

# Using VOLTA's BPMN to Manage and Link Engineering Handoffs Across Product Design

Presented to:  
Presented by:

ESTECO 2026 International Users Conference  
John Bloomberg

## OUR PURPOSE

We invent the future of flight,  
lift people up, and bring them  
home safely



~3.5B

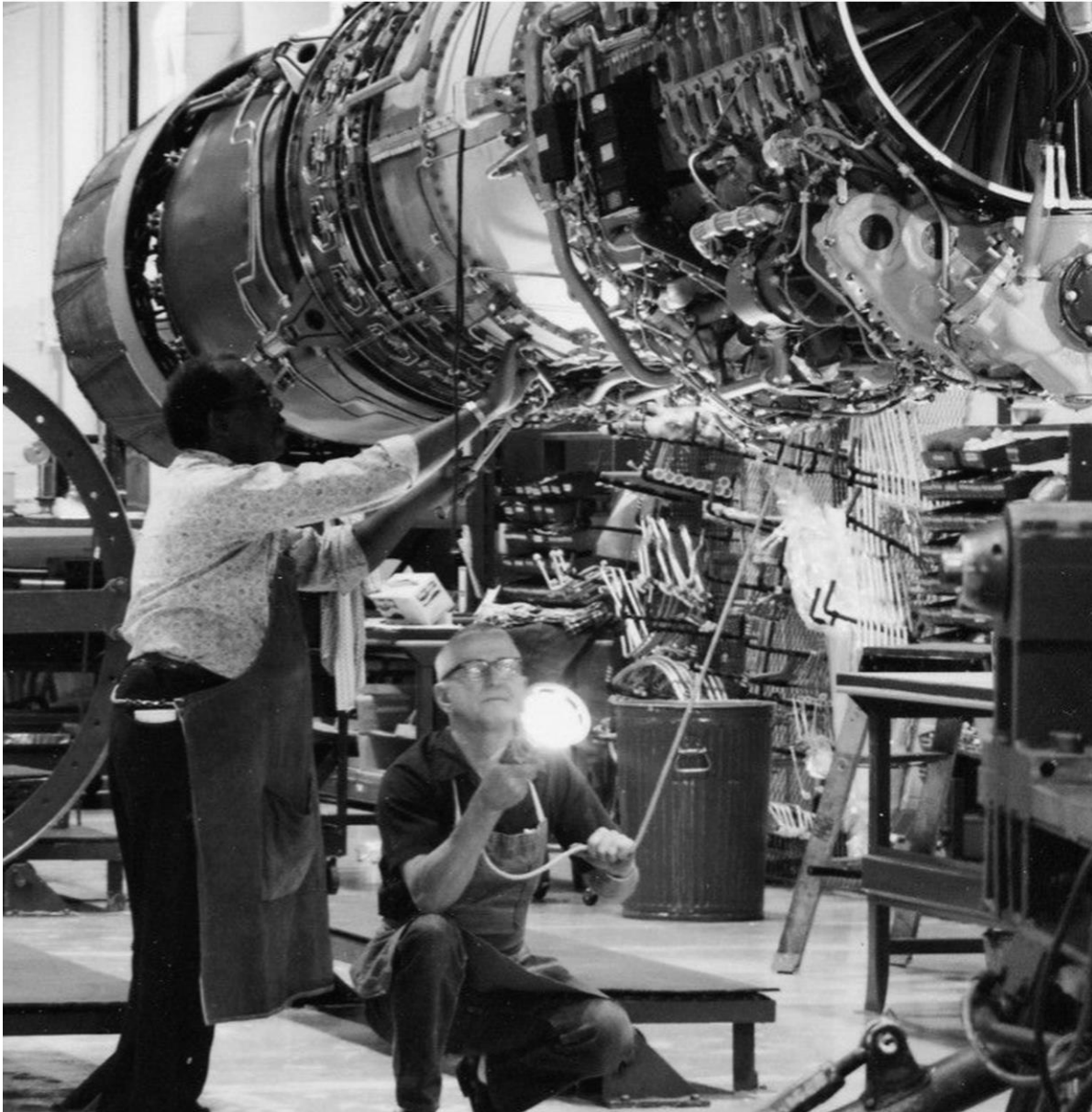
Passengers flew with GE Aerospace  
technology under wing in 2025

~1M

People flying at any given time on  
GE Aerospace-powered aircraft

3 out of 4

Commercial flights  
powered by our engines



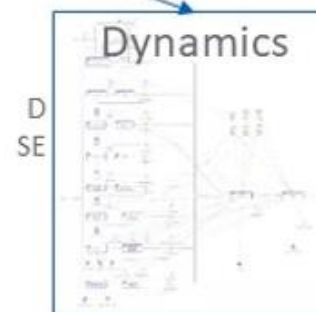
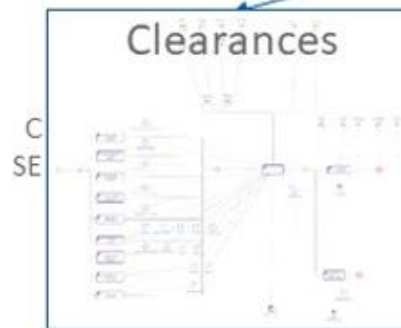
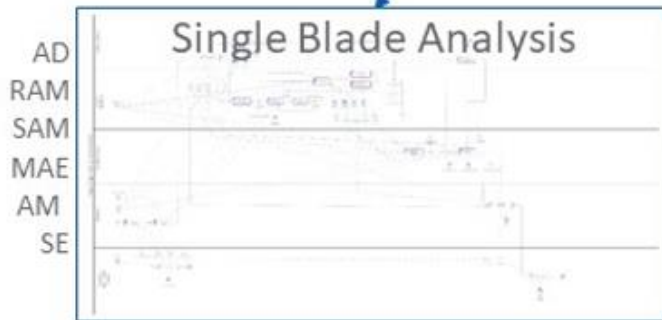
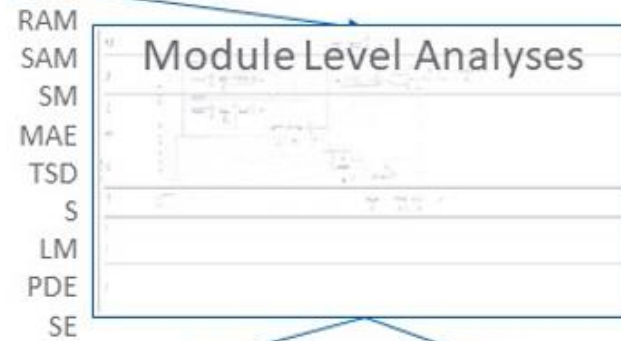
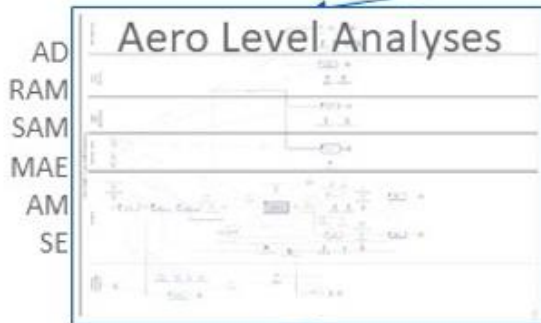
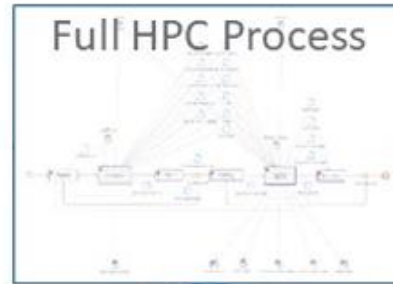
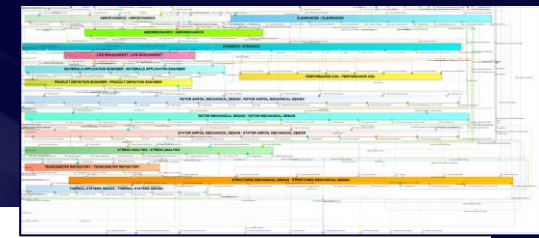
## More than 100 years of innovation

- GE Aerospace has achieved the following firsts:
- U.S. jet engine & U.S. turboprop engine
  - Mach 2 engine
  - Composite fan blade in airline service
  - World record for thrust – GE90 & GE9X
  - Additive jet engine parts approved by U.S. FAA





# HPC Complete Linked Update Structure

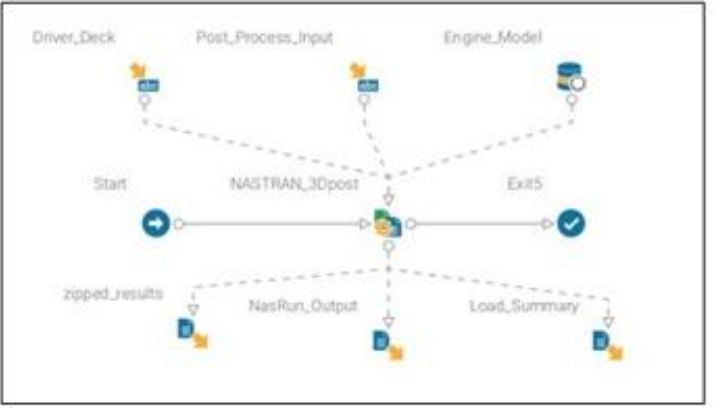
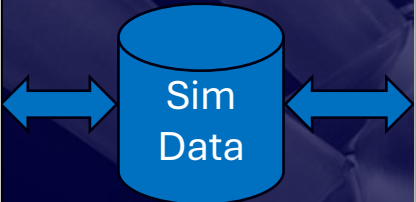
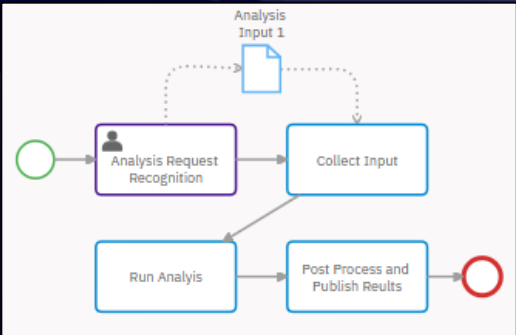
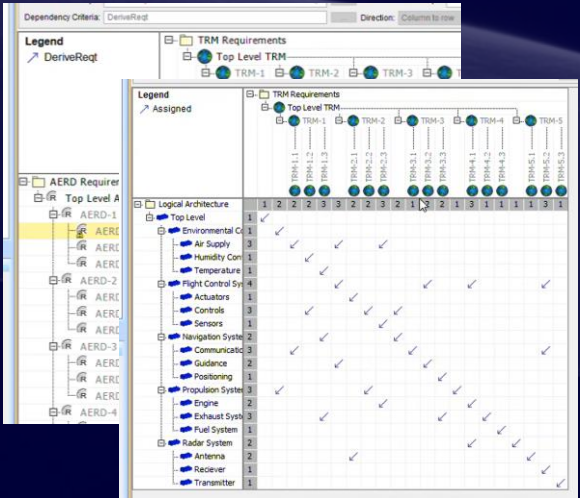
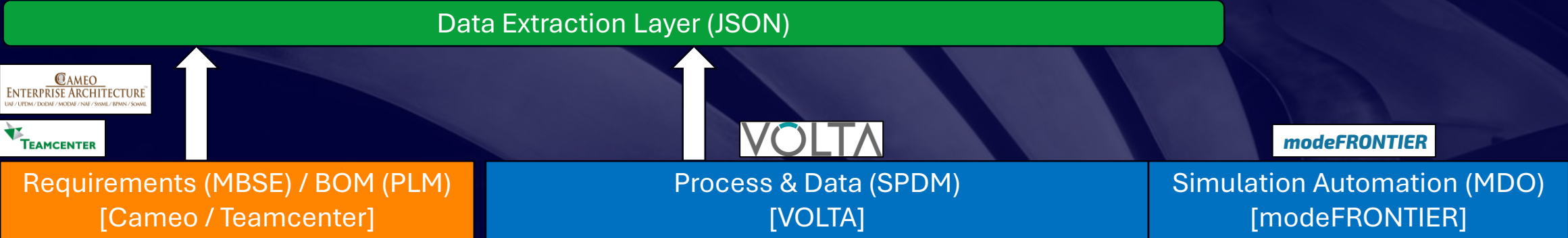


- Using **Business Process Modeling Notation (BPMN)** to model, and link engineering processes.
- BPMN models built within VOLTA environment are not just descriptive of process but **are executable to manage process and data handoffs.**

Organization Acronyms

AD	- Aerodynamics
RAM	- Rotor Airfoil Mechanical
SAM	- Stator Airfoil Mechanical
MAE	- Materials
AM	- Aero Mechanics
SM	- Structural Mechanics
TSD	- Thermal Systems
S	- Stress
LM	- Life Management
PDE	- Product Definition Eng.
C	- Clearances
D	- Dynamics
SE	- Systems Engineering

# Linking Requirements, Parts, Processes, and Simulation Results



# Systems Engineering assigns tasks to team members

The screenshot displays a Kanban board interface within a 'Process Manager' application. The board is organized into three columns: 'TODO' (4 tasks), 'DOING' (4 tasks), and 'DONE' (3 tasks). Each task card includes a title, a person icon for assignment, a timestamp, a version indicator (v4), and a category label (Testing for Business Processes). Some tasks in the 'DOING' column have status indicators like 'DS' or 'JB'. The 'DONE' column has a 'See all' link and a '3 / 9' indicator.

**Process Manager / Tasks**

**Filters**

**TODO (4)**

- Stator Airfoil Single Stage Analysis** (+ person icon)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Recieve Aerodynamics Data for Rotors** (+ person icon)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Recieve Aerodynamics Data for Stator** (+ person icon)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Recieve Rotor Airfoil Mechanics Results** (+ person icon)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes

**DOING (4)**

- AeroMechanics Rotor Check** (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- AeroDynamics Single Stage Analysis** (JB)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Stator Airfoil Material Curves Review** (Draft) (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Rotor Airfoil Material Curves Review** (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes

**DONE (3 / 9) See all**

- [AUTOMATED/Fetch Instance Metadata]** (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- AeroDynamics Single Stage Analysis** (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes
- Rotor Airfoil Single Stage Analysis** (DS)
  - Aero Design Process 2025-08-21 4:22:25 PM
  - Aero Design Process v4
  - Testing for Business Processes

Tasks are tracked and managed on the VOLTA Kanban board.

# Why SPDM?

<b>Metric</b>	<b>Traditional "File Vault"</b>	<b>Reimagined "Data Value"</b>
<b>Search Time</b>	Hours/Days (Manual)	Seconds (Metadata-driven)
<b>Data Utility</b>	Passive (Storage Only)	Active (Training AI/ROMs)
<b>Handoff Lag</b>	Days (Email/Meetings)	Instant (BPMN Triggers)
<b>Risk</b>	High (Lost Context)	Low (Full Traceability)

**Data value orchestrator with data as a strategic asset.**

# Why ESTECO?

Feature	ESTECO (VOLTA/modeFRONTIER)	Siemens/Ansys SPDM
<b>Interoperability</b>	High: Designed for mixed-vendor toolchains.	Moderate: Best within their own product suites.
<b>Optimization</b>	Core Strength: Industry-leading MDO and AI algorithms, also customizable.	Secondary: Often requires additional modules or plugins.
<b>Workflow</b>	BPMN-driven: Formal business process tracking.	Task-driven: Often focused on data state changes.
<b>Implementation</b>	Lean: Targeted SPDM/MDO focus.	Heavy: Often tied to a broader, complex PLM rollout.

**Highly heterogeneous toolchains** need a more agile and performance-driven environment.

# Lessons Learned

Executable Business Process Modeling Notation (BPMN) can be used to manage engineering processes.

Engage early and often with SMEs during process development.

No-code BPMN (Volta) and workflow automation tools (mF) promote democratization and adoption.

Esteco Volta can manage large engineering files at speeds that meet user's expectations.

Vendor neutral formats are beneficial to relate data across all tools in the LMU environment.

AI for python script generation is an automation accelerator.

Mapping the process can standardize inputs, the process, and identify opportunities for automation.

The SPDM system can enable ASoT evolution.

Modeling large processes can become difficult to represent as a single BPMN model.

BPMN Subprocesses are needed, but not available in the current tool. Workarounds had to be developed to link all six processes.



**GE Aerospace**