

LISTEN.
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Sustainable Production and Supporting Standards Rockwell Automation

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Global Standards and Trade
Rockwell Automation

Agenda

- Rockwell Automation
- Defining Sustainable Production
- Standards supporting Sustainable Production
- Q&A



Rockwell Automation At A Glance

Leading global provider of industrial automation control and information solutions

- Annual Sales: \$5.7 billion
- World Headquarters: Milwaukee, Wisconsin, USA
- Trading Symbol: ROK
- Employees: About 21,000
- Serving customers in 80+ countries



What does Rockwell Automation Manufacture?

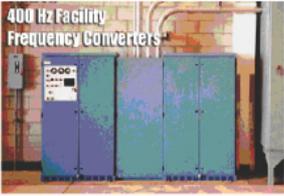
What does Rockwell Automation manufacture?

- Industrial automation, power control, information solutions -products which are used to control manufacturing processes
 - Control electric motors on pumps, fans, conveyor
 - Control production quantities, volumes
 - Monitor product quality and volumes
 - Initiate Recipes and batch processes.
 - Maintain Worker Protection and Process Safety and Productivity
 - Energy Management Systems and Solutions
 - Continuous emissions monitoring
 - Track and trace solutions

What are these products?

- Motor starters, Variable frequency Drives for Motors, Power and energy Monitors, Programmable Controllers, Industrial Computers, Operator screen devices, message displays, sensor products.

9.INDUSTRIAL AUTOMATION

COMPONENTS OF INDUSTRIAL INSTALLATION Out of the scope of WEEE Out of the scope of RoHS	FINISHED PRODUCTS In the scope of WEEE Out of the scope of RoHS
	
	
 <p>400 Hz Facility Frequency Converters</p>	<p>Hand held data logger Bench data logger Energy Meter</p>

Drive, Contactor, Inverter, Interface, Programmable Logic Controllers (PLCs), Safety push button, Sensor, Control Panel

Sustainable Production Defined

Sustainable production is ...using technologies to transform materials without emission of greenhouse gases, use of non-renewable or toxic materials or generation of waste while optimizing yield and supply chain integrity.

Options for Manufacturers...

- Use less material and energy
- Substitute materials: non-toxic for toxic, renewable for non-renewable
- Reduce waste, cleaner production
- Recycling and all its variants
- Alternative energy/Co-generation
- Change structures of production, supply chain
- Workplace safety and product safety



Sustainability drives innovation throughout the product lifecycle

Rockwell Automation's Sustainability Portfolio

Natural Extension of Our Business

- Track record of enabling cost, quality, productivity and flexibility improvements
- Automation and controls enable sustainable production

More Than Green

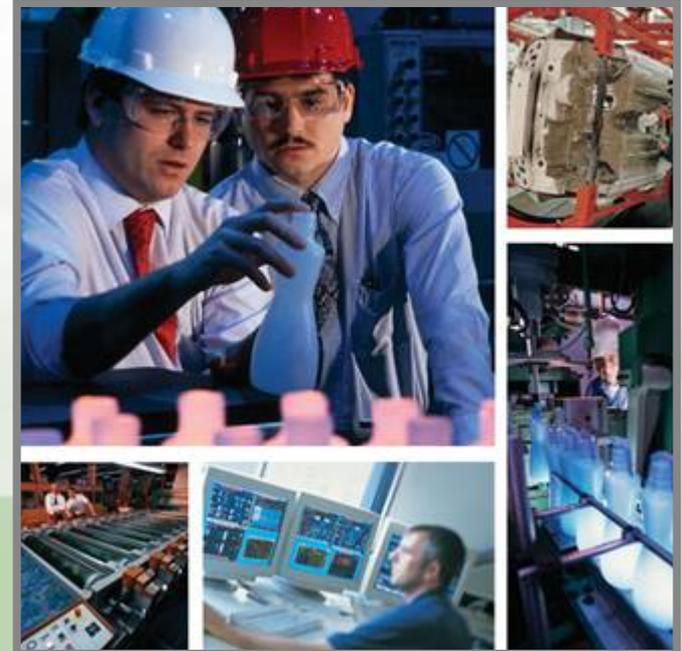
- Energy and environmental concerns
- Efficient use of production assets and raw materials
- Workplace and product safety

A Business Imperative

- Not just society and environment
- Must improve global competitiveness

Practicing What We Preach

- Rockwell Automation applies sustainable production principles in its own facilities
- We already have customers who are experiencing successful sustainable production



Challenges - It's Not Just About Energy



Sustainable Production must balance environmental and social performance factors in addition to those for business performance

Sustainable Production - *Energy & Environment*

Market Trends

- Energy Efficiency
 - Energy costs ... supply volatility
 - Raw material and water costs
 - Peak load management
 - Renewable energy alternatives
 - Reduced compressed air consumption
- Environmental Protection
 - Recovery and recycling
 - Raw material reduction
 - Emissions monitoring and reduction
 - Responsible product/package design
 - Carbon foot-printing
 - Consumer and community imperatives

Green is Lean



Rockwell Automation Response...

- Power and Energy Management Solutions
- Market Leading Intelligent Motor Control Portfolio
 - *PowerFlex and IntelliCENTER*
- Software CEM (Continuous Emissions Monitoring) - *Pavilion*

Sustainable Production - *Meeting Mandates*

Market Trends

Brand protection becoming part of the Sustainability Agenda

- **Machine Safety & Electrical Safety**
 - Maintaining Worker Protection and Productivity
- **Process Safety**
 - Responding to Evolving Global Standards and Practices
- **Product Safety and Supplier Quality**
 - Avoiding / Managing Product Recalls (impact on profitability and brand equity)

Protecting People and Profits

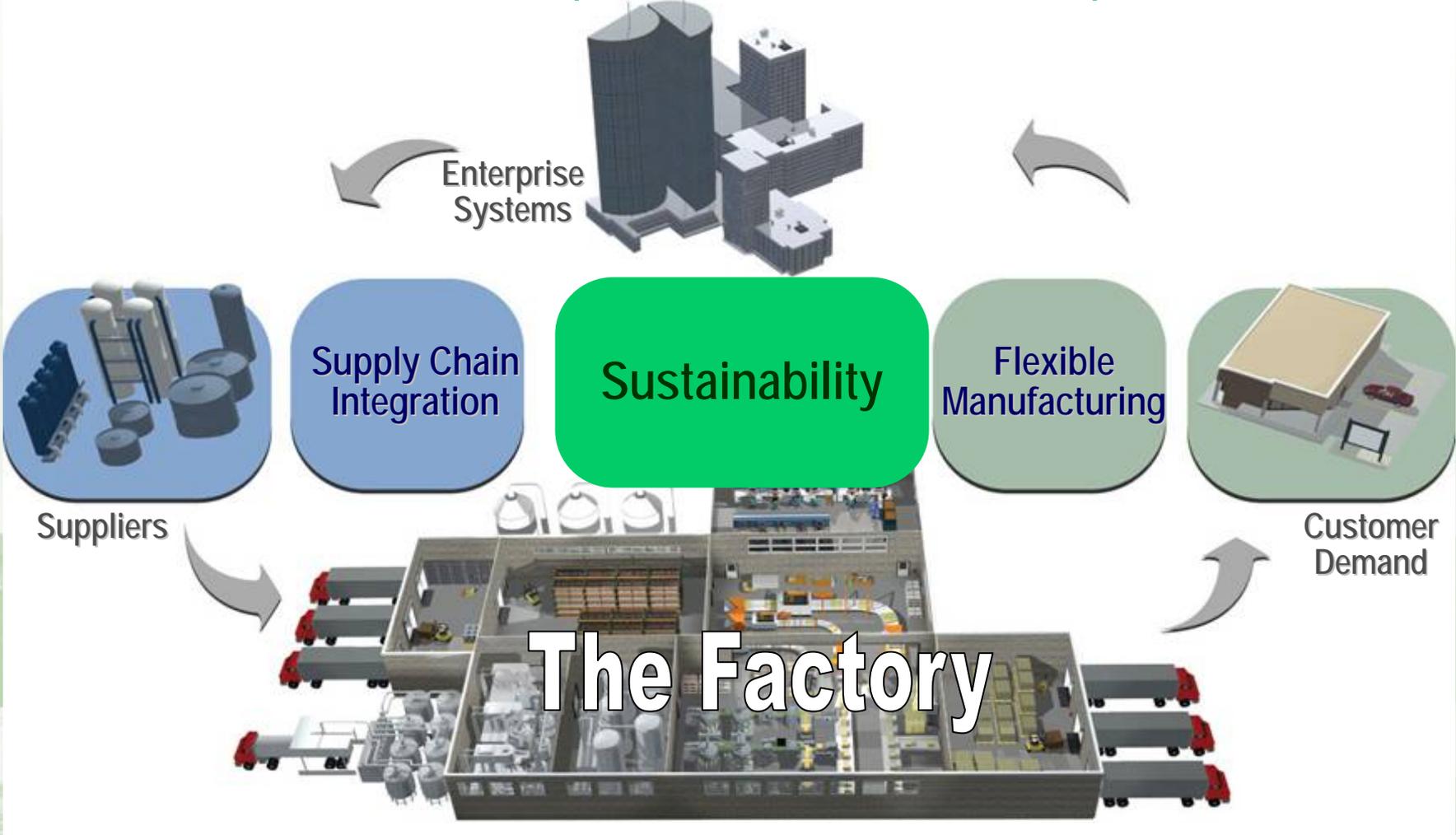


Rockwell Automation Response...

- **Most Complete Portfolio for Machine, Electrical and Process Safety Applications**
 - Core Part of Integrated Architecture
 - Advance Safety Networking – *CIPSafety*
- **Pre-engineered Safety Solutions & Safety Engineering Services**
- **FactoryTalk Solutions for Tracking and Tracing / Genealogy**

The Emerging Sustainability Imperative

Product & Production Safety | Environmental Protection | Energy Efficiency



Faster Time to Market | Lower Total Cost of Ownership | Asset Optimization | Risk Management

Information Management Solutions

Industrial Information Management

Business Intelligence

- | | |
|-----------------------------------|--------------------------|
| • Facility Energy Profiling | • Inventory Management |
| • Production Energy Profiling | • Performance Management |
| • Recipe Management | • Asset Management |
| • Capacity/Product Mix Management | |

Regulatory Compliance

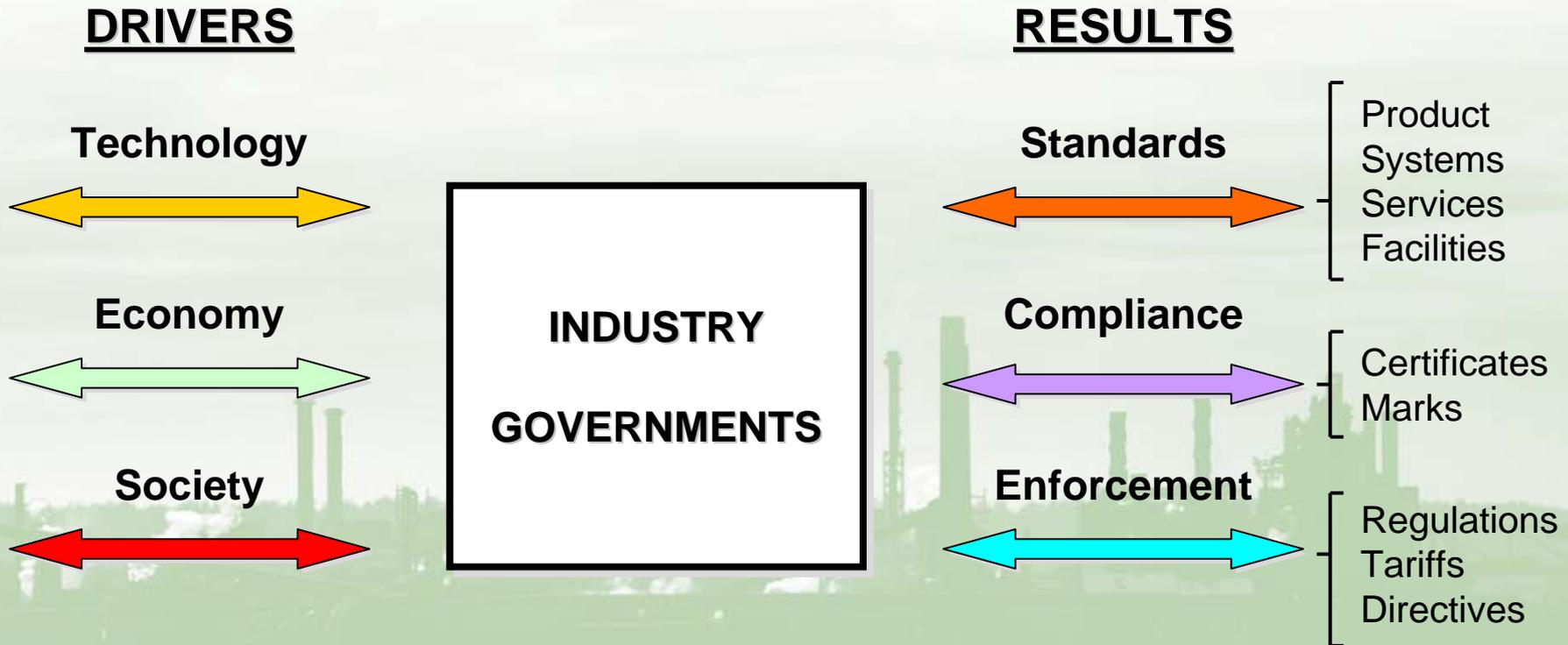
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|-------------------------------|--|
| • Material Accountability | • Corrective Action, Preventative Action |
| • Traceability/Genealogy | • Environmental Monitoring |
| • Electronic Record (EBR/DHR) | • Facilities Energy Reporting |
| • Emissions Monitoring | • Quality Management |

Operational Efficiency

- | | |
|-------------------------------|--------------------------------------|
| • Production Optimization | • Model Predictive Control |
| • Energy Optimization | • Production KPI Profiling (e.g.OEE) |
| • Equipment Optimization | • Schedule Optimization |
| • Statistical Process Control | |

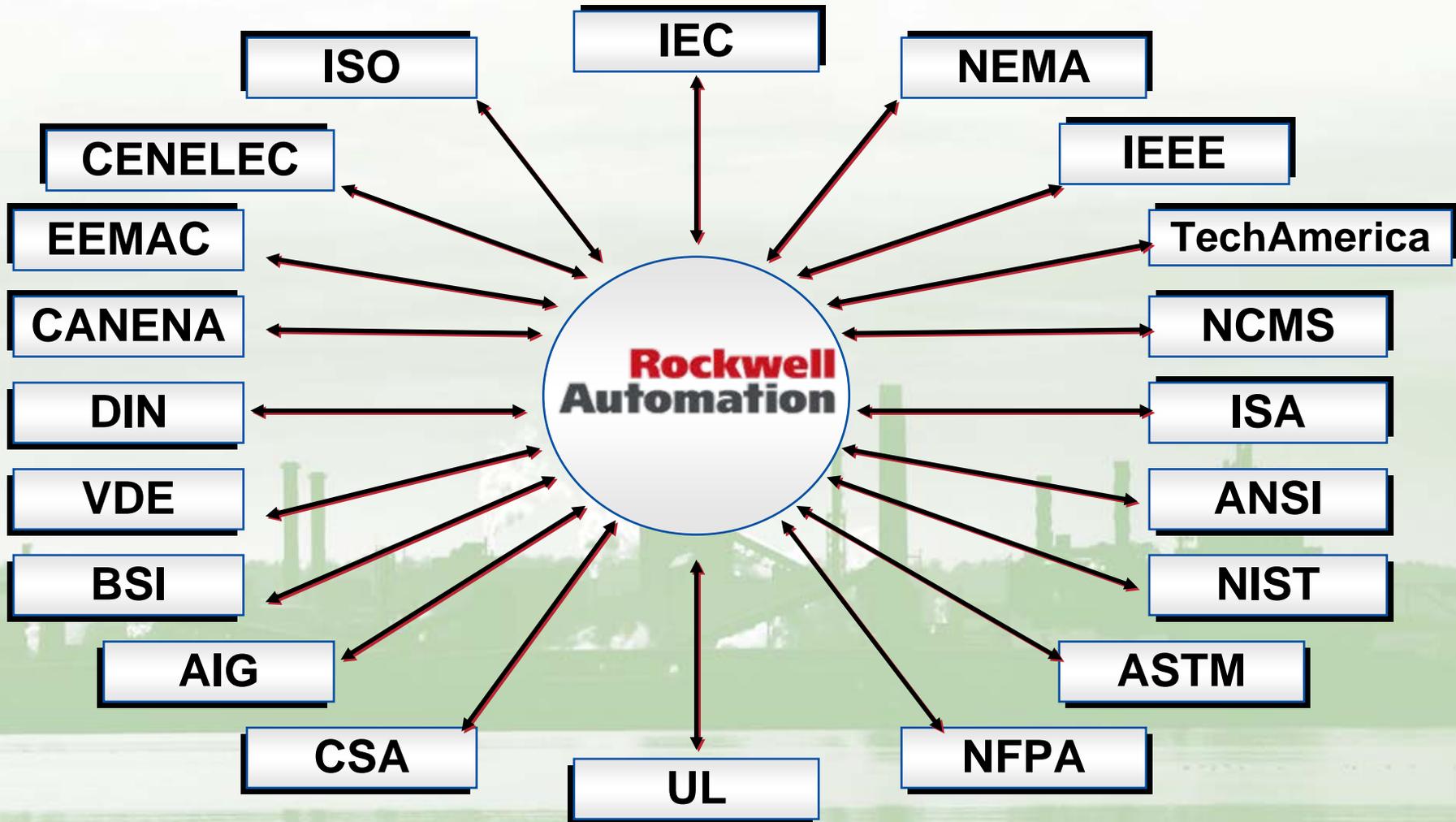


Global Trade and Society Drive Standards



Industry and Governments seek to produce results that facilitate trade and protect society.

Rockwell Automation Public Standards Participation



Standards Activity Examples --Sustainability

- **SMART GRID STANDARDS ACTIVITY**

- IEC Smart Grid Strategic Group
- NIST Roadmap of Smart Grid Interoperability standards
- NIST Industry to Grid (I2G) Standards
- IEEE P2030 Group for Smart Grid Standards

- **ENERGY MANAGEMENT STANDARDS ACTIVITY**

- ISO 50001 Energy Management System Standard
- ISO Strategic Advisory Group on Energy Efficiency
- Superior Energy Performance (US DOE/GA Tech) Working Group
- NEMA Premium Motor/Drives Tax Proposal and Application Group

- **ENVIRONMENTAL STANDARDS ACTIVITY**

- IEC TC111 Environmental standardization for electrical and electronic products and systems
- ISO 14006 Environmental Management Systems Guidelines on Eco-Design
- ISO 14067 Environmental Management – Carbon footprint of products
- BSI PAS 2050 – Assessing the life cycle greenhouse gas emissions of goods and services

- **SOCIAL RESPONSIBILITY STANDARDS ACTIVITY – ISO 26000**

Standards Activity Examples - Manufacturing Equipment - Safety, Security, Information

- **IEC Centric**
 - TC 17, 22, 31, 44, 65, 77, 108, 111,
- **NEMA / UL / CSA**
 - 1-IS Section Standards “Free On Web”
- **ISO Developments**
 - TC 184, 199
- **ISA**
 - S84, S88, S95, S99, S100, S101, S102, S103,
- **IEEE**
 - 1588, 802.1, 3
- **MESA**
- **ODVA**
 - DeviceNet, ControlNet, Ethernet I/P
- **OPC**
- **SEMI**
- **Foundation FieldBus**
- **MIMOSA**
- **OMAC**
- **FDT/DTM**

Optimizing Manufacturing systems

- Balance of global supply chains through the product life cycle to deliver competitive global products to local markets



Transition from silos of standardization to system standards.

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Questions?

Thank you