Closing the Loop with Product Performance Intelligence

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Realizing The Digital Enterprise
The Siemens Digitalization strategy

Ideation
Digital Product Twin

Realization
Digital Production Twin

Utilization
Digital Performance Twin

Chassis and Suspension  Body  Powertrain  E&E  Full Vehicle

Structure  Acoustics  Energy  Safety  Dynamics

Design  Field  Supply  Manufacturing
Sales
Materials
Suppliers
Design
Distribution

Customer service
Suppliers
Manufacturing
Marketing
What you think your products do.

MIND THE GAP

What your customers experience.
Bloomberg - Samsung Note 7 Recall
Analysts estimate impact of recall at about $1 billion

These kinds of problems are common across industries…

What if this could be reduced with Product Performance Intelligence?

Figure 1
Aerospace Warranties
Claims Paid Worldwide by U.S.-based Manufacturers

Figure 5
Aerospace Warranties
Reserves Held Worldwide by U.S.-based Manufacturers

Source: WarrantyWeek

http://www.warrantyweek.com/archive/ww20160414.html
What if this could be improved with Product Performance Intelligence?

http://www.warrantyweek.com/archive/ww20160414.html
Digitization is a broad term used to describe the advent and introduction of new technologies that essentially replace old mechanical practices.

Examples include additive manufacturing, also known as 3-D printing, as well as augmented-reality systems, robotics, “big data” analytics, autonomous systems, cloud computing, the “Internet of Things,” and cyber, among others.

Cutting costs, growing profits and introducing new offerings – especially big data – lead the wish lists of many A&D companies.

### Where Industry Sees Digitization Now and in Five Years

- **Vertical value-chain integration**
  - Today: 26%
  - Five years out: 82%

- **Horizontal value-chain integration**
  - Today: 30%
  - Five years out: 46%

- **Digital business models, product and service portfolio**
  - Today: 25%
  - Five years out: 74%

- **Product development and engineering**
  - Today: 49%
  - Five years out: 90%

- **Customer access, sales channels and marketing**
  - Today: 40%
  - Five years out: 52%

*Shown: Percentage of companies reporting advanced levels of digitization and integration*  
*Source: PwC*
Closing the loop with Product Performance Intelligence

Product Quality

Supplier Quality

Customer Experience
Closing the loop with Product Performance Intelligence

Driving top-line revenue growth...

...and operational cost savings.

Product Quality

Supplier Quality

Customer Experience
Predictive
Diagnostic
Descriptive
Prescriptive
What happened?
Descriptive - What happened?

Customer

Support

Team
Disconnected Data Sources
Unify Disconnected Product Data into Contextualized Data Lake
THE REAL VALUE

Search and analyze contextualized big-data in seconds.
Why did it happen?
Diagnostic

Problem identified

Analyzed in context

Fast problem resolution
Big Data Analytics: Improving our Customers’ Experience
Michael Shepherd, Senior Strategist

At recent launch of Dell XPS13…

Noticed LCD was flickering on 2 of 6 units Demo Units.

Demonstrating the power of “Analytics at the Speed of Thought”
Used Omneo to identify and isolate the problem in 3hrs vs 3 days.

Firmware issue contained the following day.
Big Data Analytics: Improving our Customers’ Experience
Michael Shepherd, Senior Strategist

10:00 - Friday
Critical Customer Trigger

12:00 - Friday
China Holiday Shipping Deadline (1 week shutdown)

Monday
Earliest Estimated Solution

Earliest Solution Processing Friday

Existing Methods

Time

FRI
SAT
SUN
MON
TUE
WED

Using Omneo

10:05 - Friday
Omneo Accessed
- Problem Scoped
- Omneo pointed to broader problem
- Solution Proposed

11:00 - Friday
Solution Implemented & Order Placed

Wednesday
Customer Fully Operational
- Complimented Dell on fast resolution
- Relationship intact

Monday

Earliest Estimated Solution

Customer Data Centers Globally Serviced

Engineer estimated 3+ DAYS to:
1. Acquire data
2. Scope problem
3. Recommend solution

Earliest Estimated Solution Processing Friday
Unify Disconnected Product Data into Contextualized Data Lake
The Internet of Everything

Connected products

Connected plants and machines

Growth of internet of things

BILLONS OF DEVICES


1 M

IoT

INCEPTION

2020

50.1 B
THE REAL VALUE

Speed time to problem resolution with greater visibility into product and supply chain performance.
What happens next and when?
Product Performance Intelligence

Guess

Know

Predict

- Ben Nevis Inn Weather Forecasting Stone
- Stone is Wet
- Stone is Dry
- Shadow on Ground
- White on Top
- Can't see Stone
- Swinging Stone
- Stone Jumping Up & Down
- Stone Gone

- Conditions Forecast
  - Rain
  - Not Raining
  - Sunny
  - Snowing
  - Foggy
  - Windy
  - Earthquake
  - Tornado

- Map showing Hurricane Joaquin future track
Predictive

Insight / actionable intelligence

Trends and predictions

Automated analytics
Leveraging Omneo To Fuel Our Ability To Learn
David Morgan, Senior Quality Manager Bose

Learning from our customers and from our products…

- Not about *fixing* quality issues (although important)…
- The game changing value is *learning* from the data and feeding it into new designs.
- Always improving and delivering *wow* customer experiences.
Performance Analytics - Key Capabilities

**Insight Discovery**
- Patented discovery algorithms
- Automatically analyze billions of data combinations
- Global and user-defined dashboards

**Parametric Data**
- Analyze sensor-based data
- Quickly access relevant test data and performance measurements
- Export data for further analysis

**Advanced Data Visualization**
- Tableau inside of Omneo
- Create compelling visualizations
- Combine Omneo results with other visual data
Unify Disconnected Product Data into Contextualized Data Lake
Omneo and Teamcenter
Machine learning for prediction
Techniques and use cases examples

- Dimension analysis
- Anomaly detection
- Sentiment analysis
- Association rules and classification
- Predictive maintenance for products

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THE REAL VALUE

Discover insights into actual and predicted product performance.
When this happens, take these steps.
Prescriptive

Alerts and notifications  Pre-defined steps  Repeatability and Predictability
Product Performance Intelligence

- Leverage big data to transform your business
- Search and analyze contextualized big-data in seconds
- Discover insights not possible using traditional Business Intelligence (BI)
- Cloud-based, software-as-a-service (SaaS) solution platform
What you think your products do.

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What your customers experience.
…with Product Performance Intelligence.
Thank you.

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