Knowledge Driven
Configurable Manufacturing (KDCM)

Flexible & Reconfigurable Manufacturing Systems
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Embracing Industry 4.0, 30 November 2015
Aim – Digital Automation Lifecycle Support

*Current problems are poor validation, retention of knowledge, reuse, agility*

- Real and virtual representations aligned throughout the lifecycle
- Component-based modular reconfigurable systems
- Knowledge captured within the system drives future design optimisation
Objectives

- Improve the reuse of manufacturing systems from both design and physical perspectives.
- Reduce the time and cost to deploy and commission such systems.
- Improve the retention of knowledge and lessons learned as systems iteratively evolve.
- Enhance the provision of system lifecycle support.
KDCM Lifecycle Environment

Virtual Engineering
Control Deployment
Maintenance Monitoring

Common Engineering Tool Set

Data
Editing
Visualisation
Simulation
Analysis

Service based Interface
formats
structure
integration
management

Common Data Model

Design Data
Control Software
Operation Log

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Project Impact

- **KDCM VueOne lightweight toolset**
  - Integrated virtual process planning and automation deployment
  - Closing the digital loop via OPC-UA and Web services
  - Phased use by industry

- **Alignment and application with industry at scale**
  - Multi PLC/IIoT platform deployment
  - Aligned to user standards
  - Lifecycle value demonstrated

- **Embedded intelligence within the product**
  - Traceability, automation decision support, analysis services
Future challenges & opportunities

- Technical progression
  - Web-based KDCM environment
  - Mobile KDCM applications
  - Service-oriented engineering

- Need to validate at scale with the supply chain
  - WMG full-scale autonomous systems
  - WMG-located HVEMS and AMPLIFII pilot lines for automated battery and electric motor assembly
Thank you

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