Manufacturing in the Age of Experience

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Guillaume Vendroux is the DELMIA brand CEO within Dassault Systèmes where he leads the industrial solutions portfolio and strategy for all industries in today’s digital revolution. Guillaume brings to Dassault Systèmes applied knowledge from his roles across industry. Most recently, Guillaume was VP Industrial at Alstom Transport where he led organizations in Engineering, Manufacturing and R&D. Previously, he held a Directorship position at Valeo Electrical Systems. Guillaume started his career in Engineering and R&D in Aerospace as an R&D engineer in Composite material at Aerospatiale. Guillaume holds a Ph.D. in Aeronautics from the California Institute of Technology.
70% of companies say growth will be a high priority for the next 2 years.

81% are focused on improving cost and performance management by evaluating new technologies, partnership models and emerging markets as well as cost structures.
Increasing Pressure Facing the Aerospace & Defense Industry

Record Setting Production Rates

HOW TO: manage the record setting production levels from CONCEPT to RECYCLING with the need for over 33,000 aircraft in the next 20 years?

Growing Complexity of Programs

HOW TO: integrate new technologies into a system of systems to ensure increased inter-operability, safety and profitability?

Evolving Work Force

HOW TO: facilitate knowledge transfer and intellectual property protection as companies redefine their workforce and how they partner with their supply chain?

Innovate with Flat Budgets

HOW TO: drive down costs to innovate, build and operate aerospace systems to compete with new entrants and technologies coming into the market?
Technology Trends are Creating Opportunities

IoT/IoT, Big Data, Mobility, Cloud
3DEXPERIENCE Manufacturing

**Collaborative Management Processes**
all stakeholders share common understanding

**Engineer**
all Industrial Processes, eliminating time and waste

**Operate**
the Physical Industrial Operations with synchronization and efficiency

**Optimize**
Supply Chain and Operations with Dynamic Scheduling & Predictive Analytics

Real time 3DEXPERIENCE
3DEXPERIENCE Manufacturing Business Processes

Supply Chain Planning & Operations
- Sales & Operations Planning
- Master Planning (MPS+MRP)
- Detailed Scheduling & Re-scheduling

Lean Manufacturing Collaborative Space

Engineering
- Program Governance
- Manufacturing Operations Management
- Product Engineering
- Asset Design & Mgmt.
- Process Engineering
- Manuf. Engineering
- Resource Programming
- SC Engineering*
- Indus. Quality Engineering*

Manufacturing Operations Management
- Intelligence & Traceability
- Production
- Quality
- Warehouse
- Plant Maintenance
- Field Operations
- Edge Integration Layer

Edge IOT Integration

Factories

Field

* In Progress
ENGINEER: Model & Simulate Global Industrial Operations

► What
▷ Creates executable process plans insuring manufacturability
▷ Validates process plans through simulation and virtual certification

► Why
▷ New product Introduction lead time ↓
▷ Right First Time ↑
▷ Manufacturing engineering efficiency ↑

► How
▷ Process Planning; Assembly Process and Ergonomic Simulation; 3D Work Instructions; and Machine & Robotics Programming
▷ Single 3D data model across engineering and manufacturing
OPERATE: Execute Global Industrial Operations

What
- Orchestrates all Shopfloor activities
- Provides comprehensive, actionable intelligence, traceability and reporting

Why
- Manufacturing Efficiency 🔺
- Cost of Non-Quality 🔻
- Inventory and WIP 🔻

How
- Visibility, control & synchronization across all manufacturing operations
- Global, enterprise solution enables “best practices“ across environments from leading edge IIoT equipment, to brownfield factories, to recent acquisitions
OPTIMIZE: Schedule and Predict Industrial Operations

► What
  ▶ Real time analytics for efficient decision making and re-scheduling
  ▶ Back office analytics for continuous improvement
  ▶ Predictive analytics to anticipate

► Why
  ▶ On Time Delivery 🎉
  ▶ On Time in Full 🎉

► How
  ▶ Platform for all needs: Strategic to tactical decision support
  ▶ KPI-based planning with real-time decision support
  ▶ Record-breaking optimization processing speed
COLLABORATE: Empower the Manufacturing Team

► What
  ▶ Common understanding across daily activity and business goals
  ▶ Manages Lean, Operational & Performance activity, data, analysis

► Why
  ▶ Team engagement and empowerment
  ▶ Sustainable continuous improvement
  ▶ Efficiency (Safety, People, Quality and Deliveries 🔄 Cost 🚀)

► How
  ▶ A single, simple to use Experience that empowers workers
  ▶ Seamlessly move between Lean, KPIs, Operations, and continuous improvement activities
3DEXPERIENCE Manufacturing Delivers Digital Continuity

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- Detailed Scheduling & Re-scheduling

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Manufacturing Operations Management
- Intelligence & Traceability
  - Production
  - Quality
  - Warehouse
  - Plant Maintenance
  - Field Operations
  - Edge Integration Layer

Edge IOT Integration
- As Maintained
- Manuf item
- NC prog
- Issues
- Machine
- layout
- Cloud of pts
- PFMEA
- standard
- Process
- Work order
- wki
- Sales Order
- sensors
- fasteners
- As built
- Resource Programming
- Employee
- Robot prog
- tools
- KPI

In Progress
3DEXPERIENCE Manufacturing Delivers Digital Continuity

Accelerate

- Mitigate program start up risk
- Accelerate production at rate
- Eliminate quality delays
- Achieve targets

SPEED

Industrial Analytics & Predictive Intelligence

Supply Chain Planning & Operations

- Sales & Operations Planning
- Master Planning (MPS+MRP)

Lean Manufacturing Collaborative Space

- Manufacturing Operations Management
- Intelligence & Traceability

Edge Integration Layer

- Field Operations
- Field Maintenance

Process Engineering

- Asset Design & Mgmt.
- Resource Programming

Product Engineering

- Process Engineering
- Engineering

Quality

- Indus. Quality Engineering*
- Product Engineering.
- Resource Programming

Warehouse

- Plant Maintenance
- Field Operations

Lean Manufacturing Collaborative Space

- Mitigate program start up risk
- Accelerate production at rate
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Edge IoT Integration

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3DEXPERIENCE Manufacturing Delivers Digital Continuity

Increase

- Capture market opportunities
- Control costs and maintain profitability

AGILITY

- Minimize disruptions
- Reduce impact of change

Features

- Lean Manufacturing Collaborative Space
- Master Planning (MPS+MRP)
- Sales & Operations Planning
- Production Planning & Scheduling & Integration Layer
- Edge Integration Layer
- Manufacturing Operations Management
- SC Engineering
- Industrial Analytics & Predictive Intelligence
- Production
- Process Engineering
- Warehouse
- Plant Maintenance
- Field Operations
- Field Engineering
- Maintenance
- Program Governance

• Capture market opportunities
• Control costs and maintain profitability

Process

- Work order
- NC prog
- Robot prog
- Issues
- Sensors
- Fasteners
- Tools
- Layout
- As built
- Standard
- KPI
- PFMEA
Everyday on the Shopfloor…

- Updated execution content available for next instantiation
- ECR & Process validation and Routing updates
- Problem Solving Session
- 5’ meeting to start the day
- Execute Production Orders
- Quality Issue Notification
- Manage Mitigation Actions
- Rework Order scheduling
- Rework Order validation
...3DEXPERIENCE Manufacturing Delivers Value

- Full & instantaneous data **consistency** from Shopfloor to Engineering
- Full & Instantaneous data **availability** from Shopfloor to Engineering
- Complete Traceability
Conclusion

- A model based and data centric approach is the key to execute strategy whether you are an OEM, tier 1 supplier or diversified manufacturer.

- Digital Continuity is achieved through a collaborative platform, unified model, and user specific experience from engineering, manufacturing, supply chain and field operations.

- Dassault Systèmes is the partner to help you achieve your objectives.