Digital Manufacturing Commons

Program Review & Workshop Update

James A Barkley

18 September, 2015
Welcome & Opening Logistics

• Wi-Fi

• Online participation
  • http://uilabs.adobeconnect.com/dmc
  • Feel free to join the conversation in the chat room, show us your beautiful smile!
  • No mics! If you have a question, please use the Q&A box
  • PLEASE NOTE: We are recording this session

• Community discussion forums for more permanent discussion
  • http://projectdmc.org/community
Attendees

- Total registrants = 170
- **Member density (Md) =** members/nonmembers
- In-person Md = 1.63
- Virtual Md = 0.78
- Overall = 1.08
Member Attendees

![Bar chart showing member attendees by tier and registration type]
Nonmember attendees

In-Person | Total
---|---
US Government PM | 
University of Michigan | 
System Insights | 
Sunesys, LLC | 
SIRTAC Corporation | 
RadioBro Corporation | 
ParallelWorks | 
Oklahoma State University | 
North Carolina State University | 
NCSA | 
MIT | 
Midwest Turners | 
Koneksys LLC | 
Hewlett Packard | 
Frantz Manufacturing Company | 
ECBB Holdings, LLC | 
Connectivity Resources Inc. | 
Big Data Ventures | 
Argonne National Laboratory | 
Arc Precision | 
Appirio | 
ANSER - OSD/ManTech | 
AlliedStrand Corporation | 
AES | 
Accenture | 

Virtual | Total
---|---
Wayne State University | 
University of Texas at Tyler | 
TechSolve, Inc. | 
SME Silicon Valley Chapter 98 | 
SimaFore LLC | 
Sealed Air Corporation | 
PROJMOL | 
Panorama Innovation | 
Notre Dame | 
Morane Valley Community College | 
MIT | 
http://www.kurtz- | 
GPI Prototype & Manufacturing... | 
FLATE | 
Elysium Inc. | 
Decipher Technology Studios | 
Connectivity Resources Inc. | 
SME Silicon Valley Chapter 98 | 
Charles, Charles & Associates Inc. | 
AMS Endeavors |
Attendee Skill Mix

Software experience (5=great)

Manufacturing-related analysis experience (5=great)
Project Call 15-16

• Looking for innovative ideas to:

  • build user communities

  • Establish seed data and applications in the marketplace

  • Demonstrate use cases for real-world mfg. problems

  • Connect the smart factory
Project Call 15-16

- Up to $2,000,000 in funding
  - $25k to $200k awards
  - Minimum 1:1 cost share & membership

- All IP under an open source license (Apache2 for technical works)

- Teaming and SME participation strongly encouraged

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http://dmdii.uilabs.org/projects

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April 2015
Project kickoff

May 2015
Alpha deployment

September 2015
Project workshop

October 2015
public and open source software site launch

Feb-Apr 2016
Seed projects kickoff & workshop

October 2016
Apps open to the public; user group meeting & developer workshop

April 2017
Final acceptance review and transition to DMDII operations (UILABS)

Phase 1: Alpha Development
Apr 2015–Jan 2016

Phase 2: Beta Development
Jan 2016–Jan 2017

Phase 3: Launch
Jan–Apr 2017

Ongoing support activities (security, quality, policy, documentation)
April 2015 – April 2017

DMDII Internal Distribution Only
September 29, 2015
9
Community Building

100 – Fully Mature Open Source Project with Successful Business Ops

55.4 –Opened but not proven

0 – Not Even Pretending to be Open Source
DMC Survey Analysis

Frequent Uses for DMC by Sector

- Searching for new services and/or promoting yourself/company
- Working on new services / components and/or answering RFPs
- Making connections with others and reading discussions
- Other

<table>
<thead>
<tr>
<th>Sector</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>5</td>
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<tr>
<td>Government</td>
<td>2</td>
</tr>
<tr>
<td>Industry</td>
<td>6</td>
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</tbody>
</table>

https://dmcsurvey.typeform.com/to/pHGVNE
Delphi Stakeholder Research

Specific Research Objectives Associated with Three Areas of Investigation

- Identify and document a list of key capabilities that people in the manufacturing sector would like to see the DMC platform possess.

- Document when, where and how the DMC would be collaboratively employed to enhance their digital manufacturing capabilities
  - product design and development innovations
  - manufacturing processes & production systems
  - supply chain performances & inventory management
  - data analysis & performance monitoring
  - project planning, scheduling and management
  - product quality & operations management
  - equipment maintenance & asset management
  - collaborative workforce enablement & development
  - shop floor automation

- Prioritize DMC capabilities on the basis of informed relative judgments of importance and value.

http://www.projectdmc.org/about/roadmap/capabilities/

Two-Stage Research Approach

- Stage One: Discovery Effort
  - Secondary Research
    - Association Reports
    - Syndicated Reports
    - Trade Periodicals/Press
    - Government Reports/Sources
  - Expert Interviews
    - Trade Associates
    - Technology Experts
    - Industry Consultants
    - Academia

- Stage Two: Delphi Panel Investigation
  - Interim Read-out
    - Digital Mfg. Knowledgeable Persons
  - Stage Two: Delphi Panel Investigation
    - Design Innovation Knowledgeable Persons
  - Software & Network Knowledgeable Persons
  - Value Chain Users & Support Suppliers

- Integration & Synthesis – Final Report

DMDII Members
DMDII Non-Members
Delphi Study Initial Results on Features

Collaborative Platform Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Degree of Importance To Your Business/Institute/University</th>
<th>Percent Rank 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Design, Development &amp; Testing Innovations</td>
<td>LOW (0%)</td>
<td>50%</td>
</tr>
<tr>
<td>Manufacturing Processes &amp; Production Systems</td>
<td>LOW (0%)</td>
<td>25%</td>
</tr>
<tr>
<td>Product Quality &amp; Operations Management</td>
<td>LOW (0%)</td>
<td>0%</td>
</tr>
<tr>
<td>Equipment Maintenance &amp; Asset Management</td>
<td>LOW (0%)</td>
<td>8%</td>
</tr>
<tr>
<td>Supply Chain Performance &amp; Inventory Management</td>
<td>LOW (0%)</td>
<td>0%</td>
</tr>
<tr>
<td>Data Analysis &amp; Performance Monitoring</td>
<td>LOW (0%)</td>
<td>8%</td>
</tr>
<tr>
<td>Project Planning, Scheduling &amp; Management</td>
<td>LOW (0%)</td>
<td>0%</td>
</tr>
</tbody>
</table>

Color Code

- Important
- Less Important
Security

**Approach:** Risk assessment and mitigation will be developed using NIST Risk Management Framework, and ISO compliance Matrix (iterative process version controlled).

Deployment guide being drafted to provide guidance on how additional security can be layered on top of the above-listed baseline we are providing.

**Current Status:** Security interviews started; security vulnerability testing started; over 350 test cases written; NIST controls audit underway.

Architectural flexibility provides customizable security specifications
MISSION STATEMENT: The Digital Manufacturing Commons (DMC) is a free and open-source software project to develop a collaboration and engineering platform, which will enable plug-and-play functionality across the entire digital thread from product development to manufacturing and services.

Find out more at http://projectdmc.org

- Source code and documentation
- Community forums and discussions
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