



REGIONAL EMPLOYMENT BOARD
OF HAMPDEN COUNTY, INC.

Precision Manufacturing Regional Alliance Project (PMRAP)

Lessons From a Sector-Based Capacity Building Project

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The Precision Manufacturing Regional Alliance Project was funded by the Massachusetts Technology Collaborative- John Adams Innovation Institute.

OVERVIEW

Lessons From a Sector-Based Capacity Building Project highlights lessons learned and examples from the development and implementation of the Precision Manufacturing Regional Alliance Project (PMRAP) that was conducted from September 2008-December 31, 2010.

Lessons From a Sector-Based Capacity Building Project provides broad, overarching guidance and encouragement that may assist individuals and organizations considering the development and implementation of a sector based capacity building project that responds to an identified sector business need.

The REB is hopeful that the Report will provide business intelligence that will allow for the implementation of creative and sustainable tasks and activities that will create sector-wide innovation resulting in job retention, job creation, and sustainable economic development and expansion.

The Report can be viewed on the web site of the Regional Employment Board of Hampden County Inc. at www.rebhc.org, and on the web site of the Western Massachusetts Chapter of the National Tooling and Machining Association at <http://www.wmntma.org/members-resources/industry-reports/>.

The Precision Manufacturing Regional Alliance Project was funded by the Massachusetts Technology Collaborative- John Adams Innovation Institute. Matching cash and in-kind contributions were provided by the lead agency, the Regional Employment Board of Hampden County, Inc. In-kind contributions were also provided by other project partners.

CONTACT INFORMATION

For additional information on **Lessons From a Sector-Based Capacity Building Project** or on the Precision Manufacturing Regional Alliance Project, please contact David M. Cruise at 413-755-1362 or dcruise@rebhc.org.

For information on the Massachusetts Technology Collaborative- John Adams Innovation Institute, please visit their web site at <http://masstech.org/institute2009/index.html>

Precision Manufacturing Regional Alliance Project (PMRAP)

Overview

I. PMRAP Synopsis

The Precision Manufacturing Regional Alliance Project (PMRAP) will initiate cluster development and expand sector markets, transform industry capability, and build workforce infrastructure that will increase the transformative capacity of the precision manufacturing cluster in the Pioneer Valley Region to move up the supply chain in their present markets, position them to respond to specialized market demands in emerging domestic and international markets, and develop collaborative business formations that will accelerate job creation and economic growth.

II. PMRAP Outcomes/Economic Benefits

1. **Assess the feasibility for developing a sustainable Center for Advanced Precision Manufacturing Technology and implement and test major elements of the Center.**
2. **Increase new technology development and applications engineering support that will enhance the companies outsourcing capability in present and new markets.**
3. **Position companies to respond to specialized demands in new or emerging domestic/international markets.**
4. **Achieve 4% annual increase in new pipeline employees, and higher skills competencies for incumbent employees.**

III. Description of the Regional Sector

The regional sector companies are contract manufacturers that are primarily engaged in supplying precision mechanical components and sub-assemblies in the aerospace, defense, medical device, and power generation markets, both in the United States and internationally. The regional sector is led by the Western Massachusetts Chapter of the National Tooling and Machining Association (WMNTMA) www.wmntma.org. The WMNTMA represents 34 precision machining companies employing 2,051 people (**December 31, 2010**). In CY 2010, the **Regular Member** companies of the WMNTNA had the following employment levels and estimated gross sales:*

Year	No. of Companies	No. of Employees	Estimated Gross Sales
2010	33	1304	\$243 Million
Change '09-'10	(-) 3	(+) 103 (8.6%)	(+) \$21 Million (9.5%)

* Estimated Gross Sales, Number of Companies and Number of Employees does not include Smith and Wesson, a WMNTMA Associate Member.

Thoughts Moving Forward

Section I-Partnership Development

Partnerships are an essential component of regional sector-based capacity building projects. By drawing on the perspectives and resources of multiple employers, educational institutions, and economic development entities, a project can more effectively meet the needs of the regional industry sector, create richer opportunities for current and future workers, spawn innovation, and facilitate systemic change at the sector level. This section offers insights and key steps in building and sustaining sector partnerships.

A. Identifying Committed Partners

1. The partners should be identified during the grant solicitation period, and initially can be placed in one the following categories:

- ✚ Strategic Partner- Entity engaged in implementing a project's planned goals and actions
- ✚ Collaborator-Entity working to connect project's common goals and actions
- ✚ Cooperating Agency- Entity supporting the project's mission and planned outcomes

The goal should be to move as many Collaborators and Cooperating Agencies to the Strategic Partner category.

2. The partners need to clearly understand the goals, objectives, action initiatives, general time frames, and anticipated results of the project, and be committed to getting the project to the finish line.
3. The partners need to be willing to commit to the project in three interrelated ways:
 - ✚ Commitment of their time.
 - ✚ Commitment of their organization's time.
 - ✚ Commitment to communicate the projects mission to those within the company/organization who have a need to know.
4. Committed and engaged partners are busy people, and need to be engaged in project work tasks that have measurable outcomes and can be accomplished within reasonable time frames.
5. The partners in a regional sector-based capacity building project should understand that building a working relationship between the parties is critical to implementing the work tasks and completing the project deliverables in a timely and constructive manner.
6. Regional sectoral initiatives often generate interest from other parties after the initial start-up. New partner outreach should be encouraged and championed, and used to position the partnership to expand its sphere of influence and engagement.

Lessons From a Sector-Based Capacity Building Project

7. New partners may evolve as the project matures. It is important to engage new partners, and to identify an appropriate point of engagement that complements and supports the on-going work of the initial partners.
8. Developing a Memorandum of Understanding among the partners can help build the communication, coherence, and commitment that is necessary to accomplish the goals and satisfy the project deliverables. The MOU should:
 - ✚ Contain general agreements as well as specific, implementable, and measurable action agreements.
 - ✚ Serve as the on-going focal point for collaborative decision making.
 - ✚ Foster communication and cooperation.
 - ✚ Ensure partner commitment and buy-in.

B. Building the Partnership

Steering Committee

1. A project Steering Committee should be developed, and if possible, chaired by the owner of a regional sector company. Representatives from industry, education, regional economic development entities, and other interested partners should be members of the Steering Committee.
2. The project manager should meet individually with each member of the Steering Committee to explain the project, establish a realistic level of engagement, and answer any questions that may impact their commitment to the project.
3. The Steering Committee should meet regularly and develop a communication process that will keep them appropriately informed and engaged.

Operational Partners

1. Early in the project cycle, it is important to bring the operational partners together to begin the relationship development process that is necessary to build a collaborative partnership.
2. In partnership building involving private sector companies and educational institutions it is important to understand that these entities may have never worked together. The project manager needs to ensure that the partners develop an understanding, appreciation and respect for the perspectives that each will bring to operationalizing the project's work tasks.
3. In partnership building that involves private sector companies and education institutions, it is helpful to conduct initial meetings at the employers' site to give education representatives an opportunity to observe first hand the scope and dimension of the work tasks being performed within the company and the sector in general.
4. The project manager should ensure that the partners are cognizant of the following:
 - ✚ Roles and Expectations
 - ✚ Reporting Requirements
 - ✚ Procedures to Review Progress toward Goals

PMRAP Approaches

- ✦ A Steering Committee, chaired by the president of a regional sector company, provided the strategic direction for the implementation of the work tasks and the successful completion of the project deliverables.
- ✦ Some operational partners had experience in regional sector partnership development, and played a leadership role in providing guidance to the group in the early stages of the partnership building process.

C. Communication

1. Communication is the key to successful completion of the project deliverables, and it is important to maintain on-going contact with both the Steering Committee and the operational partners.
2. Steering Committee and partnership meetings should have a short, focused agenda that can be completed in the time allotted. Summary minutes of the meeting should be prepared and communicated to the parties no later than three (3) business days following the meeting.
3. Committed partners are also busy partners, and communication with them should be direct and focused on the issue. Follow-up electronic communication is a positive and appreciated approach and should be used often.
4. Communicate regularly and openly with the funding agency's program manager to obtain guidance and direction on issues that are challenging the implementation of the work tasks and the timely completion of the project deliverables.
5. Develop strategies and protocols to insure that elected officials are notified of programs/events that impact their district/constituents, and are invited to participate in the appropriate activities.
6. Develop media contacts to publicize and celebrate project milestones, involve partners in all media related events, and where possible, use industry sector locations as the preferred venue for the events.

D. Sustaining the Partnership

1. Sustaining the partnership beyond the project should be a value-added outcome that the partners commit to achieving as a result of their collaborative engagement.
2. Sustainable partnerships are built on trust, and strengthened by all the partners feeling valued for their work and commitment.
3. The faces on the partnership may change. New partners must be oriented to the goals of the partnership and their role.
4. If consistent and open dialogue and communication have been established and project deliverables successfully achieve project goals, the Steering Committee and the partners are more likely to take the lead to sustain and grow the partnership following the expiration of the project.

5. The partnership, led by the Steering Committee, should continually investigate new opportunities to secure and/or leverage funding that will create opportunities for new initiatives that will result in job creation, sectoral growth, and industry wide innovation.

Section II-Goals Development

Clearly articulated goals are essential for providing purpose and direction to a regional sectoral capacity building project, as well as determining the extent to which the project is ultimately a “success.” This section outlines key points related to establishing project goals.

A. Identifying the Goals

1. The project goals must be developed from a clearly identified business need, and the attainment of the goals must be realistic and doable.
2. The work tasks must be aligned with the goals and should result in measurable outcomes.
3. The project partners must be involved in the development of the goals. The project manager must make certain that any new partners understand and commit to the project’s stated goals.
4. The goals must have a connection to each other. The project manager must continue to communicate to the partners that the goals are inter-related, and the action initiatives to achieve each goal must be implemented in a seamless manner to preserve this connectivity.
5. Events and actions may occur during the project that may take the partners into areas that may have marginal connection to the original goals of the project. The project manager should be mindful of this and ensure that any intended changes support the attainment of the original goals.
6. The partners have their professional business to manage and their direct level of engagement over the course of the project will vary. It is critical to be cognizant of this and to effectively communicate with the partners on the progress of the project.

Section III- Plan Development and Implementation

The core of any regional sector-based capacity building project is careful planning and attention to the implementation details. This section articulates the process followed to implement selected deliverables, highlights PMRAP approaches that were successful, and describes lessons learned that may assist in facilitating replication.

A. Developing the Plan

1. Begin with the premise that in order to implement the goals, and satisfy the project deliverables in the Task Order, it is essential to develop a plan that will have measurable outcomes supported by relevant and current data.
2. Allow sufficient time to develop the plan while keeping in mind the project milestones and the importance of implementing the required work tasks in a timely manner.

Lessons From a Sector-Based Capacity Building Project

3. Meet individually with the necessary partners. At this meeting, focus on the following:
 - ✚ Affirm that the partners clearly understand their role and have the authority to commit the resources of their respective organizations.
 - ✚ Distribute and review a summary of the project, including the goals, project deliverables, proposed action initiatives, and project milestones.
 - ✚ In the meeting with the sector employers, review their perspective on the identified business needs.
 - ✚ In the meeting with the educational institutions, review their plan to operationalize the required activities.

B. Implementing the Plan

1. Implementation requires commitment. The partners must commit to the agreed upon implementation strategy and milestones.
2. The partners must ensure that staff involved in implementing the work tasks in support of goals attainment have the required resources, and can operationalize the activities and events in the agreed-to time frame.
3. Multiple capacity building work tasks may be in the implementation stage simultaneously and may require the project manager to move seamlessly between initiatives, allocating the required time to oversee the activities, and making any necessary modifications in a timely manner.
4. The project manager must be respectfully aggressive in keeping partners committed to the time lines for implementing the work tasks.
5. As the initiatives begin to move forward, the project manager must keep all the partners informed of the progress and/or challenges that are occurring, and should begin to document those specific aspects of the implementation process that will inform decision making going forward.
6. Lessons learned from successful early stage interventions should be documented, shared with the partners, and used to inform decision making and implementation strategies going forward.
7. Throughout the implementation process, the project manager should document challenges that developed and corrective actions taken.
8. The project manager must ensure that all project administrative requirements including financial reports, progress reports, procurement documentation, project data entry and updates, and grant modifications, if required, are completed in a timely manner and in accordance with grant protocols.
9. Communication, organization, documentation, due diligence, and a high level of persistence and sustained focus are the keys to successful implementation of the plan.

The following selected PMRAP project deliverables highlight successful approaches and processes that were followed in implementing the project plan.

1) Technology Innovation Forums

- Conducted a Technology Development Needs survey of the WMNTMA companies focused on the following:
 - i. Identify broad-based technology development needs.
 - ii. Identify and analyze supply chain risks, and mitigation steps.
 - iii. Develop roadmap documents with time-based goals, requirements, and tasks to address identified short and long term high-priority needs.
- Analyzed and matched survey findings on the technology needs with current and relevant research being conducted in the Polymer Science and Engineering (PSE), the Mechanical & Industrial Engineering (MIE) departments at UMass.
- Identified opportunities for faculty researchers to partner with companies to develop new innovative research based on the demonstrated technology needs of the companies.

PMRAP Approaches

- ✚ The project manager identified the respective companies that participated in each forum based on their survey responses and their level of project engagement and support.
- ✚ Six (6) Technology Innovation Forums involving faculty researchers and representatives from sector companies were conducted to provide venue to exchange information about technology needs and relevant research/discoveries and resulted in the identification of a pilot technology transfer project in Cryogenic Machining.

2) Technology Transfer Project

- Transferring technology from a research institution to SME's with limited engineering resources required extensive collaboration by the participating operational partners.
- The partners selected the PMRAP Technology Innovation and Applications Engineer to be the organizing entity to ensure that assigned tasks were accomplished and documented in a timely manner.
- The pilot technology transfer created significant synergy between multiple partners who have never worked together in an industry /education collaboration.
- The technology transfer successfully validated the need for an advanced manufacturing center as a resource for communication, trained technical personnel, and facilities with appropriate equipment to execute manufacturing technology and innovation development.

3) Marketing and New Business Formations

- The regional sector SME's did not have the resources to consistently develop marketing collateral and initiate professional business to business networking without external intervention.
- The economic downturn and corresponding international economic events impacted the regional sector companies, reaffirmed the projects original plan to position the regional sector companies to access new and emerging markets and opportunities, and created unique opportunities for creative and collaborative approaches to implementing this project deliverable.
- The information exchange informed industry with potential opportunities for products/services diversification relevant to new growth markets, as well as offered avenues for improved competitiveness in existing markets.

PMRAP Approaches	
✚	The WMNTMA web site www.wmntma.org was revised to focus on new business development and highlight the capacity and capabilities of the regional sector companies.
✚	Market Opportunity Forums were conducted that provided the companies with information on potential opportunities for products/services diversification relevant to new growth markets, as well as avenues for improved competitiveness in their existing business markets.
✚	The Economic Development Council of Western Massachusetts (EDC) developed marketing and new business development events, activities and initiatives to assist the regional sector companies organize and accelerate their approach to new business development.

4) Regional Precision Manufacturing Technology Advisory Council

- The Council consisted of regional company owners and administrators from the regional schools and was developed to respond to the workforce development, new pipeline issue that was an identified business need of the regional sector.
- The Council provided overarching strategic guidance and support to the industry members on the Machine Tool Technology Program Advisory Committees at the technical high schools in the region.

PMRAP Approach	
✚	The Council focused on strengthening industry-education partnerships, enhancing parental awareness and increasing student enrollment, and improving the graduation rate in the Machine Tool Technology Program.

5) The Feasibility Study for the Establishment of an Advanced Manufacturing Center

- Conducted the Study based on the following assumptions:
 - i. The Center would be tailored primarily to service the precision machining industry.
 - ii. Shared resources and facilities could be used effectively, overcoming proprietary issues and competitive pressures.

Lessons From a Sector-Based Capacity Building Project

- iii. Market demands and new applications projections would be forecasted using current and publicly available estimations.
 - iv. Industry “pull” side of the technology would be the dominant factor in the design of the Center and the selection of functionality.
- Developed a functional model for the Center, piloted and tested major elements of the Center, and assessed the feasibility for a sustainable organization.
 - Validated approaches for new technology development and applications engineering and marketing support.
 - Identified new workforce skills and develop creative avenues for labor force development at partner institutions.

PMRAP Approach

✚ In November 2009, the Massachusetts Center for Advanced Precision Manufacturing Technology, Inc was constituted as a 501 c 3 non-profit organization.

C .Documenting the Project Match Requirement

1. Documenting match is an important component in ensuring the successful implementation of a regional sectoral capacity building project.
2. Match should be documented incrementally, and not captured at the end of the projects’ life cycle.
3. Match documentation that involves employer’s time commitment should include written signatures with dates and proper identification of the match event/activity.
4. Match documentation forms should be maintained in a separate locked file and should be accessible only to the project director and other parties that have a need to know.
5. Match documentation should be reported on a regular basis to the funding agency.

Section IV- Sustainability Development

Sustaining the outcomes from a successful regional sector- based capacity building project is critical to ensuring that the original organizing business need is addressed on a long term basis. This section offers suggestions in using the outcomes from the project to develop a practical and coordinated sustainability plan.

1. The project manager should initiate discussion with the Steering Committee and the operational partners relative to potential funding sources that can support and complement the goals of the initiative.
2. A report that documents the development and implementation of the current project, including a focused assessment on partnership development, successful implementation strategies, and outcomes attainment will be a significant factor in any attempt to secure sustainable funding.

Lessons From a Sector-Based Capacity Building Project

3. Accessing public funding in today's economy will be difficult, and will require the partnership to look strategically at funding sources that have anticipated outcomes that are compatible to, and can enhance the work of the present project.
4. Accessing private sector funding is complicated and demands the presence of two essential components:
 - ✚ Data that clearly articulates the business impacts of the present project.
 - ✚ A plan that builds on the present project and includes attainable goals, realistic budget projections, anticipated results, and clear and measurable outcomes.
5. The project manager must be able to tell the project's story, and have data that documents the successful implementation of the projects goals and objectives.

Section V-Measuring Business Impacts

Measuring the business impact of a successful sector-based project is essential. This section presents some thoughts and approaches for conducting a basic business impact analysis.

1. Measuring the business impact of a regional capacity building initiative is a critical component to gauging the success of the intervention in responding to the business need that was the driver of the project.
2. The survey instrument to be used should be presented to the Steering Committee for their guidance and direction prior to being sent to the field.
3. The survey instrument should address both quantitative and qualitative objectives.
4. A Business Impact Report that summarizes the data, and presents an analysis of the findings should be prepared and submitted to the funder's program manager, Steering Committee, operational partners, and other interested stakeholders.

PMRAP Approaches

- ✚ PMRAP intentionally developed a business impacts survey that focused on measuring the successful implementation of the project's goals and deliverables.
- ✚ PMRAP intentionally prepared an analysis of the survey findings to provide the regional sector companies with information and guidance that would assist them in their decision making going forward.

Section VI-Measuring Systemic Change

A successful regional sectoral capacity building project should result in the development of a new set of shared values or beliefs on ways to create systemic change models that will effectively respond to the identified business need. This section presents some initial ideas and approaches to facilitate discussion on this important anticipated project outcome.

Lessons From a Sector-Based Capacity Building Project

1. The systemic change model should be designed to respond to the identified sectoral business need and contain success indicators and business outcomes that have been negotiated by the partners.
2. Systemic change is incremental, and the project interventions and initiatives must be seen as part of a long term strategy to implement comprehensive and collaborative change models.
3. The partnership must view measuring systemic change as an important project deliverable, and be willing to engage in a process to measure any systemic change that may have occurred as a result of the capacity building intervention.
4. The project manager should use the findings from the business impact survey in part to facilitate discussion with the steering committee and partners on whether the capacity building interventions resulted in any systemic change.

PMRAP Approaches

- ✚ The Massachusetts Center for Advanced Precision Manufacturing Technology (MCAPMT) may become a focal point and clearinghouse for future regional sector based initiatives.
- ✚ The partnership between selected regional companies and faculty researchers from the University of Massachusetts may result in new technology development that will accelerate innovation and help the regional sector improve its manufacturing processes
- ✚ Enhanced regional sector development may result in new business formations, enhanced collaborative marketing and networking activities, and business opportunities in new markets.

Section VII-Final Thoughts

1. The successful development of a regional sector-based capacity building project involves the following:
 - ✚ Developing a comprehensive plan with clear goals, measurable outcomes and implementable deliverables that respond to the identified business need.
 - ✚ Building relationships with committed partners.
 - ✚ Creating an on-going communication system that values input and encourages constructive dialogue and reflective deliberation.
2. The successful implementation of a regional sector-based capacity building project that leads to sustainable outcomes and sectoral change involves the following:
 - ✚ Coordination and commitment
 - ✚ Attention to detail
 - ✚ Willingness to take strategic risks
 - ✚ Aggressive decision making
 - ✚ On-going and open communication
 - ✚ Developing a shared belief among the partners that the body of work will add value to each entity.
 - ✚ Analyzing progress and making adjustments when necessary
3. Building a trust relationship between the employer partners, the training institutions economic development entities, operational partners and other interested stakeholders is critical to implementing a sustainable model that can drive innovation and create sectoral growth and prosperity.