECTS WHICH DO NOT INCLUDE ASSISTANCE ACTIVITIES MUST REPLACE THE TYPES WITH NEW ONES (TO A COMMENSURATE LEVEL OF DETAIL) AS REQUIRED BY THE TESTS/DATA NEEDED TO CONFIRM THE PILOT'S HYPOTHESIS. MULTIPLE CATEGORIES CAN APPLY TO ANY ONE CLIENT

QUARTERLY ACTIVITIES BY CATEGORY

3.2 ACTIVITIES INITIATED - SUBSTANCE CATEGORY BY DELIVERY TYPE	IEs	FAs	TAPs	RIAPs	Training Events	f	g	h	Qtr. Total	Cum Total
a. CAD/CAM/CAE: <i>Computer Aided Design, Manufacturing or Engineering</i>	5								5	16
b. EDI/Communications/LAN: <i>Exchanging data electronically. Computer communications.</i>					2				2	18
c. Business Systems/Management: <i>Business information and logistics flow within an enterprise.</i>	5								5	16
d. Environmental: <i>Environmental assessment of materials, discharge, waste, etc.</i>										
e. Quality/Inspection: <i>The process by which a product is determined to meet specifications.</i>	5								5	16
f. Plant Layout/Manufacturing Cells: <i>Assessing efficient means of manufacturing, assembly, or work flow.</i>	5								5	16
g. Automation/Robotics: <i>Design, development, or application of automation and robotics.</i>										
h. Control Systems/Integration: <i>Monitoring and measurement of a manufacturing process for control.</i>										
i. Market Development: <i>Information resources for new or enhanced markets or products.</i>										
j. Material Engineering: <i>Evaluation and analysis of material applications.</i>										

QUARTERLY ACTIVITIES BY CATEGORY
(CONTINUED)

3.2

**ACTIVITIES INITIATED --
SUBSTANCE CATEGORY BY
DELIVERY TYPE (CONTINUED)**

	<u>IEs</u>	<u>FAs</u>	<u>TAPs</u>	<u>RTAPs</u>	<u>Training Events</u>	<u>f.</u>	<u>g.</u>	<u>h.</u>	<u>Qtr Total</u>	<u>Cum Total</u>
k. Process Improvement: <i>Process evaluation to identify and eliminate time-wasting activities.</i>										7
Product or Design Development: <i>Creation or enhancement of a product.</i>										
m. Human Resources: <i>Management, culture, empowerment, education and training.</i>	5								5	17
n. Other Activities Not Elsewhere Classified: Specify: <u>New Business Practices</u>										
o. Other Activities Not Elsewhere Classified: Specify: <u>Core Competencies</u>	6								6	15
p. Other Activities Not Elsewhere Classified: Specify: _____										
q. Other Activities Not Elsewhere Classified: Specify: _____										
r. Other Activities Not Elsewhere Classified: Specify: _____										

NOTE: THIS FORM SHOULD BE TAILORED BY EACH PILOT PROJECT TO FIT THE PARTICULAR HYPOTHESIS OF THE PROJECT AND THE TESTS/DATA/ANALYSES REQUIRED TO CONFIRM THE HYPOTHESIS. DOUBLE COUNTING IS EXPECTED.

CLIENT FIRMS SERVED DURING QUARTER

FORM 3, PAGE 4

		<u>1-19</u>	<u>20-99</u>	<u>100-249</u>	<u>250-499</u>	<u>>500</u>	<u>Qtr Total</u>	<u>Cum Total</u>
3.3	TOTAL CLIENT FIRMS -- ACTIVITY TYPES ONLY							
a.	Total Served: <i>Delivered activities counted in terms of firms</i>	1	6	5	4	0	16	36
b.	Total Employees at Clients Served: <i>All employees at client firms counted in 3.3a</i>						2,194	5,592
3.4	TRAINING EVENTS -- TOTAL PARTICIPANTS							
a.	Total Client Firms at Training Events: <i>Firms who sent attendees to seminars, lectures, etc.</i>	1	4	4	2	0	11	38
b.	Total Attendees at Training Events: <i>Attendees at seminars, lectures, etc.</i>						18	42
3.5	CLIENT FIRMS SERVED -- ALL CATEGORIES							
	Total Client Firms Served: <i>Total activity client firms (3.3a) and the total training client firms (3.4a) without duplication</i>	1	6	5	4	0	16	53
b.	Total New Client Firms: <i>Clients served for first time</i>	0	0	0	0	0	0	20
c.	Total Defense Client Firms: <i>Defense firms served in any manner</i>	0	2	1	0	0	3	17

NOTE: NO DOUBLE COUNTING. SEE USERS GUIDE FOR DETAILED DEFINITIONS, INCLUDING DEFINITION OF "CLIENT FIRM"

PLOT-RELATED BUDGET ITEMS (OBJECT CLASSES)

	Current Quarter	Year to Date	Estimated End of Year
5.1 Cash Expended	\$274,951	\$822,204	\$822,204
5.2 In-kind Expenditures	\$12,787	\$74,861	\$74,861
5.3 Federal Reimbursements Requested	\$143,759	\$273,759	\$273,759
5.4 INCOME			
5.4.1 Income - Earned	\$0	\$0	\$0
a. Project Fees	\$0	\$0	\$0
b. Training Fees	\$0	\$0	\$0
c. Membership/Sponsorship	\$0	\$0	\$0
d. Other Earned Income:	\$0	\$0	\$0
5.5 EXPENSES - OBJECT CLASSES			
5.5.1 Expenses - Internal			
a. Personnel Expenses	\$84,941	\$295,417	\$295,417
b. Operating - Travel	\$5,722	\$18,495	\$18,495
c. Operating - Equipment & Supplies	\$29,461	\$97,826	\$97,826
d. Operating - Advertising & Marketing	\$0	\$902	\$902
e. Operating - Staff Training	\$3,835	\$19,801	\$19,801
f. Operating - Other:	\$123,959	\$432,441	\$432,441
g. Total Operating Expenses (b-f)			
5.5.2 Expenses - External			
a. Consultant Contracts - Client Services	\$13,090	\$52,435	\$52,435
b. Consultant Contracts - Pilot Services	\$85,075	\$161,052	\$161,052
c. NPO Contracts - Clients Services	\$0	\$0	\$0
d. NPO Contracts - Pilot Services	\$52,827	\$176,276	\$176,276
e. Total External Contracts (a-d)	\$150,992	\$389,763	\$389,763



DEPARTMENT OF THE AIR FORCE

WRIGHT LABORATORY (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO



MEMORANDUM FOR ASC/PA (Ms. Sharon Reed)

FROM: WL/MTII

SUBJECT: Request for Public Release Approval (AFI 35-205)

1. Please review the attached material for public release approval. The following information is provided in support of this request:

a. **CONTRACT # and company name:** F33615-94-2-4412/Ben Franklin Technology Center

Contains DD 254	Yes	No	<u>X</u>
Refers to Security Classification Guide	Yes	No	<u>X</u>

b. **TYPE OF INFORMATION:** (technical paper, journal article, abstract, technical report, etc.): Technical Report

Internet Requests: When requesting public release approval for WWW pages, please submit the request via the WPAFB WWW server. The on-line form to submit the request is available at <http://www.wpafb.af.mil/ascpa/secretary/rr/release-request.html>, or you can access this form by navigating the following links: the Wright-Patt Home Page, ASC Public Affairs, All WPAFB Home Page Requests On-Line.

c. **PRESENTATION TO:** (i.e., for conferences or presentations, give sponsoring organization or technical society, location (city & state), and exact date) (BE SPECIFIC)
for voluntary distribution

NOTE: FOR CLOSED SESSIONS -- PUBLIC RELEASE APPROVAL IS NOT REQUIRED

d. **PUBLICATION AND/OR SUBMITTAL DEADLINE:** N/A

e. **TITLE:** Agile Web Pilot Program, Executive Summary

f. **AUTHOR(S):** (name, title, organization): Mark S. Lang, et al/Ben Franklin Technology Center

g. If co-authored by other government entities (i.e., Army, Navy, NASA, DARPA, etc.), obtain their coordination and attach the signed statement, authorizing public release of this information, to this request.

2. The information contained in this material is complete with figures/legible with photos/text with briefing charts/videos and scripts.

ASC/PA APPROVAL

CLASSIFIED FOR PUBLIC RELEASE
EXCEPT WHERE SHOWN OTHERWISE
- ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED
DATE 11/19/01 BY 60322 UCBAW/AFMC/

GERALD SHUMAKER, Chief
Mfg. & Engineering Systems Division
Manufacturing Technology Directorate

19 MAY 1997



DEPARTMENT OF THE AIR FORCE

WRIGHT LABORATORY (AFMC)
WRIGHT PATTERSON AIR FORCE BASE, OHIO



MEMORANDUM FOR ASC/PA (Ms. Sharon Reed)

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c. **PRESENTATION TO:** (i.e., for conferences or presentations, give sponsoring organization or technical society, location (city & state), and exact date) (BE SPECIFIC)
For use limited distribution

NOTE: FOR CLOSED SESSIONS -- PUBLIC RELEASE APPROVAL IS NOT REQUIRED

d. **PUBLICATION AND/OR SUBMITTAL DEADLINE:** N/A

e. **TITLE:** Agile Web Pilot Program, Final Technical Report

f. **AUTHOR(S):** (name, title, organization): Mark S. Lang, et al/Ben Franklin Technology Center

g. If co-authored by other government entities (i.e., Army, Navy, NASA, DARPA, etc.), obtain their coordination and attach the signed statement, authorizing public release of this information, to this request.

2. The information contained in this material is complete with figures/legible with photos/text with briefing charts/videos and scripts.

ASC/PA APPROVAL

GERALD SHUMAKER, Chief
Mfg. & Engineering Systems Division
Manufacturing Technology Directorate

CLEARED FOR PUBLIC RELEASE
DEPARTMENT OF THE AIR FORCE
AERONAUTICAL SYSTEMS CENTER (AFMC)
OFFICE OF PUBLIC AFFAIRS

19 JUN 1997



Franklin

Building Partnerships for Competitive Advantage

March 26, 1996

George Orzel
WL/MFH
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

This letter is a follow up to the Program Review Meeting held on February 21 with you and Paul Bentley here at the Ben Franklin Center.

I thought the meeting was excellent, and gave us an opportunity to discuss in depth the progress we have made and the lessons learned to-date. I am appreciative of the feedback, support, and suggestions you continually offer to help us insure the program meets its objectives.

I'd like to review some key activities of the Agile Web Pilot Project that we reported on at the meeting.

The first key event and activity of the program is that of the creation of Agile Web, Inc. When we first began the program, we assumed that, in order to maintain flexibility and responsiveness, the Agile Web should operate as a loose confederation of firms. As the program went forward, we worked with potential customers, the Web members, and legal counsel in defining a new and innovative model of how the Web could operate. We learned the following:

Our legal counsel indicated that this loose configuration of firms working together could be interpreted by the courts as an legal partnership, and thereby make ALL Web members (not just those involved in a particular project) jointly and severally liable if anything goes wrong in a project. Thus, forming an independent for-profit corporation can keep the liability where it belongs - with just those firms involved in a particular project.

The customers strongly expressed the need for a single point of contact for the Web that is a legal entity, able to sign contracts, etc.

Once recognizing this need for a corporation, we expended considerable effort developing a model of a new organization that would creatively use standard corporate and contract law in such a way as to provide the flexibility and responsiveness we needed. Consistent with our program objective of actually putting in place and testing in the business environment the new innovative business practices we develop, we incorporated Agile Web, Inc. This entity has been very successful in bringing focus and energy to the Web activities.



Franklin

Building Partnerships for Competitive Advantage

The second major component of our activities is that of attracting business for the Web to work on. Again, the basic premise of our program is to develop and test out our new business practices while the Web members were actually doing real business together. This insures that the new business practices address real issues and also gives us opportunities to see how well they work in a production environment.

Our original expectation was that the large manufacturers that supported us in the TRP proposal would provide the Web with design and/or production orders we needed. However, they, like any other company in today's competitive environment, were not able to merely give us orders. Hence, to meet our program objectives, we needed to go outside our project participants and win business in the real-world competitive environment - both in the defense and the commercial sectors. This required informing the manufacturing marketplace of the concepts of agility embodied in the Web, the objectives of the Agile Web, and its innovative services and capabilities. To this end, we developed brochures, information sheets, trade show displays, etc. There will likely be other things in the future we will also need to do to continue generate interest in the Agile Web.

Our efforts are paying off, and we are working with many potential customers. Our work with these potential customers is giving us excellent opportunities to further the goals of the program by learning more about how the Agile Web should operate and trying out the new business practices we have modeled.

I would appreciate it if you could indicate, by returning this to me with your signature below, that these activities meet with your approval and also meet the specific requirements of the award.

Thanks, again, for all of your help and support.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

Signed: _____ Date: _____
George Orzel



Franklin

"Building Partnerships for Competitive Advantage"

July 12, 1995

Timothy L. Jones
WL/MLKT Bldg. 7
2530 C Street
WPAFB, Ohio 45433-7607

Re **Request for 12 Month No-cost Extension**
Cooperative Agreement Number F33615-94-2-4412

Dear Tim,

Please accept this letter as an official request for a no cost extension for the Agile Web Pilot Project until December 31, 1996. The status of the project and the reasons and justifications for this request are given below

Status of the Agile Web Pilot Project

The pilot project is going very well, and we are very pleased with the progress we have made. Many things have been accomplished in the past 16 months:

- We have an operating Web of 19 small and mid-sized manufacturers that provide a wide range of complementary, as well as competitive, skills that service several industrial sectors.
- The Web members have gotten to know and work with each other, allowing for them to develop excellent working relationships built on trust.
- Because of these relationships we are now seeing Web members, on their own initiative, begin to partner with other web members in order to offer extended capabilities and greater value-added to their existing customers
- We are also beginning to see examples of Web members using their expertise to help other Web members improve their internal processes and relieve bottlenecks
- We have identified a market niche unique to the Web, and are pursuing a strategy to address that market



Promoting Partnerships for Business Advantage

March 15, 1994

▲
New Business
Growth

▲
Manufacturing
Competitiveness

▲
Community
Partnerships

Chris Lay
WL/MLKT Bldg. 7
2530 C Street
WPAFB, Ohio 45433-7607

Dear Chris:

Enclosed are two (2) copies with original signatures of the signature page of our Cooperative Agreement, which when fully executed obligates \$2,000,000 of Federal Funds in support of our **Agile Web Pilot Program**. Once you have obtained the rest of the required signatures, I ask that one of the copies with original signatures be returned to us for our files.

I would like to thank you for your cooperation in working out this agreement. You have been very helpful to us in our first experience in receiving Federal funding.

We are very excited about this program and look forward to two years of continuing to work with your office.

Thanks, again.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

DATE: March 27, 1997

TO: George B. Orzel- Program Manager
Manufacturing Technology Directorate
WRIGHT LABORATORY
WL/MTI Bldg 653
2977 P Street Suite 6
WRIGHT PATTERSON AFB, OH

Timothy L. Jones- Grants Office
The Department of the Air Force
Air Force Materiel Command (ASC)
WRIGHT LABORATORY
WL/MLKT Bldg 7
2530 C Street
WRIGHT-PATTERSON AFB, OH 45433-7607

Gerald Smith- Grants Administration Office
Office of Naval Research Resident Representative (ONRRR)
536 South Clark Street, Rm 208
Chicago, Ill. 60605-1588

FROM: Chris Jones, Controller, NET/BFTC

RE: Agile Web Pilot Program- Final Financial Status Report

In accordance with Reporting Requirements outlined in Cooperative Agreement No. F33615-94-2-4412, please accept the enclosed Final Financial Status Report for the Agile Web Pilot Project.

FINAL FINANCIAL STATUS REPORT- AGILE WEB PILOT PROGRAM- No. F33615-94-2-4412

27 Mar-87

Budget	Expenses	To-Date	Jan84-Mar84	Apr84-Jun84	Jul 84-Sept84	Oct84-Dec84	Jan 85-Mar 85	Apr 85-Jun 85	Jul 85-Sept 85	Oct 85-Dec 85	Jan 86-Mar 86	Apr 86-Jun 86	Jul 86-Sept 86	Oct 86	Q12
SPENDING BY SOURCE OF FUNDS															
Federal Cash Expended	2,000,000	2,000,000	N	0	123,600	143,759	70,807	118,506	124,688	198,148	134,310	318,400	262,806	503,896	
Cash Match Expended	1,500,000	1,437,441	O	193,324	230,129	131,192	57,607	134,829	143,781	113,829	264,283	154,818	-31,409	45,050	
Cash Subtotal	3,500,000	3,437,441		193,324	353,729	274,951	128,414	254,435	268,449	311,977	398,593	473,218	231,397	548,946	
In-kind Match Expended	500,000	666,177		50,451	17,922	12,767	31,968	59,507	76,056	65,354	113,418	28,636	136,586	106,562	
TOTAL SPENDING	4,000,000	4,103,618		243,775	371,651	287,738	160,382	313,942	344,505	377,331	512,009	501,852	367,985	655,538	
Federal - to - Match Ratio (must be <= 1.00)	1.00	0.94	R	0.00	0.50	1.00	0.79	0.62	0.57	1.11	0.36	1.74	2.50	1.97	
SUMMARY OF CASH EXPENSES															
Internal Expenses			P												
Personnel	1,006,168	1,035,506	O	104,796	105,678	84,941	95,164	88,565	128,751	95,663	93,895	38,892	62,418	136,641	
Travel	60,000	57,391	T	11,521	1,253	5,722	6,181	6,925	2,314	6,370	5,440	5,366	1,185	3,104	
Communications	20,500	20,076	R	1,275	1,160	830	3,606	3,510	1,631	1,819	1,310	2,600	1,019	1,415	
Materials and Suppliers	3,500	2,724	R	105	461	94	507	615	30	65	554	197	52	53	
Accounting/Legal Services	48,500	55,247	E	6,350	787	0	3,910	0	0	5,596	15,112	6,751	0	16,741	
Other	40,235	40,011	Q	3,419	2,874	2,905	3,496	3,558	487	2,050	13,675	682	1,645	4,898	
Publication and Printing	47,000	46,016	U	0	502	0	1,469	1,211	879	856	30,045	6,618	1,643	391	
Public Information Services	72,500	92,195	I	0	0	0	239	0	0	0	55,738	20,742	0	15,445	
Rearrangement and Alteration Costs	0	0	R	0	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	1,296,454	1,349,134	E	127,488	113,215	94,582	114,573	106,384	134,092	112,221	215,870	84,058	67,942	17	
External Expenses			D												
Contracts with For-Profit Consultants/ Service Pr	1,546,501	1,463,290		0	119,647	98,165	41,873	116,482	75,390	112,932	121,543	285,808	126,684	334,736	
Contracts with Non-Profit Service Providers	490,045	493,196		65,858	59,468	52,927	-42,205	24,975	53,687	85,504	36,210	84,615	36,771	35,481	
Hardware/Software for Communications Infrastru	165,000	161,849		0	61,399	29,377	14,174	6,584	5,290	1,320	24,970	18,735	0	0	
SUBTOTAL	2,201,546	2,086,307		65,856	240,514	180,369	13,841	146,051	134,357	199,756	182,723	389,158	163,455	370,227	
TOTAL CASH EXPENSES (Federal and Match)	3,500,000	3,437,441		193,324	353,729	274,951	128,414	254,435	268,449	311,977	398,593	473,218	231,397	548,956	



Franklin

Building Partnerships for Competitive Advantage

July 31, 1996

George Orzel
WL/MTII
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

I am pleased to submit this ninth interim report (April 1, 1996 - June 30, 1996) for the Agile Web Pilot Project being funded under the Technology Reinvestment Project (TRP). I have included both a paper copy and the report on diskette.

This last year of the project we are focusing on preparing the Agile Web to operate successfully next year, after the TRP funds run out. Our efforts this past quarter have resulted in excellent progress towards the Web finalizing a working relationship with Lockheed Martin. In parallel with that, the Web companies have made great strides in defining the practices and procedures they will follow when doing business together as a Web. With this groundwork, we can then finalize the Virtual Organization Agreement.

If you have any questions or need more information, please give me a call.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. Hansen".

Dwayne L. Hansen
Director, Manufacturing Initiatives

cc: Michael Hitchcock
Frank Estock
Leo Plonsky
Gerald Stoops
Tim Jones
Mark Lang
Chris Lay

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

AGILE WEB PILOT PROGRAM

Organization Name

7/1/96 TO 9/30/96

Reporting Period

Quarterly Report Number 96-3

October 31, 1996

Date of Submission

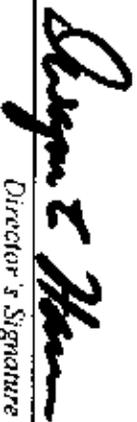

Director's Signature

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APPENDICES

General Information

1.1. Pilot Information

- a. Pilot Name: AGILE WEB PILOT PROGRAM
- b. Date Established: January 1, 1994
- c. Date of Completion: December 31, 1996
- d. Pilot Director: Dwayne L. Hansen
- e. Director's Telephone Number: 610/758-5238
- f. Director's Email Address: Dwayne@met.bfp.org

1.2. Host Organization Information

- a. Mailing Address: Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015
Phone: 610/758-5200
Fax: 610/861-5918

1.3. Participating Web Members

Allen Integrated Assemblies	Jade Corporation	PS Group
Barner Metals	Lamm's Machine	Suckle Corporation
Blue Mountain Machine	Lockheed/Microcom	Surtech Industries
Blue Ridge Pressure Castings	MicroTool	WORLD Electronics
Cook Specialty Company	Paramount Industries	
Electro-space Fabricators	ProtoCAM	
General Atronics Corporation	Pruzer-Painter Stove Works	

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, called "agile manufacturing", through a carefully structured series of pilots carried out through collaboration among a group of large and smaller manufacturers, small suppliers, and organizations that can provide business and technical assistance to the first two constituencies.

2.2 PROGRESS AND PLANS- THROUGH SEPTEMBER 30, 1996- SUMMARY

We have now completed the eleventh quarter of our pilot project. We have organized the data in this report under the four principle dimensions of agility: Enriching Customers, Cooperating to Enhance Competitiveness, Organizing for Change, and Leveraging People and Information, and an additional section for project management issues.

Agile Web president Bill Adams and Ted Nickel of the Ben Franklin staff have continued their effort to build relationships and procure orders from selected customers. In the course of these activities, they have confirmed the existence of a market need and desire for the collaborative, value-added competencies found within the Agile Web, Inc. Bill and Ted have found both small, high-tech companies, as well as Fortune 500 manufacturers in both the commercial and defense markets, which have been eager to partner with the Agile Web. They have found value in addressing a variety of opportunities, from solving manufacturing problems, to industrial design, to product improvement. In the defense arena, we have learned that our most likely customer will be the large prime contractors, rather than the DOD directly.

The keys to success in these ventures has been the ability to identify customer needs both through active listening and proactive searching for opportunities while touring facilities or in other contacts with the customer. While exceeding customer expectations has become a familiar concept, our observations of behaviors demonstrate that it is often difficult to put into practice.

Another key to success for the Agile Web will be their ability to Cooperate to Enhance their Competitiveness. During the past quarter, a team of Web participants have spent a significant number of hours meeting to discuss how the Agile Web should operate. The resulting Operating Principles were presented to and adopted by the Agile Web at a meeting in August. A description of this document is included in an attached case study.

We are finding that the most difficult chore for Agile Web participants in many cases is to learn to approach the customer as a representative of the Agile Web, Inc. and not as that of the individual company. A variety of behaviors have been identified that tend to unintentionally undermine the seamless appearance that the Agile Web seeks to present to the customer. By the same token, a number of examples of excellent team behavior have been exhibited. The lesson learned, however, is that the difficulty of the transition should not be underestimated, particularly in this situation where at one moment the participating company's employee is representing his home company and in the next he or she is representing the combined Agile Web.

In Organizing for Change, we'll discuss the progress and the lessons learned in establishing both an electronic infrastructure for communications and information as well as a quality system based on the ISO-9000 standards. While we've had to and continue to address technical obstacles to completing the systems, the more compelling need is for defining a clear business advantage in utilizing the new technology.

Over the course of the Pilot Program, we have become convinced that the most demanding need is for ways to facilitate not only coping with change, but learning to use change to your advantage. Our change consultants, The Davison Group, have advanced their plans to produce a prototype multimedia, game based, product to help facilitate a company's ability to recognize in advance what it takes to change and how to deal with it. We also continue to learn from our workforce change pilots that are being carried out in two Agile Web participating companies.

Greg Kunkle has released three case studies titled, Developing a Standard Virtual Organization Agreement and Operating Principles in the Agile Web, Coordinating Quality in the Agile Web, and Legal Issues in Agile Collaboration: The Agile Web Pilot Project, which are attached. We have also begun to develop a format for our final report scheduled for submission early next year.

2.2.1 ENRICHING CUSTOMERS- BEING PROACTIVE WITH CUSTOMERS

Progress: As word of the Agile Web spreads, we have been approached by numerous companies exploring ways to partner with us. During these conversations, it has become clear that there is a definite market for the collaborative, value-added services the Agile Web can provide. We are negotiating a proposal to a manufacturer of communications transmission equipment that would have the Web provide preliminary design services leading, in turn, to a production contract in 1997. This project was referred to the Web by one of its sheet metal providers who, by teaming with a number of other Web companies can take part in a project it couldn't have done alone. The customer gains from the association through access to all the production capabilities as well as design expertise in infrared and telecommunications technology. We've also been successful in presenting the Agile Web to another large defense contractor.

In the defense example, the Agile Web used an initial discussion and tour of the facility to identify potential opportunities for collaboration. What was originally a limited second visit to discuss a single problem with one of the Web participants blossomed into an ever-increasing proposal to provide solutions to needs in various coating applications, inventory management, and machining operations. These opportunities were developed largely by proactive probing and the ability and willingness of the Web participant involved to represent all the capabilities of the Agile Web, including those outside of his own company.

We have found that working with the prime defense contractors much more productive than dealing directly with the DLA and other DOD agencies. The vast majority of government opportunities are for specified part numbers and manufacturers. It has proven extremely difficult to develop a productive relationship with the various defense agencies we have worked with. While the BFTC staff continues to work with CECOM, Tobyhanna Army Depot, DSCC's On Demand Project, and the ARL at Penn State, the focus of Bill Adams and the Agile Web's sales efforts have moved to defense primes.

We have also met with several small firms and start-up companies who are seeking both design help and a manufacturing arm to produce new products in a volume that exceeds their current capacity. In some of these projects, the Web has been asked to help enhance the current design to eliminate quality problems.

While the concept has been attractive to a wide range of potential customers, response from the Agile Web participants has not always been adequate to take full advantage of the opportunities. We have found that many have exhibited behaviors inconsistent with the presentation of a seamless virtual company to the customer. In most cases, these behaviors have been well-intended and were not intentionally designed to undermine a collaborative effort. They do provide evidence, however, that making the paradigm shift from only representing their own single company to representing the entire Web is not a simple matter.

For example, we've received non-competitive pricing which has later been lowered, rather than giving the Web their best price immediately. In instances where the company does not really want the work they have communicated their reluctance to do certain operations through over pricing. During Agile Web presentations to a customer, individual company brochures have been handed out, rather than or in addition to the Agile Web brochures and inserts. We've also had instances where a company will insist on using a paradigm unique to their industry, inhibiting the Web's ability to use their capabilities for a customer whose expectations are quite different. Many of these behaviors continued to occur even after they had been pointed out through the discussion of the Operating Principles.

We have begun trying to focus also on customers who are interested in being collaborative and in partnering. A good example is a New Jersey manufacturer of warehouse equipment who has worked with the Agile Web through a number of design issues and is negotiating our proposal rather than approaching the project from the traditional "lowest bid" point of view. We expect to finalize the contract in the next quarter.

Plans: During the final quarter of the project, the Agile Web, Inc. will continue to focus on opportunities that we expect to result in orders in the near term. These customers are those that are seeking the long-term partnering efforts that Agile Web is geared for and who have identified an immediate need. We expect to also maintain contact with other interested companies who have resonated strongly with our message, but with whom we have not yet established a viable project on which to collaborate in the short term. We will continue to document the opportunities and barriers we encounter in the process.

2.2.2 COOPERATING TO ENHANCE COMPETITIVENESS-BEING PROACTIVE IN THE AGILE WEB

Progress: In the last report we explained that a team of Agile Web participants had been formed to establish operating principles that would bridge the gap between the Ethics Statement and a formal contract or Virtual Organization Agreement (VOA). A series of six meetings were conducted by the team. They were facilitated by the Davison Group and the Ben Franklin staff. Detailed documentation was provided by Greg Kunkle. The discussion was based on a series of provocative questions designed to raise real life issues, including several actual incidents within the Web. These discussions led to a consensus on how similar circumstances should be handled in the future.

Once completed, the Operating Principles were presented to the other Agile Web companies at a meeting on August 29th. The team presented and explained the development of each principle and gained acceptance by those attending with minor changes. The Operating Principles are included in a case study titled "Developing a Standard Virtual Organization Agreement and Operating Principles in the Agile Web", attached to this report. Major topics covered in the Principles include: Flexibility in Changing Individual Roles to Satisfy Customers, Project Management, Pricing, Responsibilities, Payments, Liabilities, Insurance, Warranty, Intellectual Property, Quality, Project Teams, and Internal Etiquette and Communications.

As is pointed out in the case study, the challenge has moved from reaching agreement conceptually to putting each principle to the test in practical applications. A key chore for the final three months of the project will be tracking performance against the principles in order to raise participant awareness where traditional practices and the new Operating Principles collide.

Plans: During the final quarter, we will track the performance of the Agile Web against its newly adopted Operating Principles and monitor collaboration and intra-web relationships as the business transitions to self-sufficiency.

2.2.3 ORGANIZING FOR CHANGE- NEW BUSINESS PRACTICES

Progress: With the Quality Policy Manual finalized, we have spent this quarter drafting a Procedures Manual for Agile Web, Inc. Generally speaking, the procedures defer to the individual company procedures for their own internal operations, but such ISO-9001 paragraphs as record keeping, contract review and management responsibility spell out procedures to be completed at the Agile Web level. The manual is currently being reviewed and will be completed during the final quarter of the project.

In regards to the Agile Web communications system, we now have all but two Web companies connected to the Internet and using E Mail. Ten companies are connected through their internal LANs in order to provide access to multiple users. We have one additional company to connect via their LAN.

The video-conferencing capability has been extended to one additional company with the availability of ISDN in their local area. We have been certified for use of the AT&T multi-point video-conferencing "room" which allows more than two sites to conference together. We are currently arranging certification for a small group of Web companies to test multi-point in a collaborative environment.

We have had some technical difficulties in connecting with the Datamatrix server in test mode. Efforts along these lines will continue and we are hopeful of at least proving out the technology, even though the system will not likely be in use for any appreciable time to observe the development of related business practices.

Plans: During Q12, we expect to complete the Quality Procedures Manual. The remaining technology items on the agenda are the multi-point video testing and the NFS connection with the shared database at Datamatrix. We will also be documenting the expected costs of developing a new system from the ground up, based on the lessons learned in this pilot.

2.2.4 LEVERAGING PEOPLE & INFORMATION

Progress: The Davison Group is well into the development of their multi-media prototype. Design work will focus in these areas:

- 1.) Creating a detailed physical layout and architectural map of the manufacturing plant.
- 2.) Creation and production of sample panoramic, photorealistic views within the demo plant.
- 3.) Planning and designing a 3D model of the manufacturing plant.
- 4.) Experimentation and testing of the selected game development application (an object-oriented program); emphasis on player navigation, timing of sound and visual cues, best methods for building scenes, and pre-packaging of "behaviors" to make full use of inheritance of properties that reduce coding time.
- 5.) Enhancing the player interface. Creating a unique combination of vocal, visual, tactile and verbal cues to provide a full, "natural" bandwidth of communication to the player. [Lessons learned: designing the interface is more challenging than in a single player game;

it requires a balance between graphics and cursor sizes that allow effective participation by 3 players, cues that appeal to different "personality types" of screen reading, all the while keeping data storage volume limits in mind. Further, the potential for new user behaviors and new visual consequences requires the creation of new objects (such as icons and cursors); it is challenging to convey to the player that these new objects nevertheless "evolved" from previous discoveries, and build on visual precedents. In other words, the player must be given a sense of supporting predictability, while making discoveries.]

- 6.) Creating effective symbolic representations of the dynamic psychological states and "understandings" that the main character is entering into during his/her progress through the game. [Lessons learned: finding a way to show the main character stepping into another character's point of view; a primary learning feature of the game, requires a "transition scheme" that makes sense visually. One of the best ways to enhance the visual effectiveness of these transitions seems to be to underscore them with sound effects.]
- 7.) Recording, digitizing and editing of interaction sound effects and ambient environmental sounds.
- 8.) Extensive development of personal histories of the characters in the story; and further development of the story line
- 9.) Development of a multimedia demonstration of the game features.

Also, we are continuing to assist one of the Web members with their transformation process to an agile, empowered organization. The process has not been completely unique, but as a pilot, we are introducing agile concepts and lessons learned from the Agile Web in addition to the more typical vision/mission work. For example, the CEO of the company introduced his Mission Team to the Agile Web Operating Principles as a potential guide to creating their own. In an illustration of how merely working on the Mission Team has empowered its members, an hourly worker took it upon himself to get more feedback from the workforce through a lunch-time meeting over pizza. As a result, the Team learned that the workforce was satisfied with the work being done by the team and was supportive even if they were not vocal about it. The CEO made a point of applauding the team member who organized the meeting, further reinforcing the empowered behavior. We are compiling a list of general observations and lessons learned from this pilot.

Plans: By the end of the final quarter we expect to have developed the multi-media prototype to the point where we have a program that demonstrates the proposed interface, and some of the functionality, a multimedia presentation overview of the game, and the documentation to support them. We also are continuing our observation and facilitation of the two transformation pilots.

2.2.5 PILOT PROJECT MANAGEMENT

Progress: Documentation by Greg Kunkle continues with three papers entitled, "Developing a Standard Virtual Organization Agreement and Operating Principles in the Agile Web", "Coordinating Quality in the Agile Web" and "Legal issues in Agile Collaboration: The Agile Web Pilot Project". These three are attached. We expect future case studies from Greg to include the topics of DOD as a Customer Issues and Information Technology.

In addition, we have begun to draft an outline for our final report which is due early next year.

WMA

Dwayne Hansen and Bill Adams (Agile Web) attended the Agile PI meeting in Washington, DC in September. Based on the presentations made during those sessions, we have contacted IBM about the NIIIP project and their Workflow tool and Lockheed about the electronic tools from their ALMS project. Agile Web has offered to act as a test site for both projects.

Plans: During the final quarter of the project, we will be laying out the format and beginning work on the final report. We have begun to review our various improvement projects and other efforts to establish deliverables and a conclusion for each. Documentation of lessons learned has already begun. Agile Web, Inc. will be focusing on a transition strategy to self-sustainment in 1997 in addition to continuing to build customer relationships.

D. Hansen

3.0 AGILE WEB Status of Current Milestones

TASK DESCRIPTION	Milestone	Status as of 31-Mar-96
<p>Establish Agile Web, Inc. Execute Marketing Strategy Develop Marketing Materials Develop/Execute Communication Strategy Identify Appropriate Customers that Fit Profile Identify Value-added Services Tailored to Customer Needs Obtain Contracts for Manufacturing Services</p> <p>Develop New Business Practices Develop/Refine Initial Virtual Organization Agreement Develop a Procedure for Web members with Best-In-Class skills to Help other Web members in that Area Complete Core Competency Identification and Analysis</p> <p>Carry Out System Improvement Projects Web-wide Compatible Quality System Employee "Transformation Training" WWW Tool for Posting and Locating Requests for Services Database Tool to Identify Web Resources/Competencies Web Information/Communication System</p> <p>Write Documentation Business Cases on Lessons Learned Impact of New Business Practices Process of Establishing and Operation a Web</p>	<p>Jun 95 Aug 95 Dec 95 on-going on-going on-going on-going</p> <p>Sept 96 Aug 95 Oct 96 Dec 96 Dec 95 Jul 96 Sept 96 on-going Dec 96 Dec 96</p>	<p>Completed</p> <p>Completed Completed; strategy will be updated as we move forward See Section 4.0 See Section 4.0 See Section 4.0</p> <p>Operating Principles adopted. Complete Delayed due to other priorities.</p> <p>Completed</p> <p>Reviewing final draft of procedures manual in-process; see narrative Completed Complete. Installation completed</p> <p>8 written and released, two more in process</p>

4.0 Numerical Metrics for Agile Web Pilot Program

	TOTAL	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
(1) Number of Qualified Customers Contacted	80	5	0	3	5	5	8	18	8	12	8	10
(2) Source of Customer Leads												
a. New Customers Identified by Agile Web, Inc	59	5	0	3	5	4	7	12	6	7	2	8
b. New Customers Referred to AWI by Web Member	9	0	0	0	0	1	0	2	1	3	0	2
c. Existing Customers of Web Members Brought to Web	12	0	0	0	0	0	1	4	1	2	2	0
(3) Number of Specific Projects Discussed with Customers	74	7	2	1	0	0	4	13	9	18	9	11
(4) Number of Requests for Proposal	53	6	2	0	0	0	4	8	8	10	7	8
(5) Use of Resource Teams												
a. Number of Resource Teams Created	73	7	2	1	1	2	4	12	9	15	9	11
b. Average Number of Firms in Resource Teams	2.4	4	3	3	1	1	2	3	2	2	2	3
c. Number of Creative Solutions offered by Resource Team Beyond what the Customer was Requesting	16	2	0	1	1	0	2	2	1	2	1	4
(6) Number of Proposals for Services Submitted	38	0	3	2	2	0	2	7	5	8	8	3
(7) Number of Proposals Accepted by Customer	8	0	0	1	0	0	0	1	0	1	3	2

OBSERVATIONS:

7. Quarters B-10 have seen a fairly stable amount of activity with a somewhat greater degree of initial contacts in the first quarter of 1996(Q1). In the latest quarter, we have continued to focus on the more promising customers initially contacted earlier. A significant amount of time was expended in Q10 on building a long-term relationship with a large defense prime contractor, as opposed to submitting specific proposals.
8. A high of 8 proposals were submitted, in many cases to customers who we've been working with for some time.
9. The three accepted proposals were all single company contracts for initial work on looking, mechanical sub-assemblies, etc. Although these contracts are not directly with the Agile Web and do not make use of virtual organizations, they are helping to build a relationship with potential future customers of the Web. In many cases, customers wish to test the viability of the Agile Web through email, piece part orders before committing to more complex projects.
10. Activity continues at about the same pace in Q11. Many of the projects being discussed and RFPS received in this quarter have since moved to the bid or contract stage, including the first multi-company Agile Web proposal to be accepted by a customer.

EXPLANATIONS:

1. **Qualified Leads** include only those potential customers that appear to have a need for the Agile Web. It does not include all potential customers that have been contacted about the Web and given brochures, literature, or other information on the Web. It is also a count of the FIRMS we have contacted, even though we may discuss several potential projects with each firm. Each firm is counted only once in the quarter they are first contacted.
- 2a. This metric gives a sense of the value-add of Agile Web, Inc. in identifying new markets and customers for the Web members.
- 2b. This metric shows the value Web members can bring to each other by referring potential business they come across that they cannot do but that others in the Web might be able to do.
- 2c. This metric gives an excellent indicator of the confidence Web members are developing in each other by bringing their customers to the Web for greater services than they can offer alone.
3. Activities are counted in line 3 only if conversations with qualified customers progress to the point where specific projects are discussed. This is a count of Projects, not Firms.
4. This is a count of the number of projects that have progressed to a point where the customer asks for a proposal on the services we can provide and the associated costs.
- 5a. The Resource Team is a unique business practice of the Web that allows us to provide greater value-added to the customer. A team of Web members are pulled together based upon core competencies to creatively examine innovative solutions to better meet customer needs. The team may be formed at any time when working with the customer, either before or after a request for proposal is made by the customer.
- 5b. Size of Resource Teams varies depending on the requirements of the customer and the core competencies of the Web members.
- 5c. This metric gives an indication of the value a customer can receive when working with a creative Web of firms operating under an agile paradigm of learning with the customer to anticipate and exceed expectations, rather than working in a "build-to-print" paradigm.
7. This metric gives an indication of the acceptance of the customer to the Agile Web concepts, and their confidence in selecting the Agile Web as a new supplier.

5.0 ACILE WEB FINANCIAL REPORT

SPENDING BY SOURCE OF FUNDS	Budget	Expenses To-Date	Jan94	Apr94	Jul94	Oct94	Jan95	Apr95	Jul95	Oct95	Jan96	Apr96	Jul96
			Mar94	Jun94	Sep94	Dec94	Mar95	Jun95	Sep95	Dec95	Mar96	Jun96	Sep96
Federal Cash Expended	2,000,000	1,496,104	N	0	123,600	143,759	70,807	119,606	124,689	196,148	134,310	318,400	262,826
Cash Match Expended	1,438,334	1,392,381	O	193,324	230,129	131,192	57,607	134,829	143,791	113,823	284,283	154,816	-31,409
Cash Subtotal	3,438,334	2,888,485		193,324	353,729	274,951	128,414	254,435	268,449	311,977	398,593	473,216	231,397
In-kind Match Expended	561,666	592,035		50,451	17,822	12,737	31,960	59,907	76,056	65,354	113,416	28,596	136,058
TOTAL SPENDING	4,000,000	3,480,579		243,775	371,551	287,738	160,382	313,942	344,505	377,331	512,009	501,852	367,495
Federal - to - Match Ratio (must be <= 1.00)	1.00	0.75		0.00	0.50	1.00	0.79	0.62	0.57	1.11	0.36	1.74	2.5
SUMMARY OF CASH EXPENSES													
Internal Expenses			P										
Personnel	1,041,913	898,955	R	104,798	105,678	84,941	95,164	88,565	128,751	95,653	93,995	38,892	62,418
Travel	80,000	54,287	T	11,521	1,253	5,722	6,181	6,925	2,314	6,370	5,440	5,396	1,155
Communications	20,072	18,550		1,275	1,180	930	3,006	3,510	1,531	1,619	1,310	2,600	1,019
Materials and Suppliers	2,827	2,571	R	105	451	84	507	615	30	65	554	197	52
Accounting/Legal Services	56,509	36,505	E	6,350	787	0	3,910	0	0	5,598	15,112	6,751	0
Other	36,100	35,072	Q	3,419	2,974	2,925	3,498	3,558	487	2,050	13,675	962	1,645
Publication and Printing	48,100	45,825	U	0	902	0	1,489	1,211	679	958	30,045	6,618	1,543
Public Information Services	97,700	76,720	I	0	0	0	239	0	0	0	56,739	20,742	0
Rearrangement and Alteration Costs	0	0	R	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	1,365,221	1,170,405	E	127,468	113,215	94,582	114,573	106,394	134,092	112,221	215,870	84,058	87,942
External Expenses			D										
Contracts with For-Profit Consultants/ Service Providers	1,426,386	1,039,524		0	119,647	93,185	41,973	116,482	75,390	112,932	121,543	285,809	126,684
Contracts with Non-Profit Service Providers	484,878	457,708		65,866	59,488	52,827	42,205	24,975	53,687	85,504	36,210	84,615	36,771
Hardware/Software for Communications Infrastructure	161,849	161,849	D	0	61,369	29,377	14,174	6,594	5,280	1,320	24,970	18,735	0
SUBTOTAL	2,073,113	1,718,060		65,866	240,514	180,369	13,841	148,051	134,357	199,756	182,723	389,159	163,455
TOTAL CASH EXPENSES (Federal and Match)	3,438,334	2,898,485		193,324	353,729	274,951	128,414	254,435	268,449	311,977	398,593	473,216	231,397

C9 In-Kind Match was corrected from \$108,865 to \$113,416.
 D10: Results of internal audit indicated a need to adjust salaries reported to-date downward by \$54,914

APPENDICES

Case Studies

Developing a Standard Virtual Organization Agreement and Operating Principles in the Agile Web

Coordinating Quality in the Agile Web

Legal Issues in Agile Collaboration: The Agile Web Pilot Project

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

AGILE WEB PILOT PROGRAM

Organization Name

4/1/96 TO 6/30/96

Reporting Period

Quarterly Report Number 96-2

July 31, 1996

Date of Submission



Director's Signature

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General Atronics Corporation	Prizer-Painter Stove Works	

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, called "agile manufacturing", through a carefully structured series of pilots carried out through collaboration among a group of large and smaller manufacturers, small suppliers, and organizations that can provide business and technical assistance to the first two constituencies.

2.2 PROGRESS AND PLANS- THROUGH JUNE 30, 1996- SUMMARY

We have now completed the tenth quarter of our pilot project. For this report, we will again organize the data under the four principle dimensions of agility: Enriching Customers, Cooperating to Enhance Competitiveness, Organizing for Change, and Leveraging People and Information, and an additional section for project management issues.

Enriching Customers can be defined as increasing the value you bring to the customer in return for the customer's cost to obtain and use your product. We are continuing to seek out opportunities to apply the full value of the Agile Web to selected projects requiring or benefiting from collaborative problem solving. The Agile Web is focusing on those customers with current or future potential for complex or assembled products where we see the Web as adding value.

The Agile Web has met with a number of manufacturers who are in the market for these enhanced capabilities from their supply chain. In particular, President Bill Adams is working to establish a long term relationship with companies such as Lockheed-Martin and others in both the defense and commercial sectors. It has become more and more apparent that the readiness of a customer to work with its suppliers in an agile manner is critical to applying the full value of the web concept.

The Agile Web continues to demonstrate that Cooperation Enhances Competitiveness. In this dimension of Agility, companies are able to more effectively compete for projects by cooperating with other organizations to create virtual firms of combined competencies. Bill Adams has introduced the idea of Client Development Teams (CDTs) to carry out the initial strategic contact with the customer and work out the best methods of working together. One challenge that the CDTs have had to overcome is the dichotomy of representing both an individual company and the Agile Web. After some initial problems, the Web participants successfully performed as a single team in meetings with Lockheed and another commercial customer. Individual partnering among Web companies without using Agile Web, Inc., also seems to be growing as the companies continue to view each other as partners of choice.

In the Organizing for Change dimension, firms structure themselves in such a way as to readily and rapidly reconfigure to meet opportunities. The Agile Web continues to Organize for Change through the development of new business practices and operational improvements. Currently, we are

- Defining the Web's Operating Procedures pursuant to the adoption of a Virtual Organization Contract for use with members of a virtual organization.
- Documenting the Quality policies and procedures of the Agile Web, Inc
- Deploying the Agile Web Communications and Information System, including the use of shared data bases, video-conferencing, shared applications, and enhanced E Mail capabilities.
- Entering information on company competencies into the Capabilities Database.

Leveraging the Impact of People and Information is the final dimension of agility. In the future, information and the knowledge and skill of the work force will differentiate the ability of firms to compete successfully. In addition to Leveraging Information, we also plan to Leverage People within the individual companies of the Agile Web. The Davison Group has begun to establish the technical parameters of the prototype multimedia product capable of modeling and assisting the change process in other organizations. In the meantime, we have been documenting actual experiences for inclusion in the product. We are also assisting two of the Web companies with workforce change issues. Ted Nickel took part in the 1996 DOD/DLA and Industry Sustainment Conference in Seattle.

We have attached the following documents to this report: Copies of the Quality in Manufacturing article and others, and the latest case study by Greg Kunkle titled, "Agile Web, Inc. in Relation to Global Trends in Cooperative Activity".

2.2.1 ENRICHING CUSTOMERS- BEING PROACTIVE WITH CUSTOMERS

Progress: The highlight of the quarter in terms of enriching customers was an exploratory meeting held June 25th between the Agile Web, Inc. and a major prime defense contractor. Representatives of 16 of the 18 Web companies, with support from BFTC, The Davison, Group, Shaeffer & Associates, WPAPFB, and President Bill Adams met to exchange ideas on how the two companies might work together. The Agile Web offered assistance with product development, value engineering, parts with diminishing manufacturing sources, and commodity procurement. Lockheed also offered the Web access to their group purchasing capabilities. An initial result of the meeting is the expected receipt of an RFP for a specific product, as well as longer term discussions on how to best provide Value Engineering solutions

Long term relationships were also pursued with commercial businesses in the instrument, furniture, and capital equipment industries. The Agile Web failed to procure an order for two initial projects discussed with these potential customers, the Web's performance was impressive enough to encourage the customers to continue working with the Web on future projects. In July, the Agile Web already has meetings scheduled with two additional large customers in Pennsylvania and Kentucky to explore collaborative projects.

One lesson that has been learned in the course of these customer meetings, is the necessity to present the individual members of a resource or client development team as part of a whole and not as a collection of individual companies. In the former case, the Agile Web has been successful in demonstrating to a number of customers, the synergy and value emanating from the Web's collaborative problem solving. In instances where the companies viewed and subsequently addressed potential customers and projects from the perspective of their own companies, the Agile Web was seen in the role of a less value-adding broker. A collaborative mindset and resulting behaviors must be proactively learned and practiced. The un-collaborative behaviors were not consciously planned, but were the result of falling into a "business-as-usual" mode.

The WMTA contract was received by WORLD Electronics, a Web participant, who is working with Paramount Industries and Cook Specialty on the project. Design work and some production is underway. Although this is a variation of the Agile Web model, BFTC staff will be observing the interaction of this collaborative effort among three Web companies. It appears to be the type of value added project at which the Agile Web is developing a competitive advantage through prior planning and collaboration.

As we refine the Agile Web approach to the market, we have begun to sort opportunities into three categories:

- Those to which we can apply the value add of the Agile Web to products requiring multiple competencies and problem solving.
- Those which initially involve piece parts suppliable by a single Web company, but where the Web sees future opportunities for multi-company collaboration.
- Those which can be produced by a single company and there appears to be no need for Agile Web assistance in the future.

In the latter case, the Agile Web will introduce the customer to the individual Web company which can best serve them, but little or no further Web resources will be expended on the project. With those customers where the Web see current or potential opportunities for appropriate Agile Web, multi-company projects, the Agile Web will continue to provide direct services and management for the customer. Examples include manufacturers of car wash controllers and cryogenic equipment who have received single company proposals from Web participants. In these situations, the Agile Web has continued to work with the individual company to procure the order while continuing discussions with the customer concerning entire products or sub-assemblies involving multiple competencies.

While our most productive approach to the defense industry appears to be through a prime contractor, we continue to pursue direct DOD business as well. In order to test the value added nature of the Web, we have met with officials at CECOM, DSCC, and Penn State ARL. CECOM and Tobyhanna Army Depot are developing a list of roughly 50 items which the Agile Web might provide in order to help evaluate CECOM's Intelligent Data project through the FCIM process. We expect to receive initial RFOs in July.

We have also submitted a request to the Defense Supply Center Columbus (DSCC) to be included as a potential supplier to their On-Demand Manufacturing program. The proposal is being evaluated by DSCC and we expect a response within the month.

Finally, MicroTool, a Web participant, is working with Penn State ARL on a joint effort to reverse engineer parts that the DLA no longer has either a source or documentation to produce. A shaft has been procured and is currently being reviewed by ARL to produce specifications and drawings, which MicroTool will use to produce the part. If successful, the Agile Web may be able to produce additional parts for the project.

Plans: During the 11th quarter of the project, the Agile Web, Inc. will continue following two tracks in search of business opportunities. Bill Adams and Ted Nickel are seeking long term relationships with large customers desiring the supply chain management and value add LPD capabilities that the Web can offer. At the same time, they will continue pursuing selected opportunities that arise through BFTC contracts and participant referrals, where the potential for multi-company projects exists now or in the future. We will continue the brainstorming sessions to identify better ways of finding good opportunities.

2.2.2 COOPERATING TO ENHANCE COMPETITIVENESS-BEING PROACTIVE IN THE AGILE WEB

Progress: We have already discussed in the prior section the growing awareness of and ability for the Web company representatives to project a collaborative image to the customer. In a number of presentations to a customer, Web members have been able to tout the capabilities of other Web partners, at least to the extent that they can demonstrate the advantage to the customer of dealing with a "single" entity. At one meeting, for example, Ray Biero of ProtoCAM gave a presentation on rapid prototyping during which he frequently alluded to the technologies and capabilities of other Web companies who might ordinarily be seen as competitors.

Much of the credit for the growing collaborative nature of the Agile Web can be traced to the expansion of business between the participants. Many of the Web companies have begun to do business together outside the formal structure of the Agile Web, dealing directly with each other. These deals have been developing over the past year or so, but seem to have reached a point where they are worthy of greater study. The most immediate effect is the growth of trust and comfort in working together. While not all Web members have done so and the rest have worked with a smaller sub-set of their Agile Web partners, these deals offer opportunities not only to build trust, but to work collaboratively as well.

Plans: During the next quarter, we will attempt to learn more about the individual dealings between Web companies in an attempt to identify new business practices which may have emerged, consciously or unconsciously, during the course of these projects. In addition, we will continue to work with Bill Adams, the Davison Group, and Lehigh University resources to monitor, evaluate, and provide feedback to the Web on their collaborative efforts and behavior.

2.2.3 ORGANIZING FOR CHANGE-NEW BUSINESS PRACTICES

Progress: We continue to develop tools allowing the Agile Web to organize for change. Through use of new business practices and infrastructure, the Agile Web is able to rapidly reconfigure itself to respond to a customer's specific needs. The four tools we are currently working on are the Operating Principles and Virtual organization Agreement (VOA), The Web Quality Policy & Procedures Manual, the Agile Web Communications/Information System, and the Capabilities Database.

During the April meeting of the Agile Web, we presented a draft VOA for the participants' approval. A strong consensus emerged that the document was too negative in that it dealt with recourse for terms and conditions that the Agile Web members generally do not accept in their current businesses. While it was pointed out that the Agile Web would not impose penalties on its subscribers that had not been imposed on it by the customer, the companies were clearly uncomfortable with several of the provisions. As a result, a team was formed to review the VOA and come back to the full membership with recommendations.

The VOA team agreed to approach the issue by going back to the original Ethics Statement and expanding those into a statement of Operating Principles with considerably more detail than the original. It was felt that high level ethical statements needed to be defined more closely to be assured that all members had a common vision of how the Web would operate. If consensus is reached first on how the Agile Web will operate, many of the issues raised in the April meeting will disappear. A VOC, or Virtual Operating Contract, could then be written to formalize those procedures that require a legal structure.

The team, consisting of four Agile Web members and President Bill Adams, has met three times and has scheduled a fourth session to complete the process of defining the Operating Principles. It has proven very helpful to present the team with real-life scenarios based on the principles of the ethics statement, which helps validate our approach of having the participants work together on real business before all of the operating practices have been defined. The team expects to present the proposed Principles to the full Agile Web in August.

The Agile Web Quality Policy has been revised after input from Agile Web, Inc. and based on our experience to date. While many of the procedures will be determined by the individual company procedural manuals, an Agile Web Quality Procedure is being written to explain how the Agile Web will meet its obligations to the customer.

The chief lesson learned in deploying the Agile Web communications system is that nothing is as easy as it seems. We have completed the installation of the video-conferencing system to 15 of the Agile Web sites (all that have ISDN service available). ISDN service recently became available for two of the remaining four, and we hope to have them up and running shortly. We are looking for creative ways to encourage the companies to use videoconferencing and applications sharing to do real business rather than using the system as a novelty. Two members are already using the capability with their own customers.

The Internet connections to the World Wide Web and for E Mail have been more difficult. Those companies which connected from a stand-alone PC are now receiving and sending E Mail successfully. Those with connections through their internal LANs have been more of a problem. In addition, a host of existing LAN problems at several companies were exposed in trying to make the installation. These must be sorted out before we can complete the installations.

The Agile Web WWW server is up and running at Datamatix, but the desktop front-end access is still in development and testing. We expect to have a limited version available shortly for testing.

The Agile Web Capabilities Database has been designed and data is currently being loaded. This MS Access database will allow the Web members and president to quickly determine if a specific competency is available in the Agile Web and at which company(ies) it is located. The data being input was derived from the Core Competency review and the brochure information. The database is designed to allow easy updating as competencies change. The database will be accessible to the Web companies by connecting with the Agile Web server.

Plans: During Q11, we expect to complete the final draft of the Quality Procedures Manual. The Operating Principles should be agreed to as well as the resulting VOAVOC. The Communications system will be installed and we will be developing business practices using its capabilities. Operating and start-up costs will also be documented. The database will be installed on the server and tested.

2.2.4 LEVERAGING PEOPLE & INFORMATION

Progress: The Davison Group is making progress on their prototype software product to assist companies deal with change. The unique feature of the product is its game-like format which allows groups of users to "walk through" a manufacturing firm as a new CEO, making decisions and seeing the results as the game progresses. Much of the value of the product will result from the interaction of the individuals using the game together. In addition to the simulation game, there will be more straight-forward reference material as background information. During the quarter, work has commenced on the scenarios and story line, as well as research into various technical issues.

We have also continued with two projects being piloted by individual Web companies. The Human Resources assessment project has been completed at Prizer-Painter and a report has been received from Northampton Community College. The process, developed in 1994 as part of the pilot, used a series of interviews and an employee survey to define significant issues for the business. We expect to receive ongoing updates on results from Prizer management. The second project is facilitating a company transformation project, including the development of a mission statement and related issues of employee empowerment at Paramount Industries. Agile Web staff are providing

the facilitation with review by the Davison Group. We expect to provide a generic description of the process and results as a deliverable of this project.

We have received a detailed outline from Napoleon Devia of the Iacocca Institute for his report on Core Competency issues, and how to apply our process and lessons learned to future evaluations. Again, this will be a project deliverable which will accompany a future progress report.

We have continued our efforts to learn from others and pass on our own lessons through attendance at the 1996 DOD/DIA and Industry Sustainment Conference held in Seattle, WA. Ted Nickel represented the Agile Web Pilot Program at the conference. One direct result was an invitation to submit a proposal to become a supplier to DSCC's On-Demand Manufacturing program.

Plans: The Davison Group will continue development on the prototype. Connie Faylor and the Ben Franklin Staff have been assisting by providing examples and scenarios of experiences in the face of change, both from the Agile Web and prior industry involvement. The Paramount facilitation will continue and the Prizer results will be documented.

2.2.5 PILOT PROJECT MANAGEMENT

Progress: Documentation by Greg Kunkle continues with a paper entitled, "Agile Web, Inc. in Relation to Global Trends in Cooperative Activity". We expect future case studies from Greg to include the topics of Quality in the Web, the VOA development and results, DOD as a Customer Issues, the legal issues surrounding the Agile Web, and Information Technology.

3.0 AGILE WEB Status of Current Milestones

TASK DESCRIPTION	Milestone	Status as of 31-Mar-96
<p>Establish Agile Web, Inc.</p> <p>Execute Marketing Strategy</p> <p>Develop Marketing Materials</p> <p>Develop/Execute Communication Strategy</p> <p>Identify Appropriate Customers that Fit Profile</p> <p>Identify Value-added Services Tailored to Customer Needs</p> <p>Obtain Contracts for Manufacturing Services</p> <p>Develop New Business Practices</p> <p>Develop/Refine Initial Virtual Organization Agreement</p> <p>Develop a Procedure for Web members with Best-In-Class skills to Help other Web members in that Area</p> <p>Complete Core Competency Identification and Analysis</p> <p>Carry Out System Improvement Projects</p> <p>Web-wide Compatible Quality System</p> <p>Employee "Transformation Training"</p> <p>WWW Tool for Posting and Locating Requests for Services</p> <p>Database Tool to Identify Web Resources/Competencies</p> <p>Web Information/Communication System</p> <p>Write Documentation</p> <p>Business Cases on Lessons Learned</p> <p>Impact of New Business Practices</p> <p>Process of Establishing and Operation a Web</p>	<p>Jun 95</p> <p>Aug 95</p> <p>Dec 95</p> <p>on-going</p> <p>on-going</p> <p>on-going</p> <p>on-going</p> <p>Sept 96 *</p> <p>Aug 95</p> <p>Sept 86</p> <p>Dec 96</p> <p>Dec 95</p> <p>Jul 96 *</p> <p>Sept 96*</p> <p>on-going</p> <p>Dec 98</p> <p>Dec 96</p>	<p>Completed</p> <p>Completed</p> <p>Completed; strategy will be updated as we move forward</p> <p>See Section 4.0</p> <p>See Section 4.0</p> <p>See Section 4.0</p> <p>See Section 4.0</p> <p>VCA Team working on operating principles. To be presented to Web at Aug/Sept meeting</p> <p>Delayed due to other priorities.</p> <p>Completed</p> <p>Policy manual complete in July, procedures by Sept. in-process; see narrative</p> <p>Completed</p> <p>Format complete. Inputting detailed information</p> <p>Installation is in-process; see narrative</p> <p>8 written and released, several in process</p>

4.0 Numerical Metrics for Agile Web Pilot Program

	TOTAL	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(1) Number of Qualified Customers Contacted	70	5	0	3	5	5	8	18	8	12	5
(2) Source of Customer Leads											
a. New Customers Identified by Agile Web, Inc.	51	5	0	3	5	4	7	12	6	7	2
b. New Customers Referred to AWI by Web Member	7	0	0	0	0	1	0	2	1	3	0
c. Existing Customers of Web Members brought to Web	12	0	0	0	0	0	1	4	1	2	4
(3) Number of Specific Projects Discussed with Customers	63	7	2	1	0	0	4	13	9	18	9
(4) Number of Requests for Proposal	45	6	2	0	0	0	4	8	8	10	7
(5) Use of Resource Teams											
a. Number of Resource Teams Created	62	7	2	1	1	2	4	12	9	15	9
b. Average Number of Firms in Resource Teams	2.3	4	3	3	1	1	2	3	2	2	2
c. Number of Creative Solutions offered by Resource Team Beyond what the Customer was Requesting	12	2	0	1	1	0	2	2	1	2	1
(6) Number of Proposals for Services Submitted	35	0	3	2	2	0	2	7	5	6	8
(7) Number of Proposals Accepted by Customer	5	0	0	1	0	0	0	1	0	1	3

OBSERVATIONS:

7. Quarters 8-10 have seen a fairly stable amount of activity with a somewhat greater degree of initial contacts in the first quarter of 1996(Q9). In the latest quarter, we have continued to focus on the more promising customers initially contacted earlier. A significant amount of time was expended in Q10 on building a long-term relationship with a large defense prime contractor, as opposed to submitting specific proposals.
8. A high of 8 proposals were submitted, in many cases to customers who we've been working with for some time.
9. The three accepted proposals were all single company contracts for initial work on tooling, mechanical sub-assemblies, etc. Although these contracts are not directly with the Agile Web and do not make use of virtual organizations, they are helping to build a relationship with potential future customers of the Web. In many cases, customers wish to test the reliability of the Agile Web through small, piece part orders before committing to more complex projects.

EXPLANATIONS:

1. Qualified Leads include only those potential customers that appear to have a need for the Agile Web. It does not include all potential customers that have been contacted about the Web and given brochures, literature, or other information on the Web. It is also a count of the FIRMS we have contacted, even though we may discuss several potential projects with each firm. Each firm is counted only once in the quarter they are first contacted.
- 2a. This metric gives a sense of the value-add of Agile Web, Inc. in identifying new markets and customers for the Web members.
- 2b. This metric shows the value Web members can bring to each other by referring potential business they come across that they cannot do, but that others in the Web might be able to do.
- 2c. This metric gives an excellent indicator of the confidence Web members are developing in each other by bringing their customers to the Web for greater services than they can offer alone.
3. Activities are counted in line 3 only if conversations with qualified customers progress to a point where the customer asks for a proposal on the services we can provide and the associated costs.
4. This is a count of the number of projects that have progressed to a point where the customer asks for a proposal on the services we can provide and the associated costs.
- 5a. The Resource Team is a unique business practice of the Web that allows us to provide greater value-added to the customer. A team of Web members are pulled together based upon core competencies to creatively examine innovative solutions to better meet customer needs. The team may be formed at any time when working with the customer, either before or after a request for proposal is made by the customer.
- 5b. Size of Resource Teams varies depending on the requirements of the customer and the core competencies of the Web members.
- 5c. This metric gives an indication of the value a customer can receive when working with a creative Web of firms operating under an agile paradigm of teaming with the customer to anticipate and exceed expectations, rather than working in a "build-to-print" paradigm.
7. This metric gives an indication of the acceptance of the customer to the Agile Web concepts, and their confidence in selecting the Agile Web as a new supplier.

APPENDICES

Magazine Articles

Quality In Manufacturing March 1996: 21st Century Manufacturing Takes Shape

Case Studies

Agile Web, Inc. in Relation to Global Trends in Cooperative Activity



Franklin

Building Partnerships for Competitive Advantage

April 7, 1996

George Orzol
W1/MTII
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

I am pleased to submit this eighth interim report (January 1, 1996 - March 31, 1996) for the Agile Web Pilot Project being funded under the Technology Reinvestment Project (TRP). I have included both a paper copy and the report on diskette.

This last year of the project we are focusing on preparing the Agile Web to operate successfully next year, after the TRP funds run out. A permanent, full-time president for Agile Web, Inc. is on board and working hard to develop some working relationships with defense primes and commercial customers. We are making good progress, which I think you'll see in the report.

Of particular note, included is a copy of the CNBC broadcast on the Agile Web.

If you have any questions or need more information, please give me a call.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

cc: Michael Hitchcock
Frank Estock
Leo Plonsky
Gerald Stoops
Tim Jones
Mark Lang
Chris Lay

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

AGILE WEB PILOT PROGRAM

Organization Name

1/1/96 TO 3/31/96
Reporting Period

Quarterly Report Number **96-1**

MAY 7, 1996
Date of Submission



Director's Signature

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APPENDICES

General Information

1.1. Pilot Information

- a. Pilot Name: AGILE WEB PILOT PROGRAM
- b. Date Established: January 1, 1994
- c. Date of Completion: December 31, 1996
- d. Pilot Director: Dwayne L. Hansen
- e. Director's Telephone Number: 610/758-5238
- f. Director's Email Address: Dwayne@met.bfp.org

1.2. Host Organization Information

- a. Mailing Address: Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015
Phone: 610/758-5200
Fax: 610/861-5918

1.3. Participating Web Members

Allen Integrated Assemblies	Jade Corporation	Prizer-Painter Stove Works
Banner Metals	Lanni's Machine	PS Group
Blue Mountain Machine	Loral/Microcom	Suekle Corporation
Blue Ridge Pressure Castings	MicroTool	Suretech Industries
Cook Specialty Company	New Standard Corporation	World Electronics
Electro-space Fabricators	Paramount Industries	
General Atronics Corporation	ProtoCAM	

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, called "agile manufacturing", through a carefully structured series of pilots carried out through collaboration among a group of large and smaller manufacturers, small suppliers, and organizations that can provide business and technical assistance to the first two constituencies.

2.2 PROGRESS AND PLANS- THROUGH DECEMBER 31, 1995 SUMMARY

We have now completed the ninth quarter of our pilot project. For this report, we will again organize the data under the four principle dimensions of agility: Enriching Customers, Cooperating to Enhance Competitiveness, Organizing for Change, and Leveraging People and Information, and an additional section for project management issues.

Enriching Customers can be defined as increasing the value you bring to the customer in return for the customer's cost to obtain and use your product. We are continuing to seek out opportunities to apply the full value of the Agile Web to selected projects requiring or benefiting from collaborative problem solving. That value is sometimes in the form of design assistance such as the Allen-Stevens casement window hardware, and sometimes in supply chain management as shown in the WMATA example.

With the hiring of William Adams as President of the Agile Web, Inc., we are now able to pursue more targeted relationships with larger companies. Bill is drawing on his many contacts in the defense prime industry to form long-term opportunities for the Agile Web to manage and supply product for companies such as Lockheed-Martin. At the same time, Tod Nickel continues to work with regional customers looking for the added value a collaborative web can provide

The Agile Web continues to demonstrate that Cooperation Enhances Competitiveness. In this dimension of Agility, companies are able to more effectively compete for projects by cooperating with other organizations to create virtual firms of combined competencies. The Board of the Agile Web has taken on a more active role in operating the Web. They are conferring with Bill Adams biweekly and were active in his selection. The Agile Web has been focusing on two issues:

- How to market the Web's capabilities
- How to operate the virtual firms through a VOA

In the Organizing for Change dimension, firms structure themselves in such a way as to readily and rapidly reconfigure to meet opportunities. The Agile Web continues to Organize for Change through the development of new business practices and operational improvements. Currently, we are

- Reviewing a proposed Virtual Organization Agreement (VOA) drawn up by our legal counsel, with the Web companies. This document will be the focus of our April meeting.

- Assessing the Quality Systems of the Agile Web and how to present it to customers.
- Deploying the Agile Web Communications and Information System, including the use of shared data bases, video-conferencing, shared applications, and enhanced E Mail capabilities.
- Receiving electronic RFQs via EDI from the Tobyhanna Army Depot. To better work with the Depot and other defense procurement agencies, we have attended seminars at Fort Monmouth and the Scranton ECRC. Several of the Web companies are also receiving profiled RFQs via Datamatrix.

Leveraging the Impact of People and Information is the final dimension of agility. In the future, information and the knowledge and skill of the work force will differentiate the ability of firms to compete successfully. In addition to Leveraging Information, we also plan to Leverage People within the individual companies of the Agile Web. We are engaged with The Davison Group in exploring the change process in the Agile Web and the Web companies. In addition to assisting the Web through this transformation, we expect to produce a prototype multimedia product capable of modeling and assisting the change process in other organizations. We are also assisting two of the Web companies with workforce change issues. We also played an active role in the Agility Forum's Annual Conference.

The hiring of a Web President will allow the Agile Web Staff at Ben Franklin to focus more exclusively on the new business practices that are developing. In fact, Bill Adams' arrival has accelerated the focus on agile practices as a requirement of establishing the long-term relationships he sees as essential to the Agile Web's success. During the quarter, we held a full day program review with our program management from Wright Patterson AFB.

We have attached the following documents to this report: A videotape of the CNBC program and a copy of the Industry Week article

2.2.1 ENRICHING CUSTOMERS-BEING PROACTIVE WITH CUSTOMERS

Progress: Our biggest success of the quarter was receiving the letter of intent from the Washington Metropolitan Area Transit Authority (WMATA). The virtual organization will provide a warning system to advise blind patrons of the subway system when they are approaching the edge of the platform or the open door of the train. WORLD Electronics is the actual recipient of the letter of intent. Once the contract with WMATA is in place, WORLD will establish agreements with the Agile Web and the other virtual firm participants - Cook Specialty and Paramount Industries. This project grew out of a request for the manufacture of the electronics of the system, and now includes the entire subassembly and final design work. As a result, WORLD and the Agile Web are providing supply chain management for the entire project, including design enhancements of the electronics and personal receiver worn by the transit authority patron. Cook and Paramount have been working closely with WORLD on a "handshake" to finalize the details of this complex project.

A second project about to close is the manufacture of casement window hardware for Allen-Stevens Corp. In this project, the value-add has been design for manufacturability and performance. We reported last quarter that the customer had stated that working with Agile Web company, Cook Specialty, had taken months off their design cycle. In addition, Cook Specialty worked closely with the customer through various iterations of the design to both improve the product while reducing costs. One innovative proposal being reviewed is the possibility of the customer putting machinery into Cook to perform operations the Web cannot currently provide. We expect a contract to be signed very shortly.

We have also had two customers to whom we had presented unsuccessful proposals earlier, come back with additional projects. Harley-Davidson and Polybac each felt the value of working with the Agile Web was high enough to warrant continuing the relationship. We are preparing quotations for each customer.

We are finding that in many cases, customers want to test the Agile Web by asking for quotes on individual piece parts rather than the value added subassembly and innovative solutions for which the Web is designed. As a result, we often find that their immediate projects are more suitable for reference to a Web company as opposed to handling it as an Agile Web project. It becomes a matter of judging whether there is significant future potential for the kinds of projects the Web is searching for or whether the customer is simply looking for a cheaper build to print source. In the latter case, the Agile Web will likely refer the customer to the appropriate Web company to handle, and possibly receive a small marketing finder's fee.

In the event significant potential is expected, the simple projects can be handled by Web members as a Web project while the Agile Web continues to probe for the better value-added opportunities. An example of this can be seen with a new customer, Innovative Control Systems of Bethlehem. They are currently looking for help with cable harnesses, a job within the scope of a single company. They have given indications, however, of needing assistance at some point on the entire assembly. Their markets seem to be growing, so we are continuing to pursue them as a Web customer.

In the defense area, we have a number of initiatives underway. New president, Bill Adams, is making contact with a number of defense businesses, including several Lockheed divisions, Allied Signal, etc. He is focusing on long term relationships between the customer and the Agile Web. We have also put considerable time into working with Tobyhanna Army Depot on an antenna assembly. We have assembled a team of Web members and known sub-contractors to produce a proposal for this item. We expect to see an RFQ via EDI in the next month. The Penn State ARL Labs have finally been funded and have given us our first part to quote. The shaft is being reviewed by Web participants. To the extent that these parts require highly unusual processes to manufacture, however, the Agile Web may not be the best source, unless they just happen to provide one of those capabilities.

Finally, we have scheduled a meeting with the CECOM people at Fort Monmouth to better understand both their needs and their procurement programs. Two defense suppliers within the Agile Web, General Atomics and Loral/Microcom will be represented at that meeting.

Plans: During the 10th quarter of the project, the Agile Web, Inc. will continue following two tracks in search of business opportunities. Bill Adams and Ted Nickel are seeking long term relationships with large customers desiring the supply chain management and value add that the Web can offer. At the same time, they will continue pursuing selected opportunities that arise through BFTC contacts and participant referrals. We have begun a series of brainstorming sessions to identify better ways of finding good opportunities and operating practices for dealing with customer inquiries.

2.2.2 COOPERATING TO ENHANCE COMPETITIVENESS-BEING PROACTIVE IN THE AGILE WEB

Progress: The Agile Web continues to explore operating practices to gain competitiveness through cooperation. We have entered a new phase in the Web history with the hiring of William Adams as President. His arrival and a number of the business opportunities noted above have accelerated the need to focus on business practices. At our February meeting, the focus was on the marketing function. What we discovered was that a sub-set of Web participants have no internal marketing or sales staff. Their sales effort is through reps or simply word-of-mouth, repeat business from satisfied customers. These organizations tend to have a harder time seeing how they can sell the value of the Web to their customers. Others are more opportunistic by nature and are more able to find larger opportunities in working with their current customers. Within a Web with varying sales philosophies, it may be necessary for each company to contribute to the common goal in differing ways or to be compensated for their direct sales efforts.

The discussion of a Web product at the December meeting led to the presentation of four potential products, in various states of readiness, at the February meeting. After some discussion, the group decided that the Web needed a procedure for evaluating such proposals in the future. An ad hoc team was formed to develop such a procedure. The team has temporarily set this subject aside to focus on the Virtual Organization Agreement outlined in the next section.

The Board of Directors continues to be active. To keep up with the activities of the president, the Board holds a conference call with him at least every other Monday to review progress and establish policy.

Plans: During the next quarter, the Agile Web will be focusing on business development through joint Client Development Teams and operating practices as embodied in the virtual organization agreement (VOA).

2.2.3 ORGANIZING FOR CHANGE-NEW BUSINESS PRACTICES

Progress: We are focusing on three major tools which represent new business practices designed to improve the operation of the Agile Web. These are the Agile Web Quality System, the Virtual Organization Agreement (VOA), and the Communications/Information System.

The Quality project has progressed well during the quarter. All but a few assessments have been completed and action steps have been identified to have each company reach the interim quality level suggested by our consultant. The individual companies are proceeding with improvements as resources allow. Our focus has now turned to further definition of a quality policies and procedures manual for the Agile Web itself. A first draft has been reviewed and is currently being revised. We expect to produce a model which will be useful generically for other "webs" in the future.

A rough draft of a Virtual Organization Agreement has been written by our legal counsel and reviewed by the Agile Web participants. The focus of the April meeting will be on the VOA where we expect to receive feedback as to how the participants will work on a project together. The initial vision is that the resource team composed of Agile Web competencies from various Web companies would simultaneously develop a proposal to the customer and a virtual organization agreement to spell out how the virtual company within the Web would operate and handle certain contingencies. The VOA would, in essence, explain how the customer's contract with the Agile Web would be implemented and all of its terms and conditions passed on to the

individual participants in the project. This would provide a measure of assurance to the new customer, while eliminating misunderstandings and surprises between the suppliers. The review of the VOA will help advance the development of agile business practices because it will force discussion about how the Web participants will work together to provide more value to the customer.

The Communications/Information System is well on its way to implementation. All of the Agile Web systems have been upgraded and have the ProShare videoconferencing and application sharing product installed. We have established contracts for the provision of Internet access through Virginia-based PSCNet. The desktop being developed by Datamatrix has proven more complex than initially expected, but they have made significant progress. Finally, now that the upgrades are complete, Lehigh's CIM Lab can return their focus to the Agile Web Capabilities Database which will eventually reside on the Agile Web server at Datamatrix.

Plans: During Q10, we expect to complete the final draft of the Quality Policy Manual and make a start on procedures. We expect to resolve any problems and come to agreement on a standard VOA for use on Agile Web projects. The Communications system should be capable of videoconferencing and Internet Email shortly for all Web companies. The desktop should also become available during the quarter. The database is projected to be designed with significant amounts of data remaining to be collected and input.

2.2.4 LEVERAGING PEOPLE & INFORMATION

Progress: We have chosen The Davison Group to develop a tool to assist companies in becoming better prepared for the constant change that comes with agility. While they are helping us guide the Agile Web to independence, their main task is the creation of a multimedia prototype tool for cultural migration. They have been observing the change process in the Web and, in addition to their own experience, will use these observations in the creation of a prototype. They are also advising members of the Ben Franklin staff in piloting a change process with Paramour Industries, one of the Web companies.

In addition, the Human Resources Assessment process which was developed for the Agile Web Pilot some time ago, is being used at another Agile Web company, Prizer-Painter, in a test of the procedure. This test is being administered by Northampton Community College, our partner in developing the process. From these three efforts, we expect to produce both lessons learned and tools to assist others in addressing the people side of agility.

In efforts to leverage our own people and information learned by us and others, we have made presentations in a number of different forums. Several of the Ben Franklin staff attended the Agility Forum's Fifth National Agility Conference in March. Mark Lang made a presentation on the Agile Web, and a number of others (Mason Linn, Napoleon Devia, etc.) featured the Agile Web in their remarks. We also presented as part of the poster session. Ted Nickel has also taken part as a presenter to the ARRU Conference at the University of Texas - Arlington, the Small Business Center in Binghamton, NY, and on a panel for the Manufacturing Systems Engineering conference at Lehigh University. Ted was also a participant in a seminar at CECCOM-Fort Monmouth to learn about developments in Federal procurement practices. Based on that contact, we will be meeting with the Logistics group at CECCOM in April.

Finally, the Agile Web was the topic of a feature article in Industry Week magazine which led to a segment on CNBC's Industry Week report during the weekend of March 16-17th. Ted Nickel and several Web company representatives were interviewed and their plants filmed for the program. The resulting publicity generated numerous calls from various individuals and groups interested in collaborative networks or webs in their own region.

Plans: The Davison Group has begun to shift their focus from facilitation of change within the Web to development of the prototype. The Paramount and Prizer pilots will continue. Brainstorming sessions with Dr. Roger Nagel and others will begin during April to glean lessons learned both to improve Agile Web operations, and to document them for future quarterly and final reports.

2.2.5 PILOT PROJECT MANAGEMENT

Progress: We held a Program Review with our DOD program manager, George Orzel, on February 21st. The report led to an exchange of ideas on what remains to be accomplished during the pilot project. We specifically decided to continue efforts to work with the DOD procurement agencies and depots to identify ways in which the Agile Web and similar collaborative groups could provide value to the DOD. We will also explore the likely costs to start-up and operate a "web" building on the foundation provided by this pilot.

Other changes to come about during the quarter begin with the hiring of Bill Adams as President of the Agile Web, Inc. Bill, who came to the Web from Lockheed-Martin Corporation, has begun building the focused long-term sales effort with a number of defense and commercial prime contractors. He plans to assemble Client Development Teams at the April meeting of the Web to develop and pursue a strategy for these long-term relationships.

Greg Kunkle, who has been documenting our case histories through the Agility Forum has taken a teaching position at Lehigh University and will continue documenting lessons learned for us directly.

Steve Yoh, a member and former Chairman of the Agile Web Board of Directors is leaving Surtch Industries and has relinquished his position on the Board as a result. The vacancy will be filled by Joe Radu, owner and CEO of WORLD Electronics. Steve has been a strong proponent of the Agile Web and will be missed. Surtch plans to continue as an Agile Web participant.

We have, however, had a company leave the Agile Web. New Standard Corporation, a part of the pilot from the beginning, has decided to pursue a different strategy, focusing its efforts on a number of large customer opportunities that have arisen outside of the Agile Web program. They remain open to supplying their core competencies to Web projects as a known sub-contractor, but felt they had to reallocate their resources to their other business opportunities.

3.0 AGILE WEB Status of Current Milestones

TASK DESCRIPTION	Milestone	Status as of 31-Mar-96
<p>Establish Agile Web, Inc.</p> <p>Execute Marketing Strategy</p> <ul style="list-style-type: none"> Develop Marketing Materials Develop/Execute Communication Strategy Identify Appropriate Customers that Fit Profile Identify Value-added Services Tailored to Customer Needs Obtain Contracts for Manufacturing Services <p>Develop New Business Practices</p> <ul style="list-style-type: none"> Develop/Refine Initial Virtual Organization Agreement Develop a Procedure for Web members with Best-In-Class skills to Help other Web members in that Area Complete Core Competency Identification and Analysis <p>Carry Out System Improvement Projects</p> <ul style="list-style-type: none"> Web-wide Compatible Quality System Employee "Transformation Training" WWW Tool for Posting and Locating Requests for Services Database Tool to Identify Web Resources/Competencies Web Information/Communication System <p>Write Documentation</p> <ul style="list-style-type: none"> Business Cases on Lessons Learned Impact of New Business Practices Process of Establishing and Operation a Web 	<p>Jun 95</p> <p>Aug 95 Dec 95</p> <p>on-going on-going on-going</p> <p>Jul 96 *</p> <p>Aug 95</p> <p>Apr 96 Dec 96 Dec 95 Jul 96 * May 96</p> <p>on-going Dec 96 Dec 96</p>	<p>Completed</p> <p>Completed</p> <p>Completed, strategy will be updated as we move forward</p> <p>See Section 4.0</p> <p>See Section 4.0</p> <p>See Section 4.0</p> <p>documents written; being reviewed by Web for approval Delayed due to other priorities.</p> <p>Completed</p> <p>in-process; see narrative</p> <p>in-process; see narrative</p> <p>Completed</p> <p>Continuing to gather detailed information</p> <p>Installation is in-process</p> <p>6 written and released, several in process</p>

4.0 Numerical Metrics for Agile Web Pilot Program

	TOTAL	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
(1) Number of Qualified Customers Contacted	64	5	0	3	5	5	8	18	8	12
(2) Source of Customer Leads										
a. New Customers Identified by Agile Web, Inc.	49	5	0	3	5	4	7	12	6	7
b. New Customers Referred to AWI by Web Member	7	0	0	0	0	1	0	2	1	3
c. Existing Customers of Web Members brought to Web	8	0	0	0	0	0	1	4	1	2
(3) Number of Specific Projects Discussed with Customers	54	7	2	1	0	0	4	13	9	18
(4) Number of Requests for Proposal	38	6	2	0	0	0	4	8	8	10
(5) Use of Resource Teams										
a. Number of Resource Teams Created	53	7	2	1	1	2	4	12	9	15
b. Average Number of Firms in Resource Teams	2.3	4	3	3	1	1	2	3	2	2
c. Number of Creative Solutions offered by Resource	11	2	0	1	1	0	2	2	1	2
Team Beyond what the Customer was Requesting										
(5) Number of Proposals for Services Submitted	27	0	3	2	2	0	2	7	5	6
(7) Number of Proposals Accepted by Customer	3	0	0	1	0	0	0	1	0	1

OBSERVATIONS:

- Q1 shows the initial thrust to find project opportunities to be used by the Web to begin understanding and identifying new ways of doing business under an agile paradigm. These projects turned out to be very useful in formulating how the Web should be structured and operated.
- Q2 and Q3 was the period where the Web was looking at fulfilling these initial project opportunities, learning about the others in the Web, becoming comfortable with agile concepts and how them might apply in the marketplace. Initial ideas of how to do business differently were being formulated.
- During Q4 and Q5, the business plan development activities made more concrete and formal how the Web would operate and use the new business practices. A lot of effort was put into the details of how the Web members would work together to meet customer needs, what markets fit the capabilities of the Web, etc.
- Agile Web, Inc. was formed in Q6. Energy began to focus on finding new customers and trying out the newly designed business practices and adopted philosophies.
- The increase in numbers in Q6 and Q7 give an indication that the Web members have gained confidence in each other and are committed to using Agile Web concepts.
- Because of the time it takes to develop teaming relationships with customers, an activity with a customer may span quarters. For example, discussions with customers (3), may occur in a quarter later than when the customer was contacted (1), a request for proposal (4) may occur in a quarter later than when the project was first discussed (3), creative solutions (5c) may be offered in a quarter later than when the resource team was created (5a), etc. Consequently, customers included in row (1) will be counted in future quarters in rows (3) through (7), and resource teams counted in row (5a) may offer creative solutions in later quarters (5c).

EXPLANATIONS:

- Qualified Leads include only those potential customers that appear to have a need for the Agile Web. It does not include all potential customers that have been contacted about the Web and given brochures, literature, or other information on the Web. It is also a count of the FRMS we have contacted, even though we may discuss several potential projects with each firm.
 - This metric gives a sense of the value-add of Agile Web, Inc. In identifying new markets and customers for the Web members.
 - This metric shows the value Web members can bring to each other by referring potential business they come across that they cannot do, but that others in the Web might be able to do.
 - This metric gives an excellent indicator of the confidence Web members are developing in each other by bringing their customers to the Web for greater services than they can offer alone.
- Activities are counted in line 3 only if conversations with qualified customers progress to the point where specific projects are discussed. This is a count of Projects not Firms.
- This is a count of the number of projects that have progressed to a point where the customer asks for a proposal on the services we can provide and the associated costs.
- The Resource Team is a unique business practice of the Web that allows us to provide greater value-added to the customer. A team of Web members are pulled together based upon core competencies to creatively examine innovative solutions to better meet customer needs. The team may be formed at any time when working with the customer; either before or after a request for proposal is made by the customer.
- Size of Resource Teams varies depending on the requirements of the customer and the core competencies of the Web members.
- This metric gives an indication of the value a customer can receive when working with a creative Web of firms operating under an agile paradigm of learning with the customer to a unique and exceed expectations, rather than working in a "build-to-print" paradigm.
- This metric gives an indication of the acceptance of the customer to the Agile Web concepts, and their confidence in selecting the Agile Web as a new supplier.

5.0 AGILE WEB FINANCIAL REPORT

SPENDING BY SOURCE OF FUNDS	Budget	Expenses To-Date	Period											
			Jan94-Mar94	Apr94-Jun94	Jul94-Sep94	Oct94-Dec94	Jan95-Mar95	Apr95-Jun95	Jul95-Sep95	Oct95-Dec95	Jan96-Mar96			
Federal Cash Expended	2,000,000	921,298	N	0	130,000	143,759	70,807	119,606	124,668	198,148	134,310			
Cash Match Expended	1,500,000	1,261,890	O	193,324	223,729	131,192	57,807	134,829	143,781	113,145	264,283			
Cash Subtotal	3,500,000	2,183,188		193,324	353,729	274,951	128,414	254,435	268,449	311,293	398,593			
In-kind Match Expended	500,000	422,810		50,451	17,822	12,787	31,968	59,507	76,056	65,354	108,865			
TOTAL SPENDING	4,000,000	2,605,998		243,775	371,551	287,738	160,382	313,942	344,505	376,647	507,458			
Federal - to - Match Ratio (must be <= 1.00)	1.00	0.55	R	0.00	0.54	1.00	0.79	0.62	0.57	1.11	0.36			
SUMMARY OF CASH EXPENSES														
Internal Expenses			P											
Personnel	986,147	797,555	O	104,798	105,676	84,941	95,164	88,565	128,751	95,863	93,905			
Travel	60,000	47,726	T	11,521	1,253	5,722	6,181	8,925	2,314	6,370	5,440			
Communications	20,500	15,041	R	1,275	1,160	930	3,606	3,510	1,631	1,619	1,310			
Materials and Suppliers	3,500	2,422	R	105	461	84	507	615	30	65	554			
Accounting/Legal Services	45,000	31,755	E	6,350	787	0	3,910	0	0	5,596	15,112			
Other	40,566	32,565	O	3,419	2,974	2,905	3,498	3,558	487	2,050	13,675			
Publication and Printing	50,000	35,364	U	0	902	0	1,469	1,211	879	858	30,045			
Public Information Services	72,500	55,978	I	0	0	0	239	0	0	0	55,739			
Rearrangement and Alteration Costs	0	0	R	0	0	0	0	0	0	0	0			
SUBTOTAL	1,257,213	1,018,405	E	127,468	113,215	94,582	114,573	106,384	134,092	112,221	215,870			
External Expenses			D											
Contracts with For-Profit Consultants/ Service Providers	1,491,445	686,032	D	0	119,647	98,165	41,873	116,482	75,390	112,932	121,543			
Contracts with Non-Profit Service Providers	586,342	336,322		65,856	59,468	52,827	42,205	24,975	53,687	85,504	36,210			
Hardware/Software for Communications Infrastructure	165,000	142,430		0	61,399	29,377	14,174	6,594	5,280	636	24,970			
SUBTOTAL	2,242,787	1,164,783		65,856	240,514	160,369	13,841	148,051	134,357	199,072	182,723			
TOTAL CASH EXPENSES (Federal and Match)	3,500,000	2,183,188		193,324	353,729	274,951	128,414	254,435	268,449	311,293	398,593			

APPENDICES

Magazine Articles

Industry Week, March 4, 1996: The Agile Web: A Model For The Future?

Video Tape

IT's Management Today, March 16, 1996: CNBC



Franklin

Building Partnerships for Competitive Advantage

January 31, 1996

George Orzel
WL/MTII
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

I am pleased to submit this seventh interim report (October 1, 1995 - December 31, 1995) for the Agile Web Pilot Project being funded under the Technology Reinvestment Project (TRP). I have included both a paper copy and the report on diskette. We continue to make exciting progress on this project.

Of particular note, in the appendix of the report is another business case written by Greg Kunkle of the Agility Forum documenting the key lessons learned during our efforts to understand and document the core competencies of the Agile Web.

If you have any questions or need more information, please give me a call.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

cc: Michael Hitchcock
Frank Estock
Leo Plonsky
Gerald Stoops
Tim Jones
Mark Lang
Chris Lay

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

AGILE WEB PILOT PROGRAM

Organization Name

10/1/95 TO 12/31/95
Reporting Period

Quarterly Report Number **95-4**

January 31, 1996
Date of Submission



Director's Signature

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APPENDICES

General Information

1.1. Pilot Information

- a. Pilot Name: AGILE WEB PILOT PROGRAM
- b. Date Established: January 1, 1994
- c. Date of Completion: December 31, 1996
- d. Pilot Director: Dwayne L. Hansen
- e. Director's Telephone Number: 610/758-5238
- f. Director's Email Address: Dwayne@net.bfp.org

1.2. Host Organization Information

- a. Mailing Address: Ben Franklin Technology Center
125 Goodman Drive
Bethlehem, PA 18015
Phone: 610/758-5200
Fax: 610/861-5918

1.3. Participating Web Members

Allen Integrated Assemblies	Jade Corporation	Prizer-Painter Stove Works
Banner Metals	Lannin's Machine	PS Group
Blue Mountain Machine	Loral/Microcom	Suekle Corporation
Blue Ridge Pressure Castings	MicroTool	Surtech Industries
Cook Specialty Company	New Standard Corporation	World Electronics
Electro-space Fabricators	Paramount Industries	
General Atronics Corporation	ProtoCAM	

2.0 OBJECTIVES, PROGRESS, AND PLANS

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, called "agile manufacturing", through a carefully structured series of pilots carried out through collaboration among a group of large and smaller manufacturers, small suppliers, and organizations that can provide business and technical assistance to the first two constituencies.

2.2 PROGRESS AND PLANS- THROUGH DECEMBER 31, 1995- SUMMARY

We have now completed the eighth quarter of our pilot project. For this report, we will again organize the data under the four principle dimensions of agility: Enriching Customers, Cooperating to Enhance Competitiveness, Organizing for Change, and Leveraging People and Information, and an additional section for project management issues.

Enriching Customers can be defined as increasing the value you bring to the customer in return for the customer's cost to obtain and use your product. The supplier prices his product as a percentage of the value received rather than a cost plus margin basis. Judging the value received by the customer from our proposed solution is often difficult, especially since we are dealing with many of these customers for the first time. We have begun to consider such criteria as we develop our proposals, but it may well be that value pricing will not be viable until we have established a closer relationship with customers through repeat business.

The pace of customer contacts has continued as both Web participants and the Agile Web itself identify potential customers. The current search for a permanent Agile Web president is expected to be completed early in 1996. This individual will greatly assist in generating and responding to potential opportunities.

The Agile Web continues to demonstrate that Cooperation Enhances Competitiveness. In this dimension of Agility, companies are able to more effectively compete for projects by cooperating with other organizations to create virtual firms of combined competencies. In addition to examples reported in earlier reports, WORLD Electronics has utilized the added competencies of the Agile Web to present a complete proposal to the Washington, DC transit authority to provide warning devices for blind patrons as they approach the edge of the subway platform. In another example, Blue Ridge Pressure Casting has proactively identified an opportunity with a major auto manufacturer and asked the Agile Web to approach their customer with a proposal to provide a complete sub-assembly, rather than the single cast component currently supplied by Blue Ridge.

In the Organizing for Change dimension, firms structure themselves in such a way as to readily and rapidly reconfigure to meet opportunities. The Agile Web continues to Organize for Change through the development of new business practices and operational improvements. Currently, we are

- Reviewing a proposed Virtual Organization Agreement (VOA) drawn up by our legal counsel.
- Assessing the Quality Systems of the participating companies to be able to present a common Web Quality System and manual.
- Developing an Agile Web Communications and Information System, exploring the uses of shared data bases, video-conferencing, shared applications, and enhanced E Mail capabilities.
- Evaluating Cultural Transformation proposals to assist with the task of helping people within organizations cope with and thrive on the constant change in the agile world of the 21st century.

Leveraging the Impact of People and Information is the final dimension of agility. In the future, information and the knowledge and skill of the work force will differentiate the ability of firms to compete successfully. In addition to Leveraging Information, we also plan to Leverage People within the individual companies of the Agile Web. In the course of working together on both business and improvement activities, awareness and understanding of the Agile Web has penetrated deeper into each organization. In addition to the Information System and Cultural Transformation mentioned above, we have also developed a sales training outline and piloted it with two Web companies.

The hiring of a Web President early next quarter will allow the Agile Web Staff at Ben Franklin to focus more exclusively on the new business practices that are developing. With the proposals for the Information System and the Cultural Migration Project taking shape, we now have a pretty clear picture of the balance of the project. No additional major improvement projects are anticipated. We will be focusing on completing those improvements, testing the Agile Web through actual business, and documenting the lessons we have gleaned from the pilot project.

We have attached the following documents to this report: the Agile Web brochure inserts, an explanation of the proposed Agile Web Communication System, two case studies by Greg Kunkle entitled, *Developing 'Trust' Among Members of Agile Web*, *Understanding and Capitalizing on Core Competencies in the Agile Web*, and the latest magazine articles.

2.2.1 ENRICHING CUSTOMERS- BEING PROACTIVE WITH CUSTOMERS

Progress: Early in October, the Agile Web, Inc. delivered an order of circuit board stiffeners to the Tobyhanna Army Depot on schedule. As noted in our previous report, this order represented the first product produced by the new entity. In addition to the significant cost savings discussed in the last report, the parts passed inspection with flying colors. We have since received payment for the project.

There have been several examples of the Agile Web enriching its potential customers with value added service. In one instance, a manufacturer of window hardware for the construction and replacement markets approached the Agile Web to bid on several parts of a sub-assembly for a new product. Upon judging that the customer had not settled on a final design for their product, the Agile Web formed a resource team consisting of Cook Specialty and Moldmatic, an associate company to the Web. The team met with the customer on several occasions and made suggestions for manufacturing a difficult product economically. In doing so, the Agile Web reduced the customer's target price by 25% and demonstrated to the customer that the process was sound. The customer commented that working with the Agile Web had probably taken months off their typical development cycle. As a result, we have since met with their

gear manufacturer and have been asked to bid on the sub-assembly work as well. We hope to get an order early in 1996 for what could be a substantial quantity of this product.

In another instance of a Web participant taking a proactive stance with a customer, Blue Ridge Pressure Casting has provided the Agile Web with a lead with one of the big auto makers. Blue Ridge is currently providing a cast part to the customer, but has determined that the part is a component of a larger sub-assembly requiring electronics and polymer. By utilizing the expanded capabilities of the Agile Web, Blue Ridge can provide the value of supply chain management by manufacturing the complete sub-assembly. This is a good example of seeking to use knowledge acquired through a current customer relationship to offer greater value using the expanded capabilities of the Agile Web.

We have received additional visibility from articles written by several trade journals, including Design News, Tooling & Production, Quality Progress, and US Tech. In addition, Ted Nickel has been interviewed by the Philadelphia Inquirer, Industry Week, Purchasing, and Compliance Engineering among others for future articles. In response to those and earlier articles, we have received a good number of inquiries on the Agile Web and how our project has evolved. In this way, we have already been able to disseminate our lessons learned to other interested parties around the country. From the media exposure, we have even had inquiries from potential customers in New England and Ohio.

A number of Agile Web companies have been working with Datamatrix, Inc. to register and receive profiled government RFQs via EDI. Although most of the RFQs are for commodity type parts and end products which not many Web participants produce, we hope to receive enough opportunities to establish some lessons learned. We also have continued our contact with the Defense Logistics Agency to search for projects of a mutual interest. We are helping to arrange a meeting between a number of DLA officials and representatives of Soletron, Inc. for a presentation of Soletron's cultural migration strategy. Very early in January, we received two RFQs from DCSC in Columbus, OH and are assembling a resource team to respond.

On the subject of defense work, the military contractors participating in the Agile Web have found it difficult to offer the broader value of an Agile Web solution to their DOD customers. Because of the generally more arm's length relationship of the DOD with their suppliers, it is much more difficult for DOD procurement agencies to understand how the Agile Web could work with them to speed delivery or provide greater value. Questions concerning drawing changes and enhancements for manufacturability cannot be readily answered. This lack of a personal relationship seems to be a significant barrier to the DOD's efforts to obtain the lower cost benefits of the commercial sector. Even in the commercial world, we have found that customers often have cultural changes that must take place in order for them to work with the Web in an agile manner. In what could turn out to be an opportunity to demonstrate that value, we received two RFQs at the very end of December from DCSC in Columbus, Ohio.

During the quarter, we have received eight additional RFQs. We currently have pending projects with Allen-Stevens, Met-Pro, Polybac, Prizer-Painter, Sentrylok, Signal Communications Corp., and the Washington, DC Transit Authority (WAMATA). We have bid on over \$7 million worth of projects. Several of the newer projects would make use of the multi-company strength of the Agile Web, and we are making a strong effort to obtain this type of order.

Plans: During the 9th quarter of the project, the Agile Web, Inc. will expand its marketing effort through the hiring of a permanent president. We also hope to secure contracts for several of the currently active projects which provide good opportunities to assess the multi-company virtual organization around which our project is based. We need to complete a number of these projects through production and shipment in order to evaluate and improve the agile business practices we are developing.

2.2.2. COOPERATING TO ENHANCE COMPETITIVENESS-BEING PROACTIVE IN THE AGILE WEB

Progress: A good portion of the December Web meeting dealt with the possibility of the Web participants combining to produce their own product, either one brought to them by an entrepreneur or one developed internally. While individual levels of interest varied, there was a general consensus that we should explore the possibility of providing assistance beyond mere design and production, including creative financing and other management assistance. This represents another aspect of cooperation to enhance competitiveness, enabling Web participants to come together to take advantage of market opportunities far beyond the resupply mode. We expect to continue this discussion at a later Web meeting.

Individual participants also continue to partner opportunistically outside the structure of the Agile Web, Inc. WORLD Electronics approached the Agile Web for help in locating someone with the capability of conformal coating PCBs. It was determined that Loral/Microcom, a Web participant located near WORLD had that capability and they are now working together as needed. Electro-Space Fabricators and ProtoCam are also combining their talents on joint projects.

The Agile Web participating companies have had to consider how their approach to marketing could be enhanced by offering the expanded capabilities of the full Agile Web. A number of companies have initiated training for their sales force in conjunction with Connie Faylor of the Ben Franklin Agile Web staff. Connie has piloted the training process with Surtech Industries and Paramount Industries during the past quarter.

The Agile Web Board of Directors have also been active during the quarter. They met on December 6th and reviewed the recommended candidates for the position of President. The Board directed Ted Nickel to interview the leading 12 candidates by phone. Subsequently, it was decided that the entire Board would personally interview the six leading candidates early in January. The Board also accepted a proposal from their insurance carrier to provide Directors & Officers Insurance, but plans to further investigate the subject of Liability coverage. Because of the breadth of potential products the Agile Web may produce, it is difficult for an insurance provider to calculate the potential risk.

Ted also presented a preliminary budget for 1996. The Board will study the budget and make their decision at a later meeting. The projected costs are just under \$200,000.

In addition, Charles Hagan has resigned from the Board and has been replaced by Earl Ruckdeschel of General Atomics Corporation. As planned, Jim Williams will replace Steve Yohse as Board Chairman For the first six months of 1996. Steve remains a member of the Board.

Plans: The Agile Web, Inc. will hire a president during the next quarter. The idea of an Agile Web product will be explored in future sessions. We will continue to track and note examples of creative partnering within the Web as situations arise.

2.2.3 ORGANIZING FOR CHANGE- NEW BUSINESS PRACTICES

Progress: We are focusing on three major tools which represent new business practices designed to improve the operation of the Agile Web. These are the Agile Web Quality System, the Virtual Organization Agreement (VOA), and the Communications/Information System.

The Quality project has progressed well during the quarter. All of the Visual Assessor software installations and initial reviews have been completed. We have determined that the first assessment would be most effectively done by having our core partner, Northampton Community College, work with each company rather than use a self-assessment. In this way, the companies, many of which do not have significant auditing experience, will be better prepared to do future audits and we will have a more consistent view across the Web. Consequently, these assessments have begun and are scheduled through early February. Based on the assessment, an action plan will be developed to correct any deficiencies when compared to the Web Quality Manual.

The Quality Manual has been received in rough draft form and is being reviewed by the Ben Franklin staff. Working through the manual has raised a number of interesting conceptual as well as operational issues which we will explore during the final year of the project. While many quality procedures take place solely within the boundaries of the individual companies, many cross those boundaries and must be dealt with in a coordinated manner to ensure product quality and avoid costly duplication of effort. Still other procedures are actually done at the level of the Agile Web (such as contract review) and will require more detailed procedures at that level.

A rough draft of a Virtual Organization Agreement has been written by our legal counsel and is also being reviewed. It is hoped that this agreement can be adopted for all Agile Web projects and be quickly completed by filling in the appropriate blanks. Part of the agreement would be a statement of work that would identify and spell out the responsibilities of each of the parties to the agreement. This statement would have to be generated basically from scratch for each individual project, perhaps using a checklist to be certain all pertinent issues are covered.

We have completed the conceptual design of the Agile Web Communications/Information System. A copy of the chief capabilities and technical data is attached. In brief, each Agile Web participant would have access through the World Wide Web to a variety of capabilities stored on the Datamatrix server. These applications would be launched through a single front-end screen being designed by Datamatrix. In addition to the profiling capabilities already offered, offers and demands for goods and services could be posted to a publicly accessible home page. Various databases would be available to Agile Web participants only, allowing access to information on customer contacts, individual project data, VOA templates, and the competency database being developed by the CIM Lab.

Using the experience gained by Lehigh University's CIM Lab on the Arizona State University Pathfinder project, we are installing ProShare Video software, ISDN connections, and equipment on the company PCs to allow interactive video-conferencing, whiteboarding, and sharing of applications such as spreadsheets and design tools. Currently, the video capability is a viable point to

point, but multi-point capability is expected by mid-1996. Many of the services will be accessed through the Internet. Contracts and purchase orders for implementing this system were being prepared at the end of December.

Plans: During Q9, we expect to complete the Quality assessments and the final draft of the Quality Manual, and be ready to move on to improvement activities. We expect to resolve any problems and come to agreement on a standard VOA and, in fact, have several in place by the end of the quarter. The Communications systems should be installed at six pilot test sites and significant progress will be made on the required programming by the end of March.

2.2.4 LEVERAGING PEOPLE & INFORMATION

Progress: The internal deployment of Agility and the Agile Web concept into the participating companies continues as more employees become involved in customer projects and other activities. Several participants have been proactive in introducing their workforce to the idea, while other prefer to wait for the development of a booked customer project before involving more than a few employees with Agile Web activities. In addition to the sales training piloted in two companies to date, one of the Web participants has agreed to pilot the Human Resources Assessment tool which had earlier been adapted by our core partner, Northampton Community College. We expect to have a proposal from the college early next quarter to implement and assess the pilot.

In order to better familiarize the Web participants with each other's capabilities, we have collected company brochures from each and sent a set to each of the 19 companies. In addition, the insert sheets for each company for use with the brochures have been completed. They were distributed early in January.

We have made a tentative decision on hiring a consultant for the Cultural Migration project. Final contract details are being worked out and a contract should be signed in January. A detailed project plan and deliverables will be included in the next report. With this project, potentially our most critical as it will deal with how to help companies migrate to a more agile culture and learn to thrive on change, is probably our last major initiative under the pilot project.

Externally, Ted Nickel has given a number of presentations to groups interested in the Agile Web model. He was a presenter at both the CALS Expo '95 and the Defense Manufacturers' Conference during the last quarter. As a result of the CALS presentation, he was invited to a symposium of small business owners in San Francisco in December. One of the results of these contracts has been the receipt of two RFQs from DCSC in Columbus, OH.

Plans: The capabilities database continues to develop. The structure should be completed during the coming quarter to be followed by a significant amount of data collection and entry. Plans for the HR pilot and the Cultural Migration project should gel and move forward early in 1996. We expect to produce a number of deliverables from these projects which will facilitate the formation of "webs" in other areas of the country. Several members of the Agile Web staff will be attending and participating in the Agility Forum's Agility Conference in March.

2.2.5 PILOT PROJECT MANAGEMENT

Progress: We have continued to develop and add information to our World Wide Web home page. It can be reached at <http://www.lehigh.edu/~inbf/awtrp.html>. The quarterly reports, business cases, and various other documents are accessible to the public. There are also links to the Agile Web, Inc. home page, the Datamatrix offer and demand posting utility, and other related information.

Documentation continues in the form of two new business cases and the core competency report from Roger Nagel and Napoleon Devia. Greg Kunkle has produced, *Developing 'Trust' Among Members of Agile Web* and *Understanding and Capitalizing on Core Competencies in the Agile Web*, which are attached to this report. The *Agile Web Competencies, Values, and Ethics*, report by Nagel and Devia has been published and distributed to the Web participants.

We have contracted with the Agile Web, Inc. as a sub-recipient to market, administer, and carry out customer projects using the tools developed through the pilot project. In doing so, the Agile Web will help us to evaluate and improve these practices. They will identify barriers to 'web' operations and modify practices to make them more effective. These efforts will increase significantly with the hiring of a President for the Agile Web.

3.0 AGILE WEB Status of Current Milestones

TASK DESCRIPTION	Milestone	Status as of 31-Dec-95
<p>Establish Agile Web, Inc. Execute Marketing Strategy Develop Marketing Materials Develop/Execute Communication Strategy Identify Appropriate Customers that Fit Profile Identify Value-added Services Tailored to Customer Needs Obtain Contracts for Manufacturing Services</p>	<p>Jun 95 Aug 95 Dec 95 on-going on-going on-going on-going</p>	<p>Completed Completed Completed; strategy will be updated as we move forward See Section 4.0 See Section 4.0 See Section 4.0</p>
<p>Develop New Business Practices Develop/Refine Initial Virtual Organization Agreement Develop a Procedure for Web members with Best-In-Class skills to Help other Web members in that Area Complete Core Competency Identification and Analysis</p>	<p>Apr 96 *</p>	<p>documents written; being reviewed by Web for approval Delayed due to other priorities. Will Begin soon</p>
<p>Carry Out System Improvement Projects Web-wide Compatible Quality System Employee "Transformation Training" WWW Tool for Posting and Locating Requests for Services Database Tool to Identify Web Resources/Competencies Web Information/Communication System</p>	<p>Aug 95 Apr 96 * Dec 96 * Apr 96 * May 96</p>	<p>Completed in-process; see narrative Vendor selected; scope of project significantly expanded Completed; system available for testing on Internet Completed; collecting/entering data from Web members Installation is in-process</p>
<p>Write Documentation Business Cases on Lessons Learned Impact of New Business Practices Process of Establishing and Operation a Web</p>	<p>on-going Dec 96 Dec 96</p>	<p>6 written and released, several in process</p>

4.0 Numerical Metrics for Agile Web Pilot Program

	TOTAL	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
(1) Number of Qualified Customers Contacted	52	5	0	3	5	5	8	18	8
(2) Source of Customer Leads									
a. New Customers Identified by Agile Web, Inc.	42	5	0	3	5	4	7	12	6
b. New Customers Referred to AWI by Web Member	4	0	0	0	0	1	0	2	1
c. Existing Customers of Web Members brought to Web	6	0	0	0	0	0	1	4	1
(3) Number of Specific Projects Discussed with Customers	36	7	2	1	0	0	4	13	9
(4) Number of Requests for Proposal	29	8	2	0	0	0	4	8	8
(5) Use of Resource Teams									
a. Number of Resource Teams Created	38	7	2	1	1	2	4	12	9
b. Average Number of Firms in Resource Teams	2.4	4	3	3	1	1	2	3	2
c. Number of Creative Solutions offered by Resource Team Beyond what the Customer was Requesting	9	2	0	1	1	0	2	2	1
(6) Number of Proposals for Services Submitted	21	0	3	2	2	0	2	7	5
(7) Number of Proposals Accepted by Customer	2	0	0	1	0	0	0	1	0

OBSERVATIONS:

- Q1 shows the initial thrust to find project opportunities to be used by the Web to begin understanding and identifying new ways of doing business under an agile paradigm. These projects turned out to be very useful in formulating how the Web should be structured and operated.
- Q2 and Q3 was the period where the Web was looking at fulfilling these initial project opportunities, learning about the others in the Web, becoming comfortable with agile concepts and how they might apply in the marketplace. Initial ideas of how to do business differently were being formulated.
- During Q4 and Q5, the business plan development activities made more concrete and formal how the Web would operate and use the new business practices. A lot of effort was put into the details of how the Web members would work together to meet customer needs, what markets fit the capabilities of the Web, etc.
- Agile Web, Inc. was formed in Q6. Energy began to focus on finding new customers and trying out the newly designed business practices and adopted philosophies.
- The increase in numbers in Q6 and Q7 give an indication that the Web members have gained confidence in each other and are committed to using Agile Web concepts. Because of the time it takes to develop teaming relationships with customers, an activity with a customer may span quarters. For example, discussions with customers (3), may occur in a quarter later than when the customer was contacted (1); a request for proposal (4) may occur in a quarter later than when the project was first discussed (3); creative solutions (5c) may be offered in a quarter later than when the resource team was created (5a); etc. Consequently, customers included in row (1) will be counted in future quarters in rows (3) through (7), and resource teams counted in row (5a) may offer creative solutions in later quarters (5c).

EXPLANATIONS:

- Qualified Leads include only those potential customers that appear to have a need for the Agile Web. It does not include all potential customers that have been contacted about the Web and given brochures, literature, or other information on the Web. It is also a count of the FIRMS we have contacted, even though we may discuss several potential projects with each firm. Each firm is counted only once in the quarter they are first contacted.
 - This metric gives a sense of the value-add of Agile Web, Inc. in identifying new markets and customers for the Web members.
 - This metric shows the value Web members can bring to each other by referring potential business they come across that they cannot do, but that others in the Web might be able to do.
 - This metric gives an excellent indicator of the confidence Web members are developing in each other by bringing their customers to the Web for greater services than they can offer alone. Activities are counted in line 3 only if conversations with qualified customers progress to the point where specific projects are discussed. This is a count of Projects, not Firms.
 - This is a count of the number of projects that have progressed to a point where the customer asks for a proposal on the services we can provide and the associated costs.
 - The Resource Team is a unique business practice of the Web that allows us to provide greater value-added to the customer. A team of Web members are pulled together based upon core competencies to creatively examine innovative solutions to better meet customer needs. The team may be formed at any time when working with the customer, either before or after a request for proposal is made by the customer.
 - Size of Resource Teams varies depending on the requirements of the customer and the core competencies of the Web members.
- This metric gives an indication of the value a customer can receive when working with a creative Web of firms operating under an agile paradigm of learning with the customer to anticipate and exceed expectations, rather than working in a "build-to-print" paradigm.
- This metric gives an indication of the acceptance of the customer to the Agile Web concepts, and their confidence in selecting the Agile Web as a new supplier.

5.0 AGILE WEB FINANCIAL REPORT

SPENDING BY SOURCE OF FUNDS	Budget	Expenses To-Date	Jan94-Mar94	Apr94-Jun94	Jul94-Sep94	Oct94-Dec94	Jan95-Mar95	Apr95-Jun95	Jul95-Sep95	Oct95-Dec95
	Federal Cash Expended	2,000,000	796,687	N	0	130,000	143,759	70,807	128,231	119,114
Cash Match Expended	1,500,000	998,991	O	193,324	223,929	131,192	58,107	134,829	143,781	113,829
Cash Subtotal	3,500,000	1,795,678		193,324	353,929	274,951	128,914	263,060	262,895	318,605
In-kind Match Expended	500,000	313,945		50,451	17,822	12,787	31,968	59,507	76,056	65,354
TOTAL SPENDING	4,000,000	2,109,623		243,775	371,751	287,738	160,882	322,567	338,951	383,959
Federal - to - Match Ratio (must be <= 1.00)	1.00	0.61	R	0.00	0.54	1.00	0.79	0.88	0.54	1.14
SUMMARY OF CASH EXPENSES										
Internal Expenses			P							
Personnel	900,000	703,560	O	104,798	105,678	84,941	95,164	88,585	128,751	95,663
Travel	60,000	42,286	R	11,521	1,253	5,722	6,181	8,925	2,314	6,370
Communications	23,500	13,731	T	1,275	1,160	930	3,608	3,510	1,631	1,619
Materials and Suppliers	3,500	1,867	R	105	461	84	507	615	30	65
Accounting/Legal Services	25,000	16,643	E	6,350	787	0	3,910	0	0	5,596
Other	48,000	18,891	Q	3,419	2,974	2,905	3,498	3,558	467	2,050
Publication and Printing	45,000	5,319	U	0	902	0	1,469	1,211	879	858
Public Information Services	50,000	239	I	0	0	0	239	0	0	0
Rearrangement and Alteration Costs	3,750	0	R	0	0	0	0	0	0	0
SUBTOTAL	1,158,750	802,535	D	127,468	113,215	94,582	114,573	106,384	134,092	112,221
External Expenses										
Contracts with For-Profit Consultants/Service Providers	1,528,474	567,425		0	119,647	98,165	41,873	125,107	69,836	112,797
Contracts with Non-Profit Service Providers	647,777	307,440		65,858	59,668	52,827	-41,705	24,975	53,687	92,132
Hardware/Software for Communications Infrastructure	165,000	118,279		0	61,399	29,377	14,174	6,594	5,280	1,455
SUBTOTAL	2,341,250	893,143		65,858	240,714	180,369	14,341	156,676	128,803	206,384
TOTAL CASH EXPENSES (Federal and Match)	3,500,000	1,795,678		193,324	353,929	274,951	128,914	263,060	262,895	318,605

APPENDICES

Agile Web Brochure Insert Sheets

Case Studies

Developing 'Trust' Among Members of Agile Web

Understanding and Capitalizing on Core Competencies in the Agile Web

Magazine Articles

Design News, December 4, 1995: Multi-Company Corporation Focuses on "Agile" Manufacturing

Electronic Component News, January 1996

Quality Digest, January 1996: Manufacturing Network Promotes New Concept

Agile Web Communication System



Franklin

"Building Partnerships for Competitive Advantage"

July 28, 1995

George Orzel
WL/MTII
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

I am pleased to submit this fifth interim report (Apr 1, 1995 - Jun 30, 1995) for the Agile Web Pilot Project being funded under the Technology Reinvestment Program (TRP). I have included both a paper copy and the report on diskette.

A lot of exciting things have culminated this quarter, most notably the creation of Agile Web, Inc., and the related attention it has attracted. The press releases and several news articles are included as part of this report. I have also included a paper written by Greg Kunkle at the Agility Forum that describes the benefits of this new company to the Agile Web.

If you have any questions or need more information, please give me a call.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

cc: Michael Hitchcock
Frank Estock
Tim Jones
Mark Lang
Chris Lay
Leo Plonsky
Gerald Stoops

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

_____**AGILE WEB PILOT PROGRAM**_____

Organization Name

_____*4/1/95*_____*to*_____*6/30/95*_____

Reporting Period

Quarterly Report Number 95-2_____

_____*July 28, 1995*_____

Date of Submission

_____*Debra Z...*_____

Director's Signature

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GENERAL INFORMATION

FORM 1, PAGE 1

1.1 PILOT INFORMATION

- a. Pilot Name:
- b. Pilot Acronym:
- c. Date Established:
- d. Pilot Director:
- e. Director's Telephone Number:

AGILE WEB PILOT PROGRAM

1/1/1994

Dwayne L. Hansen

610/758-5238

1.2 PUBLIC ACCESS

- a. Mailing Address:
- b. Street Address (if different):
- c. Phone Number:
- d. Fax Number:
- e. E-Mail:

Ben Franklin Technology Center
125 Goodman Drive

Bethlehem PA 18015

610/758-5200

610/861-5918

Dwayne @ net.bfp.org

Participants in the pilot are located in Northeast Pennsylvania and bordering New York state, but results from the pilot can be deployed to help small and midsize manufacturers across the country.

1.5 TYPE AND NUMBER OF TARGETED MANUFACTURING ESTABLISHMENTS IN TARGET REGION

	Number of Establishments Targeted:	Number of Establishments Targeted:
20XX Food & Kindred Products	_____	_____
21XX Tobacco Products	_____	_____
22XX Textile Mill Products	_____	_____
23XX Apparel & Textile Products	_____	_____
24XX Lumber & Wood Products	_____	_____
25XX Furniture & Fixtures	_____	_____
26XX Paper & Allied Products	_____	_____
27XX Printing & Publishing	_____	_____
28XX Chemicals & Allied Products	_____	_____
29XX Petroleum & Coal Products	_____	_____
30XX Rubber & Misc. Plastics Products	_____	_____
31XX Leather & Leather Products	_____	_____
32XX Stone, Clay & Glass Products	_____	_____
33XX Primary Metals Industries	_____	_____
34XX Fabricated Metal Products	_____	_____
35XX Industrial Machinery & Equipment	_____	_____
36XX Electronic & Other Electric Equipment	_____	_____
37XX Transportation Equipment	_____	_____
38XX Measuring & Controlling Devices	_____	_____
39XX Misc. Manufacturing Industries	_____	_____
87 XX Engineering Services	_____	_____
XX _____	_____	_____

Pilot Version 1.0, 15 Apr 94

PLOT SERVICE STAFFING

FORM 1, PAGE 4

1.6 NUMBER OF PERSONNEL

0000a. Field Agents or Field Engineers:
 00000000 Provide direct service or outreach in the field

0000b. Technical Specialists:
 Serve pilot needs, utilizing their own expertise

0000c. Management or Support Staff:
 Support pilot but do not provide pilot service

0000d. Total Personnel:
 Summary of a-c above

	<u>Full Time</u>	<u>Part Time</u>	<u>Equiv. (PT/E)</u>
0000a.	1	0	1
0000b.	0	0	0
0000c.	2	2	4
0000d.	3	2	5

1.7 CONTRACTED SERVICES

00000a. Consultants Contracted for Client-related Services

000000b. Consultants Contracted for Pilot Assistance

000000c. NPOs Contracted for Client-related Services

000000d. NPOs Contracted for Pilot Assistance

	<u>Quarter</u>	<u>Cumulative</u>	**
00000a.	2	4	
000000b.	1	8	
000000c.	0	3	
000000d.	0	6	

NOTE: ENTER NUMBER — NOT DOLLAR VALUES — OF CONSULTANTS OR NPOs CONTRACTED.
 "NPOs" REFER TO NON-PROFIT OR NOT-FOR-PROFIT ORGANIZATIONS.

** Some contracted services that should have been reported in previous reports were missed. They are included in the Cumulative numbers.

MISSION, SERVICES AND PLANS

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, called "agile manufacturing", through a carefully structured series of pilots carried out through collaboration among a group of large manufacturers, small suppliers, and organizations that can provide business and technical assistance to the first two constituencies.

2.2 PROGRESS AND PLANS- SUMMARY

We have now completed the sixth quarter of our pilot project. The Agile Web, Inc. has been formally incorporated as a for-profit, standard, C-corporation. The nineteen participating companies have become equal shareholders and a Board of Directors has been appointed to oversee the entity. The initial Board consists of four members from the Web companies and one from Ben Franklin. They will meet July 7th to organize and begin the search for a permanent Web President.

In parallel with the incorporation, the effort to attract customers has been stepped up. We have contracted with a public relations consultant and an advertising firm to develop materials for use in describing the Agile Web benefits to our potential markets. In addition, Acting President, Ted Nickel, has been seeking opportunities from a variety of sources including the Defense Logistics Agency, regional and national manufacturers, and customers brought to the Web by member companies.

Other business opportunities may be provided by the alliances we have established with several other ongoing and proposed agility projects for which the Agile Web will act as a test bed. These include Lockheed/Martin, Penn State ARL, and TASC. We were also part of a proposal by the ECRC/Fairfax, VA which was not chosen for an award.

On the operational side, we are continuing with the work on core competencies and are developing a database format to make use of the data we have collected. There are also several new initiatives underway to address various agility issues generated by the creation of the Web. How do we demonstrate the Web quality system to a customer and to each other? What training does the workforce require to become agile? How will the Web track and manage customer orders? How can we form a virtual organization agreement rapidly?

MISSION, SERVICES AND PLANS

As noted in previous reports, we spent the first year or so of the project working through cultural trust issues, discussing and developing new procedures, and testing business opportunities to evaluate approaches to, and the need for, agility. With the incorporation of the Web and the implementation of our marketing strategy, we are in a better position to obtain work and begin testing the new business practices we have been working on through the first 18 months of the project.

This 6th quarter progress report is divided into several areas of focus. These are: New Business Practices; Cultural Issues of the Web; Understanding Strengths, Weaknesses, and Core Competencies; Pilot Projects; Executive Information Sessions; System Improvement Projects; Program Management; and Project Partnering.

2.2.1 NEW BUSINESS PRACTICES

Progress: As discussed in the last quarterly report, a decision was made to incorporate the Agile Web as an entity. The reasons for arriving at that decision were listed in the last report and are expanded upon in the business case attached to this report. The Agile Web, Inc. was formally incorporated as a for-profit c-corporation on June 12, 1995. At a meeting on June 13th, the Board of Directors met to approve the subscription agreement and by-laws of the organization. They also named Ted Nickel as President and Treasurer and attorney Jeff Libson as Secretary of the Agile Web. The Board members are:

- | | | | |
|---------------------|--------------------|------------------|--------------------------------|
| - Charles Hagan | Suckle Corporation | - Mark Lang | Ben Franklin Technology Center |
| - Thomas Panzarella | Cook Specialty | - James Williams | Paramount Industries |
| - Steve Yohe | Surtech Industries | | |

The Board will have their first regular meeting on July 7th.

The Operations Committee identified Quality and a standard virtual organization agreement (VOA) as two priority needs of the Agile Web, and we have begun to address each. An RFP was issued for assistance to review the current quality level of the Agile Web suppliers, assist each of them with a self assessment using the Visual Assessor software, and to develop a quality manual and system for the Web. The objective is to demonstrate the quality level of the Web and the virtual organization to a prospective customer. Many of the potential customers we have talked to aren't sure how to assess or certify the quality of a virtual organization or a Web, so we anticipate that the resulting quality system will be a useful guide for future webs. The RFP was awarded to our core partner, Northampton Community College late in June and work is expected to begin in July.

MISSION, SERVICES AND PLANS

In order to identify and address the various issues that might be dealt with in a VOA, the committee held a simulation on June 8th. The committee members played themselves as a resource team who, along with President Ted Nickel, met with a "customer" to understand his needs, develop a proposal, and present it to the customer. The customer included a number of challenges within his requirements to test the Web, and the Web resource team was able to identify and respond to all of them. Our legal counsel, Jeff Libson, observed the meeting and will use the input to refine a checklist and some standard agreement modules to facilitate rapid formation of virtual organizations. A flow chart was also generated at the end of June and circulated for comment.

The Marketing/Sales Committee has also been actively working with two marketing communications firms, Shaeffer & Associates and Lieberman-Appalucci, to implement the Agile Web marketing strategy previously developed with the help of D. F. Falcinelli. As of the end of the quarter, a press release and background information have been presented to the regional and national general and business media announcing the formation of the Agile Web, Inc. In addition, a logo and tagline have been produced and a brochure is in progress. The public relations campaign was designed to reach a broad range of potential customers, in part to determine which markets we should be targeting. (A great deal of press interest has been expressed during July, including the New York Times, Wall Street Journal, and several regional and national trade journals. A few early articles are attached to this report.) With the pace of marketing efforts picking up, the brochure will be needed to help educate customers of the Agile Web concepts, generate personal selling opportunities, and for follow-up.

One of the lessons learned by the Marketing Committee in working through these issues is that selling the value-added services of agility is much more difficult than selling machine time or brokering services. The benefits of dealing with the integrated and customer focused Agile Web must both be explained to the potential customer and differentiated from competition that often looks similar on the surface. Furthermore, these points must be made in a very few words and images in order to retain the customer's interest.

In the last few reports, we have discussed a number of new business practices developed by the Agile Web. While a number of new practices are actively being worked on, the following have been put into place or came about through the interaction of the companies.

- **Web Entity-** The Agile Web, Inc. provides the infrastructure for small businesses to quickly form virtual organizations through prior collaboration and planning. This structure, different than a partnership or joint venture, is a new way for businesses to team, maintaining flexibility while controlling risks and liability.
- **Resource Team-** The resource team concept of how to respond to customer opportunities represents a new collaborative methodology for providing a single integrated response to the customer. Several process and design improvement proposals have resulted in added value to the customer.

MISSION, SERVICES AND PLANS

- **Agile Web as Marketing Tool**- Several members have begun to leverage the core competencies of the Web to provide a higher value solution to their customers than they were able to in the past. Two members have brought their top customer to the Web, offering greater integrated services than they could have done individually.
 - **Ethics Statement** - An Ethics Statement is being used to define many aspects of the relationships between member companies and between members and the Web. Based upon trust, this statement is not legally binding, but establishes the expected behavior of the member companies. Doing business this way keeps the Web from getting bogged down in legal technicalities.
 - **Mentoring** - We have had an unusual amount of sharing between companies. In one case, a member company voluntarily assisted a second member to improve their processes. What made it more unusual, was that the first company could have provided the same process on a subcontract basis, but chose to help a fellow member improve instead. We hope to formalize this mentoring process in the future.
 - **Information Sharing** - While the subject of sharing confidential information was controversial in theoretical terms, in practice, the companies have not yet refused to share information required to formulate and submit a proposal to the customer. Members have stated that they are sharing more within the Web than was their normal practice.
- Plans:** During the 7th quarter of the project, the Agile Web Board and President will be developing further the operational policies and procedures of the organization. In doing so, they will help to create new and agile business practices, modifying them as more is learned about how to operate as a Web and as virtual organizations. The Quality system project will be in full swing by the end of the quarter with completion scheduled for the final quarter of the year. Tools for the rapid creation of the VOA will also have been tested and modified.

2.2.2 CULTURAL ISSUES OF THE WEB

Progress: The most exciting event in the last quarter has been a Web supplier bringing their biggest customer to the Web. Surtech Industries introduced and recommended the Web to their biggest customer, Harley-Davidson, as a way for Surtech to provide them greater value using the combined core competencies of the Agile Web. The results are discussed in section 2.2.4. Steve Yohe, President of Surtech and an Agile Web Board member commented that he felt it worth the risk because he believes in the concept and this was the best way to prove the concept.

There has also been an increase in the inter-company communication and relationships, as many have begun to use each other as sub-contractors on their own jobs. We have even had one member company helping a second member improve its process, even though the first member could have potentially done the work itself as a subcontractor. The level of trust continues to rise, particularly between the more active members.

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The issue of conflict resolution between members has been resolved. The subscription agreement binds the members to take all disputes that cannot be worked out between themselves to binding arbitration through the American Arbitration Association. The only exception is the ability to petition the court system for injunctive relief only where that is an appropriate action. It was felt that in the case of an injunction, the courts could in fact react more quickly. The members preferred this approach to the original plan which called for a binding judgment from a panel of Web members. It was felt that the cost of invoking arbitration was significantly higher than using an internal panel, thus encouraging the parties to work out the dispute themselves. Should arbitration become necessary, however, a final result would be handed down more quickly than through the courts. It was also felt that a panel of Web members passing judgement on fellow Web members could potentially hurt the relationships that have been built thus far.

Some of the Web members have also begun to look at their internal company cultures. Using the Cultural Migration seminar presented by Rick Seaman of Soletron (see 2.2.5) as a springboard, the Web has formed a training committee to research the training needs of companies developing an agile workforce. Surtech Industries has agreed to pilot the resulting program. Members from three Web companies are participating in the committee to identify needs. We are in contact with the Agility Forum in an effort to leverage any of their work, or work of others that they know about, in working up a methodology. The committee will be meeting early in July to help develop an RFP to obtain outside resources with this project.

Plans: The input from the training team will help in writing an RFP for outside resources to develop a process for transforming the internal company culture in a small or midsize company seeking to become agile and participate in web-like teaming. We expect to make significant progress on this project during the next quarter. We also will begin to work on a process to facilitate mentoring between Web companies. Through such a process, they can help each other improve and thus build a stronger Web.

2.2.3 UNDERSTANDING STRENGTHS, WEAKNESSES, AND CORE COMPETENCIES

Progress: Based on the recommendations of Jack Mitchell Associates, we have begun to plan for an information system for the Agile Web. We see the need to have easy access to order-entry, history and status of Web projects both for the Web itself as well as the member companies. Capacity availability, order status, remote invoicing, and access to databases are a few of the issues being discussed. The solution must be something a typical small manufacturer can afford and use effectively. We have met with a number of software suppliers to get their views on what we might be able to do for the short-run, while we look at, and develop, a long-term solution.

The final report on Core Competencies is being prepared. All companies have been revisited and a draft report has been reviewed. We have collected some very useful data which will be available in an on-line file capable of being accessed in a point-and-click fashion. The final report and the computer file are targeted for completion early in the next quarter.

MISSION, SERVICES AND PLANS

A proposal has been received from one of our core partners, Dr. Emory Zimmers of Lehigh's Enterprise System Center (formerly the CIM Lab) to address the equipment and other technical-systems capabilities of the Web members. This data base, which would be designed to assist in rapidly choosing the best resource team for each opportunity, would be linked to the larger core competency file being produced by Dr. Nagel and his associates. The proposal is being reviewed and will likely be acted on early next quarter.

Plans: One of two priorities for the next quarter is to complete the core competency databases and reports, providing the Agile Web with the ability to efficiently and effectively choose the best resource team for each project, based on core competencies. The second major initiative is to put in place a short-term project management tool to allow easy access to Web project status information and tracking.

2.2.4 PILOT PROJECTS

Progress: During the past quarter, we have stepped up our efforts to attract potential customers. We have quoted parts for Harley-Davidson, Robert, and the DLA. While none of these bids was accepted, we have laid the groundwork for a continuing relationship and expect to receive additional opportunities to submit proposals. In the case of Harley-Davidson, they decided to produce the original part in house but were impressed with the proposal and have offered two new assemblies for the Web to quote. These parts are providing an excellent opportunity to provide value-added services since they are being quoted both as-is and redesigned for cost reduction. Several of the Web members are involved in these proposals along with Lehigh's Enterprise System Center, a core partner on our project.

The due date for the turn-signal redesign being produced for Tobyhanna by the Web has been extended by Tobyhanna to the end of July. Tobyhanna is in the process of setting up a meeting with the DLA and the Web resource team to review the new design and discuss production needs. The Web was able to successfully respond to a change request to design the new internals to fit the original housing.

The Web has also had a number of contacts with the DLA, both through the ECRC in Fairfax, VA and directly with Don O'Brien. We have been given one part to quote through the ECRC, but it appears we will not get the job due to price. We are awaiting requests for additional parts and families of parts for which to submit proposals.

While marketing materials were being developed, we made a strong personal effort to follow-up on both existing and potential new customers. Several of the projects discussed during the last year remain active but have not yet reached the point of going forward. This reflects a characteristic of many entrepreneurial firms which tend to proceed by steps based on available financing and development. To broaden our exposure to potential customers locally, we have held discussions with the Executive Vice President of LVTP, a group of several local industrial parks, who has sent a letter to his resident manufacturing companies introducing the Agile Web. We expect to follow up with these contacts during the next quarter.

MISSION, SERVICES AND PLANS

Plans: We plan to fully implement the Marketing Strategy during the next quarter to expand our exposure beyond current customers. In section 2.2.7, we discuss the role of the Marketing/Sales Team and their plans to market the Web. There are a number of projects which look promising and customers have been impressed with our ability to add value through redesign services and collaborative agility. We expect to secure our first production order in the near future. We also expect to receive additional requests from the DLA and will work closely with the appropriate officials to understand their needs (including the provision of rapid turn-around, critical, short run parts) and develop creative ways to address them. We are currently seeking such contracts through Don O'Brien.

2.2.5 EXECUTIVE INFORMATION SESSIONS

Progress: There have been two Executive Information Sessions held during the 6th quarter of the project. The first was presented by Rick Seaman, Director of Strategic Development for Soletron Corporation, a 1991 Baldrige winner. He discussed the importance of aligning strategic planning with customer's needs as well as throughout one's organization. Mr. Seaman also spent a considerable time discussing self-directed work teams and what Soletron has been able to accomplish in transforming their workforce. Based on this presentation, we have begun to plan a pilot project with one of our Web members in this area. Rather than re-invent training that already exists, we are looking at a format that builds upon commercially available training and overlays the agility and cultural migration concepts. The resulting curriculum would then be available to all Web members and others. A training team was formed consisting of members from three Web companies who will provide input in writing a needs document and an RFP for an outside curriculum development resource. We are coordinating with the Agility Forum and expect to use sub-recipients and other local resources to develop and provide the training. A second round of EDI training, similar to the one held in November, was completed in June. A test scenario was developed and will be run during the next quarter.

Plans: The training team will continue its project and will have identified an outside resource by the end of the next quarter. The EDI test will also be completed during the quarter. No other Executive Information sessions are planned at this time.

2.2.6 SYSTEM IMPROVEMENT PROJECTS

Progress: A number of projects are underway to address various aspects of agility and to define the operation of an agile web. These projects include: Web Quality, Deployment of Agility to the Workforce, Project Management, Electronic Commerce, RFP Profiling, and WOA formation.

MISSION, SERVICES AND PLANS

WEB QUALITY

A plan to define and document the quality system of the Web and to make improvements where necessary was developed during the quarter. We have contracted with one of our core partners, Northampton Community College, to implement the plan during the balance of the year. They are currently collecting and reviewing quality-system documentation from each Web company. Additional steps in the plan call for: interviews with customers to determine what they need to feel confidence in the quality of the Web, quality self-assessments, development of improvement plans, and creation of a Web Quality Manual. The issue of ISO 9000 compliance will be explored.

TRAINING

As mentioned in Section 2.2.5, a training team consisting of three Web company representatives are defining training needs with two primary goals in mind. First, they plan to educate their managers on agility and the methods needed to align the tactical and strategic goals of the company with its customers' needs. Second, they need a training curriculum which would allow them to deploy agility to their workforces to prepare them not only for improved internal performance, but also to be able to work across company boundaries in a virtual firm. The curriculum design would be modular, allowing a company to build on existing training courses and what it has already done. In addition, specific modules will demonstrate the need for such training in light of agility. During this quarter, the team was formed and a preliminary list of training needs was outlined.

INFORMATION SYSTEM

We have discussed project management and information system requirements with two commercial software firms during June, and expect to continue that process in order to develop an RFP. We anticipate that the initial "system" will be very basic so as to get it in place quickly. The system will have to support the process of picking a resource team through a core competency database, allowing the collaborative creation of a proposal and VOA, and the tracking and management of joint production. As we use the system for the first few orders, we can then better define our needs and begin work on an improved, longer term system.

ELECTRONIC COMMERCE

All of the new Web members are now connected electronically and another round of EDI training and testing is underway. Based on the structure of the Web, there will potentially be two levels of electronic commerce. First, there is the customer-defined methods and format for dealing with the Agile Web. We anticipate using EDI with such customers as Harley-Davidson and the DLA. Second, the Web may establish a set of electronic documents for use within the Web itself, between the Agile Web and its members or between members. Once the training/testing cycle is completed in the next quarter, these issues will be taken up.

MISSION, SERVICES AND PLANS

CORE COMPETENCY PROFILING

Our core partner, Datamatix, has completed the first phase of its research into improved methods of electronically buying and selling through the World Wide Web and other electronic bulletin boards. They have proposed the implementation of a single computer interface through which Web members could both search a variety of trade leads and electronic RFPs and profile their core competencies in such a way as to both find business for the Web and broadcast capabilities. The single interface would also allow response through EMail and EDI directly. Details of phase two of the project are being discussed and negotiated at this time.

VIRTUAL ORGANIZATION AGREEMENTS

The status of the VOA formation was discussed in section 2.2.1. In addition to the efforts of the Operations Committee and our legal counsel, we are scheduled to be a test site for the guidelines being developed by Competitive Technologies, Inc.'s Agile Tools project. Their handbook is expected to be delivered to us early in the next quarter, and we will make use of it in forming virtual organizations

Plans: Each of the projects mentioned is underway and being actively pursued. During the 7th quarter of our project we expect to have defined the required improvements and to have begun implementation. With the exception of the enhanced information system, we anticipate having all system improvements in place by the end of the year.

2.2.7 PROGRAM MANAGEMENT

Progress: The operation of the Agile Web, Inc. is now in the hands of the Board of Directors, as discussed in Section 2.2.1. Their initial concerns are hiring a permanent President, approving a budget, and other operational details. The first meeting of the Board will be held July 7th. Overall management of the pilot project remains the responsibility of the Ben Franklin Technology Center, but the control of the Agile Web corporation now rests with the Board and shareholders. That arrangement should result in a more realistic test bed, and an earlier transition to self-sufficiency.

The Marketing Committee has provided strong leadership in the creation of a sales/marketing strategy and the necessary media to carry it out. A public relations campaign (see material attached) was initiated with the incorporation late in the quarter. It targeted a wide array of business and trade publications as well as the general media. In addition, a logo and tagline have been adopted and the outline of a brochure is being reviewed.

Plans: The Board of Directors is expected to better define their role and that of the Web president over the next quarter. The Sales/Marketing Committee, in addition to implementing the market strategy, will also lay out a coordinated, agile, sales process using both the Web and the individual company resources.

MISSION SERVICES AND PLANS

2.2.8 PROJECT PARTNERING.

Progress: As mentioned in the last report, we continue to coordinate and communicate with other consortia activities such as CommerceNet, Kansas Manufacturers Association, Minnesota Technology Defense Conversion, Winrock International in Arkansas, the ASU Pathfinder activities, and the Competitive Technologies Incorporated (CTI) Agility pilot. We met with the managers of the other TRP funded pilot project in May at KMA in Kansas City. We have also agreed to act as a test bed for a variety of other agility-related projects, including those with Penn State ARL, Lockheed-Martin, and TASC. By sharing what each group is doing and learning, we will help all groups improve programs and increase success.

Plans: We will continue to follow up on the contacts we have made and to utilize the lessons that have been learned elsewhere. We will be hosting the quarterly meeting for several Alternate Deployment Pilot Projects in September. We plan to continue working closely with the DLA to find ways to deliver short-run critical parts rapidly.

2.3 NEW SERVICES AND CHANGES IN OPERATION

There have been two changes of note in the pilot project team. The Agility Forum has hired Greg Kunkle as Program Manager to work directly on the Agile Web project to document case studies and other developments. He expects to produce a number of preliminary case studies during the next quarter. The first of these studies is attached to this report. In addition, Ted Nickel -- a member of the Ben Franklin Agile Web Staff -- has been appointed acting President of the Agile Web. In this new role, Ted will be continuing the work he has been performing (seeking business, developing agile business practices), except that he will be able to do so from the vantage point of the position of CEO. We expect this arrangement will provide a more realistic perspective of the operation of the Web. He will remain in this position until a permanent president is named.

Several of the current improvement projects are expected to produce tools or guidelines applicable to other small business groups and supply chains across the country. Most of these new tools and practices are expected to be completed later this year. In order to better test and refine the tools, we have applied for a twelve-month extension to the project through December 1996. No additional funds have been requested.

2.4 METRICS, METHODS, AND OTHER ACTIVITIES

We now have a home page on the World Wide Web to describe the Agile Web Pilot Project and give updates to our progress. It is located at "<http://www.lehigh.edu/~inf6/awtp.html>".

No new metrics or measurements have been developed during the quarter.

**3.1 ACTIVITIES INITIATED --
DELIVERY TYPE BY COMPANY SIZE
(In Employees)**

	<u>1-19</u>	<u>20-99</u>	<u>100-249</u>	<u>250-499</u>	<u>>500</u>	Qtr. Total	Cum Total
a. Initial Meetings: <i>Substantive discussions on needs and projects.</i>	1	19	14	8	0	42	178
b. Informal Engagements (IEs): <i>Assistance with a limited scope.</i>							
c. Formal Assessments (FAs): <i>Structured diagnostic analyses with project recommendations.</i>	2	7	6	4		19	50
d. Technical Assistance Projects (TAPs): <i>Activities contracted to resolve specific problems or transfer new or existing technology or techniques</i>	1	2	1			4	19
e. Referred TAPs: <i>Pilot refers a TAP to another service provider/little or no involvement in the project execution.</i>							
f. Other Activity Not Elsewhere Classified: Specify: <u>Virtual Firms</u>		3	2	1		6	26
g. Other Activity Not Elsewhere Classified: Specify: <u>Training</u>		5	6	2		13	50
h. Other Activity Not Elsewhere Classified: Specify: _____							

NOTE: PROJECTS WHICH INCLUDE ASSISTANCE TO SMES MUST KEEP TYPES a - e, WHILE ADDING "OTHER ACTIVITIES". AS APPROPRIATE, PROJECTS WHICH DO NOT INCLUDE ASSISTANCE ACTIVITIES MUST REPLACE THE TYPES WITH NEW ONES (TO A COMPENSURATE LEVEL OF DETAIL) AS REQUIRED BY THE TEST/DATA NEEDED TO CONFIRM THE PILOT'S HYPOTHESIS. MULTIPLE CATEGORIES CAN APPLY TO ANY ONE CLIENT

QUARTERLY ACTIVITIES BY CATEGORY

FORM 3, PAGE 2

3.2 ACTIVITIES INITIATED -- SUBSTANCE CATEGORY BY DELIVERY TYPE	JEs	FAs	TAPs	RTAPs	Training Events	L	E	D	Qtr.	Cum
									Total	Total
a. CAD/CAM/CAE: <i>Computer Aided Design, Manufacturing or Engineering</i>									16	16
b. EDI/Communications/LEAN: <i>Exchanging data electronically. Computer Engineering</i>			4		1				5	23
c. Business Systems/Management: <i>Business information and logistics flow within an enterprise.</i>										16
d. Environmental: <i>Environmental assessment of materials, discharge, waste, etc.</i>										16
e. Quality/Inspection: <i>The process by which a product is determined to meet specifications.</i>										16
f. Plant Layout/Manufacturing Cells: <i>Assessing efficient means of manufacturing, assembly, or work flow.</i>										16
g. Automation/Robotics: <i>Design, development, or application of automation and robotics.</i>										
h. Control Systems/Integration: <i>Monitoring and measurement of a manufacturing process for control.</i>										
i. Market Development: <i>Information resources for new or enhanced markets or products.</i>										
j. Material Engineering: <i>Evaluation and analysis of material applications.</i>										

**QUARTERLY ACTIVITIES BY CATEGORY
(CONTINUED)**

FORM 3, PAGE 3

3.2

**ACTIVITIES INITIATED -
SUBSTANCE CATEGORY BY
DELIVERY TYPE (CONTINUED)**

	<u>IEs</u>	<u>EAs</u>	<u>TAPs</u>	<u>RTAPs</u>	<u>Training Events</u>	<u>L</u>	<u>E</u>	<u>h</u>	<u>Qtr Total</u>	<u>Cum Total</u>
k. Process Improvement: <i>Process evaluation to identify and eliminate time-wasting activities</i>										
l. Product or Design Development: <i>Creation or enhancement of a product</i>									3	10
m. Human Resources: <i>Management, culture, empowerment, education and training</i>					1				1	18
n. Other Activities Not Elsewhere Classified: Specify: <u>New Business Practices</u>										
o. Other Activities Not Elsewhere Classified: Specify: <u>Core Competencies</u>									19	34
p. Other Activities Not Elsewhere Classified: Specify: _____										
q. Other Activities Not Elsewhere Classified: Specify: _____										
r. Other Activities Not Elsewhere Classified: Specify: _____										

NOTE: THIS FORM SHOULD BE TAILORED BY EACH PILOT PROJECT TO FIT THE PARTICULAR HYPOTHESIS OF THE PROJECT AND THE TESTS/DATA/ANALYSES REQUIRED TO CONFIRM THE HYPOTHESIS. DOUBLE COUNTING IS EXPECTED.

CLIENT FIRMS SERVED DURING QUARTER

FORM 3, PAGE 4

	1-19	20-99	100-249	250-499	>500	Qtr Total	Cum Total
3.3 TOTAL CLIENT FIRMS -- ACTIVITY TYPES ONLY							
a. Total Served: <i>Delivered activities counted in terms of firms</i>							55
b. Total Employees at Clients Served: <i>All employees at client firms counted in 3.3a</i>							8,058
3.4 TRAINING EVENTS -- TOTAL PARTICIPANTS							
a. Total Client Firms at Training Events: <i>Firms who sent attendees to seminars, lectures, etc.</i>		3	4	1		8	46
b. Total Attendees at Training Events: <i>Attendees at seminars, lectures, etc.</i>						24	66
3.5 CLIENT FIRMS SERVED -- ALL CATEGORIES							
a. Total Client Firms Served: <i>Total activity client firms (3.3a) and the total training client firms (3.4a) without duplication</i>	2	7	6	4		19	91
b. Total New Client Firms: <i>Clients served for first time</i>							23
c. Total Defense Client Firms: <i>Defense firms served in any manner</i>	0	2	2	0	0	4	25

NOTE: NO DOUBLE COUNTING. SEE USERS GUIDE FOR DETAILED DEFINITIONS, INCLUDING DEFINITION OF "CLIENT FIRM"

PILOT-RELATED BUDGET ITEMS (OBJECT CLASSES)

FORM 5A, PAGE 1

	Current Quarter	Year to Date	Estimated End of Year
5.1 Cash Expended	\$263,060	\$1,192,731	\$2,000,000
5.2 In-Kind Expenditures	\$59,507	\$200,677	\$300,000
5.3 Federal Reimbursements Requested	\$128,231	\$451,379	\$1,000,000
5.4 INCOME			
5.4.1 Income - Earned	\$0	\$0	\$0
a. Project Fees	\$0	\$0	\$0
b. Training Fees	\$0	\$0	\$0
c. Membership/Sponsorship	\$0	\$0	\$0
d. Other Earned Income:	\$0	\$0	\$0
5.5 EXPENSES - OBJECT CLASSES			
5.5.1 Expenses - Internal			
a. Personnel Expenses	\$88,565	\$479,145	\$650,000
b. Operating - Travel	\$8,925	\$33,602	\$48,000
c. Operating - Equipment & Supplies	\$7,209	\$113,316	\$170,000
d. Operating - Advertising & Marketing	\$1,330	\$5,350	\$23,000
e. Operating - Staff Training	\$6,949	\$36,353	\$54,000
f. Operating - Other:	\$112,978	\$667,766	\$945,000
E. Total Operating Expenses (b-f)			
5.5.2 Expenses - External			
a. Consultant Contracts - Client Services	\$29,525	\$95,685	\$210,000
b. Consultant Contracts - Pilot Services	\$79,169	\$251,267	\$350,000
c. NPO Contracts - Clients Services	\$0	\$7,389	\$25,000
d. NPO Contracts - Pilot Services	\$41,388	\$170,644	\$470,000
e. Total External Contracts (a-d)	\$150,082	\$524,985	\$1,055,000



Ben Franklin

"Building Partnerships for Competitive Advantage"

APPENDIX

Business Case

Agility Through Incorporation? A Business Case Study of the Agile Web Pilot Project

Press Release Information on Agile Web, Inc.

Eastern Pennsylvania Companies Form Unique Corporate Entity to Provide New Approach to "Agile" Manufacturing
The Evolution of Agile Web, Inc.
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Newspaper Articles

Allentown Morning Call, July 16, 1995: Web Poised for National Emergencies

Bucks County Courier Times, July 18, 1995: Competitors Find Teamwork Pays Off

Scranton Times, July 11, 1995: Ben Franklin Spins Web to Link Regional Firms

Eastern PA Business Journal, July 10-16, 1995: Agile Web Provides Network of Diverse Expertise

Eastern PA Business Journal, July 10-16, 1995: High-tech Manufactureres Join Forces in Agile Web



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AGILITY Through INCORPORATION? A Case Study of the Agile Web Pilot Project

Agility in action presents a paradox. Agility, as the conventional meaning of the word implies, denotes a fast-moving, nimble actor. As described by the progenitors of the agility concept, agile corporations are able to rapidly re-organize and even reconfigure themselves in order to capitalize on immediate, and perhaps only temporary, market opportunities. It is readily acknowledged, however, that no one firm will have all the necessary resources to meet every, if any, such opportunity. Given the especially limited resources of smaller firms, realizing short-lived opportunities requires the ability to rapidly team with other organizations and thus assemble "virtual organizations" (VOs) to respond while the chance still exists. After the opportunity has passed and been capitalized upon, the organization then disbands and

"disappears the way our laps do when we stand up."¹

Yet in the eyes of those who have carefully considered the demands of competing in the new marketplace, success in the globally competitive environment also depends upon the ability to provide more than a once-and-done commodity transaction, relying instead on an ongoing customer-supplier relationship in which goods and services (often combined in information-rich products) are sold over an extended period. Thus, there is a need to be both instantaneous in responding to an opportunity, coupled with, and compounded by, the need to maintain an ongoing interaction with a customer.²

¹Steven L. Goldman, Roger N. Nagel, and Kenneth Preiss, *Agile Competitors and Virtual Organizations* (New York: Van Nostrand and Reinhold, 1995), p. 92.

²Underscoring the need for some continuity in organizational forms, Womack and Jones have pointed to related difficulties inherent in virtual organizations, arguing that temporary and ephemeral virtual organizations lack the stability requisite for sufficient ongoing inter-company interaction. They claim that "there is no way that such an unstable entity can sustain the collaboration needed to apply lean techniques along an entire value stream." James P. Womack and Daniel T. Jones, "From Lean Production to the Lean Enterprise," *Harvard Business Review* 72 (March/April 1994): 93-103. As discussed below, however, a unique corporate structure might be able to enhance agility while providing continuity.

This presents the small to mid-size firm with an especially daunting challenge, namely: How to quickly couple and disband in order to meet opportunity, while still retaining the wherewithal to enjoy the benefits of an ongoing relationship with a customer. Additionally, there also remains the problem of obtaining sufficient knowledge about another firm to effectively assemble any given VO. In the absence of a technological tool, like a F.A.N.,³ some mechanism needs to be in place to provide firms with the requisite knowledge to partner with appropriate firms in order to set up such a VO.

In part to respond to these difficulties and challenges inherent in competing in the agile world through virtual organizations, the Agile Web project decided upon a strategy of incorporation. In light of the demands for rapid response and the seemingly conflicting need for continuity, the WEB as a corporate entity, comprising member companies which can be mixed and matched as opportunities warrant, provides a

³Factory America Network (F.A.N.) is the hypothetical electronic database, discussed in Goldman, Nagel, and Preiss's *Agile Competitors and Virtual Organizations* (New York: Van Nostrand Reinhold, 1995), that would provide a comprehensive database containing the core competencies of American businesses. In their vision, companies could then use this source to quickly find appropriate partners to form virtual organizations. See p. 27.

solution addressing both needs. Agile WEB, incorporated, provides an infrastructure to allow the rapid formation and reconfiguration of virtual companies, but, by retaining a permanent base, also offers a forum for ongoing customer relations. What is more, it also provides a vehicle through which companies can both become comfortable, and maintain ongoing relations, with each other, thereby making partnering to form VOs much more feasible.

Despite the logic of the decision, the plan to incorporate only evolved as the activities of the WEB got underway. Once more specific thinking was targeted at coordinating the ongoing interaction of WEB members, however, the choice seemed more and more appropriate. The group of companies decided that there needed to be some "vehicle around which to focus [their] efforts." And after weighing the pros and cons of incorporation, the members concluded that such an approach would provide WEB members with a long-term agent to facilitate continued collaboration after government funding has ended.

More than just providing long term stability, which in itself might be considered the antithesis of agility, the incorporation move was designed to bring into focus the point that the member companies were

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striving to do more than simply pool their individual capabilities. In order to fully integrate their competencies, they chose to collectively form a corporation--but not a corporation or even collaboration in the traditional business sense. The resultant corporation provides focus for the group's activities but is not designed to inhibit responsiveness by channeling activity into old practices. Rather, the umbrella corporation is only the conduit through which the member companies can meet market opportunities. In other words, the corporate structure exists only to provide an infrastructure that allows the formation of virtual organizations which, in turn, consist of the appropriate member companies who possess the core competencies necessary to respond to a particular customer need.

The members concluded that through the focus made possible by joint ownership of, and involvement in, a single entity, they could more easily achieve coordination of various administrative, oversight, and sales and customer-relations functions. The specific capabilities the corporate structure can thus provide include:

- *The Development of a Coordinated and Focused Strategic Marketing Plan

- *The Capability to Screen and Pursue Specific Business Opportunities

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*The Compilation and Maintenance of a Core Competency Data Base of Web Members

*Provision of a Single Point of Contact for Customers

*The Ability to Creatively Reconfigure the Core Competencies, Customized to Each Opportunity

*Coordinate the Management of Project Teams (VOs)

*Provide a Mechanism to Ascertain and Implement New Business Practices

*Search for Other Potential Members and Bring in New Members to Augment the Competencies of the Web

In addition, there were important liability, tax, and anti-trust considerations that factored into the decision to incorporate the Web. Through incorporating as a classification "C," regular for-profit corporation, members of the web are only liable, above the value of their shareholdings (\$1.00 per member), in project contracts in which they are directly participating. The tax consequences of participation in such an arrangement have been contained by keeping the profits of the umbrella corporation, Agile Web, inc. itself, to a minimum. Accordingly, the entity itself retains only enough money to cover its overhead costs. The rest of the revenues will be disbursed to the member companies, based upon their participation in the respective project. Furthermore, forsaking

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dividend payments to members will prevent double taxation from taking effect. Finally, anti-trust problems can also be avoided, as in this arrangement members are clearly permitted to share cost-information related to projects being cooperatively undertaken.⁴

In combination then, moving agility into action at the small business level, required a feeling of joint-involvement and ownership, a level of cohesion and coordination for effective customer interaction, and a legal umbrella--all of which were provided through a strategy of incorporation. Despite a few drawbacks, like some additional overhead costs resulting from liability insurance, the trade-off appears to have been a successful one, with members showing an increased sense of involvement. What is more, joint activities now enjoy a level of coordination that would not have been possible given the significant time and resource constraints facing small to midcap firms. Overall, incorporation as a single umbrella-style entity has been a unique and integral step toward making the agile

⁴A more extensive discussion of legal issues pertinent to the operation of a Web is provided in a case-study devoted entirely to the subject (forthcoming).

practice of forming virtual organizations a reality for
the small manufacturers of Agile Web.

Gregory C. Kunkle
Program Manager
Agility Forum

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Eastern PA Business Journal, July 10-16, 1995: High-tech Manufactureres Join Forces in Agile Web

Eastern Pennsylvania Companies Form Unique Corporate Entity
To Provide New Approach to "Agile" Manufacturing

BETHLEHEM, PA –The Ben Franklin Technology Center at Lehigh University has announced the formation of Agile Web, Inc., a unique new corporation formed by 19 small to medium-sized companies in eastern Pennsylvania.

The company has been established with the express purpose of providing a new form of integrated supplier-chain applying the techniques of agility for fast-response product design and manufacturing.

Agility, which has been hailed as the new approach to manufacturing in the 21st century, has come into widespread practice among large companies confronting growing demand for customized output as opposed to mass production.

According to officials at Ben Franklin Technology Center, Agile Web is unique in that it

--more--

brings together a group of highly experienced entrepreneurs who have successfully built individual companies to unleash their combined inventiveness on behalf of customers with constantly changing needs for customized solutions in fast-response product design and manufacturing.

A key feature of the Agile Web concept is its flexibility; in effect, it reconfigures itself by selecting from among member companies' capabilities to meet the precise needs of each customer.

In market research studies, the concept was shown to be particularly appealing to companies engaged in widespread new product development, where there is a pressing need for outside sources with diversified capabilities in product-design and prototype production. The Web will also work with customers who want resupply or new parts where they have already done the design work.

Potential customers for Agile Web services include large diversified manufacturers, mid-cap companies either in expansion or outsourcing modes, and startup companies which may have limited or no production facilities.

In particular, Agile Web, Inc.'s capabilities are well suited to serving the defense sector,

-more-

where there is a pressing need to maintain a supplier base to provide for rapid production of spare parts and supplies as well as support large prime contractors in fulfilling demanding new systems requirements.

Named to head Agile Web, Inc. is Ted Y. Nickel, a former IBM executive who was part of the team that developed the initial concept of agility in manufacturing. As CEO, Nickel will direct all facets of Agile Web's introduction and project management, with support from the Ben Franklin Technology Center staff and individual companies in the Web. Nickel reports to a five-person board of directors made up of executives from member companies and the Ben Franklin Technology Center staff. Ownership of the new corporation is divided equally among the member companies.

Nickel said he expects Agile Web to establish a prototype for how small companies can productively apply the concept of agility, as defined in a landmark study by the Iacocca Institute, also located at Lehigh University.

That study, which included participation by a panel of industrialists seeking to determine how U.S. manufacturers can compete effectively, developed the concept of agility as an approach to capitalize on a trend toward customization in product development.

-more-

According to Dr. Roger Nagel, one of the developers of the agility concept and now executive director of the Iacocca Institute, the agile corporation recognizes the desirability of maximum flexibility in seeking new ways to anticipate and respond to the needs of customers, functioning more as a business partner in developing solutions than as simply a supplier.

In addition to agility, the formation of Agile Web, Inc. is an outgrowth of the trend among purchasers toward consolidating supplier chains. It is believed that Agile Web, Inc. can establish a new model of business practices among small and medium-sized manufacturers seeking to compete effectively in an era of consolidation of suppliers and customization in production.

Increasingly, large contractors have sought to reduce the number of single-task subcontractors in an effort to reduce administrative burdens, improve controls, and accelerate the overall production-and-delivery process. Many have established their own supplier chains, assuming increased administrative responsibility in return for increased speed and efficiency.

The Agile Web provides a totally-coordinated resource through concept, design, manufacture, and final assembly. A single point of contact directs all aspects of multi-

-more-

phase design-and-production projects. Moreover, Agile Web companies provide design engineering services with an intent to meet customers' aspirations for improvements in cost or quality of finished goods without adding to their internal overhead.

Web member companies, with combined revenues of \$250 million, have a broad diversity of capabilities. They include manufacture of electronics and mechanical assembly services of circuit boards, electro-mechanical equipment, precision machining and fabricating, custom die castings, complex wire assemblies, custom printed circuit boards, high quality communications equipment, precision sheet metal stampings, and custom finishes such as powder metallization and polishing.

In the area of new product development, Agile Web capabilities include prototyping, concept design, industrial design, pre-production, product engineering, production tooling, full-scale manufacturing and testing.

Funding to develop the Agile Web concept was provided by the federally-sponsored Technology Reinvestment Project matched by a portion of the Ben Franklin Technology Center's annual appropriation from the Pennsylvania Department of Commerce.

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The Evolution of Agile Web, Inc.

The concept for Agile Web, Inc. has evolved over the past several years as an outgrowth of two significant developments: the emergence of the agility concept in manufacturing, and the trend toward consolidating supplier chains in fabricated products.

Beginning in the late 80s, with the onset of widespread corporate downsizing, manufacturers began reducing their supplier base in an effort to add efficiency to the procurement process. This period also saw the beginnings of contractors organizing and managing supplier chains.

Small companies in particular were vulnerable to the trend toward consolidating the supplier base. Although these small firms weren't significantly affected yet, longer range the threat was unmistakable. It was during this period that a purchaser-inspired emphasis on partnering was increased in an attempt to meet changing needs and expectations among contractors.

The trend was particularly disquieting to officials at the Northeast Tier Ben Franklin Technology Center at Lehigh University insofar as eastern Pennsylvania's industrial base was overwhelmingly populated with various types of small to medium-sized manufacturers—precisely the sector under threat.

In response, Executive Director Mark Lang and his staff began considering how combining the resources of small to medium-sized manufacturing companies could lead to new business opportunities that were unavailable to the companies individually.

Their pursuit: to uncover opportunity from amid problems and threats— not only to protect jobs, but to develop an approach to generating new growth and economic vitality in the region. Indeed, what was envisioned was an opportunity to rearrange— possibly even revolutionize— business practices to enable small companies to compete more effectively in an environment of constant change.

At the same time, Lang's colleagues at Lehigh University's Iacocca Institute were defining the concept of agility, which would later be hailed as the new approach to manufacturing in the 21st century. There, Roger Nagel, formerly head of automation at International Harvester (and now the Institute's Executive Director), assembled executives from 13 prominent manufacturers to address the challenge of devising a

new approach whereby the U.S. could regain its manufacturing competitiveness. Nagel and other visionaries among the industrialists saw that companies succeeding in an evolving global economy shared certain characteristics, among them the ability to thrive and prosper in the changing economic environment and the ability to customize their products to the needs of specific companies, single contracts, even, they foresaw, to the needs of the individual.

Noting the work of the Agility Forum and the progress several large corporations were making in applying the principles of agility to compete more effectively, officials at Ben Franklin Technology Center set out to determine how agility could be productively applied among small to medium-sized enterprises.

Thus, the concept of Agile Web, Inc. emerged in early 1993: a group of companies with complementary capabilities, interwoven in a supply web, functioning as an agile manufacturer, with speed and efficiency in meeting emerging needs for customized output. In short, what manufacturing opportunities one company could not handle alone, several companies joining forces with strong communication and cooperation could handle together, creating more business opportunities for themselves and greater value for the customer.

Throughout that spring and summer, Ben Franklin executives met with candidates for inclusion in the Web. Sought were companies with established track records, up-to-date technology, complementary capabilities and an interest in taking part in something entirely new.

Invariably, the initial response from prospective member companies was one of interest but skepticism, the founders recall. However, as heads of small companies, the CEOs already were possessed of entrepreneurial mindsets and were intrigued by the concept, quickly recognizing potential benefits. As talks progressed, doubts dissipated, and companies signed on for what would be a long and time-consuming process of working out myriad complexities in structuring the web.

Meanwhile, at the federal level, government forecasters in several government departments and Congressional leaders became concerned about the ability of American industry to fill the needs of the defense sector and compete effectively in an increasingly demanding global market. Budget cuts forced the rethinking of the timeworn strategy of maintaining vast stockpiles of military hardware for any contingency, yet unpredictable flare-ups in global fighting continually produced an ever-changing need for spare parts and material. To help meet the growing needs of the defense sector, government officials developed the Technology Reinvestment Project to help American industry reinvent itself to meet external challenges as well as to support the needs of the military.

By August 1993, Ben Franklin had commitments from 19 participating companies. They agreed to participate in the site visit conducted by officials with the federal

government's Technology Reinvestment Project which was in the process of evaluating hundreds of grant proposals seeking funding for concepts aimed at strengthening the nation's small-company industrial base and meeting the needs of the defense sector.

In October of 1993, the Ben Franklin Technology Center was awarded a \$2 million grant over two years to determine how agility could be applied in small to medium-sized manufacturing companies. With that commitment, the framework for what would formally become Agile Web, Inc. was in place.

Over the next 18 months, Ben Franklin officials and executives of Agile Web member companies worked to fully define the concept, its implementation strategy and its operating procedures.

Numerous meetings were held with prospective customers, including major contractors such as APD Cryogenics, Rockwell, Texas Instruments and IBM, as well as mid-cap and startup companies. Interest in the concept and in working with Agile Web, Inc. was clearly confirmed, and the challenges facing the Web in providing services with increased value were equally clear.

Agile Web, Inc. was launched in June. Ted Y. Nickel, a former IBM executive and one of the original industry leaders who developed the agility concept at the landmark summit at the Iacocca Institute, was appointed CEO of the new corporation. Nickel, who is on loan from the Ben Franklin Technology Center, will report to the Agile Web, Inc. board of directors, which is made up of five representatives from member companies and the Ben Franklin Technology Center.

Questions and Answers on the Agile Web

1. What is Agile Web, Inc?

Agile Web, Inc. is a unique new corporation representing the collective capabilities of 19 small to medium-sized successful manufacturing and product-design companies in eastern Pennsylvania. The companies have combined sales of \$250 million.

2. Why was it formed?

Agile Web, Inc. was formed to meet an emerging need for an integrated multi-phase source of manufactured assemblies involving electronics and/or electromechanical products. In addition to meeting this emerging market need, Agile Web provides an opportunity for small, specialized design and manufacturing companies to compete for larger, multi-phase contracts that would otherwise be out of reach for each one individually. It is believed that Agile Web, Inc. can establish a new model of business practices among small and medium-sized manufacturers seeking to compete effectively in an era of consolidation of suppliers and customization in production.

3. Why is it needed?

Increasingly, large companies have sought to reduce the number of single-task contractors in a supplier chain, occasionally even taking on additional administrative burdens in managing their own supplier network. This is both a threat and an opportunity for small to medium-sized suppliers. The Agile Web offers a totally integrated supplier chain with unprecedented flexibility and the resources to add value in quality and productivity. Because of the diversity of its capabilities and its unique organizational configuration, Agile Web companies-- through a single point of contact-- can add their collective experience to influence concept development through product design, manufacture and final assembly for the most trouble-free production possible. This combination of breadth and flexibility is intended to deliver a demonstrably higher level of value-added than what is presently available in contract manufacturing today. Because it is made up of successful entrepreneurs, the Agile Web is oriented to forward thinking and leading-edge approaches.

4. How does the Web work?

Agile Web management will meet with prospective customers to identify precise areas in which the Web's integrated design and production capabilities may be applicable. The Web will actively seek opportunities where customers have needs that are not being fully satisfied by conventional sources. This may entail new product development and introduction as well as the application of entirely new technology or process redesign. Prospective customers include major contractors, mid-cap companies and startups which may need initial production facilities.

5. Is this a "virtual organization"?

Agile Web, Inc. is a Pennsylvania business corporation, privately-held by its member company shareholders.

In effect, however, it functions as a virtual organization, insofar as on a project-by-project basis different companies within the web participate to provide precisely the capabilities needed for each individual customer contract. This creates a level of efficiency and flexibility that is at the heart of the concept's efficacy in terms of value-added to customers.

6. How is Agile Web, Inc. financially supported?

Agile Web's initial funding has come from the federal government's Technology Reinvestment Project, matched by a portion of the Ben Franklin Technology Center's annual appropriation from the Pennsylvania Department of Commerce.

Once the new corporation is fully operational, it will be supported by funds generated from sales.

7. Why call it the Agile Web?

Agile refers to the concept of agility, developed in a landmark study involving prominent industrial executives facilitated by the Iacocca Institute at Lehigh University. Agile companies are flexible, changing to meet the customer's needs but also anticipating them. The Web refers to the interconnectedness of the companies involved, and the ability of the web companies to knit together in precisely the right configuration to achieve each task with speed, efficiency, and without waste.

8. Why is it believed the Agile Web will be successful?

Agile Web will be successful because of the combined skills of its component organizations, their respective track records of building successful enterprises, their entrepreneurial orientation and their dedication to serving the customers' needs. A key to Agile Web's success will be its breadth of skills and its flexibility in utilizing specific skills at precisely the moment they are needed, with no wasted time or expense.

9. What are the Web's advantages compared to purchasing from individual companies?

The Agile Web provides a totally coordinated approach to multi-task contracting through a single point of contact. As an organization of successful, forward-thinking companies, the Web is committed to new levels of quality and flexibility to achieve solutions, functioning as true partners with customers.

10. What are its advantages compared to purchasing from a larger company?

The Agile Web puts together the specific talents needed for the job without carrying the overhead for capabilities not needed for the specific project under development. Each company within the Web provides the service it does best, so each component of the project is made up of the highest quality, to produce a final product that is superior.

11. What is agility?

Agility is a new business and manufacturing philosophy. A short answer is that the truly agile company is able to say yes to a customer's request no matter what is asked. An agile company provides solutions.

The agile company is characterized by a sharing of needed information across the organization rather than within a traditional hierarchical structure. Products are delivered to the marketplace faster and pinpointed to the customer's requirements.

12. What types of projects is the Agile Web designed to produce?

Web member companies have a broad range of capabilities including assembly services for circuit boards, manufacture of electromechanical equipment, precision machining and fabricating, custom die castings, complex wire assemblies, custom printed circuit boards, high quality communications equipment, precision sheet metal, stamping, and custom finishes such as powder metallization and polishing. In the area of new product development, Agile Web capabilities include prototyping, concept design, industrial design, pre-production, product engineering, production tooling, full-scale manufacturing and testing. Specific industry segments targeted by Agile Web, Inc. include telecommunications, mobile communications, medical and home care medical, manufacturing systems and other capital equipment, computer enclosures, PC boards, robotics and motion control, consumer electronics, and the transportation industry. In particular, Agile Web's capabilities are well suited to serving the needs of the defense sector.

13. Will the Agile Web be able to respond to business opportunities as quickly as a fully integrated company?

The Agile Web member companies have a commitment to making speed its competitive advantage in the marketplace. Companies within the Web will be able to communicate through both e-mail and the electronic data interchange (edi), a computer-linked communications network, to facilitate quick and accurate responses.

14. Why will independent companies adopt a spirit of cooperation to work together within the Web?

Actually, several Web companies have worked cooperatively in the past. The Web concept expands the business opportunities of individual companies rather than limiting them, thus promoting cooperation. Successful, forward-looking enterprises joined to form the Web precisely because they saw the advantages of pooling their collective resources, becoming a goal-oriented supplier chain.

15. Has there been any market research?

Yes. Over the past two years we have worked with a number of major contractors, including APD Cryogenics, Rockwell International, Texas Instruments, and IBM, among others. All have indicated interest in the Agile Web concept and have encouraged our efforts.

16. Is this Web unique?

The new company is being established with the express purpose of applying the concept of agility among small to medium-sized companies to provide a first-of-its-kind supplier chain for innovative design and manufacturing.

17. Who am I dealing with and who's accountable if something goes wrong?

The customer's primary contact with the Web is Ted Nickel, president and chief executive officer. In addition, customers are free to meet with representatives of the participating companies during contract discussions, and, thereafter, throughout the course of the project. Thus, at any time, customers can communicate directly with the people actually doing the work under the leadership of Agile Web, Inc., just as if they were all working for the same firm. At the same time, through a single source at the Web, they can be immediately informed of the precise status of projects.

Agile Web, Inc. as prime contractor, is accountable to the customer. Additionally, participating web companies will have obligations as subcontractors. In the event of a dispute, the customer has recourse through Agile Web, Inc. Each participating company will sign a formal agreement setting forth its obligations on individual projects.

18. What was the selection criteria for Web members?

Web member companies were selected on the basis of 1) being successful enterprises with established reputations for quality products and forward thinking, 2) having complementary capabilities that are naturally linked in the supplier chain from design to production and delivery of completed electronic and/or electromechanical assemblies, and 3) being small to medium-sized enterprises which would benefit from joint involvement in an integrated supplier chain.

19. Why is this a Department of Defense initiative?

The Department of Defense believes it is in the national interest to develop a supplier base which can meet the increasing needs for new and upgraded weapons systems more quickly and cost effectively than existing arrangements with dedicated suppliers. To this end, the DoD funded the Technology Reinvestment Project to develop quick and responsive ways of replenishing replacement parts as well as producing entirely new systems and supplies on demand.

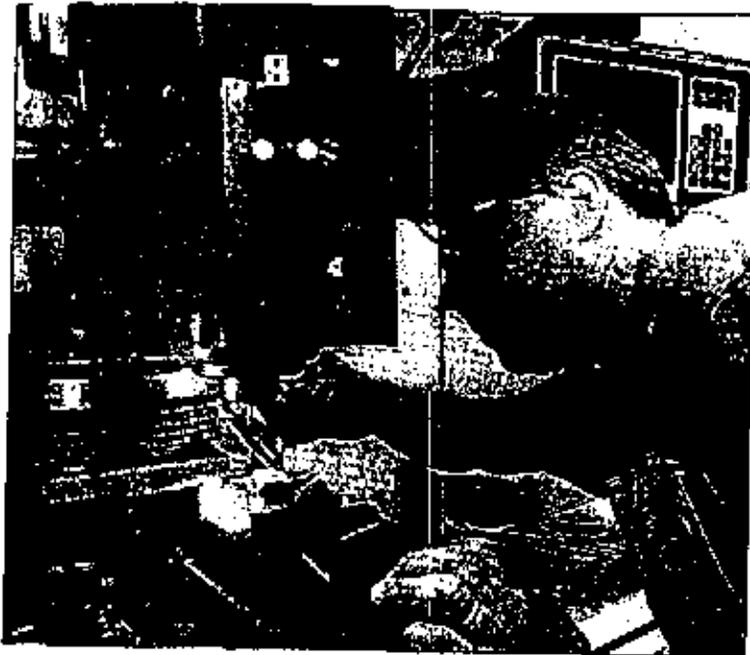
20. What are some of Agile Web's manufacturing capabilities?

Web member companies have extensive experience and expertise in the following fields:

- design and production of electromechanical assemblies;
- product industrial design, manufacturing and comprehensive development and pre-production services;
- rapid prototyping services;
- castings from design to machining in various alloys requiring up to a 1200 die locking force;
- precision machining;
- automated material handling;
- stamping of precision parts requiring up to a 2700 ton press;
- precision sheet metal fabrication;
- plastic molding from design of the molds to completion;
- custom metal fabrication;
- surface finishing including buffing, polishing, computerized graphics, silk screening, blast media etching, powder coating, teflon coating, spray metallization, porcelain enameling and other applications.
- electronics including advanced circuit board design and robotic assembly of printed circuit boards;
- full design, manufacture, and test of hardware and software required for high-speed telecommunications components including encryption technologies for commercial as well as defense contractors.
- customized refrigeration equipment assemblies;
- wire forming and fabrication;
- tube bending and shaping;
- robotic MIG and TIG welding;
- CNC wire EDM.

9: Ted Nickel

ON: PZI



By Crawford/Courier Times

Model maker Bill Smith checks measurements on the job at Paramount Industries.

Competitors find teamwork pays off

Can competitors work together to increase business? Yes, says a new corporation, which has set out to prove its theory.

By Tom Johnson
Courier Times

A group of local companies is finding that there's strength in numbers.

Agile Web Inc. was formally launched last month as an umbrella organization uniting small companies, according to chief executive officer Ted Nickel.

The concept is fairly simple, Nickel explained: Let's say a customer has an idea for an electromechanical device. Typically, the customer would find one subcontractor to handle the electrical work, another subcontractor to build the housing for the device, another to handle packaging and distribution, and so on.

That approach tends to be expensive and time-consuming, Nickel said, while the Agile Web approach saves time and money.

"A customer comes to the Web and says, 'We need an electromechanical device that has to satisfy this set of needs — some sheet metal parts, some machined parts, electrical parts, and so on,'" he said.

"We can rapidly choose the right set of companies from the 19 in the Web," he added. "We can bring to the table very quickly the right group to meet the customer's needs and propose a solution."

Jim Williams of Paramount Industries in Middletown, a company that specializes in product design, said the Web is an effective way to enhance business.

"This gives us a lot of credibility, makes us look more favorable to our clients," Williams said. "The Web offers clients a path that takes them from concept to manufacturing."

The Web was formed in response to trends among large corporations, partic-

Web members

The following Pennsylvania companies, which employ more than 2,000 workers and have combined revenues of \$250 million, are members of Agile Web:

- Allen Integrated Assemblies, Macungie
- Benner Metals, Stroudsburg
- Blue Mountain Machine, Lehighton
- Blue Ridge Pressure Castings, Lehighton
- Cook Specialty, Green Lane
- Electro-Space Fabricators, Tipton
- General Atomics, Philadelphia
- Jade Carbonado, Huntingdon Valley
- Lamm's Machine, Allentown
- Loral/Microcom, Westminster
- Micro Tool, Bethlehem
- New Standard Corp., Mount Joy
- Paramount Industries, Middletown
- ProtoCAM, Northampton County
- Prager-Painter Stove Works, Reading
- PS Group, Telford
- Suckle Corp., Scranton
- SorTech Industries, York
- World Electronics, Morgantown

For more information, contact Ted Nickel at (610) 758-8580.

itself to meet the needs of individual customers. The technology center received a \$2 million federal grant to develop the framework for Agile Web.

Now, major companies have to deal with one central point of contact — Nickel — who coordinates the approach for any given project. Customers also have to pay only one invoice. Agile Web handles the billing and distribution of payment to members.

See TEAMWORK, B1



...said.

Studies by the Jacobs Institute and the Ben Franklin Technology Center, both of which are based at Lehigh University in Bethlehem, found that large companies wanted to reduce their number of single-task subcontractors in an effort to reduce administrative burdens, improve control and accelerate production and delivery.

The solution: multiple companies in a flexible framework that reconfigures



Jay Christman / Courier Times

Craig Hidalgo, Paramount's senior engineer

Teamwork: Web aids competitors

From page 80

Web members are able to handle all aspects of production: concept design, prototyping, industrial design, pre-production, product engineering, production tooling, full-scale manufacturing and testing.

One of the most remarkable aspects of the Web is that some members are actually competitors.

"We have a number of sheet metal shops and machine shops, but all have different capabilities," Nickel said. "This has given the Web a rather strong position to pick and choose which company is best able to solve a particular customer's needs."

An added benefit, Nickel said, is flexibility: If one machine shop is busy, another is readily available within the Web.

While the Web currently has 10 members — and a representative of each is a Web shareholder — Nickel said more companies may join.

"I could envision going up to 25. Above and beyond that, things might become a bit unwieldy because people wouldn't be able to have the personal interaction," he said. "But we'd be willing to add members if they have capabilities we're lacking."



Jay Crawford / Courier Times

James R. Williams, CEO of Paramount Industries, is shown with a display of products his company has engineered and produced. He's holding a virtual reality headset.

L.V. TICKER	D2
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Business

AGILE WEB COMPANIES

Company	Employees	Line of business
Allan Integrated Assemblies, Macungie	N/A	Contract manufacturing of personal computer boards.
Banner Metals, Stroudsburg	89	Manufacturing of metal cabinets for computer, automotive and furniture industries.
Rise Mearns Machine, Lehighton	43	Computer-controlled precision machining and fabrication of wide variety of materials.
Rise Ridge Pressure Castings, Lehighton	150	Production and design of high-tech brass, aluminum and zinc custom die castings.
Cook Specialty, Green Lane	120	Metal and tube fabrication, wire forming, progressive stamping, welded and joined assemblies.
Electro-Space Fabricators, Tipton	180	Custom-printed circuit board card enclosures, precision sheet metal fabrication, plastic injection molding.
General Atronics, Philadelphia	170	High quality communications, signal processing, radar systems, naval weapons systems, tactical data link and surveillance systems.
Jade Corp., Huntingdon Valley	250	Automated equipment manufacture, precision machining, stamping and die design, subcontract manufacturing and assembly, prototyping and engineering services.
Lamm's Machine, Allentown	25	Computerized milling, wire and plunge electronic machining and grinding, plastic injection molding with in-house design and mold construction.
Lors Microcom, Warminster	235	Design and production of telemetry components and systems, in-house engineering, research and development, production of thru hole and surface-mount assemblies.
Micro Tool, Bethlehem	26	Computerized milling, both production and prototype runs, custom punch and cutting dies.
New Standard Corp., Mount Joy	325	Metal stamping, fabrication and assembly, die design and fabrication, welding, secondary tapping and machining, drawing and finishing.
Paramount Industries, Langhorne	60	Product development services in toys, telecommunications and medical markets.
ProtoCam, Northampton	50	Design and engineering including manufacturing engineering, computer-aided design interface to stereolithography and other rapid prototyping equipment; scan models, short-run production.
Prizer-Painter Stove Works, Reading	8	Porcelain enameling of steel and cast iron; metal fabrication and product assembly.
PS Group, Telford	35	Factory automation system engineering; manufacturing of assembly systems; material conveying.
Steele Corp., Southampton	N/A	Precision sheet metal stamping, labeling, finishing and assembly of parts.
SurTech Industries, York	80	Specialized and job-shop finishing, powder coatings, blasting, buffing and polishing, silk screening and computer graphics, etching on metal and glass, metalizing and burn-off services.
WORLD Electronics, Morgantown	44	Custom printed circuit board design with computer aided facilities, parts procurement and assembly, surface mount and thru-hole assemblies.

N/A - Did not disclose

Source: Sheaffer & Associates

Web poised for national emergencies

By DAN SIHOPE
Of The Morning Call

Remember Pearl Harbor?

The 19 manufacturing companies forming Agile Web Inc. of Bethlehem do.

They're part of America's pledge since Dec. 7, 1941, to remain vigilant against surprise attacks — from military or from foreign trade.

And, because it's been set up before the next conflict, the web will support manufacturers in peacetime, too.

"This started back in 1991 when the Department of Defense was getting its budget approved by Congress," explained Ted Y. Nickel, chief executive officer of Agile Web.

"Because defense contractors were hit with the budget cuts, we were asked to come up with a way to keep the companies together so their capabilities would still be there."

Agile Web is spun from various specialists: A toy designer in Langhorne, Bucks County. A stove works in Reading. An electronic sign maker in Macungie. A maker of circuit boards for computers in Tipton.

These, and others from eastern Pennsylvania, have formed a group of manufacturers that may someday help

Please See WEB Page D2 ▶



CLARENCE ELIE RIVERA / The Morning Call
Jeff Lamm in front of a computerized milling machine

WEB

► Continued From Page D1

protect the United States during an unexpected military crisis.

For most, keeping American manufacturing healthy is the most patriotic part of the program.

"Many of the big guys — Ingersoll-Dresser Pump Co. in Allentown, Cooper Industries Inc. in Palster Township and others — are gone," said Dave Krisovitch, general manager of Bethlehem-based Milco Tool Co. Inc., which employs 28 people and has about \$3 million in sales annually.

"Besides the new warehouses ... what we have left in the Lehigh Valley are a lot of smaller manufacturers who still do pretty good work.

"We tend to feed off the larger manufacturers, so we are going outside the area for business. The web can make us more competitive."

Agile Web was an idea created by the Ben Franklin Technology Center and the Iacocca Institute at Lehigh University and embraced by President Clinton.

Mark Lang, executive director of the Northeast Tier Ben Franklin Technology Center at Lehigh, had been concerned about that situation since the late 1980s, when manufacturers began reducing their suppliers in an effort to improve efficiency, Nickel said.

In this, Lang found an opportunity to rearrange business practices to enable small companies to compete more effectively in a changing environment.

Simultaneously, Lang's colleagues at the Iacocca Institute were defining the concept of agility, which would be hailed as a new approach to manufacturing in the 21st century, Nickel said.

Rogel N. Nagel, executive director of the institute, studied 13 prominent manufacturers and learned that they shared the abilities of thriving in a changing environment and customizing products to the needs of customers.

An example is the new Boeing 777 airliner, Boeing designed, assembled and marketed the jet, but doesn't make the parts. Rather, it formed an international network — or web — of suppliers to make the components, including the plane's structure.

It's called agility.

The idea of agile manufacturing was spawned in the Agile Manufacturing Enterprise Forum at the Iacocca Institute, named after former Chrysler Corp. chairman Lee Iacocca, who helped raise money to start it.

And in 1993, the concept for Agile Web was formed.

The Ben Franklin Technology Center received a \$2 million grant for two years and hired Nickel, a former IBM executive and a developer of the agility concept.

Meetings were held with prospective customers, including APD Cryogenics Inc. of Allentown, Rockwell International Corp. of Seal Beach, Calif., Texas Instruments Inc. of Dallas and IBM Corp. of Armonk, N.Y.

The 19 members of Agile Web were picked by the Ben Franklin Technology Center, based on management's forward thinking and often previous involvement with the center.

Combining the companies in the web, they employ more than 7,000 people and have annual sales of more than \$250 million.

Ownership of the new corporation is divided equally among the member companies.

If a company chooses to drop out, it simply sells back its 1% share of stock to Agile Web, said

Dwayne Hansen, director of Manufacturing Initiatives at the Bethlehem center.

A two-thirds vote by members of the web resolves a manufacturing company.

A company that wants to join can show a reference from a web member or show the web's five-member board that it can provide capability that the group needs.

The concept of agile manufacturing — the ability to quickly and economically move from one product to another with little disruption — has been developing in industrial America as companies struggle with foreign makers over the past decade.

This new agility may lead to "virtual" enterprises, in which several companies work on a product for a certain time and then break up as the participants go on to other jobs.

Last year, the Defense Department sought bids for \$30 million in projects involving agile manufacturing.

Agile Web a first of its kind, and could serve as a prototype for others across the country, according to manufacturing experts.

Whether they've rolled out a Mustang or an Ecolab, no one knows yet.

While Agile Web has won just one proposal since being formed in June, top officials believe it will become a venture exceeding \$100 million annually by the end of this century.

"A number of the companies in Agile Web are defense-oriented," Nickel said. "But not all of them. They are machine, sheet metal, electronics and design shops. They offer full-service."

"Many saw customers reducing the number of suppliers they work with, and they see the web as the future."

In the short term, Nickel said Agile Web plans to be self-sufficient by the end of this year.

"It's important for us to maintain a strong manufacturing base," said Bill Stracca Jr., president of Electro Space, which employs 180 people and has annual sales exceeding \$16 million. "And we're doing this together."

"With 19 members in Agile Web, we have diverse capabilities. If a certain product is needed, we can put together the special companies who will sit down, design the product and manufacture it — very quickly."

Potential customers for Agile Web include large diversified manufacturers, mid-size companies that are expanding or subcontracting work and start-up companies, Nickel said.

"The customer comes to us," Nickel said. "One of our 19 different companies, we pick the handful that would offer the best opportunity for the web to help the customers and supplier."

The web companies form a resource team, and get a proposal from a customer. Then they come to an agreement on who is responsible for what. The money for the deal goes only to those who participate on that project.

"We don't see a large cash flow in Agile Web. The profits will flow back to the participating companies."

For others, the flow of information is an adjustment.

"It gives us exposure in information as a group," said Jeff Lamm, president of Lamm's Machine Inc. in Allentown, which employs 20 people and has annual sales of \$3.8 million. "We share ideas and learn about other business."

"We have to share stuff [though] we would never share."



Franklin

"Building Partnerships for Competitive Advantage"

New Business

Growth

Manufacturing
Competitiveness

Work Force
Development

May 6, 1995

George Orzel
WL/MTII
2977 P Street, Suite 6
WPAFB, OH 45433-7739

Dear George:

I am pleased to submit this fourth interim report (Jan 1, 1995 - Mar 31, 1995) for the Agile Web Pilot Project being funded under the Technology Reinvestment Program (TRP). I have included both a paper copy and the report on diskette.

If you have any questions or need more information, please give me a call.

Sincerely,

Dwayne L. Hansen
Director, Manufacturing Initiatives

cc: Michael Hitchcock
Leo Plonsky
Frank Estock
Gerald Stoops
Mark Lang

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

_____ AGILE WEB PILOT PROGRAM _____

Organization Name

_____ 1/1/95 _____ TO _____ 3/31/95 _____

Reporting Period

Quarterly Report Number 95-1 _____

_____ April 30, 1995 _____

Date of Submission

_____ *Aug 27th* _____

Director's Signature

ALTERNATE DEPLOYMENT PILOT PROJECT
QUARTERLY REPORTING GUIDELINES

_____ **AGILE WEB PILOT PROGRAM** _____

Organization Name

_____ *1/1/95* _____ *TO* _____ *3/31/95* _____

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_____ *April 30, 1995* _____

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1.1 PILOT INFORMATION

a. Pilot Name:

AGILE WEB PILOT PROGRAM

b. Pilot Acronym:

c. Date Established:

1/1/1994

d. Pilot Director:

Dwayne L. Hansen

e. Director's Telephone Number:

610/758-5238

1.2 PUBLIC ACCESS

a. Mailing Address:

Ben Franklin Technology Center
125 Goodman Drive
Bethlehem PA 18015

b. Street Address (if different):

c. Phone Number:

610/758-5200

d. Fax Number:

610/861-5918

e. E-Mail:

Dwayne @ nclbfp.org

1.3 AFFILIATIONS

a. Name of Host Organization with City, State and ZIP:
Organization which administers the pilot cooperative agreement

b. Name of Affiliate(s) with City, State and ZIP:
Long-term, working relationship with the Pilot

Northeast Tier Ben Franklin Technology Center
125 Goodman Drive

Bethlehem PA 18015

MICROCCOM

965 Thomas Drive

Warminster PA 18974

PRIMO GAM

3848 Cherryville Road

Northampton PA 18067

PARAMOUNT INDUSTRIES

2475 BIG OAK ROAD

LANGHORNE PA 19047

WORLD ELECTRONICS

ROUTE 10 BETHLEHEM DRIVE

MORGANTOWN PA 19543

Description of the geographic area in which the Pilot Service focuses its resources

Participants in the pilot are located in Northeastern Pennsylvania and bordering New York state, but results from the pilot can be deployed to help small and midsize manufacturers across the country.

1.5 TYPE AND NUMBER OF TARGETED MANUFACTURING ESTABLISHMENTS IN TARGET REGION

	Number of Establishments Targeted:	Number of Establishments Targeted:
20XX Food & Kindred Products	_____	_____
21XX Tobacco Products	_____	_____
22XX Textile Mill Products	_____	_____
23XX Apparel & Textile Products	_____	_____
24XX Lumber & Wood Products	_____	_____
25XX Furniture & Fixtures	_____	_____
26XX Paper & Allied Products	_____	_____
27XX Printing & Publishing	_____	_____
28XX Chemicals & Allied Products	_____	_____
29XX Petroleum & Coal Products	_____	_____
30XX Rubber & Misc. Plastics Products	_____	_____
31XX Leather & Leather Products	_____	_____
32XX Stone, Clay & Glass Products	_____	_____
33XX Primary Metals Industries	_____	_____
34XX Fabricated Metal Products	_____	_____
35XX Industrial Machinery & Equipment	_____	_____
36XX Electronic & Other Electric Equipment	_____	_____
37XX Transportation Equipment	_____	_____
38XX Measuring & Controlling Devices	_____	_____
39XX Misc. Manufacturing Industries	_____	_____
87 XX Engineering Services	_____	_____
XX _____	_____	_____

Pilot Version 1.0, 15 Apr 94

PILOT SERVICE STAFFING

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1.6 NUMBER OF PERSONNEL

0000a. Field Agents or Field Engineers:
 00000000 Provide direct service or outreach in the field

0000b. Technical Specialists:
 Serve pilot needs, utilizing their own expertise

0000c. Management or Support Staff:
 Support pilot but do not provide pilot service

0000d. Total Personnel:
 Summary of a-c above

	<u>Full Time</u>	<u>Part Time</u>	<u>Full Time Equiv. (FTEE)</u>
0000a. Field Agents or Field Engineers:	1	0	1
0000b. Technical Specialists:	0	0	0
0000c. Management or Support Staff:	2	2	4
0000d. Total Personnel:	3	2	5

1.7 CONTRACTED SERVICES

00000a. Consultants Contracted for Client-related Services

00000b. Consultants Contracted for Pilot Assistance

00000c. NPOs Contracted for Client-related Services

00000d. NPOs Contracted for Pilot Assistance

	<u>Quarter</u>	<u>Cumulative</u>
00000a. Consultants Contracted for Client-related Services	0	1
00000b. Consultants Contracted for Pilot Assistance	1	6
00000c. NPOs Contracted for Client-related Services	0	1
00000d. NPOs Contracted for Pilot Assistance	0	5

NOTE: ENTER NUMBER — NOT DOLLAR VALUES — OF CONSULTANTS OR NPOs CONTRACTED.
 "NPOs" REFER TO NON-PROFIT OR NOT-FOR-PROFIT ORGANIZATIONS.

MISSION, SERVICES AND PLANS

2.1 OBJECTIVE STATEMENT

This program is designed to validate the premise that "Cooperation enhances competitive capability" with the corollary that "small firms appropriately cooperating can beat other small and large providers". Competitiveness in the future will require that manufacturers and their supply chains develop new working relationships characterized by teamwork, shared risks and rewards, and close communications. This program proposes to develop, demonstrate, and evaluate the dynamics of this new manufacturing system and practice, which we will call "agile manufacturing", through a carefully structured series of pilots carried out through collaboration between a group of large manufacturers, small suppliers, and organizations that can provide business and technical assistance to these two constituencies.

2.2 PROGRESS AND PLANS

We have now completed the fifth quarter of our pilot project and a significant change in the dynamics of the group has occurred. The combination of several events, including the growth of trust, the Simulation Day, the completion of Business Practice and Core Competency reviews, and the presentation of the Business Plan in January, culminated in the web members becoming more highly involved in addressing the issues raised by the plan. They are focused on the development of the new business practices required to function as both a Web and as virtual organizations. While the Ben Franklin staff continues to provide facilitation, support and resources, three committees - composed of and led by members of the supplier companies - have been formed to explore in depth the key legal, operational, and marketing issues of the Web.

In March, we decided to move forward with incorporation of the Agile Web as a for-profit c-corporation with each Web member company as an equal shareholder. We are also on the verge of choosing a marketing communications firm to help market the unique Web competencies to our selected targets - commercial firms committed to new product development and the defense industry. With the completion of the Business Practice Review and the analysis of core competencies, we now have a wealth of information from which to target areas of improvement and identify the tools required to operate successfully.

This 5th quarter progress report is divided into several areas of focus. These are: New Business Practices - Agile Web Structure; Cultural Issues of the Web; Understanding Strengths, Weaknesses, and Core Competencies; Pilot Projects; Executive Information Sessions; System Improvement Projects; Program Management; and Project Partnering.

MISSION, SERVICES AND PLANS

2.2.1 NEW BUSINESS PRACTICES - AGILE WEB STRUCTURE

Progress: In January, a draft business plan was presented to the Web members describing the elements of the business environment supporting the need for the Agile Web, the specific target market opportunities, the case for and structure of a Web entity, and the proposed procedures for operating the entity. Several advantages were identified supporting the need for a separate Web entity. They are:

- Providing a single point of contact and accountability for the customer
- Having a single decision maker to allow rapid response to customers
- Maintaining an understanding of all Web core competencies to match to customer needs
- Providing certain legal protections, including the elimination of joint and severable liability
- Supporting an infrastructure to allow small firms to form and operate virtual organizations quickly

The members then volunteered to join committees to review the plan and define the necessary detail to allow us to move forward. The three committees formed were:

- **Entity Committee** - to address:
 - Partner entrance and exit policies
 - Limits on competition within the Web
 - Start-up/Transition
 - Assignment of authority
 - Dispute resolution
- **Marketing Committee** - to address:
 - Product definition for the market
 - Marketing approach - next steps
 - Deficiencies in current competencies
 - Target services/market niche
 - Core competencies
 - Competency verification
- **Operations Committee**- to address:
 - The customer response process
 - Contract liabilities
 - Progress monitoring & quality control
 - Compensation guidelines
 - Keeping business within the Web
 - Retained earnings for contingencies

The committees met several times in person and via conference calls to develop their recommendations which were presented to the full group at a meeting in March. They agreed to draw up the incorporation and related documents to form a c-corporation governed by a five member board with each Web member having one equal share in the corporation. The Board will hire a president to run the daily operation of the entity. The model recommended gives sufficient authority to the president to make key decisions on such things as which

MISSION, SERVICES AND PLANS

members participate in each business opportunity to provide for quick response to the customer. What has been developed is an organization that uses standard contract and corporate law in creative ways to support the new paradigm of agility.

Plans: During the next quarter, we expect to incorporate the Agile Web and move forward aggressively to market the Web. The Ben Franklin staff will fill the role of the president until the Board hires a person for the position. The assignments of the committees have been enhanced. The Entity Committee will oversee the incorporation and transition to the entity. The Marketing Committee will become the Sales Team with responsibility for the marketing program and defining the sales process. The Operations Committee will focus on the procedures and "tools" required for the formation, operation, and dissolution of virtual organizations within the Web as the Tools Team.

2.2.2 CULTURAL ISSUES OF THE WEB

Progress: With the development of the business plan, the participation level of the Web members has increased significantly. It appears that the level of detail introduced by the plan has excited the interest of the companies to a greater extent than many of the conceptual discussions we had had previously. All but a few companies have active committee members who have contributed time to that effort during the quarter.

An interesting development recently occurred that serves as anecdotal evidence of the progress we are making in the area of trust among the Web. The Entity Committee recommended that the Web deal with as many issues as possible in a Web Ethics Statement, rather than in a legal contract. This Ethics Statement details the ethical practices that Web members are expected to use in their dealings with each other. This statement is not legally binding and is in fact a handshake deal of sorts. The members of the committee felt that writing a legally binding document for these issues did not fit the model of agility. While there will be some legal agreements, as required by law, this movement away from having everything in a contract is a clear indication of the levels of trust and confidence that have developed in the Web.

The membership of the Web has changed during the last few months. We have had one company drop out of the project. The reason is that they see themselves as trying to build a Web internal to their own company, through acquisition and vertical integration - a different model focused on a similar goal. Since they felt they would be a potential competitor to the Web, they have decided to leave the project.

MISSION, SERVICES AND PLANS

At the same time, we have added four companies to the Web in order to add needed competencies. They are

- **Paramount Industries** - a design engineering firm located in Langhorne, Pa.
- **ProtoCAM** - a rapid prototyping shop in Northampton, Pa.
- **Microcom** - a manufacturer of military communications equipment
- **WORLD Electronics** - a manufacturer of PC boards with surface mount technology

The integration of these new companies into the Web has been accomplished in a remarkably smooth fashion. Representatives of these companies have been active and are perceived by others as valuable contributors to the committee work described in the previous section. As was mentioned in previous reports, many Web members judge the commitment of other members by their level of participation, and these new members have been active from the start.

Plans: The Web members and the Entity committee will continue to refine a few remaining issues over the next quarter. They are reviewing various options put forward to handle conflicts arising within the Web so as to minimize the time and cost necessary to resolve them, while at the same time preserving the environment of trust and fairness needed for the Web to operate in an Agile fashion. Suggestions have ranged from the standard use of the legal system to the internal arbitration of disputes by Web members.

2.2.1 UNDERSTANDING STRENGTHS, WEAKNESSES, AND CORE COMPETENCIES

Progress: The consultants, J. Mitchell & Associates, have submitted their final report based on their Business Practices Review of the Web members. In addition to providing each individual company with an assessment of their business, they gave an overall "systems" view of the Web including recommended changes to enhance the agility of the group as a whole. The following six projects were recommended to be implemented over time:

- The formalization of a Performance Measurement System
- The generation of a Core Competencies Data Base
- The implementation of a Production Orchestrator System (project management)
- The implementation of a Product Configuration and Document Control System
- The formalization and integration of a Design Environment
- The adoption of an ISO 9000 certification strategy

We are currently reviewing these recommendations as well as the balance of the report in order to work these recommendations into our plans.

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Dr. Nagel has completed his initial analysis of the Web Core Competencies and organized them for input to a data base. He will be visiting the new members as well as returning to the original members to confirm the observations made. This information has already been a key input to the Marketing Committee and will provide the data for the Core Competency Database to be used by the Web to quickly identify the right resources to respond to a customer request. We see the structure and development of such a database as being a key deliverable of the pilot project.

Plans: As stated above, the recommendations of J. Mitchell & Associates will be reviewed and plans made to address the issues raised. In addition, the Nagel material will be used to develop the Core Competency Database.

2.2.4 PILOT PROJECTS

Progress: A key strategy of this pilot is to learn from experience as Web members work together on real orders. The critical time in forming virtual organizations is during the proposal preparation period, when firms see a business opportunity and try to work out how to address the opportunity together. This is where roles, responsibilities, risks, and rewards are worked out and where competencies and confidence become crucial. Our efforts to respond to real customer requests have been invaluable in helping us identify and work on these key issues, where the "rubber meets the road". All of our work on defining markets, identifying core competencies, creating a Web entity, trust and confidence, and the need to share information, has been looked at in a much more meaningful way when wrapped around real business opportunities. We have seen that it is when the companies actually observe how the others act and react to the realities of a business opportunity that confidence and trust are truly built. We have learned from our pilot project activities that if the customer is only interested in lowering the price of a "build-to-print" component or sub-assembly, it is difficult to tap the real advantages of a Web. But when new solutions are being sought, the collaborative strength of a Web can be of great value to the customer. Thus, in order to provide the maximum value-added, the Web should become involved through concurrent engineering early in the product development cycle. Additionally, we've seen that collaboration among the Web suppliers can result in greater value than many other collaborative efforts where the individual suppliers only deal with the customer and not each other. We have also seen yet more value from the fact that the Web members come with experience in many different industry sectors. Through the collaboration of the Web, we can take best-in-class practices common in one industry and bring that value to a customer in another industry where those practices are not common.

Many start-up and mid-cap companies take a step-at-a-time approach to new products and are reluctant to involve the Web until they are sure there is a market and that they have financing established and conceptual designs worked out. Thus we must have the customer's attention during a relatively small window of opportunity where they are ready to proceed and yet not already locked in to their final design. We recognize, therefore, the need to market the Web's capabilities to a broader range of potential customers using the strategy developed by the Marketing Committee.

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While our marketing strategy has focused on the area of new product development, the Agile Web staff has been contacting defense agencies (such as the DLA and Letterkenny Army Depot) and prime contractors (Rockwell and TI) in the defense industry. From those conversations we now see a value-added service that the Web can provide in the defense arena. There is often a need for a supplier to furnish small quantities of critical parts rapidly. In many cases, these parts, which at first appear to be normal resupply requirements, must be redesigned or upgraded to take advantage of current production technologies and product enhancement opportunities. With its wide array of capabilities and rapidly re-configurable infrastructure, the Web would be ideal to fill that need.

Many of these key insights to-date would not have been recognized in a theoretical discussion of agility, but only because we have been working through the realities of pursuing business opportunities as a Web.

As far as the status of the pilot projects discussed in the last report, they remain open but have seen little activity since then. We have received additional comparative feedback from the customer on the IBM controller project. As we mentioned in our last report, the project was awarded to an off-shore firm. The input from IBM was useful in seeing how competitive we were. This input will assist us in improving the process for the next project. We have are almost finished with the redesign of the turnsignal for Tobyhanna.

Plans: Now that the business plan is being finalized with new business practices outlined, we are turning our focus to attracting customers to the Web in order to test these agile practices in a real business setting. In early April, we will choose a marketing communications firm to publicize and explain the Web to potential customers. We have also begun to receive leads from the Web members and through contacts at the Ben Franklin Center and Lehigh University. We will follow-up aggressively during the next quarter. In addition we will continue to explore opportunities to work with the DLA and the depots to provide the Web's services in redesign and rapid turnaround. The turn signal redesign project awarded to the Web will be completed during the next quarter and may lead to a production opportunity.

2.2.5 EXECUTIVE INFORMATION SESSIONS

Progress: We have not held any Executive Information Sessions during the 5th Quarter of the project. Our focus has been almost exclusively on finalization of the business plan and we have utilized a significant amount of the members' resources on that issue.

Plans: We have a seminar scheduled with Richard Seaman, Director of Strategic Development for Solelectron Corporation, a 1991 Baidrige winner. The April 26th session will focus on the cultural migration of Solelectron to a self-directed work team environment. After the presentation, Web members will have the opportunity to brainstorm with Rick how the Solelectron experience might relate to the Web. We also are exploring the option of piloting a transitional strategy with our Web member companies based on the Solelectron model.

MISSION, SERVICES AND PLANS

2.2.6 SYSTEM IMPROVEMENT PROJECTS

Progress: The EDI test discussed in the last report has been completed. We have found the test scenario to be a good method to both provide practice and reinforce formal training, but also to identify technical and logistical problems. The ECRC at the University of Scranton, a sub-recipient of this project, provided extensive monitoring and trouble shooting services during the test. We expect to repeat the exercise for additional and new Web members soon, with enhancements developed from the initial test.

As new members have been added to the Web, we have provided the hardware and software required to link them electronically to the Web. At the end of this reporting period, we have two members yet to be connected. This should be completed by the end of April.

In January, we began in new project with Datamatrix, who has been providing VAN services to the Web. A key value of the Web is for the firms to work closely with customers, truly understand their environment, and propose valuable services or solutions that the customer may not even recognize they need. It is difficult for government procurement offices to describe in procurement databases their needs when they are looking for solutions to problems, rather than shipment of parts. Traditional methods of profiling bid opportunities and matching them to profiles of company expertise do not allow for this deeper understanding of customer needs nor the reconfigurable capabilities of a Web. To address this limitation, Datamatrix is providing research and development services to create a more applicable way of profiling the customer needs and the Web's capabilities.

We have been working with the Pathfinder project at Arizona State University to find ways of utilizing their work to advance our electronic resource capabilities, including the use of interactive collaborative software. We want to make use of the work if there is a clear need for it in the operation of the Web, and are anticipating a more formal way to participate in the project.

We have also been partnering with the Fairfax ECRC to submit a proposal in response to BAA 95-23. The proposal will assist in moving the Web toward a better understanding of electronic commerce and the exchange of technical data, and its use in a Web environment. The ECRC at Fairfax, who is leading the project, can bring valuable knowledge and experience in this field to the Web, and the Web can provide a ready tested for these concepts.

Plans: The Operations Committee of the Web has identified three "tools" required to operate the Web which will be needed in the near term. They are:

- A method of describing the Web's quality level to the customer and assuring an acceptable common minimal level for all members
- A method to qualify customer opportunities
- A method to address how customers might qualify the Web as a supplier
- A standard set of Virtual Organization Agreements (VOAs) for use to form and operate virtual organizations.

MISSION, SERVICES AND PLANS

Through the committee, we expect to establish plans to address each of these in the next quarter. We are working closely with Competitive Technologies, Inc., recipient of an ARPA sponsored project to develop agility tools, to leverage their activities and better address a number of these issues.

Once all current members have been linked electronically, we expect to run another round of EDI training and testing, probably during May or June.

Finally, the recommendations of Mitchell & Associates for the development and implementation of specific tools will be integrated with our plans.

2.2.7 PROGRAM MANAGEMENT

Progress: There has been a major shift in the "ownership" of the Agile Web Pilot Project that has resulted in a far more productive use of the Web supplier members than previously. The committees that were formed in January after the introduction of the business plan have been very active. They have also involved all but a few of the Web members in discussing and defining the structure and operation of the Agile Web. The committees have now been given new assignments as described in Section 2.2.1. We have also seen more involvement from owner/CEO's, indicating a heightened interest and perceived value in Web activities.

Plans: Aside from the continuing work of the committees during the transition to an incorporated entity, the next major step will be the election of a five member Board of Directors for the Agile Web, Inc. The Board will then begin their search for a president. The Ben Franklin Agile Web staff will act in the capacity of the president on an interim basis.

2.2.8 PROJECT PARTNERING

We continue to coordinate and communicate with other agility-related activities such as the Agility Forum, the ASU Pathfinder activities, and the Competitive Technologies Incorporated (CTI) Agility pilot. We also continue to meet with other consortia activities as mentioned in the last report, such as CommerceNet, Kansas Manufacturers Association, Minnesota Technology Defense Conversion, and Winrock International in Arkansas. Sharing of what each group is doing and learning will help all groups improve our programs and increase our successes.

2.3 NEW SERVICES AND CHANGES IN OPERATION

We have been working with one of our subrecipients, the Agility Forum, to identify and document lessons learned which will be described in the business cases they will write. We expect that these cases will identify agile business practices, the creation of the Web, and other lessons learned during the pilot project. Case writing will begin during the next quarter.

MISSION SERVICES AND PLANS

The profiling methodology being developed by Datamatrix is also expected to result in a useful tool for the accurate matching of suppliers and customer opportunities in a value-added, agile business environment.

The Core Competency Database under construction at this stage will also be a valuable tool and the subject of one of the business cases described in the first paragraph.

2.4 METRICS, METHODS, AND OTHER ACTIVITIES

We have not developed metrics as yet to quantitatively measure the impact of new agile business practices on the operation of the Web. We have been focused on structuring and marketing the Web in order to attract more projects to work on. The metrics will become a much higher priority once business begins to flow through the Web. We also are proposing to utilize the Agile Web as a test bed for other projects such as the ASU Pathfinder project and the ECRC-Fairfax proposal for which specific practices and their results will be measured.

Our holistic approach to the pilot project, however, has been confirmed in a qualitative sense through interviews with defense prime contractors and depots, as well as executives of commercial companies heavily involved in new product development. They have confirmed the potential value of a Web-like supplier in meeting their needs.

QUARTERLY ACTIVITIES BY TYPE

**3.1 ACTIVITIES INITIATED --
DELIVERY TYPE BY COMPANY SIZE
(In Employees)**

	<u>1-19</u>	<u>20-99</u>	<u>100-249</u>	<u>250-499</u>	<u>>500</u>	<u>Qtr. Total</u>	<u>Cum Total</u>
a. Initial Meetings: <i>Substantive discussions on needs and projects.</i>	2	23	24	12	0	61	136
b. Informal Engagements (IEs): <i>Assistance with a limited scope.</i>							
c. Formal Assessments (FAs): <i>Structured diagnostic analyses with project recommendations.</i>							31
d. Technical Assistance Projects (TAPs): <i>Activities contracted to resolve specific problems or transfer new or existing technology or techniques.</i>							15
e. Referred TAPs: <i>Pilot refers a TAP to another service provider/little or no involvement in the project execution.</i>							
f. Other Activity Not Elsewhere Classified: Specify: <u>Virtual Firms</u>							20
g. Other Activity Not Elsewhere Classified: Specify: <u>Training</u>							37
h. Other Activity Not Elsewhere Classified: Specify: _____							

NOTE: PROJECTS WHICH INCLUDE ASSISTANCE TO SMES MUST KEEP TYPES a - e, WHILE ADDING "OTHER ACTIVITIES", AS APPROPRIATE. PROJECTS WHICH DO NOT INCLUDE ASSISTANCE ACTIVITIES MUST REPLACE THE TYPES WITH NEW ONES (TO A COMMENSURATE LEVEL OF DETAIL) AS REQUIRED BY THE TEST/DATA NEEDED TO CONFIRM THE PILOT'S HYPOTHESIS. MULTIPLE CATEGORIES CAN APPLY TO ANY ONE CLIENT

QUARTERLY ACTIVITIES BY CATEGORY

3.2 ACTIVITIES INITIATED -- SUBSTANCE CATEGORY BY DELIVERY TYPE	I _{ES}	F _{AS}	T _{AP} s	R _{TAP} s	Training Events	I	E	h	Qtr. Total	Cum Total
a. CAD/CAM/CAE: <i>Computer Aided Design, Manufacturing or Engineering</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
b. EDV/Communications/LAN: <i>Exchanging data electronically, Computer Communications</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	18
c. Business Systems/Management: <i>Business information and logistics flow within an enterprise.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	16
d. Environmental: <i>Environmental assessment of materials, discharge, waste, etc.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
e. Quality/Inspection: <i>The process by which a product is determined to meet specifications.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	15
f. Plant Layout/Manufacturing Cells: <i>Assessing efficient means of manufacturing, assembly, or work flow.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	15
g. Automation/Robotics: <i>Design, development, or application of automation and robotics.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
h. Control Systems/Integration: <i>Monitoring and measurement of a manufacturing process for control.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
i. Market Development: <i>Information resources for new or enhanced markets or products.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
j. Material Engineering: <i>Evaluation and analysis of material applications.</i>	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

**QUARTERLY ACTIVITIES BY CATEGORY
(CONTINUED)**

**ACTIVITIES INITIATED -
SUBSTANCE CATEGORY BY
DELIVERY TYPE (CONTINUED)**

	IEs	FAs	TAPs	RTAPs	Training Events	g	z	h	Qtr Total	Cum Total
k. Process Improvement: <i>Process evaluation to identify and eliminate time-wasting activities.</i>										
l. Product or Design Development: <i>Creation or enhancement of a product.</i>									7	
m. Human Resources: <i>Management, culture, empowerment, education and training.</i>									17	
n. Other Activities Not Elsewhere Classified: Specify: <u>New Business Practices</u>										
o. Other Activities Not Elsewhere Classified: Specify: <u>Core Competencies</u>									15	
p. Other Activities Not Elsewhere Classified: Specify: _____										
q. Other Activities Not Elsewhere Classified: Specify: _____										
r. Other Activities Not Elsewhere Classified: Specify: _____										

NOTE: THIS FORM SHOULD BE TAILORED BY EACH PILOT PROJECT TO FIT THE PARTICULAR HYPOTHESIS OF THE PROJECT AND THE TESTS/DATA/ANALYSES REQUIRED TO CONFIRM THE HYPOTHESIS. DOUBLE COUNTING IS EXPECTED.

CLIENT FIRMS SERVED DURING QUARTER

FORM 3, PAGE 4

	<u>1-19</u>	<u>20-99</u>	<u>100-249</u>	<u>250-499</u>	<u>>500</u>	Qtr <u>Total</u>	Cum <u>Total</u>
3.3 TOTAL CLIENT FIRMS -- ACTIVITY TYPES ONLY	<u>1</u>	<u>19</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>19</u>	<u>55</u>
a. Total Served: Delivered activities counted in terms of firms	<u>2</u>	<u>7</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>19</u>	<u>55</u>
b. Total Employees at Clients Served: All employees at client firms counted in 3.3a	<u>2,466</u>	<u>8,058</u>				<u>2,466</u>	<u>8,058</u>
3.4 TRAINING EVENTS -- TOTAL PARTICIPANTS							
a. Total Client Firms at Training Events: Firms who sent attendees to seminars, lectures, etc.	<u>19</u>	<u>72</u>				<u>19</u>	<u>72</u>
b. Total Attendees at Training Events: Attendees at seminars, lectures, etc.							<u>42</u>
3.5 CLIENT FIRMS SERVED -- ALL CATEGORIES							
Total Client Firms Served: Total activity client firms (3.3a) and the total training client firms (3.4a) without duplication	<u>2</u>	<u>7</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>19</u>	<u>72</u>
b. Total New Client Firms: Clients served for first time	<u>1</u>	<u>3</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>5</u>	<u>23</u>
c. Total Defense Client Firms: Defense firms served in any manner	<u>0</u>	<u>2</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>4</u>	<u>21</u>

NOTE: NO DOUBLE COUNTING. SEE USERS GUIDE FOR DETAILED DEFINITIONS, INCLUDING DEFINITION OF "CLIENT FIRM"

PILOT-RELATED BUDGET ITEMS (OBJECT CLASSES)

	Current Year	Estimated End of Year
	<u>Quarter</u>	<u>to Date</u>
5.1 Cash Expended	\$128,915	\$951,118
5.2 In-kind Expenditures	\$31,968	\$106,829
5.3 Federal Reimbursements Requested	\$70,807	\$344,566
5.4 INCOME		\$1,000,000
5.4.1 Income - Earned	\$0	\$0
a. Project Fees	\$0	\$0
b. Training Fees	\$0	\$0
c. Membership/Sponsorship	\$0	\$0
d. Other Earned Income:	\$0	\$0
5.5 EXPENSES - OBJECT CLASSES		
5.5.1 Expenses - Internal		
a. Personnel Expenses	\$95,164	\$390,581
b. Operating - Travel	\$6,181	\$24,676
c. Operating - Equipment & Supplies	\$14,681	\$112,507
d. Operating - Advertising & Marketing	\$1,708	\$2,610
e. Operating - Staff Training	\$18,414	\$38,215
f. Operating - Other:	\$136,149	\$568,589
g. Total Operating Expenses (b-f)		\$1,007,000
5.5.2 Expenses - External		
a. Consultant Contracts - Client Services	\$0	\$52,435
b. Consultant Contracts - Pilot Services	\$34,472	\$195,525
c. NPO Contracts - Clients Services	\$0	\$0
d. NPO Contracts - Pilot Services	-\$41,705	\$134,571
e. Total External Contracts (a-d)	-\$7,233	\$382,531