Securing the Digital Thread In Connected Manufacturing

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Software AG

GLOBAL PRODUCT DATA
INTEROPERABILITY
SUMMIT
2017

ELYSIUM   Parker Aerospace   NORTHROP GRUMMAN   BOEING

- **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

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Digital Thread

- **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

REUTERS

Merck says cyber attack halted production, will hurt profits

3 Month — 09/15/17

SC MEDIA

More industrial IoT cyberattacks expected

2017 Data Breach Investigations Report from Verizon

Pattern	Accommodation	Education	Finance	Healthcare	Information	Manufacturing	Public	Retail
Denial of Service	4	228	445	3	508	10	617	180
Privilege Misuse	5	7	48	125	23	13	7,417	9
Lost and Stolen Assets	5	13	10	92	4	2	5,519	4
Everything Else	8	106	20	40	32	213	88	8
Point of Sale	182		3	4	1			9
Miscellaneous Errors	2	24	14	114	13	3	2,246	16
Web App Attacks	4	25	376	32	73	4	148	28
Crimeware	5	32	30	54	63	261	5,102	14
Payment Card Skimmers	6		53			1	1	57
Cyber-Espionage		22	5	2	4	115	112	3
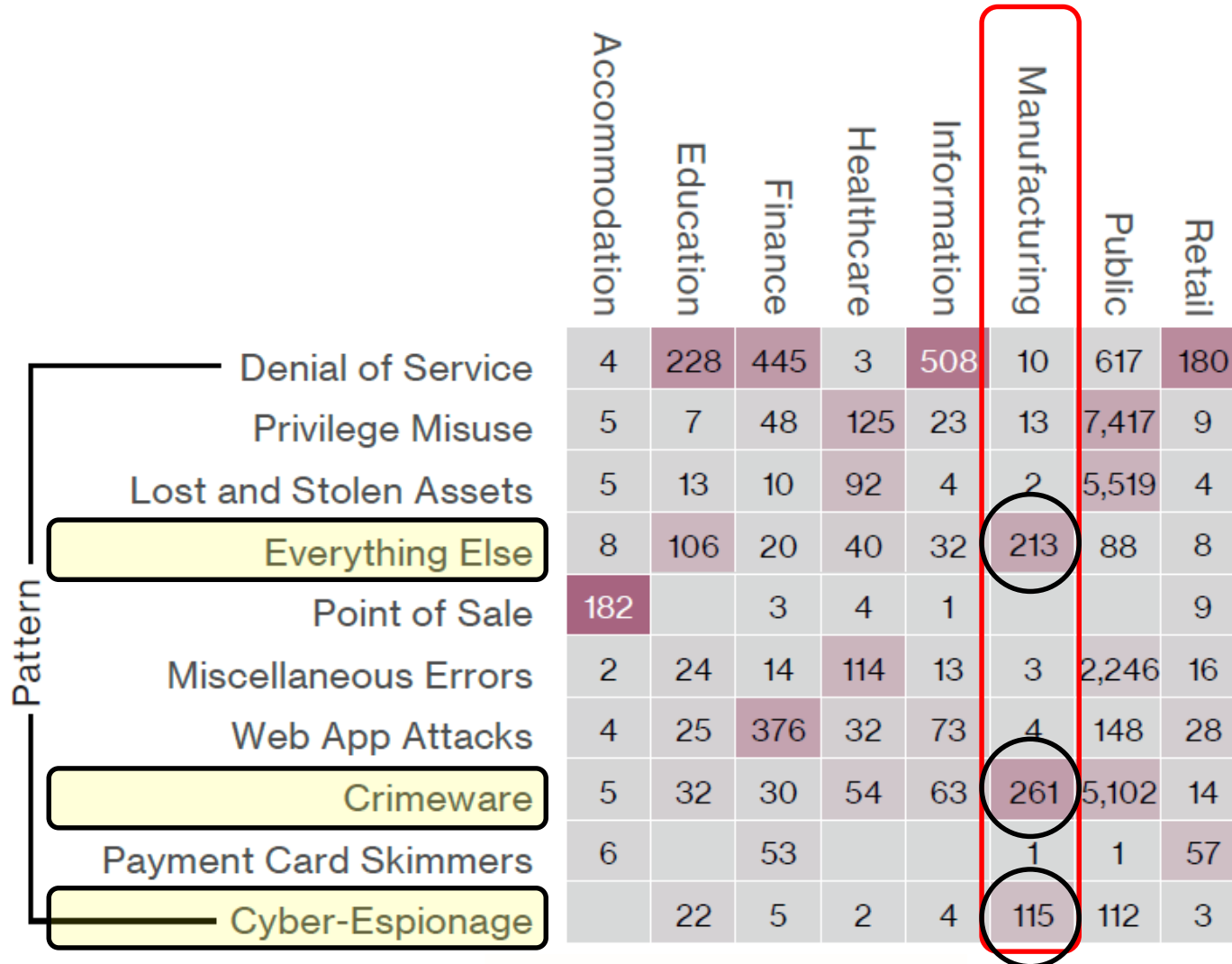
Lessons Learned from NotPetya and others

- **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
  - **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.**
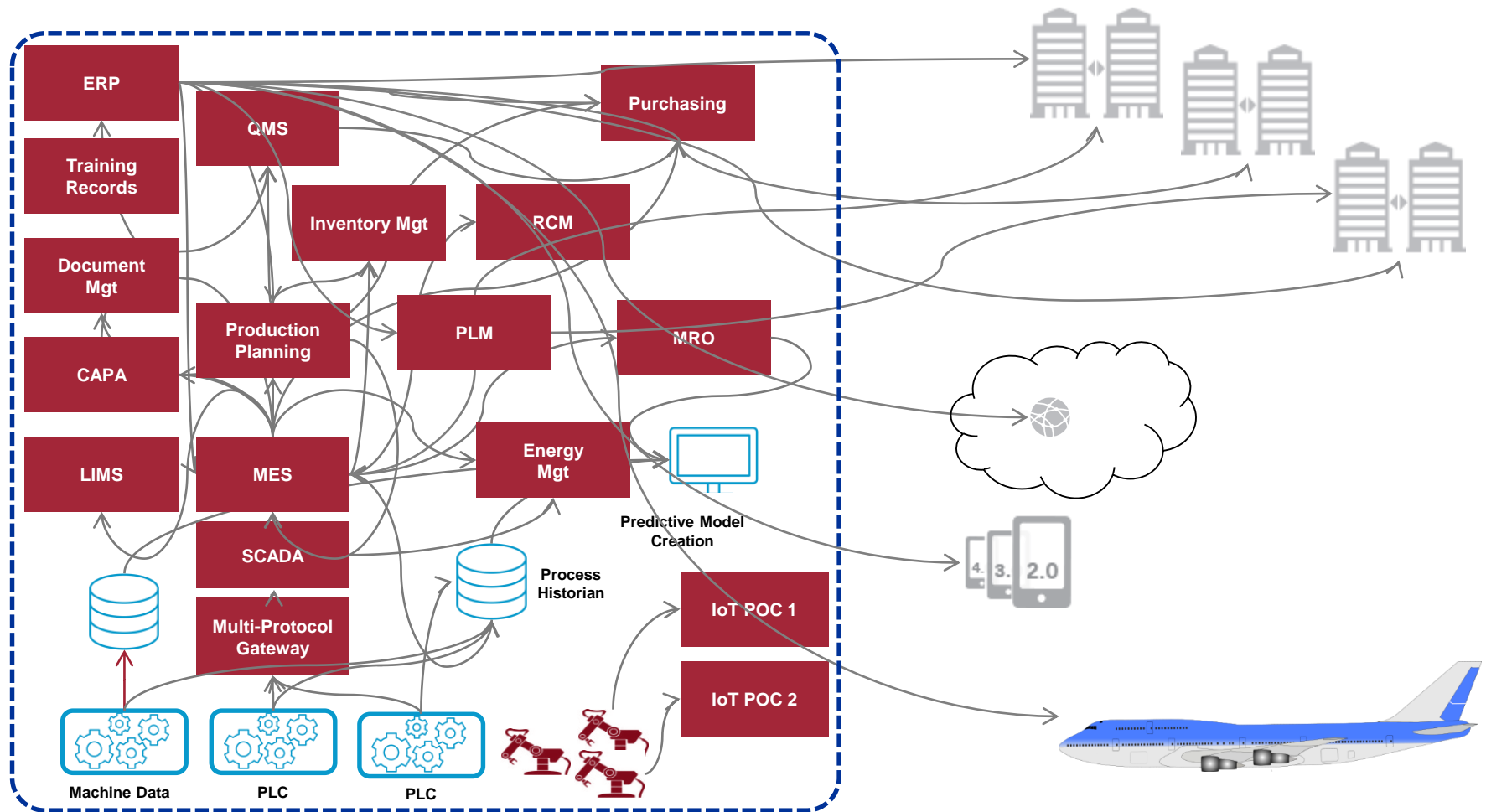 - **ERP, PLM, MRO, Purchasing, Inventory, HR**

- # 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**
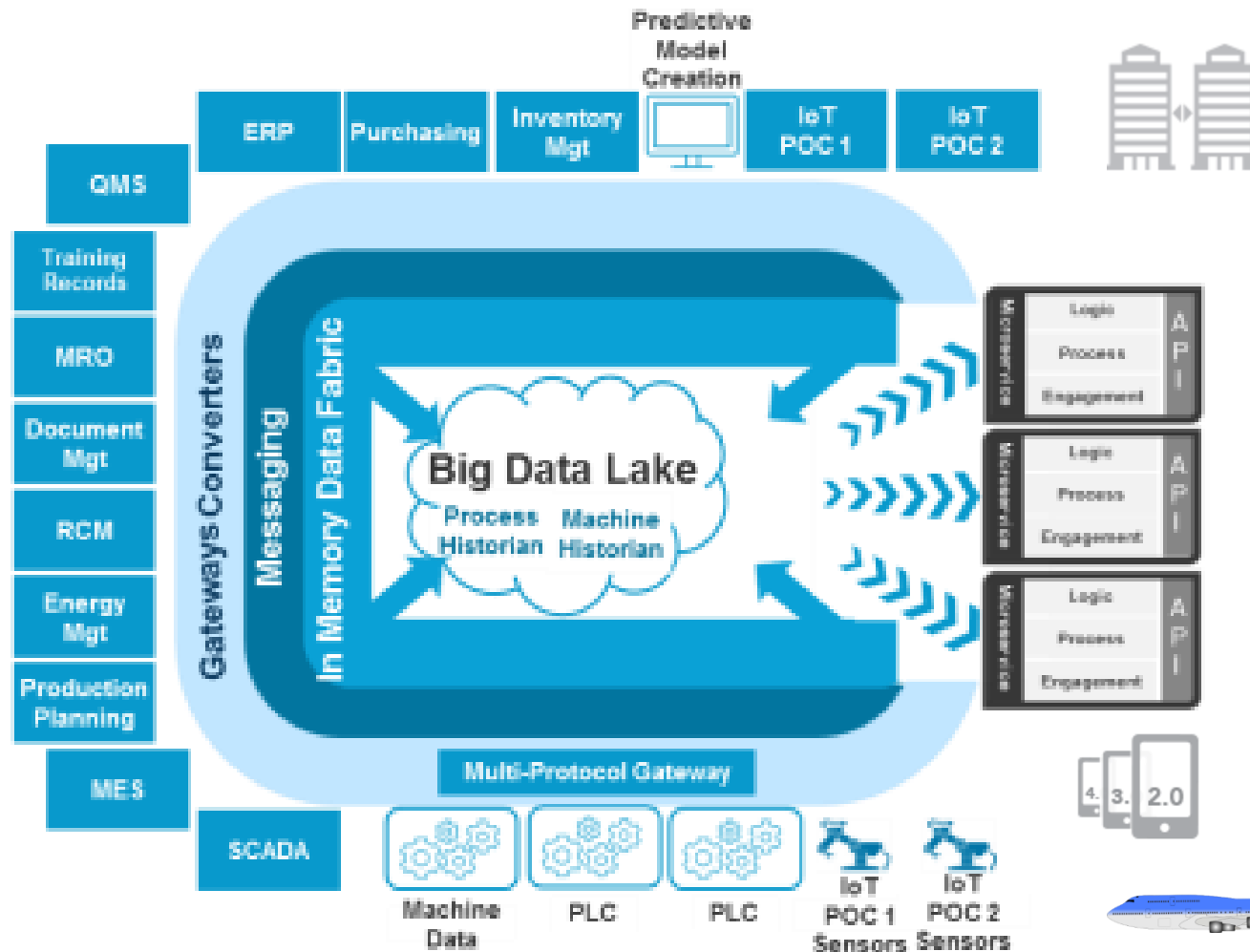
As Is Approach and Challenges
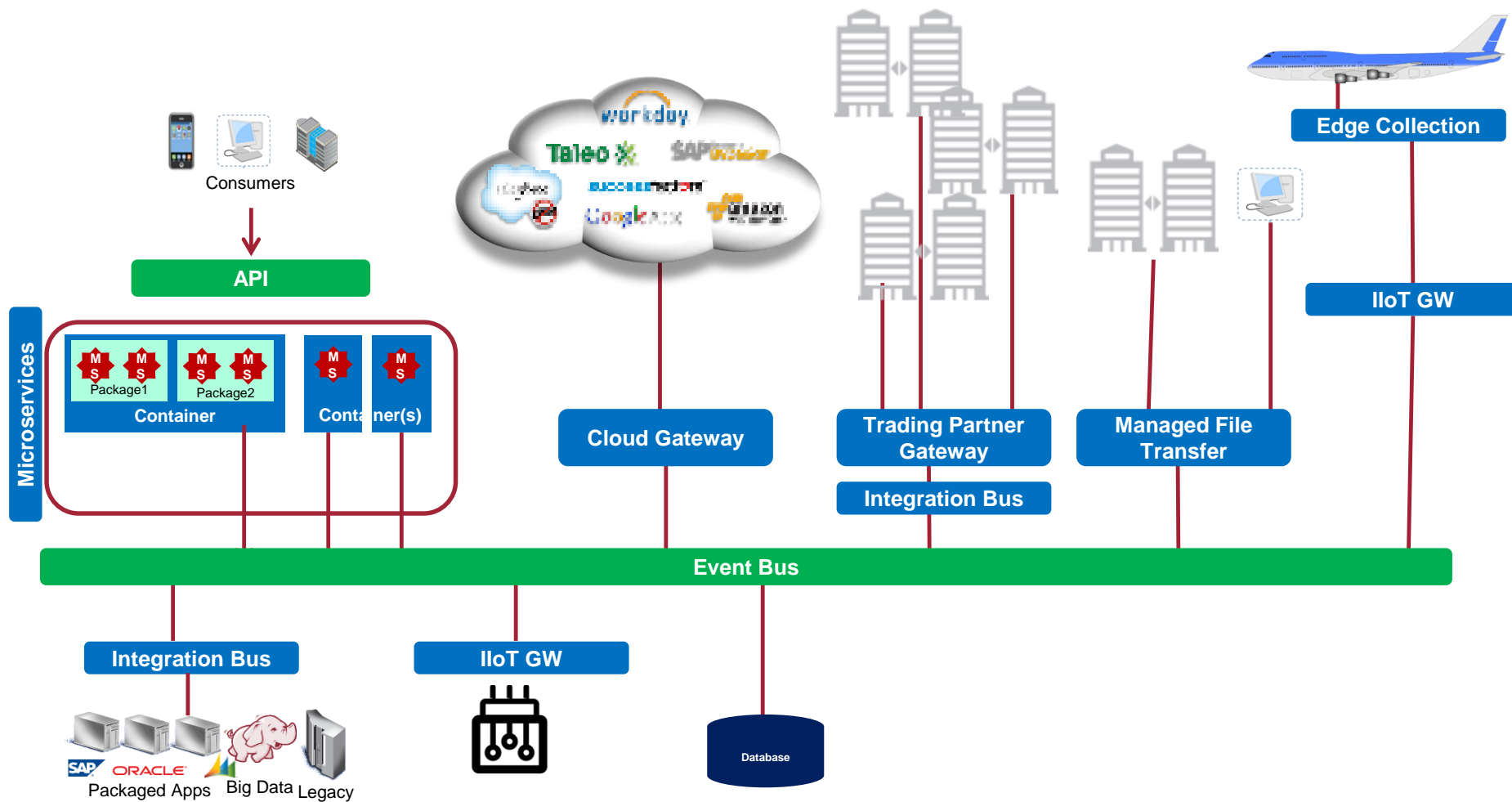
Pervasive Integration
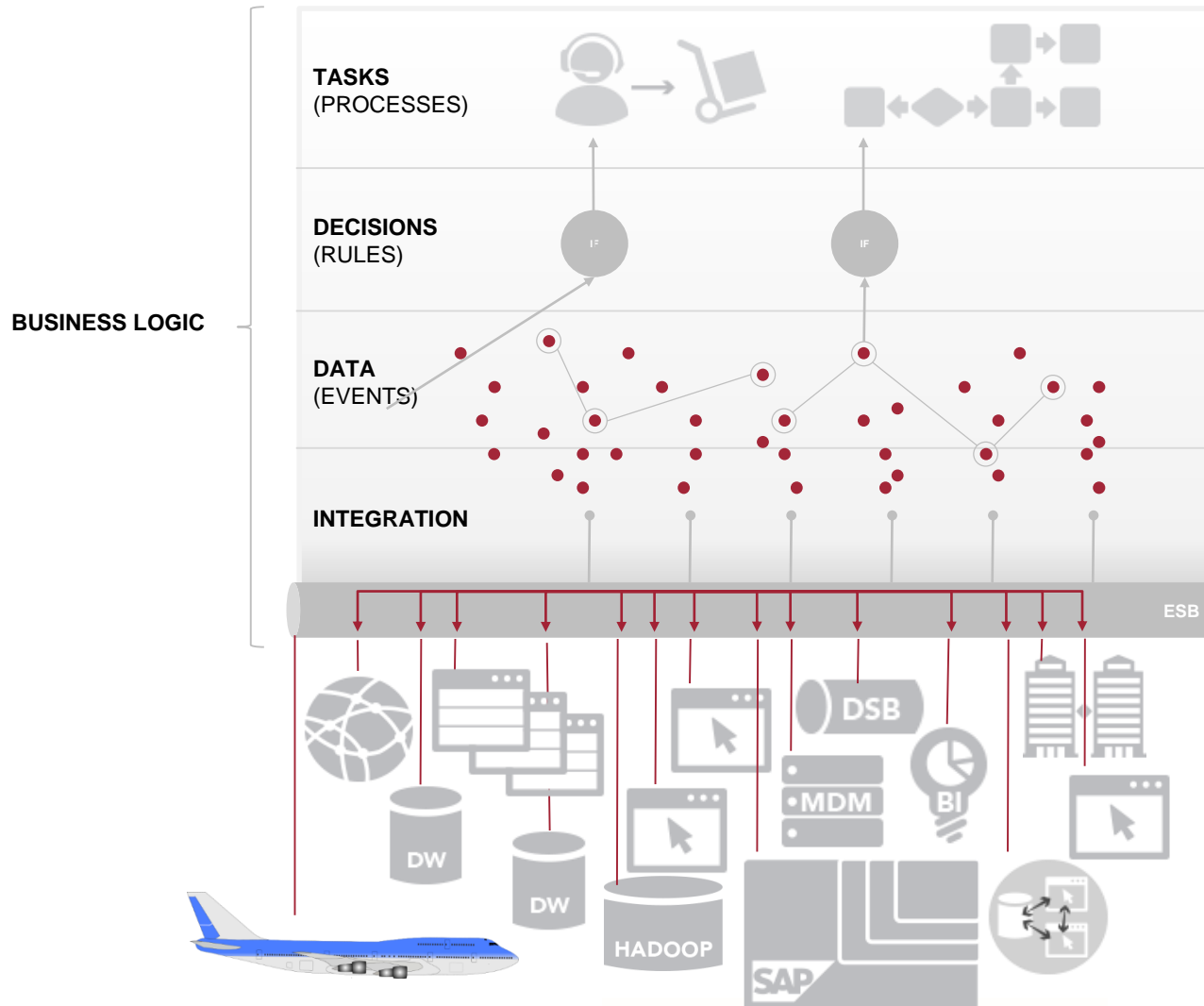
Five Basic Building Blocks

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

CLOUD

HYBRID

ON PREMISE

Independent

Connected

Trusted
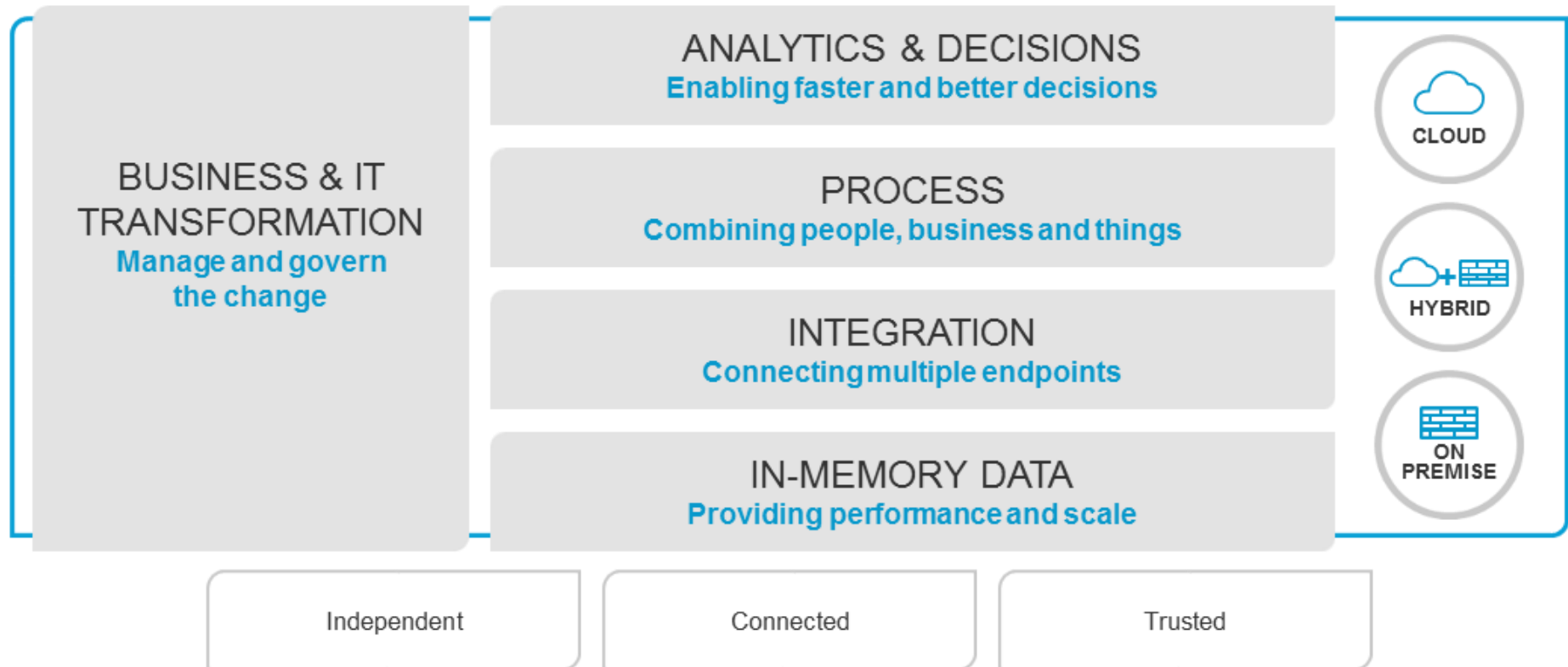
Real-Time Monitoring of Manufacturing Quality Processes

Global Product Data Interoperability Summit | **2017**

Global Component Manufacturer

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**
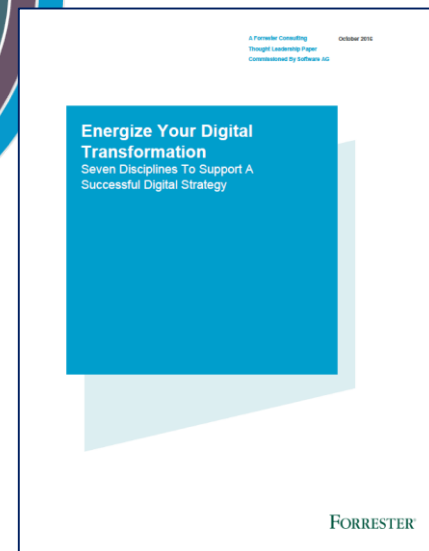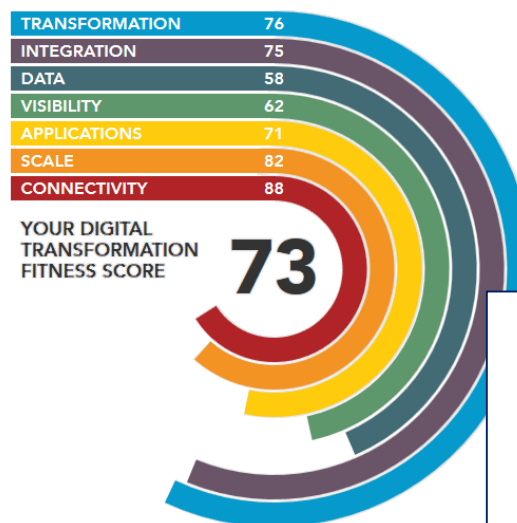- **Flawless, uninterrupted copper production**

SINCE PARTNERING WITH SOFTWARE AG:

ACHIEVED FASTER RESPONSE

TO PRODUCTION ISSUES

QUALITY CONTROL

IMPROVED DETECTION

25 MILLIMETERS

GROWTH

IN MARGINS

ELYSIUM · Parker · NORTHROP GRUMMAN · BOEING

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**

digital.softwareag.com

TRANSFORMATION	76
INTEGRATION	75
DATA	58
VISIBILITY	62
APPLICATIONS	71
SCALE	82
CONNECTIVITY	88

YOUR DIGITAL TRANSFORMATION FITNESS SCORE **73**

Energize Your Digital Transformation
Seven Disciplines To Support A Successful Digital Strategy

FORRESTER

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