Smart Manufacturing Leadership Coalition (SMLC)

The infusion of intelligence that transforms the way Industries conceptualize, design, and operate the manufacturing enterprise.

Presented by Denise Swink, CEO - SMLC
Smart Manufacturing 101
Networked Information & Integrated Decision-Making

- Networked sensors & information
- New forms of benchmarking
- Untapped efficiency opportunities
- Integrated, global performance metrics
- New forms of production management

End-to-end data and information connectivity across the plant floor

- e.g., Ethernet/IP
SMLC’s Partnerships

**Test Beds** - General Dynamics, General Mills, General Motors, Praxair, Corning, Pfizer, NETL, Alcoa, Center for Advanced Technology Systems/RPI

**Design/Manufacturing Platform Providers** – JPL/NASA, UCLA, Rockwell, Honeywell, Emerson, Schneider Electric, Nimbis Services Inc.

**Modeling & Simulation Materials, Design, Manufacturing** – Caltech/JPL, NETL, Argonne, UCLA, UT Austin, Tulane, NCSU, CMU, Penn, Purdue

**Smart Manufacturing/Smart Grid** – EPRI

**Global Metrics/Outreach** – AIChE, ASQ, ACEEE, NCMS, MESA, SME, Sustainable Solutions, Spitzer & Boyes

**Agency partners** – DOE, NIST, NSF

**Regional/National Partners** – ASERTTI, Center for Smart Manufacturing Innovation in CA (CMSI), NASEO, Wisconsin Manufacturing Institute
Affordable, Accessible, Innovative and Secure

Discrete • Batch • Continuous

Intelligent, Seamless & Collaborative
Networked-Based, Smart Manufacturing

Challenges

SCALE
COMPLEXITY
DATA –INFORMATION
AUTOMATION SILOS
SECURITY
INTEROPERABILITY
TECHNOLOGY

Vision

NETWORKED
COLLABORATIVE
INNOVATIVE
PROVEN
SCALABLE
GREEN
ECONOMICAL
COMPETITIVE
JOBS

Connected Supply Chain

• Agile
• Demand Driven
• Raw Material to Finished
Product

Optimized Production

• Asset Utility/Zero Downtime
• Quality/Zero Defects
• Reliable results

Sustainable Production

• Higher value products
• Data for decision making
• Product Lifecycle Management

Energy Efficient

• Lower emissions
• Less energy
• Green manufacturing

Safe Production

• Improved safety
• Fewer incidents
• More user friendly

Graphics courtesy of Rockwell Automation

Intelligent, Seamless & Collaborative
Networked-Based, Smart Manufacturing
Workflow, Data, Time & Cost

Separate Data & apps

Data to apps paradigm

Smart Manufacturing Open Architecture Platform

Data Partnership Workflow Orchestration

Sensor Data

Control & Automation Propriety Optimized Automation Workflows

Decision

Data collection, modeling & synchronization defined by workflow

Data collection, modeling & synchronization defined by workflow

Separate Data & apps

Single scale time requirement in workflow

Data to apps paradigm

Toolkits

Apps Store

Composability
Design to manufacturing Workflow libraries

Sensor Data

Insertion

Decomposition

Design to manufacturing Workflow libraries
SMLC’s Industry-Driven Strategy

**Roadmap:** Operations & Technology for SM systems

**Action Plan:** Implementing 21st Century Smart Manufacturing

- **2006-09:** NSF Workshop
- **2010:** DOE Workshop
- **2011:** SMLC Forum Workshop
- **2012:** DOE Workshop
- **2013:** DOE, NSF, NIST Awards

**Implementation Plan:** Review & Refine Collaboration Roles & Alignment

- **2006-09:** Infrastructure Specification: Increasing SM Platform Definition & Development
- **2010:** SMLC Incorporates as 501c6: Building Capacity & Resources; Leveraging Resources; Advocacy for SM
- **2011:** DOE Workshop, Calls, Advisory Groups, Focused Workshops, etc.
- **2012:** DOE, NSF, NIST Awards: $13 million in Project Work to develop SM Platform Prototype
- **Forward:** Board Meetings, Calls, Advisory Groups, Focused Workshops, etc.

**Establish Work Groups:** Identify & Drive Priority areas
- Test Bed
- Platform
- People
- Business

**Membership Expansion**
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