Digital Manufacturing Commons

Program Review & Workshop Update

James A Barkley

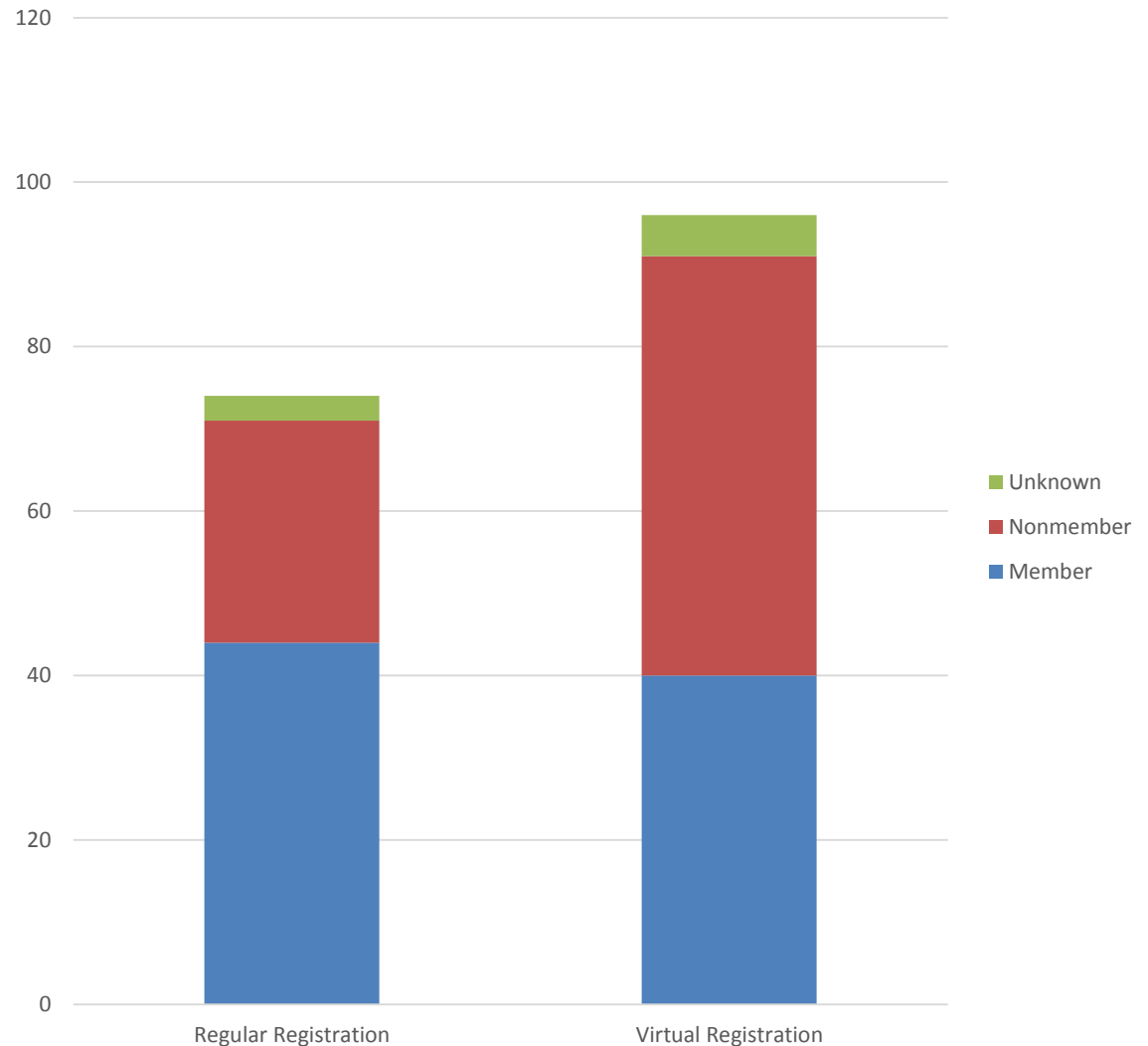18 September, 2015

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

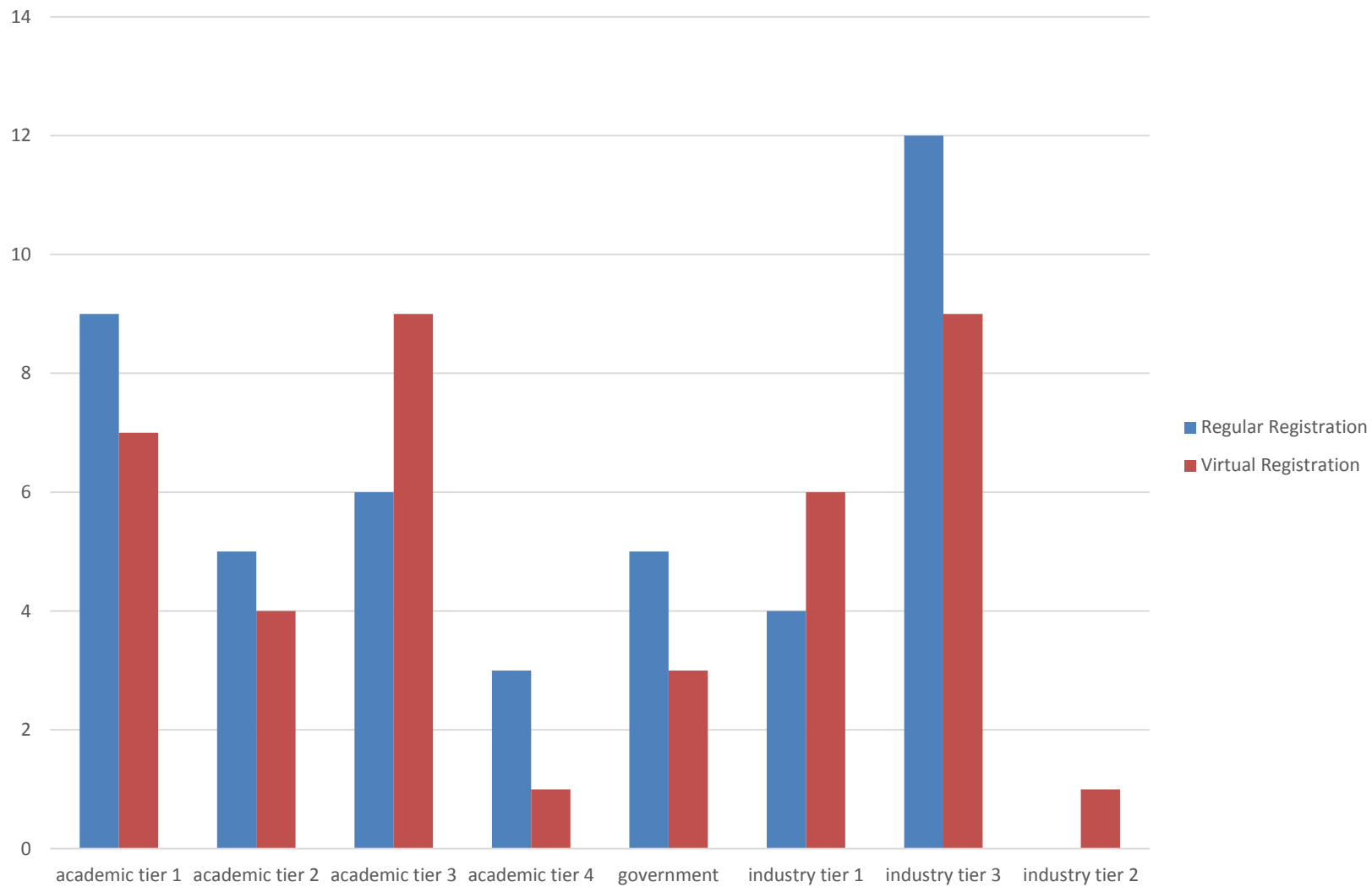- Community discussion forums for more permanent discussion

    - http://projectdmc.org/community

Attendees

- Total registrants = 170

- **Member density (Md)** = members/nonmembers

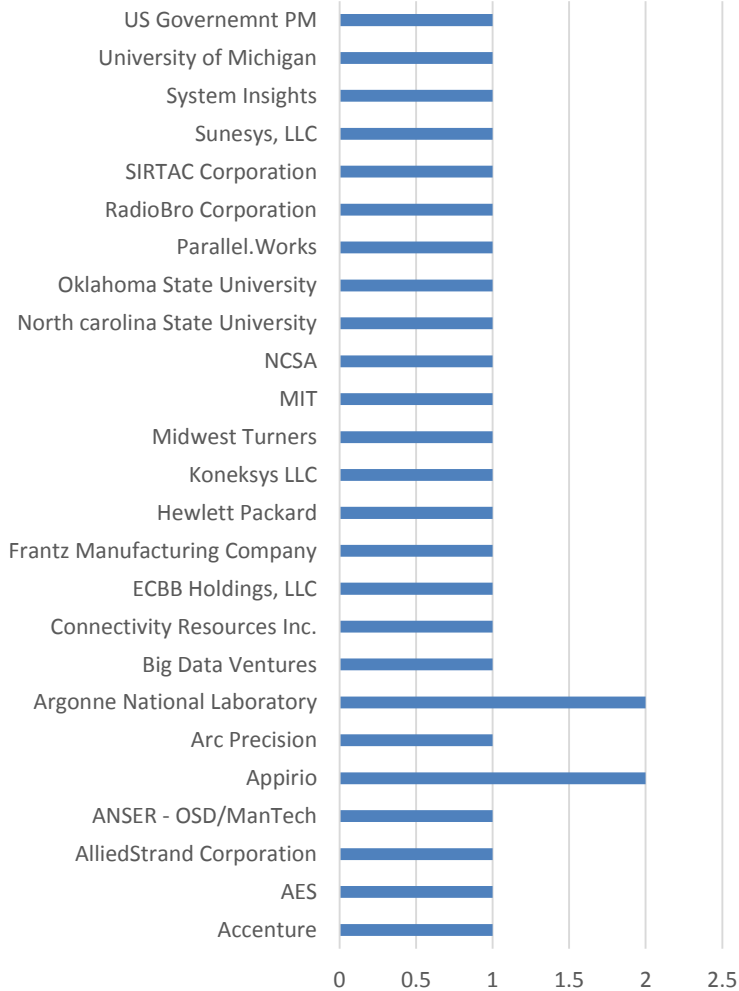- In-person Md = 1.63

- Virtual Md = 0.78
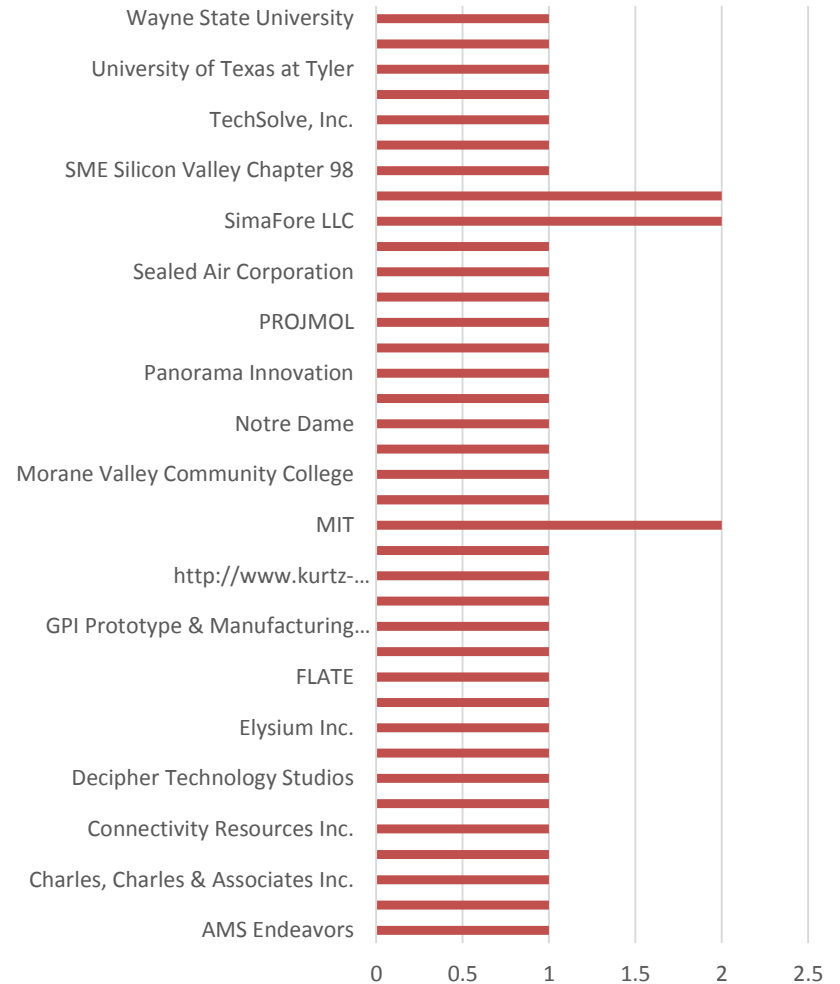
- Overall = 1.08

Member Attendees
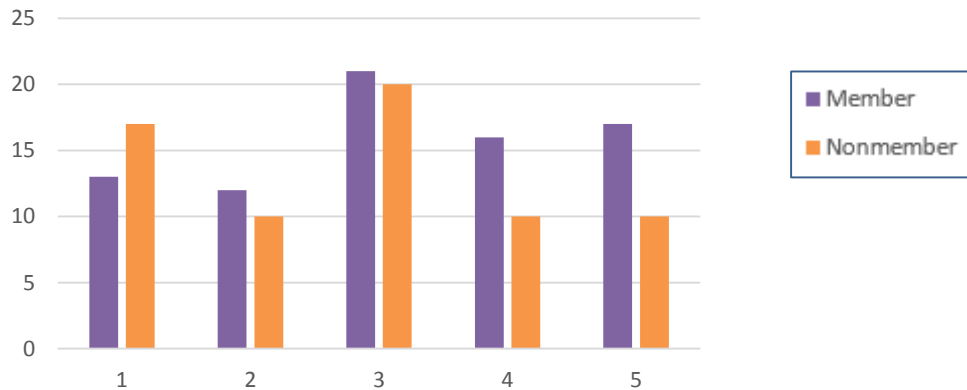
Nonmember attendees

In-Person — Total

Organization	Total
US Governemnt PM	1
University of Michigan	1
System Insights	1
Sunesys, LLC	1
SIRTAC Corporation	1
RadioBro Corporation	1
Parallel.Works	1
Oklahoma State University	1
North carolina State University	1
NCSA	1
MIT	1
Midwest Turners	1
Koneksys LLC	1
Hewlett Packard	1
Frantz Manufacturing Company	1
ECBB Holdings, LLC	1
Connectivity Resources Inc.	1
Big Data Ventures	1
Argonne National Laboratory	2
Arc Precision	1
Appirio	2
ANSER - OSD/ManTech	1
AlliedStrand Corporation	1
AES	1
Accenture	1

Virtual — Total

| Organization	Total
Wayne State University	1
University of Texas at Tyler	1
TechSolve, Inc.	1
SME Silicon Valley Chapter 98	1
SimaFore LLC	2
Sealed Air Corporation	1
PROJMOL	1
Panorama Innovation	1
Notre Dame	1
Morane Valley Community College	1
MIT	2
http://www.kurtz-...	1
GPI Prototype & Manufacturing...	1
FLATE	1
Elysium Inc.	1
Decipher Technology Studios	1
Connectivity Resources Inc.	1
Charles, Charles & Associates Inc.	1
AMS Endeavors	1

Attendee Skill Mix

Software experience (5=great)

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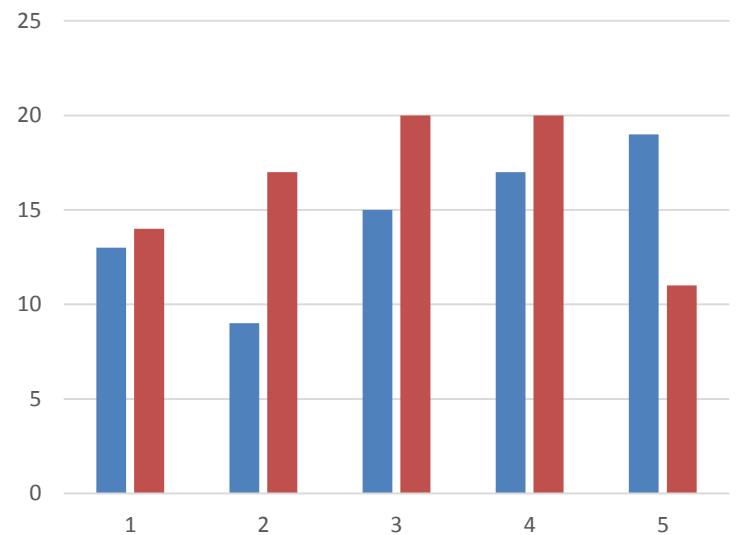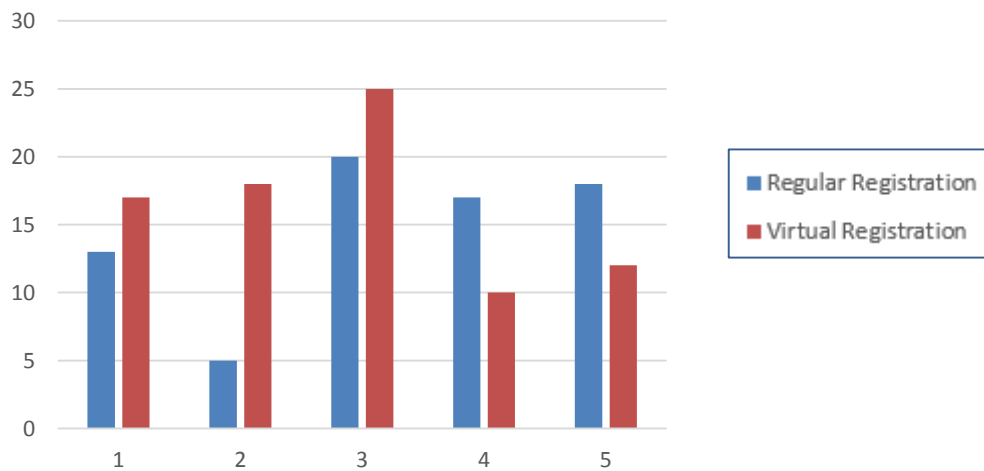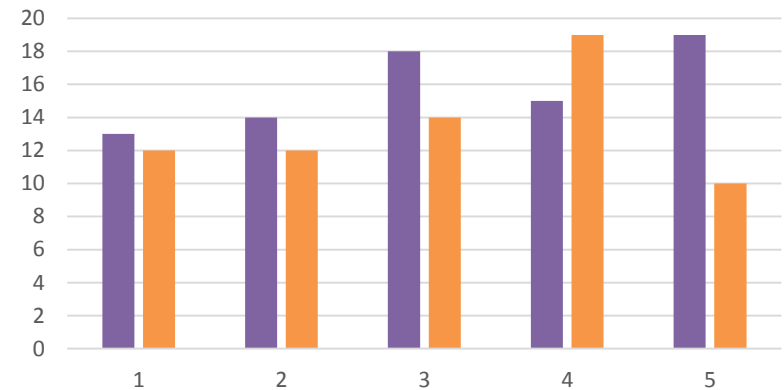
Project Call 15-16

- Looking for innovative ideas to:

  - build user communities

  - Establish seed data and applications in the marketplace

  - Demonstrate use cases for real-world mfg. problems
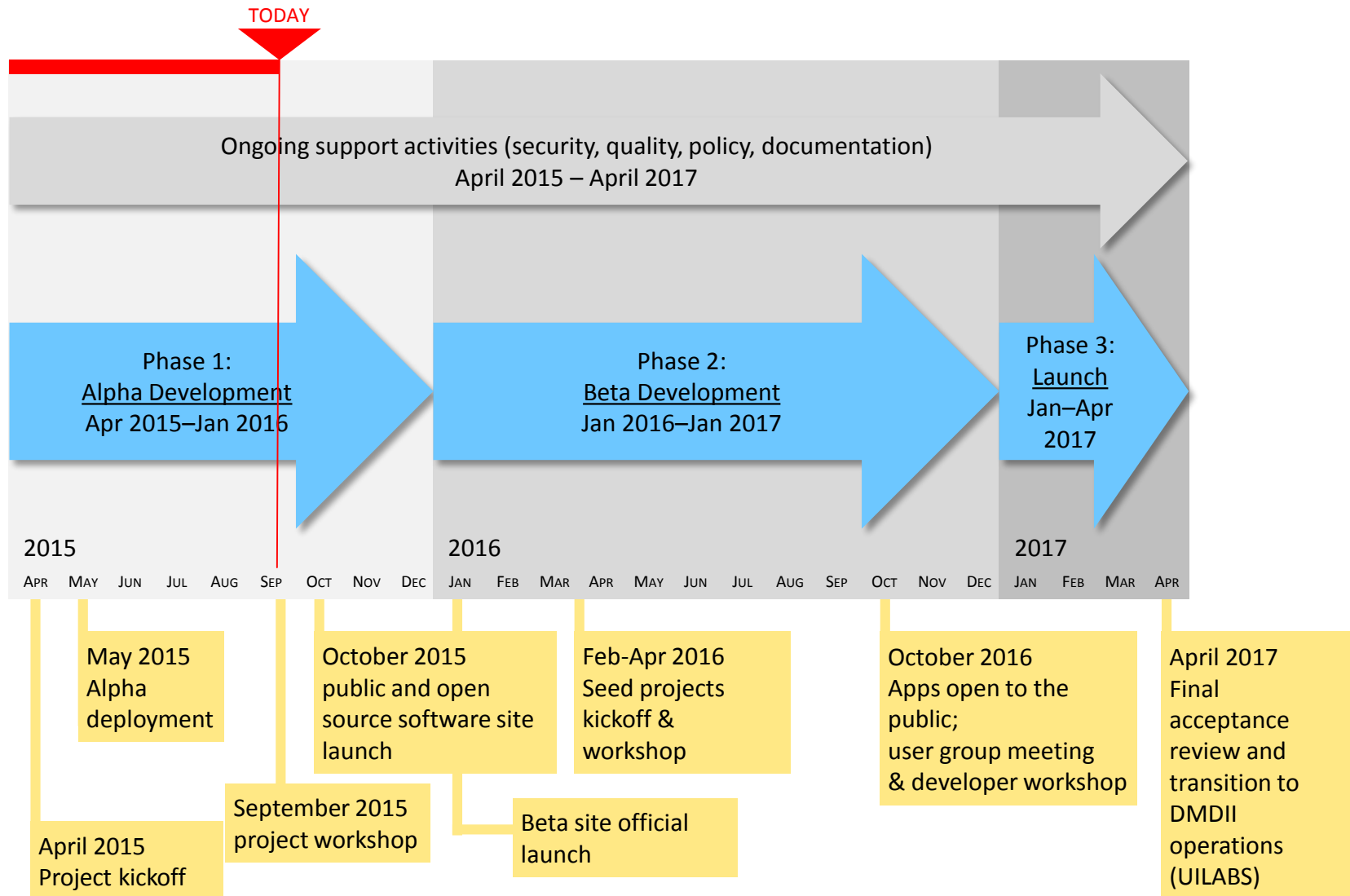
  - Connect the smart factory

Project Call 15-16

Event	Date
Call for white papers released	21-Jul-2015
Workshop	23-Sep-2015
White papers due	28-Oct-2015
Selection / Cost Proposal solicitations released	18-Nov-2015
Cost Proposals due	18-Dec-2015
Project Award	18-Feb-2016

http://dmdii.uilabs.org/projects

- 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

DMDII-15-16   PPD Ver 1.0

DMDII
DIGITAL MANUFACTURING AND
DESIGN INNOVATION INSTITUTE

a **UI LABS** Collaboration

Project Planning Document
Call for White Papers

DMDII-15-16
Open Source Software Applications for
Digital Manufacturing

Project Call Release Date: 21 July 2015

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Project Plan High-Level Timeline View

TODAY

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

Phase 1:
Alpha Development
Apr 2015–Jan 2016

Phase 2:
Beta Development
Jan 2016–Jan 2017

Phase 3:
Launch
Jan–Apr 2017

2015
APR MAY JUN JUL AUG SEP OCT NOV DEC

2016
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2017
JAN FEB MAR APR

May 2015
Alpha deployment

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)

April 2015
Project kickoff

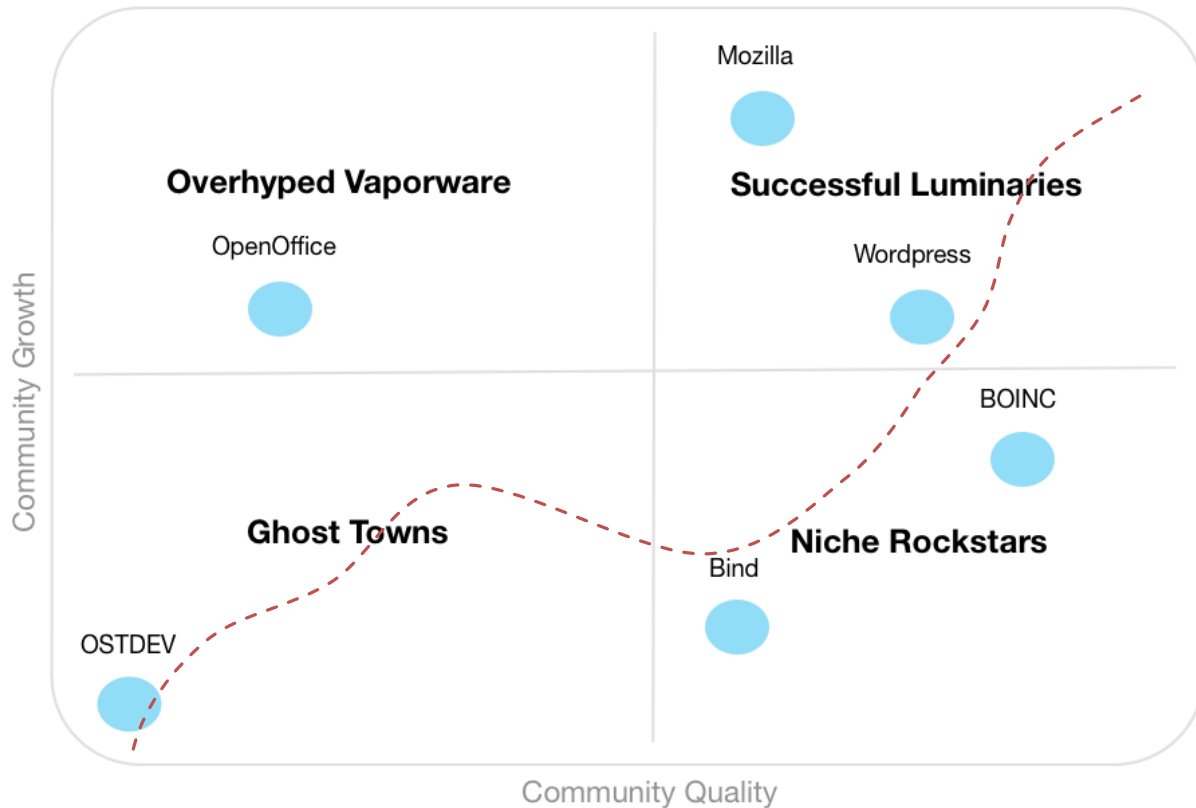September 2015
project workshop

Beta site official launch

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

Community Growth

Community Quality

Overhyped Vaporware
OpenOffice

Successful Luminaries
Mozilla
Wordpress

Ghost Towns
OSTDEV

Niche Rockstars
BOINC
Bind

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

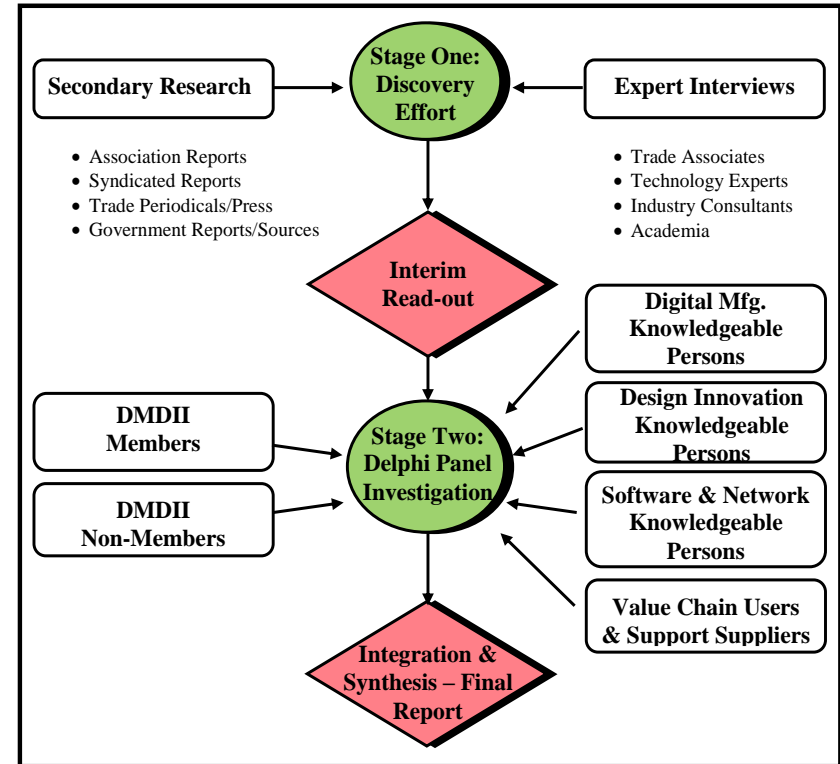https://dmcsurvey.typeform.com/to/pHGVNE
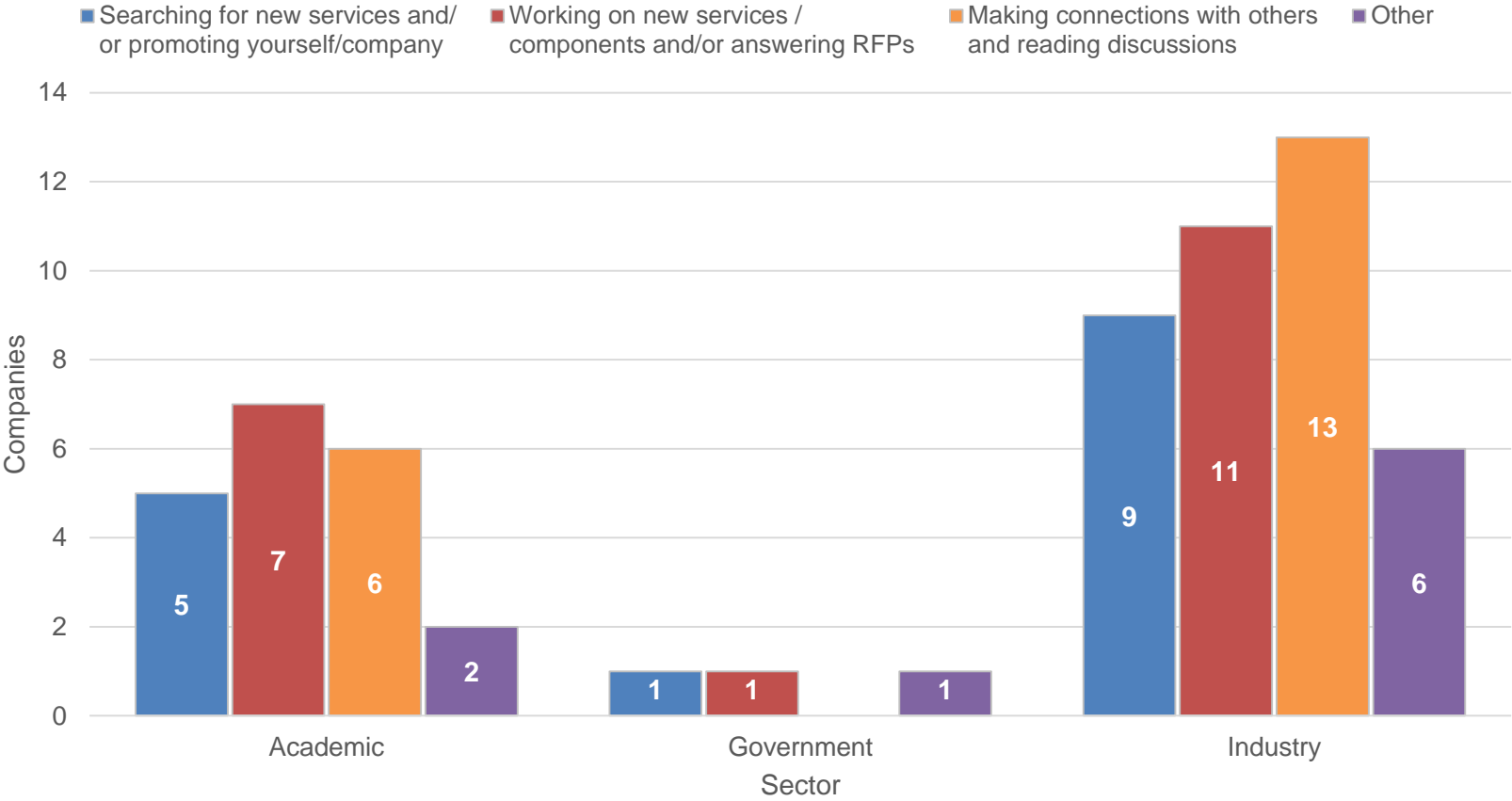
Delphi Stakeholder Research

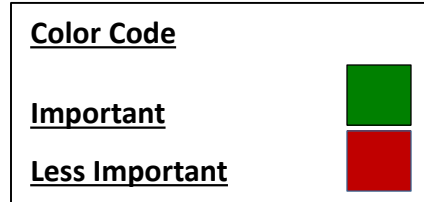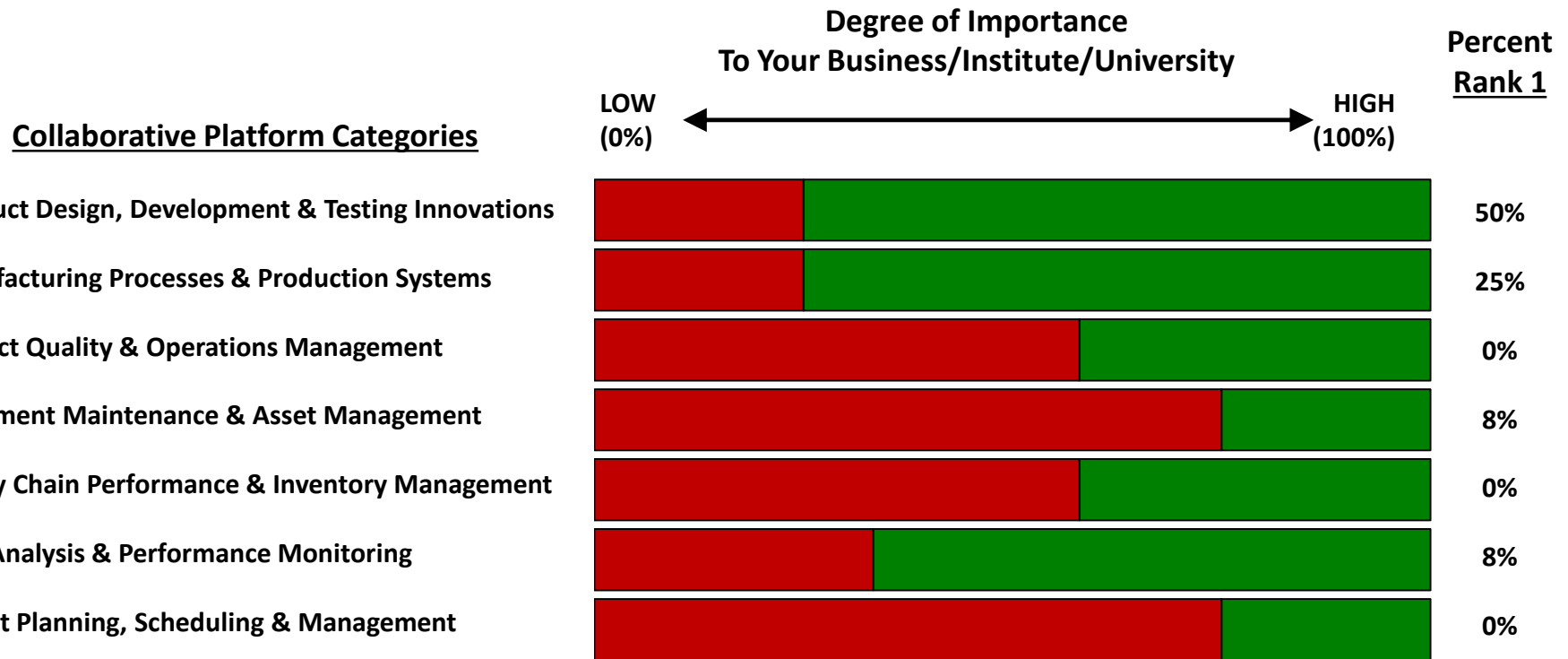## Specific Research Objectives Associated with Three Areas of Investigation

- 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.

Two-Stage Research Approach

Secondary Research
- Association Reports
- Syndicated Reports
- Trade Periodicals/Press
- Government Reports/Sources

Stage One: Discovery Effort

Expert Interviews
- Trade Associates
- Technology Experts
- Industry Consultants
- Academia

Interim Read-out

DMDII Members

DMDII Non-Members

Stage Two: Delphi Panel Investigation

Digital Mfg. Knowledgeable Persons

Design Innovation Knowledgeable Persons

Software & Network Knowledgeable Persons

Value Chain Users & Support Suppliers

Integration & Synthesis – Final Report

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

Delphi Study Initial Results on Features

Degree of Importance
To Your Business/Institute/University

LOW (0%) ←——————————————→ HIGH (100%)

Percent Rank 1

Collaborative Platform Categories

Category	Percent Rank 1
Product Design, Development & Testing Innovations	50%
Manufacturing Processes & Production Systems	25%
Product Quality & Operations Management	0%
Equipment Maintenance & Asset Management	8%
Supply Chain Performance & Inventory Management	0%
Data Analysis & Performance Monitoring	8%
Project Planning, Scheduling & Management	0%

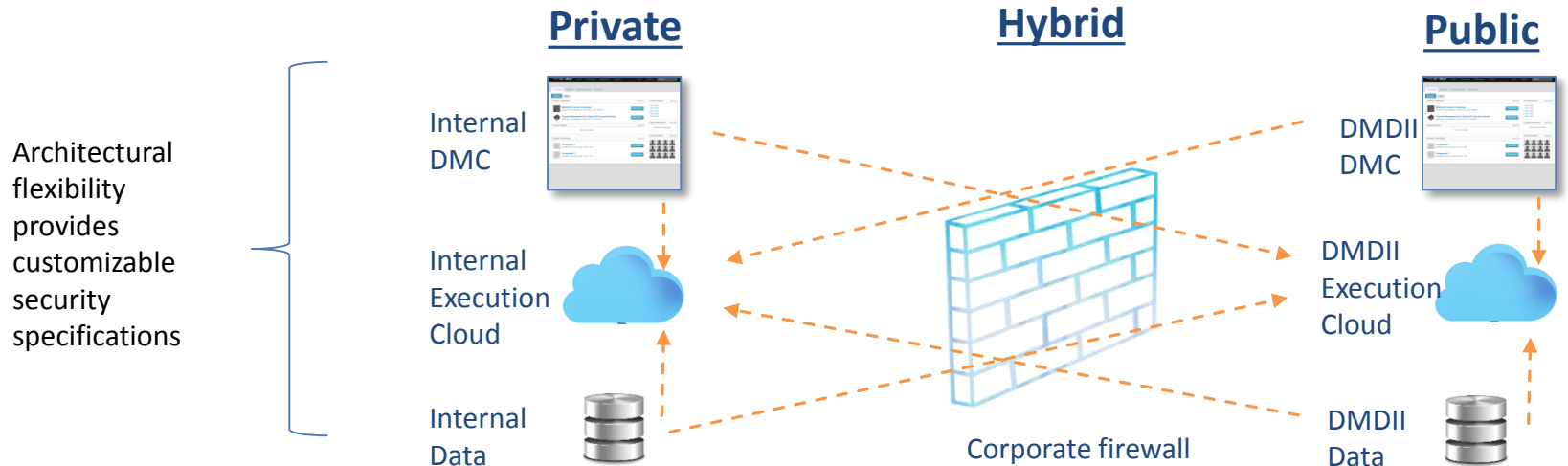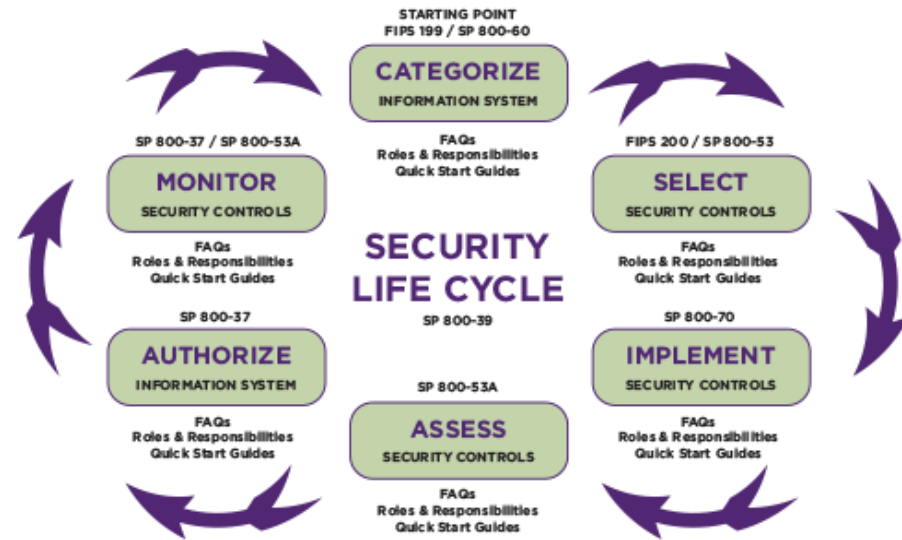**Color Code**

Important (green)
Less Important (red)

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.

SECURITY LIFE CYCLE

STARTING POINT
FIPS 199 / SP 800-60

CATEGORIZE
INFORMATION SYSTEM
FAQs
Roles & Responsibilities
Quick Start Guides

FIPS 200 / SP 800-53
SELECT
SECURITY CONTROLS
FAQs
Roles & Responsibilities
Quick Start Guides

SP 800-70
IMPLEMENT
SECURITY CONTROLS
FAQs
Roles & Responsibilities
Quick Start Guides

SP 800-53A
ASSESS
SECURITY CONTROLS
FAQs
Roles & Responsibilities
Quick Start Guides

SP 800-37
AUTHORIZE
INFORMATION SYSTEM
FAQs
Roles & Responsibilities
Quick Start Guides

SP 800-37 / SP 800-53A
MONITOR
SECURITY CONTROLS
FAQs
Roles & Responsibilities
Quick Start Guides

SP 800-39

Private   **Hybrid**   **Public**

Architectural flexibility provides customizable security specifications

Internal DMC

Internal Execution Cloud

Internal Data

Corporate firewall

DMDII DMC

DMDII Execution Cloud

DMDII Data

DMDII + a **UI LABS** Collaboration

Project Website

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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