Securing the Digital Thread In Connected Manufacturing

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VP & CTO
Software AG
Chris Borneman
Global Product Data Interoperability Summit | 2017

- Software AG CTO covering Aerospace & Defense and Federal
- 20+ years as CTO/CIO
- 10 years as Exostar CTO
- Internet since 1994
- Manufacturing/Industrial Focus
- Interest areas include Factory of the Future/Industry 4.0, Digital Thread, IIoT, Additive Manufacturing

Eclipse Hunter
Tsali Notch Vineyard
Madisonville, TN
2 min 38 seconds totality
August 21, 2017
Digital Thread

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• **Communication framework** for integrated view and connected data flow of product’s data throughout its lifecycle

• **Ability for accessing, integrating, analyzing, and transforming data from disparate systems into actionable information** throughout the product lifecycle
NotPetya Strikes

Merck says cyber attack halted production, will hurt profits

More industrial IoT cyberattacks expected
# 2017 Data Breach Investigations Report from Verizon

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<table>
<thead>
<tr>
<th>Pattern</th>
<th>Accommodation</th>
<th>Education</th>
<th>Finance</th>
<th>Healthcare</th>
<th>Information</th>
<th>Manufacturing</th>
<th>Public</th>
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<td><strong>Everything Else</strong></td>
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Lessons Learned from NotPetya and others

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- Quarantine & inspect software updates predeployment
- Phishing/attachments still a risk
- Ensure patch level and end point security is up-to-date
- Avoid flat networks
- Avoid file share (SMB) integration
- Isolate other common services such as DNS
- Develop a pervasive, segmented integration strategy
- Carefully plan our IT, OT, and IIoT integration
IT vs OT

**IT**
- Entire spectrum of technologies for information processing, including software, hardware, communications technologies and related services. In general, IT does not include embedded technologies that do not generate data for enterprise use.
- ERP, PLM, MRO, Purchasing, Inventory, HR

**OT**
- Hardware and software that detects or causes a change through the direct monitoring and/or control of physical devices, processes and events in the enterprise.
- MES, MOM, LIMS, SCADA
Avoid Point-to-Point Integration, Expand Pervasively
Pervasive Integration via Event Driven Architecture

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**BUSINESS LOGIC**

- **TASKS (PROCESSES)**
- **DECISIONS (RULES)**
- **DATA (EVENTS)**
- **INTEGRATION**

**ESB**

- **DSB**
- **MDM**
- **BI**
- **HADOOP**
- **SAP**
- **DW**

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Five Basic Building Blocks

- **BUSINESS & IT TRANSFORMATION**
  Manage and govern the change

- **ANALYTICS & DECISIONS**
  Enabling faster and better decisions

- **PROCESS**
  Combining people, business and things

- **INTEGRATION**
  Connecting multiple endpoints

- **IN-MEMORY DATA**
  Providing performance and scale

Independent  Connected  Trusted
Real-Time Monitoring of Manufacturing Quality Processes

SINCE PARTNERING WITH SOFTWARE AG:

CHALLENGE:

- 400 production lines producing 140,000 kilometers of wire per day, 24/7 operation
- Growing concern about product liability
- Increasing costs of wasted copper, labor, and energy due to late detection
- Detection limited to only a few factors and 100 meter segments of wire

RESULTS:

- Monitors dozens of quality factors in real-time against relevant order data
- Real-time intervention
- 25 millimeter segment quality detection
- Factory-floor interfaces to monitor quality and augment data manually
- Faster product introduction at lower risk
- Flawless, uninterrupted copper production

ACHIEVED FASTER RESPONSE TO PRODUCTION ISSUES

IMPROVED DETECTION

GROWTH IN MARGINS

25 MILLIMETERS
Key Disciplines FOR STRONGER Digital Strategies

1. Transformation Planning
2. Real-time Visibility and Reactivity
3. Data Consistency
4. Data Integration
5. Connectivity to Partners
6. Application and System Coordination
7. Scalability of Insights

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Contact Details

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