Lessons from the Legacy Aerospace Supply Chains

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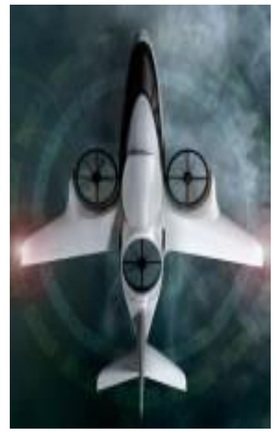
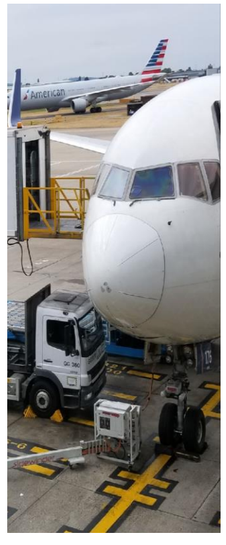


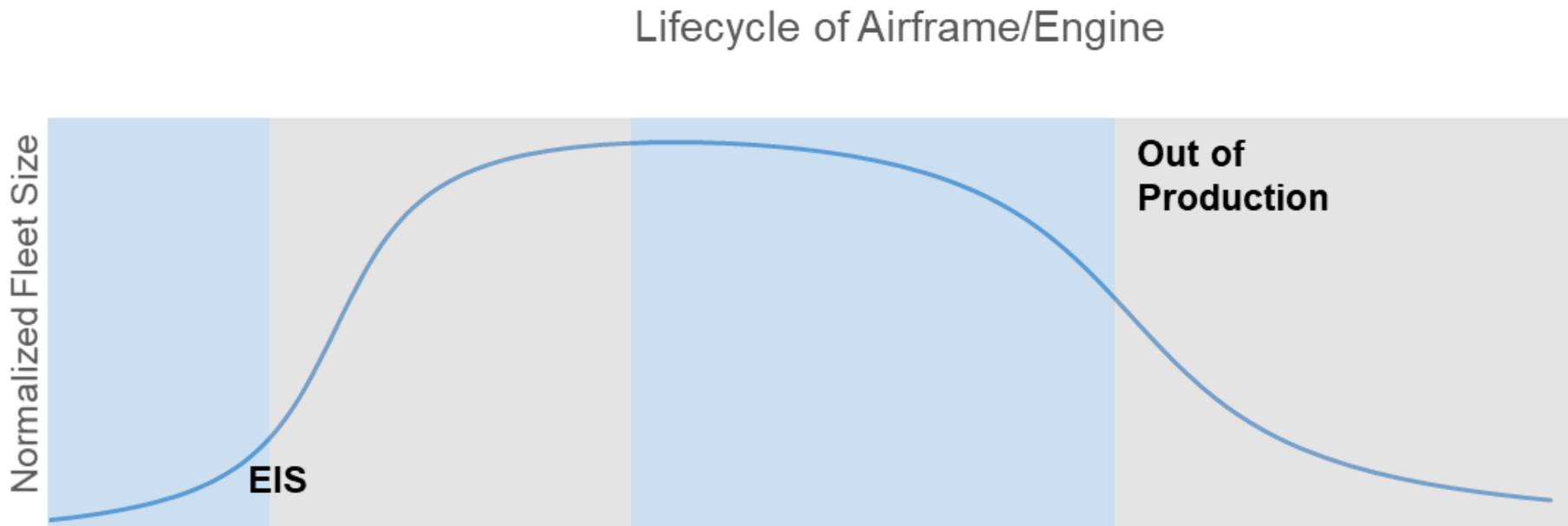
Presented at -

AGILITY PRIME

NASA



Technology will impact OEM-Supplier Dynamics

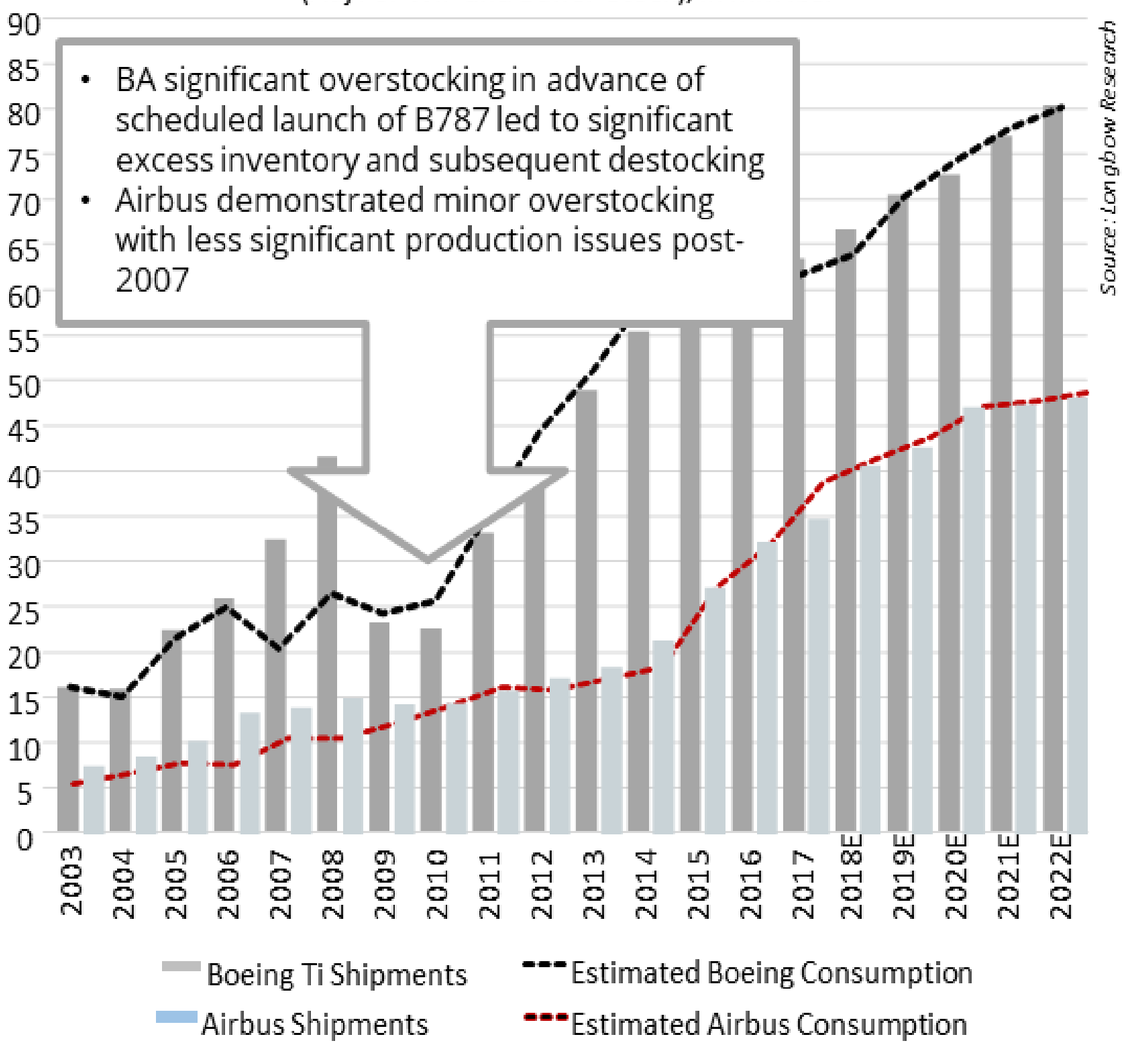


	Development	Growth	Maturity	Sunset
OEM's KPI	• Proximity • Turnaround Time • Engineering Capability	• Capacity • Delivery & Quality • Multi-source (domestic) for de-risk • Short LTA's for flexibility	• Aggressive cost reduction • Move to low-cost	• Delivery • Quality • Less aggressive on cost
Supplier's Options	• Win as much content as possible • Relationship with Engineering	• Invest for delivery • Long LTA's for security	• Internal cost-out • Process improvement • Internal low-cost source • Maintain market share	• Capacity for highly unpredictable demand • Maximize margins • Re-engineer/repair tooling
Supplier Margin	• High	• Medium	• Low	• High
LCS Threat	• Low	• Low-Medium	• High	• Low

Inefficient Stocking / De-Stocking is a norm

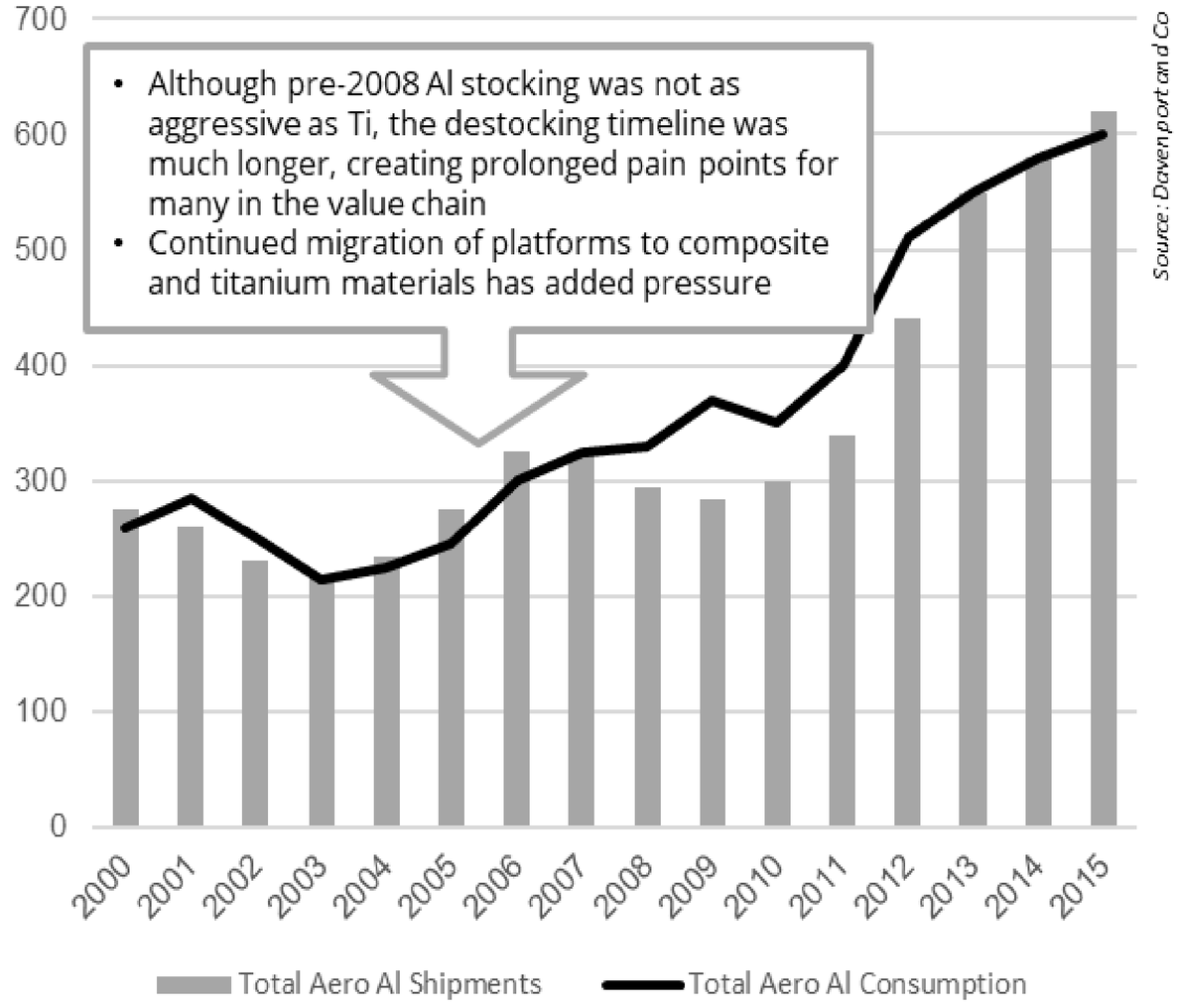
Boeing/Airbus Ti Demand and Consumption

Projected Boeing Titanium Purchasing Vs. Consumption
(Adj For WIP and Buffer Stock), in mm lbs.



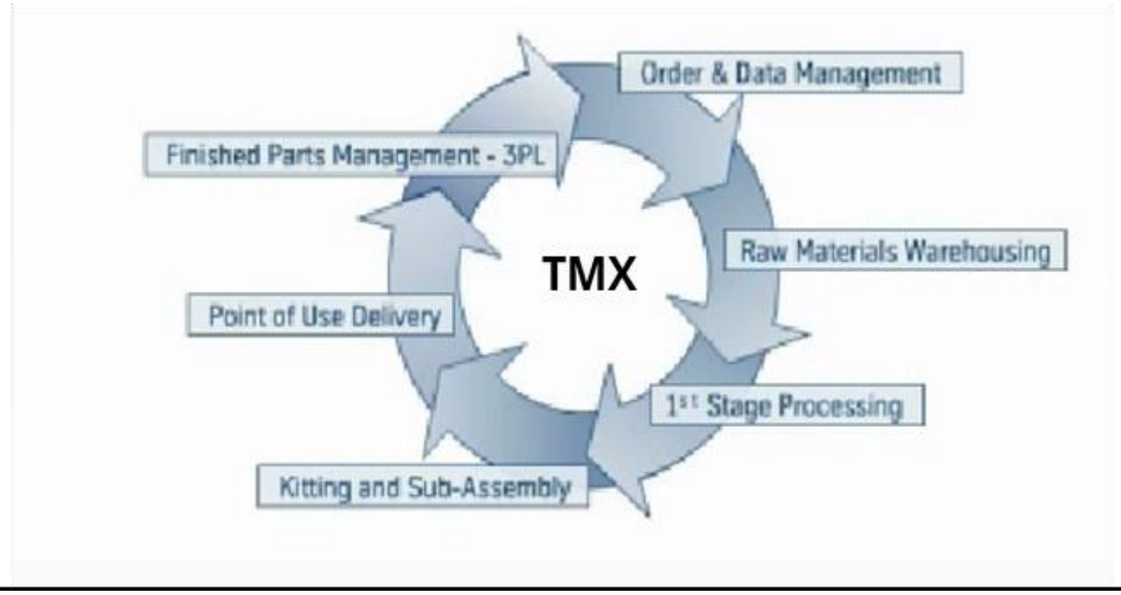
Aero Al Demand and Consumption

Est Total Aero Al Demand Vs. Consumption (in mm lbs.)

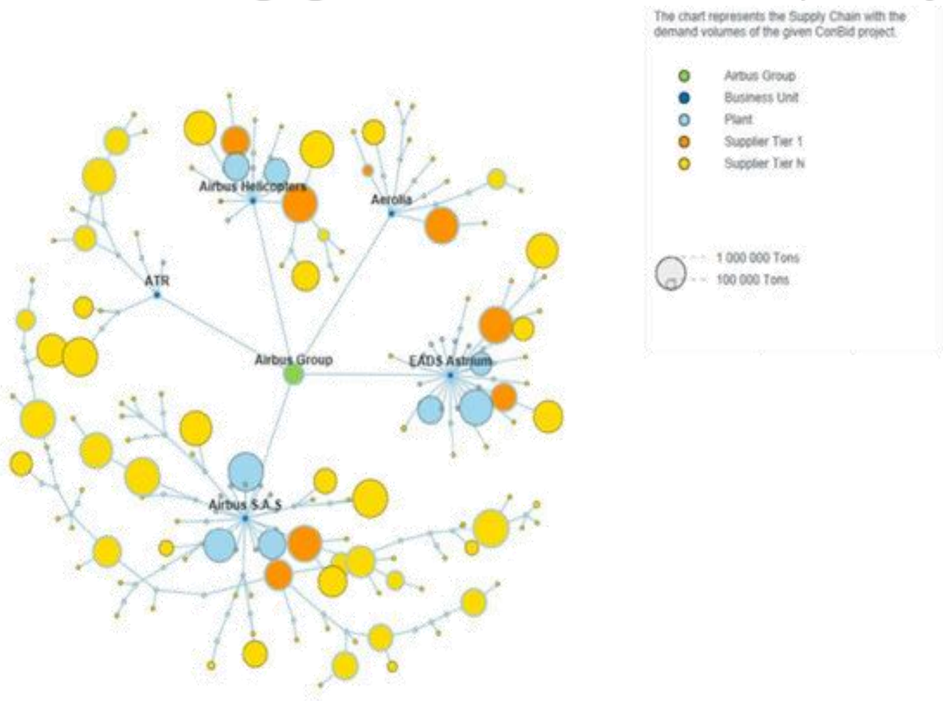


BA relies on Annual Planning while AB relies on Technology

- Boeing has used **TMX** (a ThyssenKrupp subsidiary) to be their agent in planning and controlling supply chain material flow
- Annually (each June), TMX forecasts material requirements for the next 12 months, places orders for Boeing; sub-tiers buy material from TMX rather than the manufacturer
- TMX responsible for yearly purchasing from mills for the integrated supply chain and delivering value added material



- Airbus **ConBid** system tracks material flow through each tier for specific projects ensuring real time visibility of stocking, for a 6 month and a 12 month planning horizon
- Each sub-tier can see bookings and baseline demand before placing order to prevent over or under stocking
- No central controlling agent like TMX but full transparency



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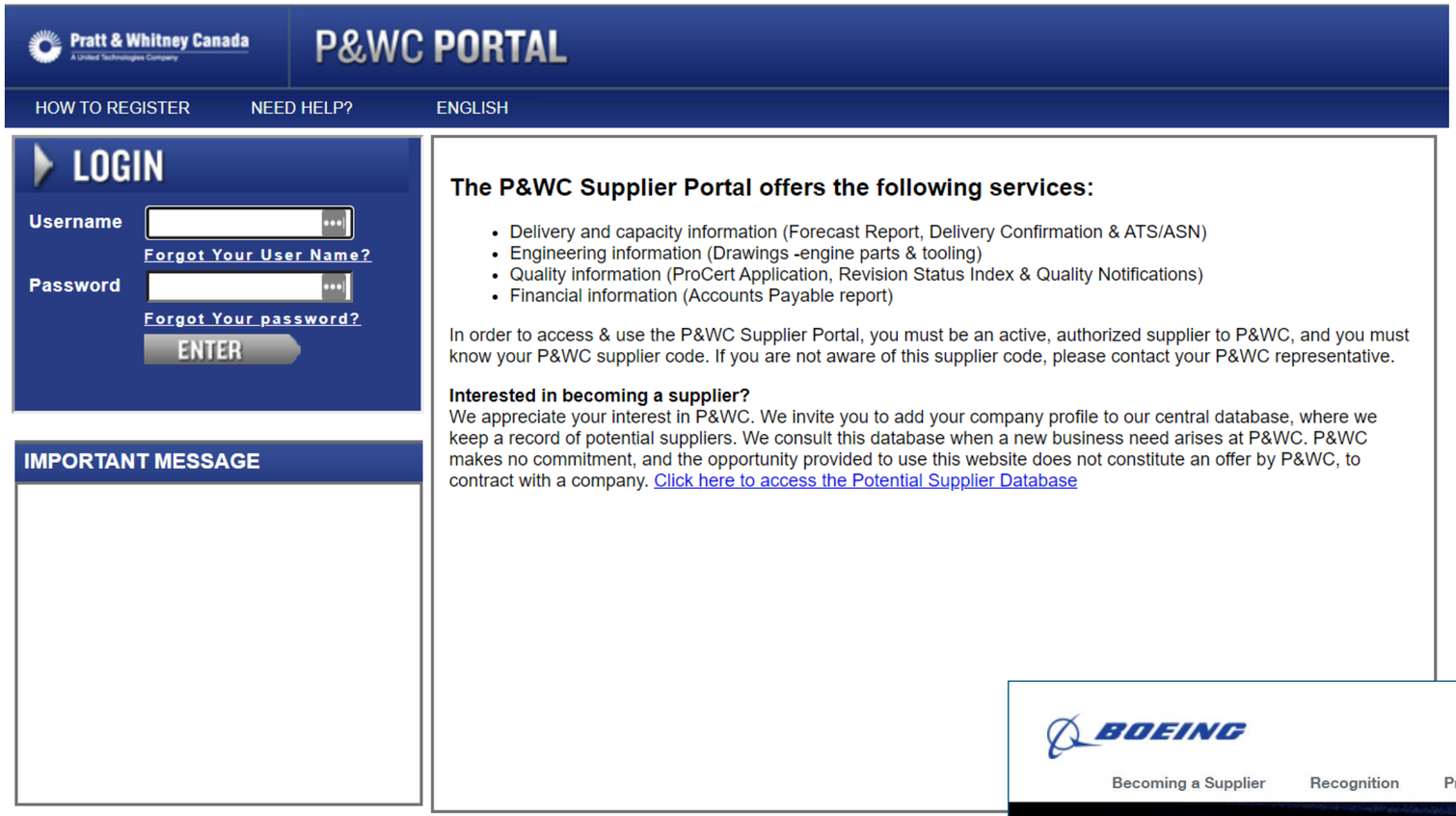
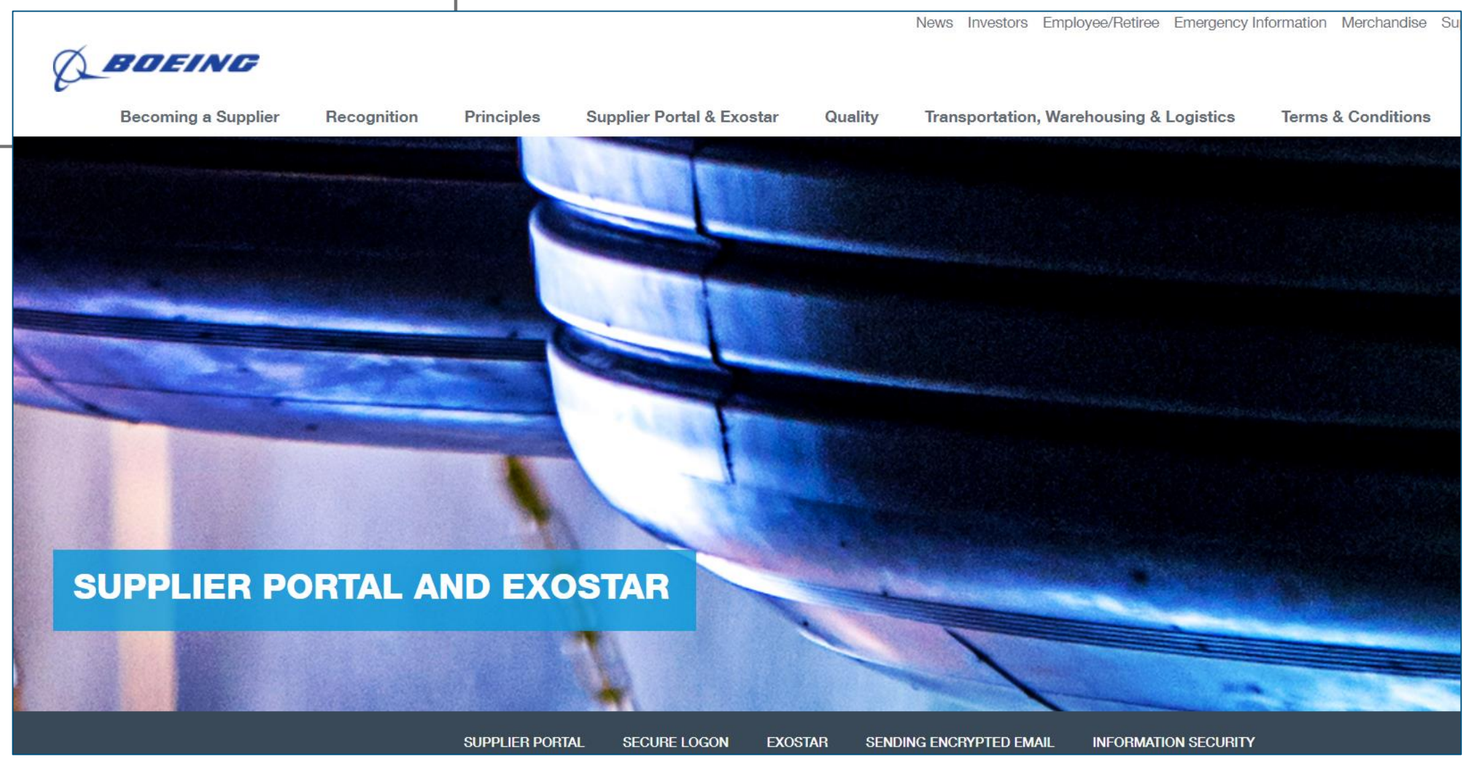
Supply Chain Management Circa 2000



- Static supplier portals
- OEM driven e-commerce portals failed
- Increased Overhead at both ends
- Secure and traceable communications



Supply Chain Management Circa 2010

- Command Centers
- Not truly connected suppliers
- Visibility of macro events
- No improvement in part visibility

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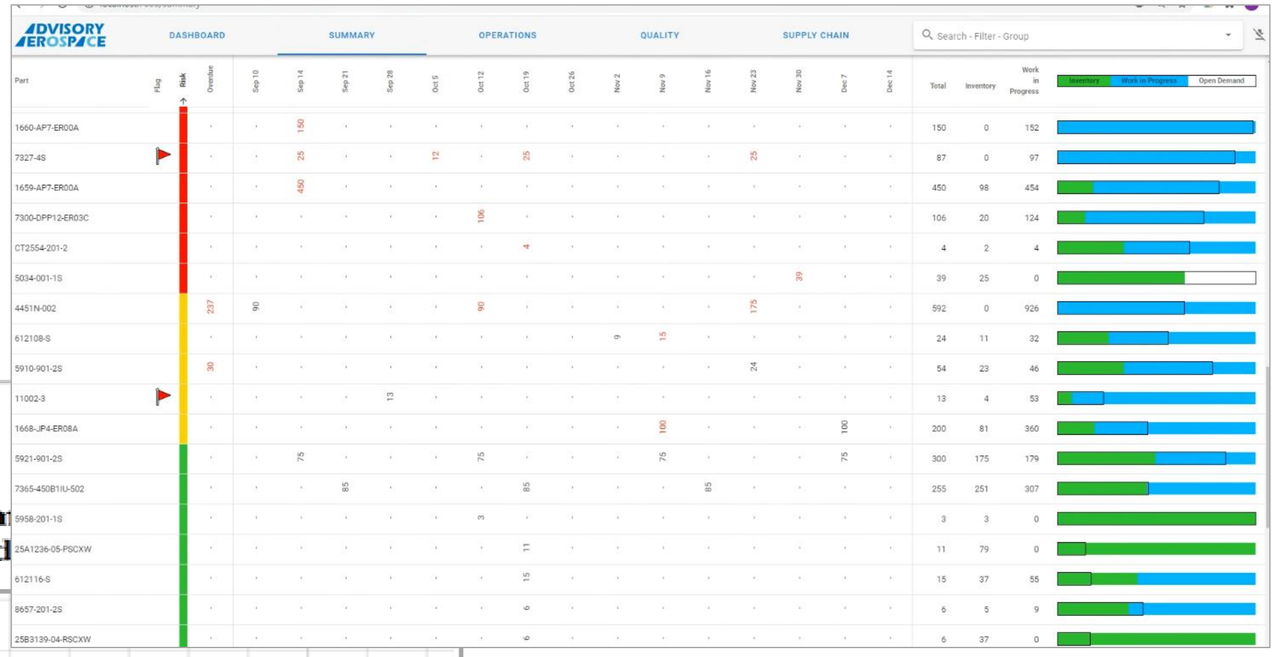
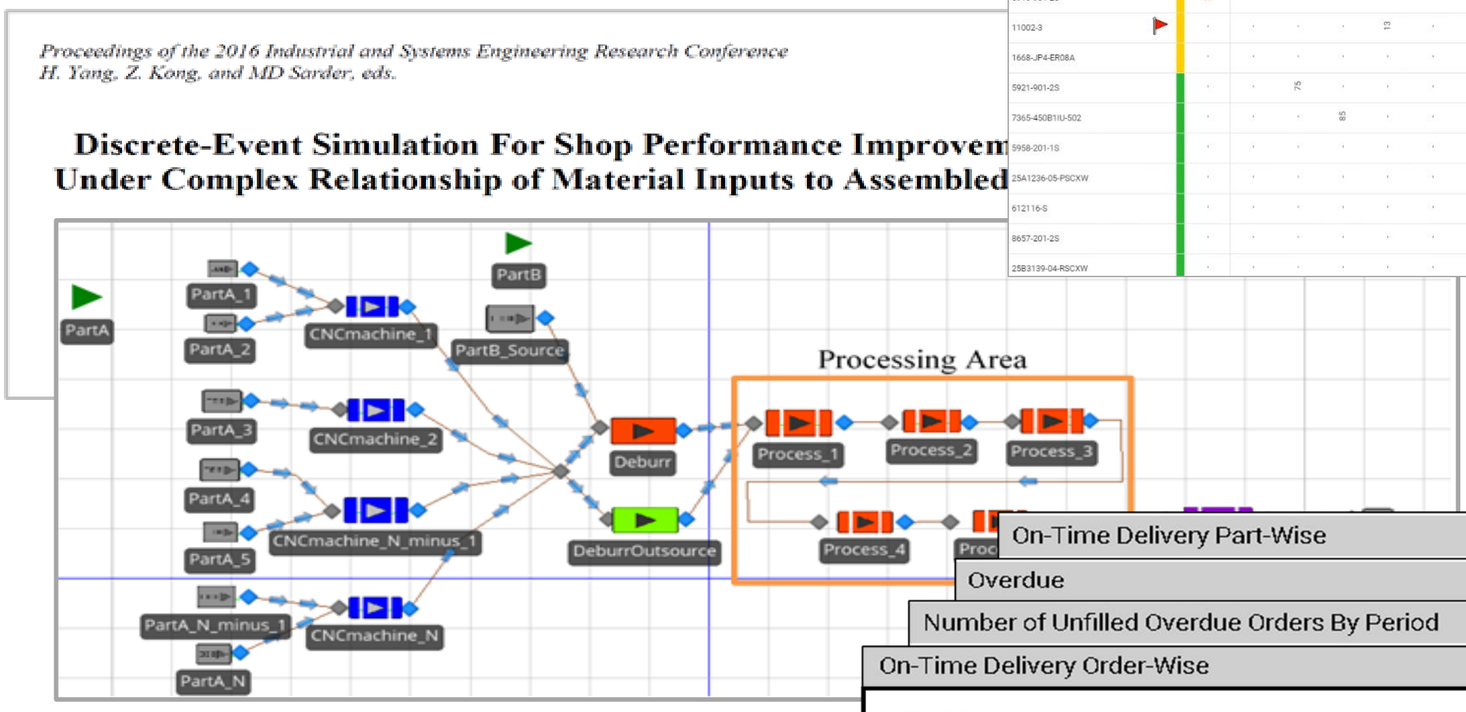
Supply Chain Management 4.0

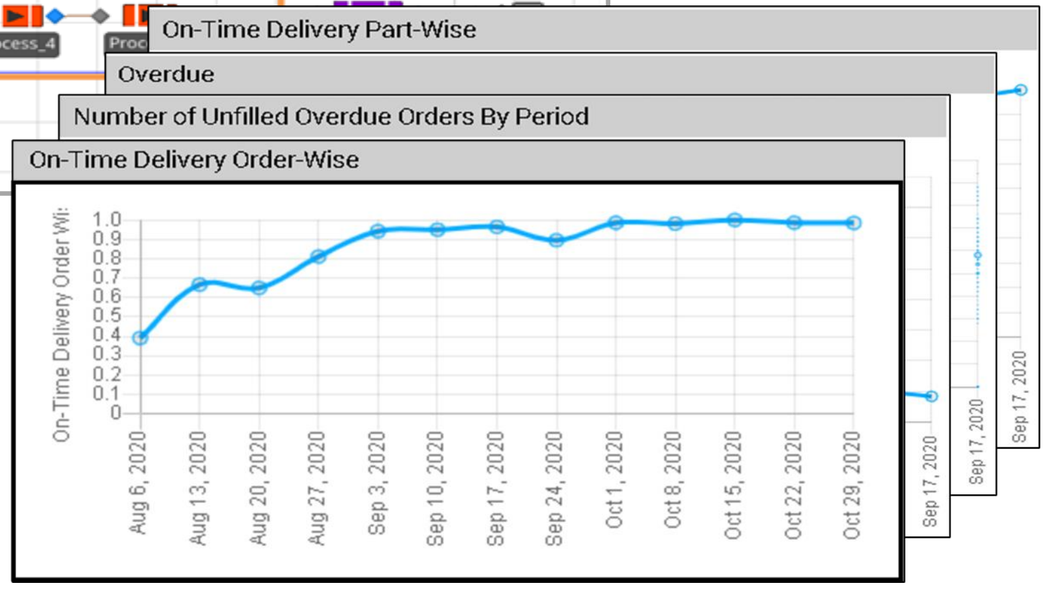
- Full Supply Chain Visibility





- Modeling & Simulation

- Optimization



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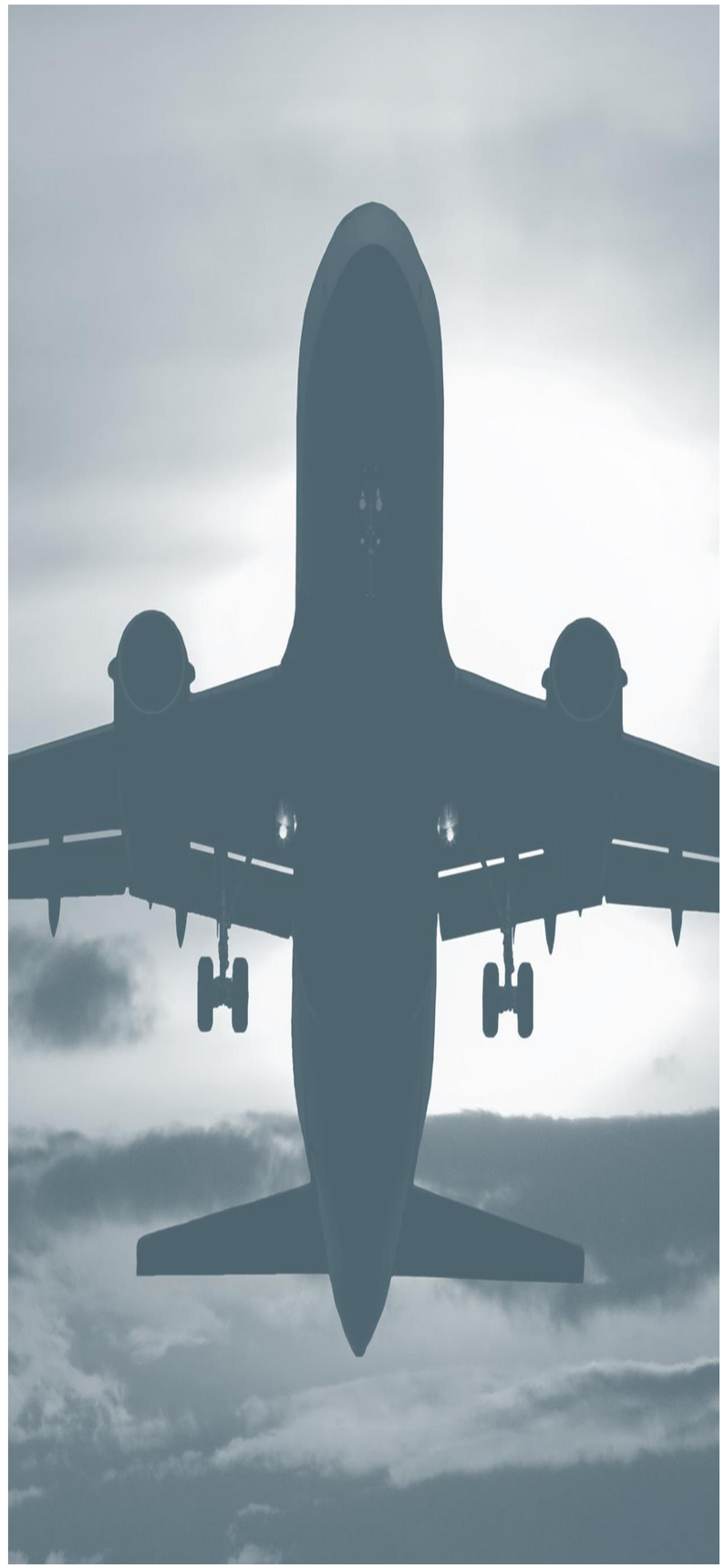
Thank you.



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