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Smart Factory Task Group

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www.iiconsortium.org

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IIC Working Groups and Task Groups

Marketing Working Group	Communications	Energy	Healthcare	Marketing Security	Retail Operations
Smart Factory	Mining	Thought Leadership	**Security Working Group**	**Liaison Working Group**	Standards
Technology Working Group	Architecture	Connectivity	Distributed Data Interoperability & Management	Safety	Edge Computing
Innovation	IT & OT	Vocabulary	Industrial Analytics	Interoperability	
Testbeds Working Group	Healthcare Initiative	Smart Grid	IIRA-based Horizontal	Smart Cities	
Business Strategy and Solution Lifecycle Working Group	Business Strategy	Use Cases	Ecosystem		

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Marketing Working Group

- Current focus: Security & Smart Factory
- Events: Security Forum, Industrial Internet Forum, IIC Pavilions (Hannover Messe, IoT SWC)

- IIC Journal of Innovation

- Promotion of Publications:
  - Security Framework
  - Industrial Internet Reference Architecture
  - Connectivity Framework
  - Journal of Innnovation
- White papers; Security, Energy, Investment, **Green Patch & Testbed Results White Papers**

- Industrial Internet in Action case studies

- Videos

- Webinars

- **Industry Vertical Flyers and Testbed Flyers/1-Pagers**

The Industrial Internet in Action

Cyber Access to Robots

Challenge
- Eliminate VPN access to ensure more secure troubleshooting of factory automation equipment
- Maintain high standards of access control

Solution
- Joint Bayshore Networks-Cisco solution enabling secure "line of sight" access for remote users

Results
- Uninterrupted enforcement of secure IT/OT operations and safety policies
- Faster execution of diagnostics and maintenance, without travel
- Zero downtime and higher availability of production zone operations

www.iiconsortium.org/case-studies

Journal of Innovation

Industrial Internet of Things (IIoT) in the Manufacturing Industry

IIoT in Manufacturing

The term IIoT describes technology innovations and interconnectivity enabled by the Internet. By automating communication between industrial equipment and systems, IIoT enhances efficiencies throughout the factory, making it smarter.

Evolution to Smart Factories

Becoming a Smart Factory is a long-term, complex process. It often requires a "wrap and reuse" rather than "rip and replace" approach where smart connected assets operate as part of a larger system, a system of systems, or "greenfield" and "brownfield" applications – all converging as a smart manufacturing enterprise.

Benefits of IIoT in Manufacturing

- Minimize unplanned downtime
- Maximize operational efficiency
- Optimize business operations
- Enhance and protect systems
- Reduce TCO and increase revenue

IIoT Applications in Smart Factories

- Predictive Maintenance
- Intelligent Supply Chain Management
- Asset Performance Management
- Augmented Operators/Workers
- Cyber Security

"Architectures of the past are no longer viable in the age of IIoT. In order to influence the next generation of manufacturing technology, we're working within the IIC ecosystem to contribute requirements, expertise and customer insight."

CALVIN SMITH
DIRECTOR & HEAD OF IOT PARTNER ENGINEERING, WIPRO DIGITAL
SMART FACTORY TASK GROUP CO-CHAIR
INDUSTRIAL INTERNET CONSORTIUM

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Smart Factory Task Group

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"Traditional manufacturers and industrial leaders now have the opportunity to embrace the IIoT. ...as long as they think unconventionally, they have a chance to generate new growth with IIoT."

ERIK WALENZA, CEO, IOT ONE
SMART FACTORY TASK GROUP CO-CHAIR
INDUSTRIAL INTERNET CONSORTIUM

Ecosystem of Experts

The Industrial Internet Consortium Smart Factory Task Group brings together end user organizations, product vendors, service providers and research organizations to create new IIoT solutions, generate operational efficiencies and develop business model innovations.

Smart Factory Task Group Mission

- Establish IIC and its members as Smart Factory thought leaders.
- Create value for task group contributors by validating them as subject matter experts.
- Promote IIC collaboration with Mfg industry-oriented organizations and end-user groups.

Key Benefits

- Form collaborative relationships
- Access new knowledge and technologies
- Innovate through testbeds
- Influence future IIoT development
- Explore new business models
- Co-author publications
- Create market momentum

Resources

- White Paper: *Smart Factory Applications in Discrete Manufacturing Whitepaper*
- Brochure: *Smart Factories: a Symphony of the Industrial Internet in Action*
- Case Studies & Testbeds

Common Denominators	ENERGY	SMART FACTORY	MINING	RETAIL
Extension of key artifacts by vertical • **IIRA** • **IISF** • **Connectivity**		Ongoing		
Education & Awareness; Networking & Education; Community Outreach • **Identification of top priority venues** • **Developing "Generic pitch to secure Speakers"** • **Whitepapers and other Materials** • **Webinars** • **JOI TB Articles**		• Survey in Process • Speakers Bureau Program enhanced • JoI articles ongoing • Multiple Webinars • Website Updated w/ Resources		
End User Engagement • **"Pop-up" Networking Events** • **Reach the Users via Liaisons** • **Extension of public forums to include EU Component** • **Call for End User Community to host IIC Testbed** • **Establishment of EUAG/EUSIG**		Ongoing (Most directly through End User Testbed Program)		
Testbed Engagement • **Develop a "Shark Tank" style testbed pitch slide (1 per testbed)** • **Call for "End User" Testbed hosts** • **Testbed Whitepaper – Fontaine/Kradjel**		• Pitch decks in process • End-user program in process • TB results whitepaper in process • Testbeds on display at IOTSWC		

Revamped, Resource-Rich Microsite

End User Testbed Engagement Strategy

PROGRAM GOALS:

1. Provide a path for end users to engage with the IIC (in a limited scope).

2. Enable testbeds to experiment with multiple field deployment footprints.

3. Provide IIC members with greater exposure and business opportunities as testbeds move towards commercialization.

PROGRAM SCOPE (trial phase):

1. **Target end users:** Manufacturing facility owners/operators.

2. **End user opportunity:** End users can only participate as a deployment partner or advisor for existing testbeds. They cannot propose new testbeds.

3. **KAVI Access:** Separate KAVI databases are created to provide end users to access to information regarding their testbed deployment.

Testbed Input: Levels of Engagement

ENGAGEMENTS TYPES (level of engagement determined by testbed sponsors)

1. **One-time requirements interview [no access to confidential material]**
   - Testbed receives feedback into end user requirements.
   - End user receives a brief on the testbed.

2. **Periodic advisory [NDA between testbed participants and non-members [1]]**
   - Testbed receives periodic end user input and a potential customer.
   - End user receives periodic insight into solution development.

3. **New deployment at end user site [NDA [1] + optional partnership agreement [2]]**
   - Testbed receives a new deployment footprint and a potential customer.
   - End user receives experience implementing the solution.

Alternatives should be viewed as a progression, they are not mutually exclusive.

Notes 1: We will follow the existing procedure for end user engagement. NDAs will be required at the discretion of testbed sponsors and structured based on discussion between the testbed participants and end users. A formal IIC NDA may be developed in the future.

2: Partnership agreements beyond the scope of the IIC may be required between company participants.

Program Timeline

The pilot program is scheduled to launch after the Q4 meeting.

**Q4 2017**   Align on engagement modes, processes, legal, IP protection.

6 testbeds have opted in (Track & Trace, Manufacturing Quality Management, **Smart Factory Web**, **TSN**, Deep Learning, SF Connectivity for Brownfield Sensors)

Q4 IIC Meeting   Formally launch pilot program.

Q1 2018   Pilot launch – SFTG Chairs to recruit 10-15 end users to complete Interest Form.

3 end users have opted in (Nestle, Pfizer, Startup Factory).

Q2 2018   Pilot launch – introduce 5-10 end users to testbeds.
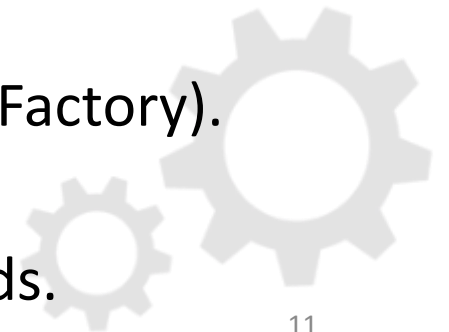
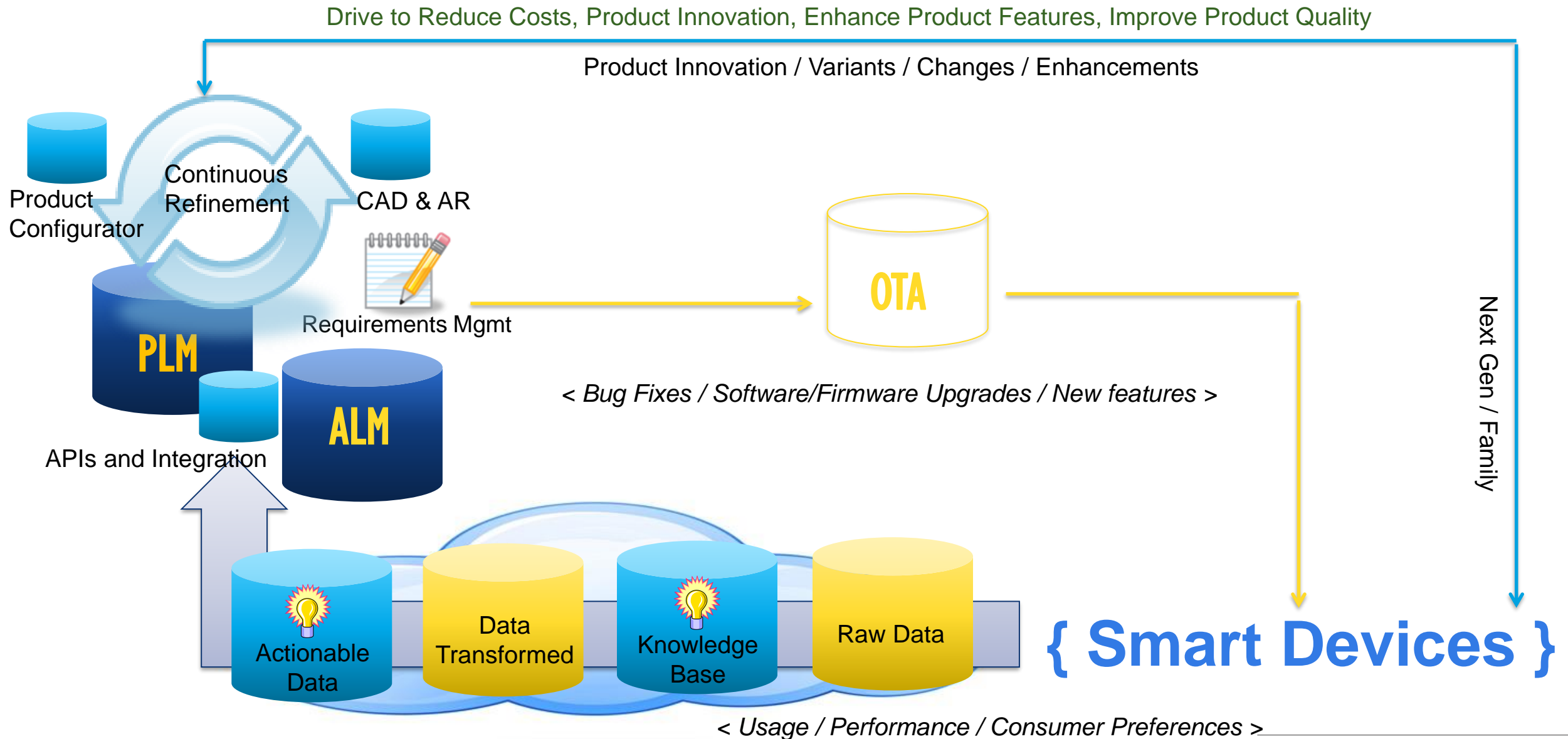# Example End User - Startup Factory (Kunshan, China)

"The Manufacturing Site for Medium Sized Enterprises in China"

- Operating production lines for 30 European manufactures in China.

- Owned and operated by a German-Chinese consortium.

- Main sectors include automotive, machinery, measuring, electronics, automation.

Factory to Field: XLM to Smart Device Closed-Loop

Drive to Reduce Costs, Product Innovation, Enhance Product Features, Improve Product Quality

Product Innovation / Variants / Changes / Enhancements

Product Configurator

Continuous Refinement

CAD & AR

Requirements Mgmt

PLM

ALM

OTA

< Bug Fixes / Software/Firmware Upgrades / New features >

APIs and Integration

Next Gen / Family

Actionable Data

Data Transformed

Knowledge Base

Raw Data

{ Smart Devices }

< Usage / Performance / Consumer Preferences >

Dashboard & Closed Loop Product Lifecycle

Connect for deeper architecture & demo: iot-partners@Wipro.com
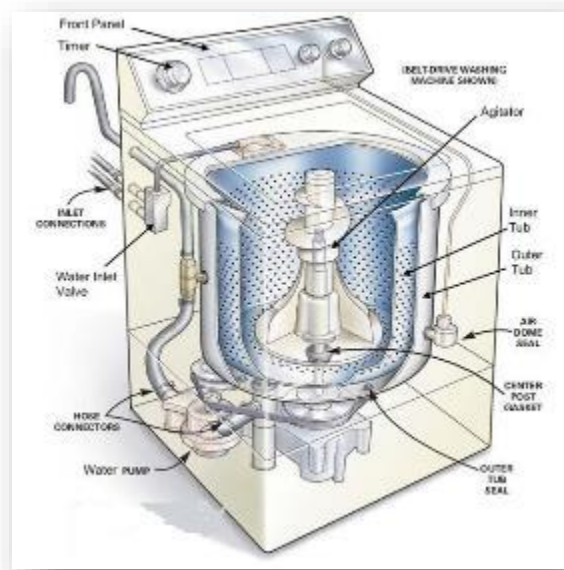
Suggested Changes:
1. **Strengthen tub rib structure**
2. **Motor and Tub spindle is connected with direct drive**

Connection Points/Next Steps

1. SFTG End User Testbed Engagement – Call for End Users

2. OMG Manufacturing Tech & Info Standards Task Group (MANTIS) Connection/Cross-Pollination

    +OMAC/OPC Foundation/PLCopen/OpX Leadership Nework?

3. Calvin's Selfish Factory to Field Closed Loop Exploration (Use Cases & End Users)

4. Others from OMG & the Audience? Please let us know:

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Thank You!