US Department of Labor

Multi-State Advanced Manufacturing Consortium

Overview / Orientation
OVERVIEW TOPICS

1. MISSION & FOCUS
2. ORGANIZATION MODEL
3. THE PROCESS
   a. WHO
   b. WHAT
   c. HOW
   d. WHEN
4. “SEEING the FUTURE” – PRESENT and PREFERRED STATE
5. THE WORK PLAN . . .
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THE GRANT – MISSION and FOCUS

ONE SENTENCE MISSION:

- Improve Manufacturing Education to better align with Industry and Student Requirements (Customers)

FOCUS:

- National Innovation with Local Implementation
- Competency Based Education Approach
- National Standard Competencies & Assessments
- Continuous Improvement . . . (Never stops)
OVERVIEW TOPICS

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M-S AMC: Targeted Local Industry Partners

- Aero Firms
- Chrysler
- Chrysler Ford GM
- Ford Honda WCOMC
- Toyota
- Goodyear Tire & Rubber
- Ford
- Toyota
- Universal Woods Inc.
- Nissan
- BMW
- DENSO
- ESAB Welding
- Toyota
- Honda & CARCAM
- GM
- Kelly Aviation Center
- Toyota
- B&WY12
# M-S AMC: 13 College Partners

<table>
<thead>
<tr>
<th>Community College Partner</th>
<th>Location</th>
<th>Business Partner Letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alamo Community College</td>
<td>San Antonio, Texas</td>
<td>Argo Group International Holdings, Ltd.</td>
</tr>
<tr>
<td>Bluegrass Community and Technical College</td>
<td>Georgetown, Kentucky</td>
<td>Leggett and Platt, Inc.</td>
</tr>
<tr>
<td>Bridgemont Community College</td>
<td>Charleston, West Virginia</td>
<td>TRG Customer Solutions, Inc.</td>
</tr>
<tr>
<td>Danville Community College</td>
<td>Danville, Virginia</td>
<td>Goodyear, Shorewood Packaging</td>
</tr>
<tr>
<td>Gadsden State Community College</td>
<td>Gadsden, Alabama</td>
<td>Elwood Manpower, and Personnel Staffing, Inc.</td>
</tr>
<tr>
<td>Henry Ford Community College</td>
<td>Dearborn, Michigan</td>
<td>Chrysler, Ford, GM, Severstal Dearborn</td>
</tr>
<tr>
<td>Jefferson Community and Technical College</td>
<td>Louisville, Kentucky</td>
<td>Louisville Bedding Company</td>
</tr>
<tr>
<td>Oakland Community College</td>
<td>Auburn Hills, Michigan</td>
<td>Delphi Corporation</td>
</tr>
<tr>
<td>Pelissippi State Community College</td>
<td>Knoxville, Tennessee</td>
<td>ArcelorMittal Laplace, LLC</td>
</tr>
<tr>
<td>Rock Valley Community College</td>
<td>Rockford, Illinois</td>
<td>Gatehouse Media IL Holding, Inc.</td>
</tr>
<tr>
<td>Rhodes Community College</td>
<td>Lima, Ohio</td>
<td>International Brake Industries, Inc.</td>
</tr>
<tr>
<td>Spartanburg Community College</td>
<td>Spartanburg, South Carolina</td>
<td>Teijin Monofilament U.S., Inc.</td>
</tr>
<tr>
<td>TCAT – Tennessee College of Applied Technology</td>
<td>Murfreesboro, Tennessee</td>
<td>Nissan</td>
</tr>
</tbody>
</table>

## Multi-State Advanced Manufacturing Consortium
M-S AMC: National Project Partners

CSW
Corporation for a Skilled Workforce
Good Jobs. Thriving Communities.

FANUC
Robotics

UAW

National Association of Manufacturers

AMTEC

Multi-State Advanced Manufacturing Consortium
M-S AMC: National Innovation with Regional Implementation

M-S AMC

M-S ADVANCED MANUFACTURING CONSORTIUM

SHARED RESOURCES

- Equipment
- Faculty Professional Development
- Facilitation Staff
- Technical Services
- Portal Development
- Infrastructure
- 3rd party Curriculum Tools
- Marketing
- Labor Market Tools

LOCAL Implementation

SHARED RESOURCES

- Equipment
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NATIONAL Innovation

M-S AMC

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WHAT

Using a PROCESS MODEL . . .

- Provides a “Picture of the Process”
- Driven by Customer Requirements
- Focused on Customer Satisfaction
- Considers every category of the work
- Specifies metrics for Improvement

- Facilitates the PROCESS
M-S AMC [Multi-State Advanced Manufacturing Consortium]

**CUSTOMER REQUIREMENTS**
- Continuously Verified Industry Deployable Skills
- Integrated Systems Troubleshooting Skills
- Valid Assessment of Demonstrated Skills & Learning Mastery
- Accelerated JIT Learning
- Rapidly Developed, Company Customizable, Credit Bearing Programs
- National Standard Lean Education Model
- Students w/ Skills for Self-Directed Lifelong Learning
- Credit for Work Skills & On-Job-Training Delivery
- Transferable Credits for Recognized Credentials
- Non-Proprietary, Cost Effective Educational Solutions

**MANUFACTURING EDUCATION PROCESS MODEL**

1. **DEVELOP COMPETENCY BASED CURRICULA & CREDENTIALS**
   - Manufacturing Bridge Program
   - Industry Verified Competencies, Certificates, Credentials, & Degrees
   - Continuously Improved – Competency Based Modularized Curriculum & Assessment

2. **TRANSFORM INSTRUCTIONAL DESIGN & DELIVERY**
   - “Industry Like” Labs
   - Online/Hands-On Blended Learning Models
   - Virtual & Physical Manufacturing Simulators
   - Competency/Curriculum Validation

3. **RE-DESIGN STUDENT SUPPORT, SUCCESS & PLACEMENT**
   - Student Completion Acceleration Toolkit (SCAT)
   - Student Support Enhanced Cohort Models
   - Student Learning Pathways
   - Work-Based Learning & Internship

4. **DEVELOP NEW ADMINISTRATIVE STRUCTURES**
   - Standard Model for Translating Prior learning/Non-credit to Credit
   - Improved Flexible Models for: Registration, Scheduling, & Delivery
   - Faculty Professional Development
   - Faculty Compensation

**EVALUATION: MEASUREMENT & FEEDBACK**
- No. of Achieved Competencies
- No. of Students Completing
- Weeks to Develop New Credit Program
- Competency Alignment w/ Work Skills
- Students employed at completion
- # of Competencies / Time

**CUSTOMER SATISFACTION**
- Requirements met within specified metrics:
  - VALUE & QUALITY
  - TIME & COST

**DEVELOP NATIONAL SUPPORT SYSTEMS**
- Data-Driven Workforce Intelligence System
- Learning Mgt System (DMS)
- Sustainable Partnerships: Industry, Workforce Sys & CBO Marketing
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HOW

Using an INNOVATION MODEL . . .

- 5 Steps “Lead people through the process”
- Facilitates the THINKING
- Can result in “Consensus Based Recommendations”
5 STEP INNOVATION MODEL

1. IDENTIFY
   [A] Customer Requirements
   [B] Present & Preferred State
   [C] Evaluation Criteria

2. ANALYZE
   [A] Solutions Options
   [B] Benchmarks
   [C] Critical Success Factors

3. PLAN
   [A] Specific Detailed Steps
   [B] Resources, Start and End Dates
   [C] Logical Calendar Order (Gannt)

4. IMPLEMENT
   [A] Steps / Solution
   [B] Recognition
   [C] a Monitoring Process

5. EVALUATE
   [A] Actual Customer Satisfaction
   [B] Performance to Plan
   [C] Next Preferred State

INNOVATION MODEL

IDENTIFY

IMPLEMENT

EVALUATE

PLAN

ANALYZE
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(3) CYCLES OF INNOVATION & IMPLEMENTATION . . .

1. INITIAL

2. IMPROVED

3. SUSTAINED

[1] Actual Customer Satisfaction
[2] Performance to Plan
[3] Next Preferred State

[4] Steps / Solution
[5] Recognition
[6] a Monitoring Process

[7] Customer Requirements
[8] Preferred State

[10] Solutions Options
[12] Critical Success Factors

[13] Specific Detailed Steps
[14] Resources, Start and End Dates
[15] Logical Calendar Order (Gantt)
INNOVATION CYCLE 1 – INITIAL IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

QTR
1 2 3 4
YEAR
2013
2014
2015
2016

INITIAL IMPLEMENTATION
## Innovation Cycle 1 – Initial Implementation & Timing

### Innovation Model

1. **Identify**
2. **Analyze**
3. **Plan**
4. **Implement**
5. **Evaluate**

### Initial Implementation & Timing

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarter</th>
<th>Implementation Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>2014</td>
<td>Q3</td>
<td>Q4</td>
</tr>
<tr>
<td>2015</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>2016</td>
<td>Q3</td>
<td>Q4</td>
</tr>
</tbody>
</table>

**M-S AMC**

- **MULTI-MODULE ADVANCED MANUFACTURING CONSORTIUM**
INNOVATION CYCLE 1 – INITIAL IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

QTR

YEAR

2013
2014
2015
2016

INITIAL IMPLEMENTATION
INNOVATION CYCLE 2 – IMPROVED IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

IMPROVED IMPLEMENTATION

QTR

YEAR

2013
2014
2015
2016
INNOVATION CYCLE 2 – IMPROVED IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

IMPROVED IMPLEMENTATION

QTR
1
2
3
4
YEAR
2013
2014
2015
2016
INNOVATION CYCLE 3 – SUSTAINED IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

SUSTAINED IMPLEMENTATION

YEAR
2013
2014
2015
2016

QTR
1
2
3
4
1
2
3
4
1
2
3
1
2
3

M-S AMC
INNOVATION CYCLE 3 – SUSTAINED IMPLEMENTATION & TIMING

1. IDENTIFY
2. ANALYZE
3. PLAN
4. IMPLEMENT
5. EVALUATE

INNOVATION MODEL

SUSTAINED IMPLEMENTATION

QTR
1
2
3
4

YEAR
2013
2014
2015
2016

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“SEEING THE FUTURE”

Most people will now agree the best way to “know” the future is to CREATE IT . . .

PRESENT STATE:  

PREferred STATE:  

[A] Customer Requirements  
[B] Present & Preferred State  
[C] Evaluation Criteria
STUDENTS and FACULTY

PRESENT STATE:

STUDENTS
* Directed learners
* Pace of learning set by instructor
* Student success grounded in theory

FACULTY
* Central Figure for Learning
* Creator of Learning Resources
* Lecturer / Subject Matter Expert
* Independent, self-sufficient
* General Professional Development

PREFERRED STATE:

STUDENTS
* Self-directed learners
* Pace of learning set by skills acquisition
* Student success grounded in competence

FACULTY
* Central Figure for Learning
* Institution Provides Resources for Instructor
* Coach / Mentor / Learning Process Expert
* Collaborative: companies, other faculty, etc.
* Targeted Instructor Certification
PEDAGOGY and ASSESSMENT

PRESENT STATE:

THE APPROACH [PEDAGOGY]

* Typically Component focused
* Troubleshooting to solve a problem
* Emphasis on (memory) recall
* Learn about multiple systems . . .
  [but generally]

ASSESSMENT

* Institution specific (Locally)
* Classroom Competence

PREFERRED STATE:

* Predominantly Integrated Systems focused
* Troubleshooting through system analysis
* Emphasis on information application
* Learn 1 System completely . . .
  [then apply to others]

* Common National Standard
* On-the-Job Competence

MULTI-STATE ADVANCED MANUFACTURING CONSORTIUM
PRESENT STATE:

CURRICULUM

* The content is “the thing”
* Generalized outcomes
* Periodic course Improvement
* Instructor dependent content
* Peer reviewed
* Local course development
* Capstone projects with some courses

PREFERRED STATE:

* The context is “the thing”
* Competency based outcomes
* Continuous course improvement
* Instructor independent content
* National/International Standard
* Collaborative course development
* Mechapracticum assess progress by semester
EQUIPMENT and LAB ENVIRONMENT

PRESENT STATE:

EQUIPMENT
* “School sized” components
* Designed by/for schools

LAB ENVIRONMENT
* Traditional “school-like”
* School safety protocols
* Component based
* Single purpose labs

PREFERRED STATE:

* “Industry sized” integrated systems
* Designed by Industry partners

* “Industry-Like”
* Industry safety protocols
  ! Arc flash rules !
* Integrated system based
* Multi-purpose labs
LEADERSHIP

PRESENT STATE:

LEADERSHIP

* Develop/Hold/Employ Vision
* Drive/Measure Degree Completion
* Lead periodic Improvement

PREFERRED STATE:

* Facilitate Vision development
* Empower staff to operationalize Vision
* Determine new metrics for:
  - Student Classroom Competency
  - Student Workplace Competency
* Lead development of a process for continuous improvement
* Re-orient expenditure decisions based on new criterion for success
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THE WORK PLAN

1. Use a Collaborative Planning Tool – SmartSheet (All)

2. Develop appropriate “Consensus Based Recommendations” for work plan steps (I-Teams)

3. Create National Work Plan Template (M-S AMC)

4. Deploy template to Implementation Facilitators

5. Customize to fit local needs, if necessary

6. Measure progress against plan . . .
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