Hyper-connected Business

- Stafford Bond, Fujitsu Digital
- Mike Lackey, SAP
- Nabil Lodey, GlobeRanger
Digital Waves

1st Wave
The Internet
Connected, online – 1bn (2000)

2nd Wave
The Mobile Internet
Real-time, anywhere – 10bn (2010)

3rd Wave
The Internet of Things
Convergence of physical & digital – 100bn (2021)

4th Wave
AI and Robotics
Knowledge & automation

Online consumer business

Hyperconnected World
A huge impact to every industry
Organizations face a dilemma

Creative Destruction Whips through Corporate America, Innosight
Be in control of your destiny

- A future where digital technology is...

- Overwhelming: Technology is connected but not human centric
- Empowering: Technology is connected and human centric
- Undeveloped: Technology is not connected nor is human centric
- Uneven: Technology is human centric but not connected

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Big opportunities

“$2.5m spent per minute on IoT in 2016”

- 30,000 deaths in accidents and 4X as many disabling injuries
- >95% of accidents from human error
- 95%
- 1.6% looking for parking
- 1% sitting in congestion
- 5% driving

Typical European car parked 92% of time
Average European car has 5 seats but carries 1.5 people/trip

“Consumer IoT devices will reach 3 billion in the next 4 years, industrial IoT devices will reach 100 billion”

“By 2021, 1 million devices will be connected every single hour”

- 69% consumed
- 11% consumer waste
- 20% value chain waste

Gartner

Growth within: A circular economy vision for a competitive Europe, McKinsey
Big challenges

Connected car

Vehicle Services
Diagnostics, servicing, upgrades, telemetry

Efficiency Services
Congestion avoidance, Ecology

Social Collaboration
Ride sharing, car sharing, taxi driving

Fees & Charges
Road using, taxes, insurance

Safety
Health monitoring, autonomous driving

Information Services
Entertainment, navigation, fuel/energy location
Why become a hyper-connected business?

- From goods-selling to service-provision
- Fast value realization to meet individual customer’s need (Mass customization)

- Better understanding of individual customers
- Maximizing Customer Experience

- Empowerment of employees
- Autonomous operation

- Intelligence in product and service
- Co-creation of innovative value
Which approach to hyper-connectivity are you taking?

**Digital Project**
- Apply digital to a function or a product and service

**Digital Business**
- Apply digital to the heart of business

**Digital Arenas**
- Co-create greater value with partners
The future: The hyper-connected API economy
Embracing hyper-connectivity: Sliding Doors

■ Now think about your organization;

■ Run through four hyper-connectivity adoption scenarios
  1. No interest in becoming a hyper-connected business
  2. Adopting hyper-connectivity solutions in small unrelated projects (Digital Projects)
  3. Integrating hyper-connectivity into the DNA of the organization (Digital Business)
  4. Adopting Digital Arenas and considering the API economy (Digital Arenas)

■ Roll forward 5 years

■ What is your prediction of the outcome?
**My predictions**

### Scenario 1 – Do Nothing

<table>
<thead>
<tr>
<th>Financial Performance</th>
<th>Customer Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue declining</td>
<td>Customer satisfaction</td>
</tr>
<tr>
<td>Cost base increasing</td>
<td>Customer Expectations</td>
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**Organization**

- Engineering culture: Product innovation
- Redundancies: New revenue streams

### Scenario 2 – Digital Project

<table>
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<th>Financial Performance</th>
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**Organization**

- Engineering culture: Product innovation
- Stagnant: New revenue streams

### Scenario 3 – Digital Business

<table>
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<th>Financial Performance</th>
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<td>Revenue growth</td>
<td>Customer satisfaction</td>
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<td>Customer Expectations</td>
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**Organization**

- Customer centric culture: Product innovation
- Expansion / recruiting: New revenue streams

### Scenario 4 – Digital Arenas

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**Organization**

- Customer centric culture: Product innovation
- Expansion / recruiting: New revenue streams
Digitizing manufacturing with IoT and Industry 4.0

Mike Lackey, Global VP of Digital Manufacturing
March 09th, 2017
Digital Transformation Impact

Business Processes

Business Models

Work Environment
Business Model, Change

Customer satisfaction
Competitive advantage
Higher profit

**Higher**
uptime and productivity

**Lower**
Risk, through predictive maintenance. Fix it before it break

**Flexibility**
Through pay per use
Business Model, Change

Customer satisfaction
Competitive advantage
Higher profit

**Higher**
uptime and productivity

**Lower**
Risk, through predictive maintenance. Fix it before it breaks

**Flexibility**
Through pay per use
Business Process, Change

Customer satisfaction
Better performance
Optimized Service

8%-10%
Reduction in maintenance costs

Improved
Reliability and availability of trains

Higher
Passenger satisfaction thanks to more reliable services
Business Process, Change

Customer satisfaction
Better performance
Optimized Service

Condition reporting
Best performing

Remote support
Reliability and availability of engines

Trend analysis
Predictive Maintenance
Work Environment, Change

Reduce costs
Improve productivity
High quality

Role Expansion
Work across disciplines, design and manufacture smart products

Process Change
Collaboration, Networking

Business Modell
Customer Centricity
Digital Manufacturing
Linking the physical world to the digital world

Business World
- Design
- Plan
- Make
- Operate
- Deliver
- General Ledger
- Procure to Pay
- Order to Cash
- Engineer to Order
- Configure to Order
- Make to Stock
- Inventory Controls
- Costing
- CRM
- SRM
- Materials

Digital World
- Digital Twin
- "As Designed"
- "As Built"
- "As Maintained"
- "Performance"

Physical World
- Vending Machine
- DCS/PLC
- Auto
- Chemicals
- Sensors
- Weigh Scales
- LIMS/Inspection/Equipment Testing
- CPG
- Robots
- CNCs
- Engine
- Batteries
- Pumps
- AGVs
- Motors
- Drinks

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Trends Impacting Connected Manufacturing

Internet of Things and Industry 4.0

SAP Connected Manufacturing runs industrial IoT with Industry 4.0 scenarios

- **Internal INDUSTRIAL scenario**
  - SCPA / HMI
  - Machine Layer
  - MES
  - ERP (PLM, PP)

- **External scenario**
  - SMART Industrial
  - Industry 4.0
    - Manufacturing industries
    - OT-IT convergence
    - Systems, things, and devices on the shop floor

- **Internet of things**
  - All industries
  - All things and devices
  - Ubiquitous
  - Personalized
**Trends Impacting Connected Manufacturing**

**Internet of Things and Industry 4.0**

SAP Connected Manufacturing runs industrial IoT with Industry 4.0 scenarios

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**SAP Solutions for Industrial IoT**

**SAP Connected Manufacturing**

- SAP Manufacturing Execution on HANA
- SAP Manufacturing Integration and Intelligence on HANA
- SAP Plant Connectivity

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**Industry 4.0**

- Manufacturing industries
- OT-IT convergence
- Systems, things, and devices on the shop floor

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**Internet of Things**

- All industries
- All things and devices
- Ubiquitous
- Personalized

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**SAP Solutions for External IoT**

**SAP HANA Cloud Platform**

- SAP HANA Cloud Platform (HCP)
- SAP IoT Connector
- SAP Plant Connectivity
SAP Digital Manufacturing Industrial IoT

- SAP Ariba
- Distributed Manufacturing
- S/4 HANA Enterprise Management
- Asset Intelligence Network
- OEM Cloud (Mindsphere)

Connected Manufacturing
- SAP ME
- SAP MII
- SAP MCO

- Business Context
- OEE, Energy Management
- Multiple vendors
- Multiple machines

Partners:
- PI System (OSIsoft)
- Festo
- Beckhoff
- Siemens
- Bosch
- Rockwell Automation
- Emerson
- Honeywell
- Schneider Electric
- Yaskawa
- ABB
- Kuka
- Rockwell Automation
- GE
- Eaton
- Kuka Robotics
- Kawasaki
- MOTOMAN Robotics
- Kepware
SAP Leonardo, Connecting Things with People and Processes

Digital Supply Chain
(Business Process View)

- Digital Business Planning
- Digital Response & Supply
- Digital Logistics
- Digital Product Innovation
- Digital Manufacturing
- Digital Operations

SAP Leonardo
("Things" View)

- Connected Products
- Connected Assets
- Connected Fleet
- Connected Infrastructure
- Connected Markets
- Connected People
SAP Leonardo & Digitizing Business: The Big Picture

Procurement → R&D → Supply Chain Planning → Manufacturing → Logistics → Sales → After Sales Service

PROCESSES
SAP Leonardo & Digitizing Business: The Big Picture

UI Layer (SAP Leonardo Bridge)

SAP S/4 HANA - Enterprise Management - The Digital Core

FROM PROCESSES TO NETWORKS

NEW BUSINESS MODELS

PEOPLE

PROCUREMENT

R&D

MANUFACTURING

LOGISTICS

SALES

AFTER SALES SERVICE

SAP Leonardo Apps

Network Log. Hub
Connected Goods
Track & Trace
Connected Mfg.
Vehicle Insights
Predictive Main.
Asset Intelligence Network

SAP Leonardo Edge Computing

SAP Leonardo Foundation

SAP Cloud Platform / SAP HANA Platform

THINGS / PHYSICAL LAYER
Integrate Operations with Digital Manufacturing

Connect
Your Global Plant Network

Transform
Manufacturing Operations

Reimagine
Business Models

Connect to people & things

Enterprise Systems
Manufacturing Systems
Automation and Control
Shop Floor Workers
Management
Sensors, Machines, RFID Tags, Scanners, Printers

Monitor and send real-time alerts to and from intelligent devices

SAP HANA Platform

Deliver Real Time KPIs
Improve Asset Efficiency
Manage Energy
Embed Track and Trace
Drive Cost, Quality, and Overall Performance
Extend Your Product Networks

SAP Manufacturing
SAP Manufacturing
SAP Manufacturing
# The GlobeRanger Perspective

<table>
<thead>
<tr>
<th>Key Market Trends</th>
<th>Customer Challenges</th>
<th>How to adopt IOT</th>
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<tbody>
<tr>
<td>1. Pace of Innovation</td>
<td>1. Monetization</td>
<td>1. Land/Expand</td>
</tr>
<tr>
<td>2. Data Driven Economy</td>
<td>2. Culture Change</td>
<td>2. Real time visibility</td>
</tr>
<tr>
<td>5. Changing Demographic</td>
<td></td>
<td></td>
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Intel Inside®.  
Powerful Productivity Outside.
Connect the physical world to the virtual world i.e. “Anything to Everything”

This provides real-time end-to-end visibility of our customer’s business

Supply Chain
- Supplier 1 Connected Factory
  - Inward Goods
  - WIP
  - Outbound Goods
- Supplier 2 Connected Factory
  - Inward Goods
  - WIP
  - Outbound Goods
- Supplier 3 Connected Factory
  - Inward Goods
  - WIP
  - Outbound Goods

WIP
- Connected Manufacturing
  - Asset Tracking
  - Connected Machine
  - Connected Workers
  - Automate manual activity
  - Tool Tracking
  - ERP Integration
  - Warehouse Management

Warehouse Operations
- Connected Warehouse
  - Inbound Goods
  - Real time putaway
  - Outbound Goods

Which enables better decisions made based on accurate real time information. No missing or inaccurate data

Can then add analytics to optimise supply chain, reduce cost and open new revenue opportunities
GlobeRanger’s IOT Examples
Key Take Aways

- Develop an hyper-connected business strategy focused on business value
- Integrate it into the DNA of the organization and establish the organizational units to maximize the value it brings
- Choosing a partner who participates in a comprehensive eco-system is key