Global Partner Summit 2017: Competing to Win

February 14 – 17 | Napa, California
Update on Brilliant Manufacturing

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Vision

Brilliant Manufacturing

The Vision of Brilliant Manufacturing is to transform our customer’s manufacturing business through insights and intelligence powered by data integration, machine learning and predictive analytics and therefore improve manufacturing productivity.
Supply Chain Shift

- Global supply chain is a closed loop
- Need visibility and synchronization to manage more efficiently
- Move to vendor-managed inventory, but you can’t shift cost.
- Need for a transformative technology, to extract cost out of the system for true savings.
BMS architecture – vision

**Principles**
- Focus on core application pillars ... partner for the rest
- Establish boundaries and interoperability across suite
- Existing applications provide the on ramp to Predix
- Requirements from internal + external stakeholders

**Brilliant Manufacturing** *line, factory and supply chain*

- Efficiency Analyzer
- Enterprise & Plant Insights
- Execution Tracker
- Genealogy Manager
- Quality Manager
- Supply Chain Optimization

**Manufacturing systems**
- ERP
- MES
- EAM

**APM** *machine modeling, downtime planning*
- CBM
- Digital Twin
- Asset Model

**PREDIX** *Edge & On-Ramp Services – move legacy on-prem offerings to Predix*
- Connectivity
- Edge
- Time Series
- Catalog

**Requirements from internal + external stakeholders**

**Establish boundaries and interoperability across suite**

**Existing applications provide the on ramp to Predix**

**Focus on core application pillars ... partner for the rest**

**Genealogy Manager**

**Quality Manager**

**Supply Chain Optimization**

**Executive Tracker**

**Enterprise & Plant Insights**

**Efficiency Analyzer**

**Brilliant Manufacturing**

**Manufacturing systems**

**APM**

**PREDIX**

**Connectivity**

**Edge**

**Time Series**

**Catalog**

**Requirements from internal + external stakeholders**

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**Existing applications provide the on ramp to Predix**

**Focus on core application pillars ... partner for the rest**
Tenets

Brilliant Manufacturing

Leverage the Platform

Connect Machines

Innovation

Protect our Core

Inputs

Have fun & be kind
Strategy

Brilliant Manufacturing

- Edge-to-Cloud architecture
- Applications discover platform capabilities
- Application mashup framework
- Shop floor connectivity with core tools
- APM for machine impact on production

Digital Model

- Digital model of manufacturing capabilities
- Collection of Digital Twins
- Connect systems and services
- Increase manufacturing productivity

Simulate/ Execute

- “What if” analysis
- Automate the result
Remember this?
Now it’s this
Google maps analogy - gather data

Google Maps

- Collects map data
- Consumes road information, speed limits, user input and other forms of exogenous data, including construction data, school schedules over time
- Creates a rich data set that provides an overall picture of all the roads in the world

Efficiency Analyzer

- Collects manufacturing data
- Consumes machine data, production throughput, waste/quality metrics as well as other data sources, over time
- Aggregates information to calculate OEE KPI’s for a line, plant and/or global enterprise
Google maps analogy – help me decide

Google Maps Route Optimization

• Uses data to calculate the optimal route and provides an estimated time of arrival
• Provides a recommendation as to when the user should leave to make it on time to their desired location taking into account current traffic

Enterprise Plant Insights

• Uses data calculate the best route and time to start a work order and provides an estimated time of completion
• Provides the context to understand production throughput, inventory, quality issues and accounts for any disruptions and maintenance that could impact the ability to complete the work
Google maps analogy – route guidance & optimization

**Google Maps Route Guidance**

- Provides route guidance and estimates the completion time based on the existing conditions
- Tracks live traffic and updates route guidance. May alert the user that an alternate route is available

**Execution Tracking**

- Provides visibility into orders being produced and manages material movement
- Tracks live order completion, WIP, Takt Time and provides a dashboard to monitor and estimate order completion
- Calculate best route along with Asset Optimization
Two year view – 2017 and 2018

Brilliant Manufacturing

- Stabilize and extend our core Predix offers- EA, WIP, EPI
- Maintain and protect our core pillar applications for natural growth into Predix
- Leverage partners to fill the gap
- New predictive simulation capabilities in 2018 - “What if” Analytics
To Build an Ecosystem
We Need You

Share the wealth of ideas
Predictive insights from Big Data
Extend beyond the core apps
A full library of apps
Support our beachhead customers
Fill the Gaps
Supply Chain Wide

Realize the Promise of Brilliant Manufacturing
The vision is clear

"Why not us?"
Jeff Immelt
Chairman & CEO
GE