



BOEING SAFETY MANAGEMENT SYSTEM

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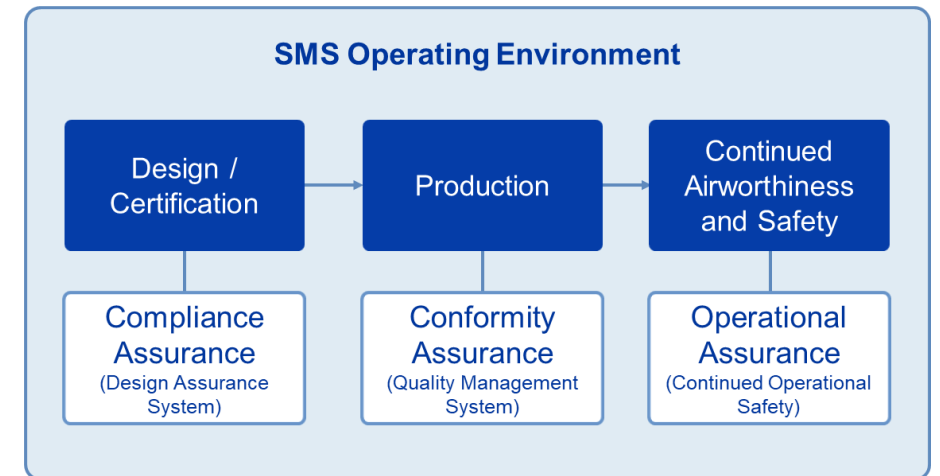
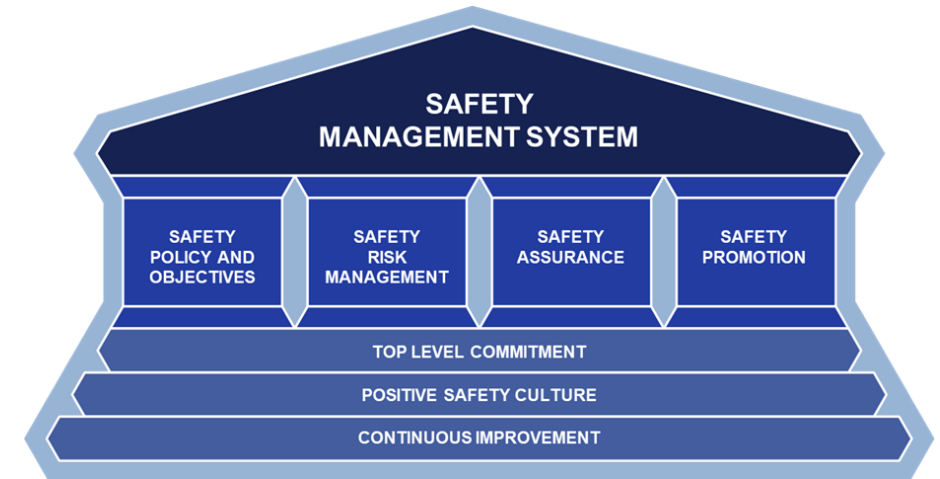


Boeing implementation of SMS

- Extensive benchmarking with Operators & OEMs
- Based on current FAR 14 CFR Part 5 and NPRM
- FAA approved voluntary program – Dec 2021
- For Design and Manufacturing (D&M) Companies:

Are the systems that **Design, Produce** and **Support** the product operating as intended?

- Using Bow-Tie analysis techniques to address the threats, events, controls and consequences in the operating environment.



Ref: NAS 9927 (Figure 1)

SMS ensures Compliance, Conformance, Continued Airworthiness

Integrating the existing product safety system with SMS

Existing Product Safety System (Continued Operational Safety Program)



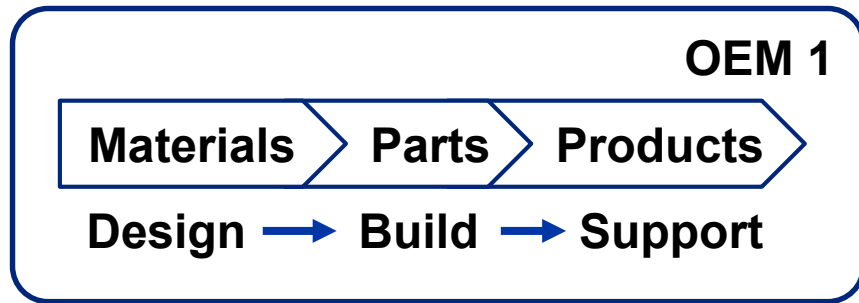
Is the product operating as intended?

Safety Management System

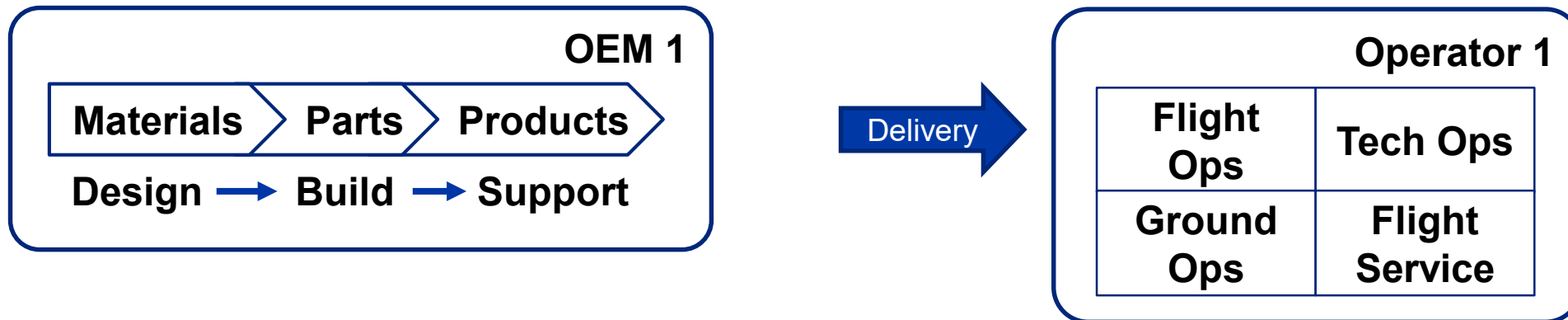


Is the system that designs, builds, and operates products executing as intended?

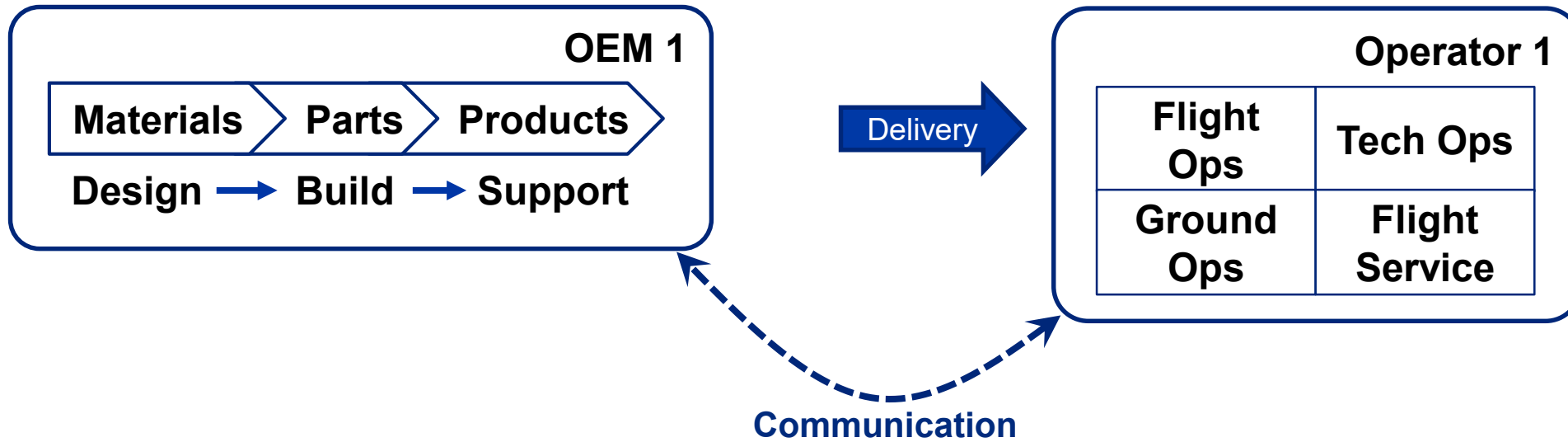
What is SMS Integration?



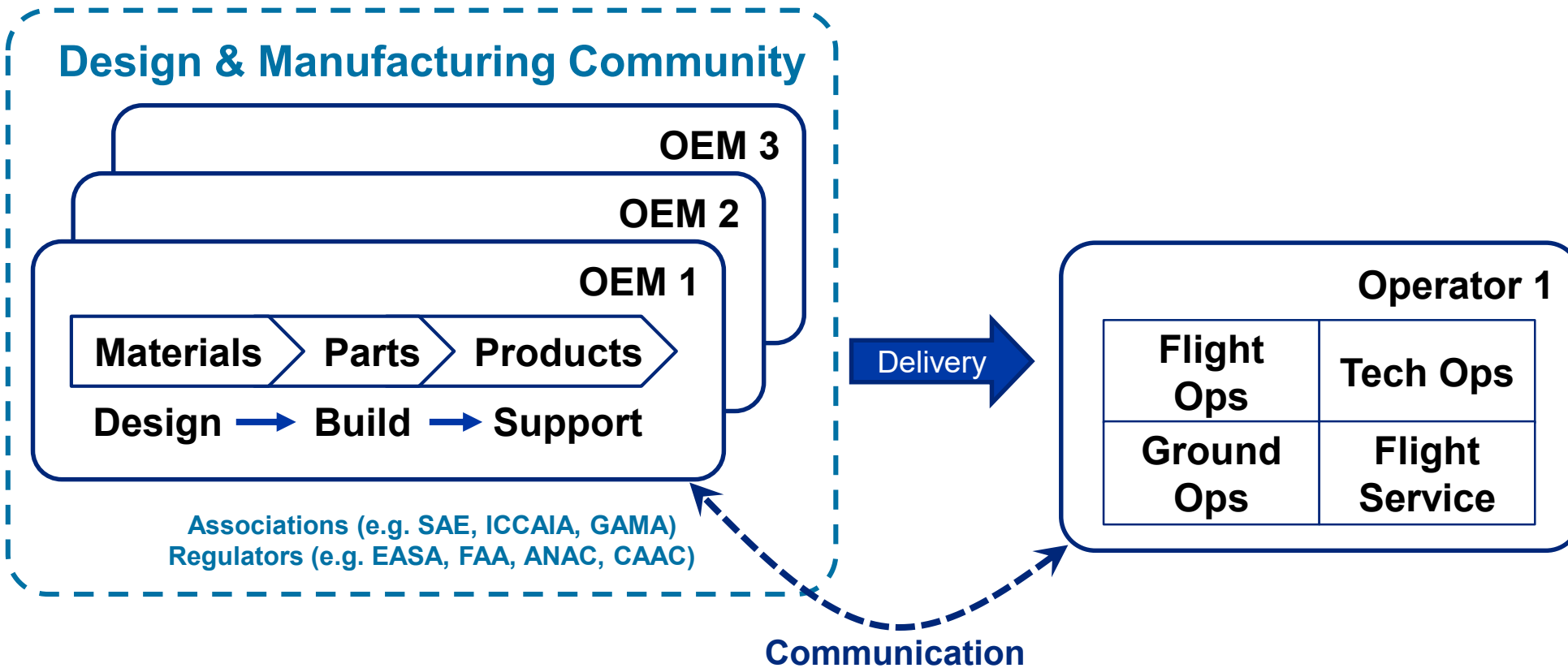
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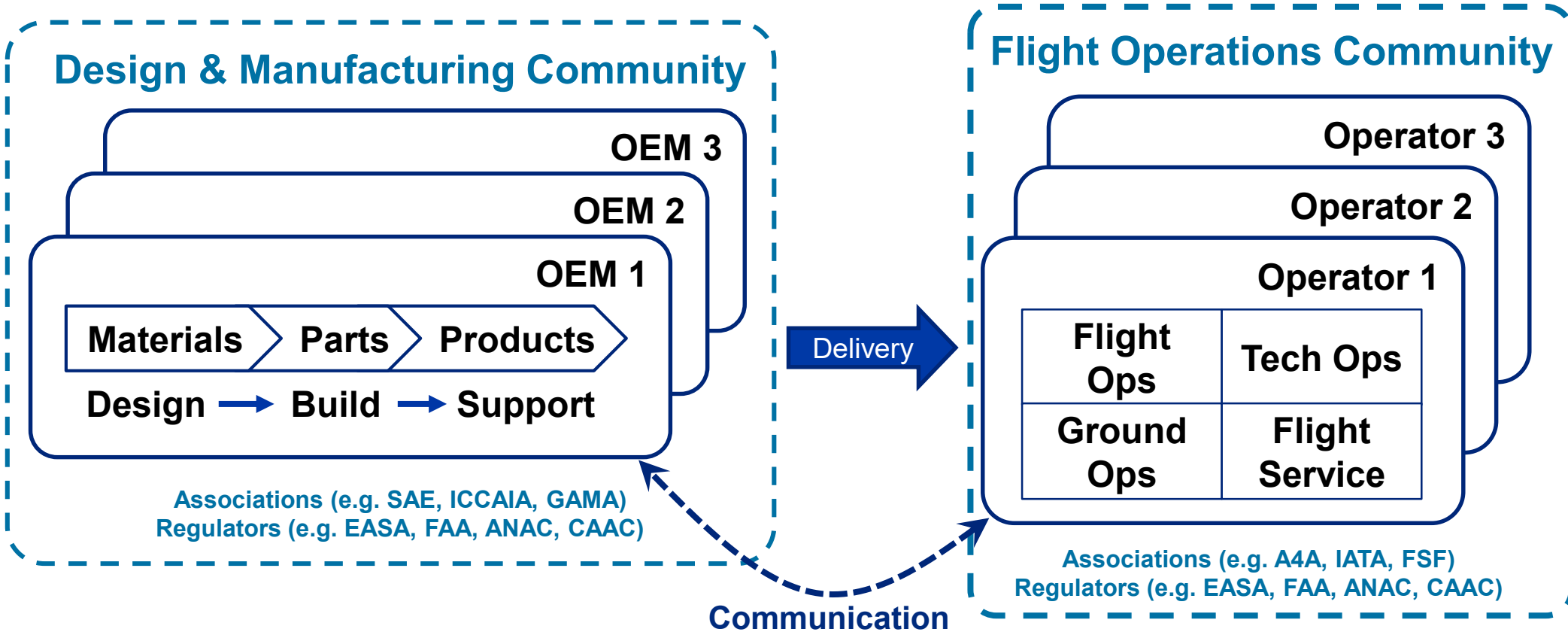
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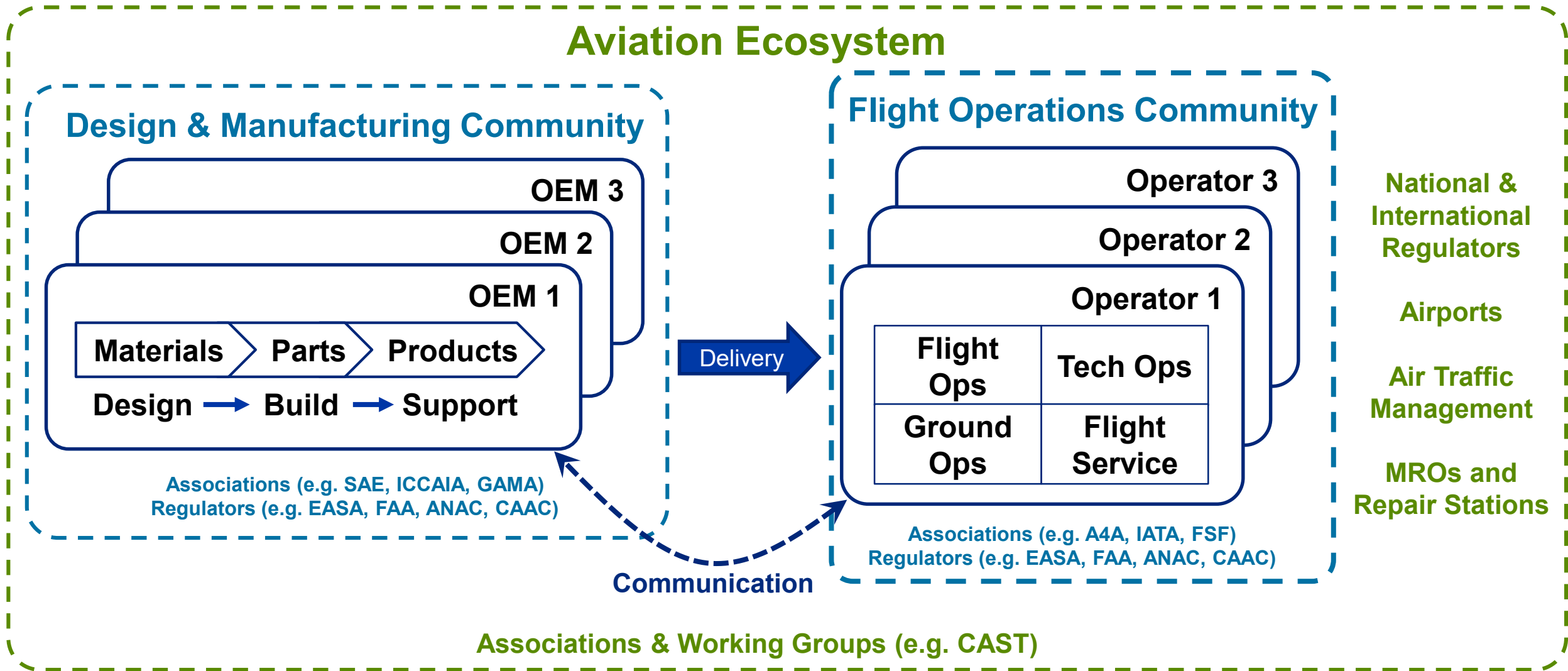
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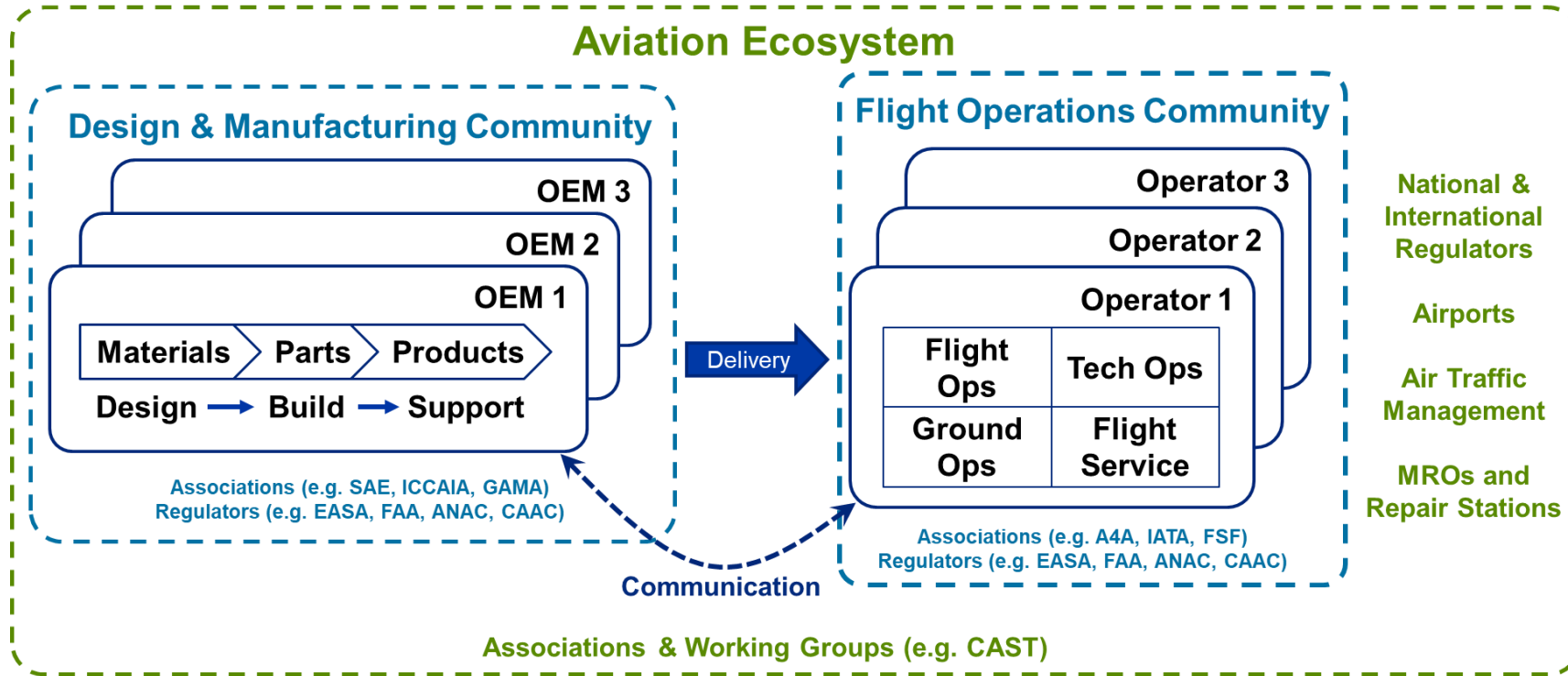
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What is SMS Integration?



What is SMS Integration?



Tools to better connect the Aviation Ecosystem through the Safety Management System:

- Robust system descriptions will minimize gaps and overlaps
- Standards around “interfacing organizations” and “interested persons”
- SMS is the common language to communicate hazards, risk & mitigations
- National or international risk register to share common risks and align mitigation efforts

Simplified Value Stream – Connecting SMS



What does it mean to connect the SMS “Value Stream” in practical terms?

Connecting Value Streams



Design error could lead to...

Incorrect fastener, which could lead to...

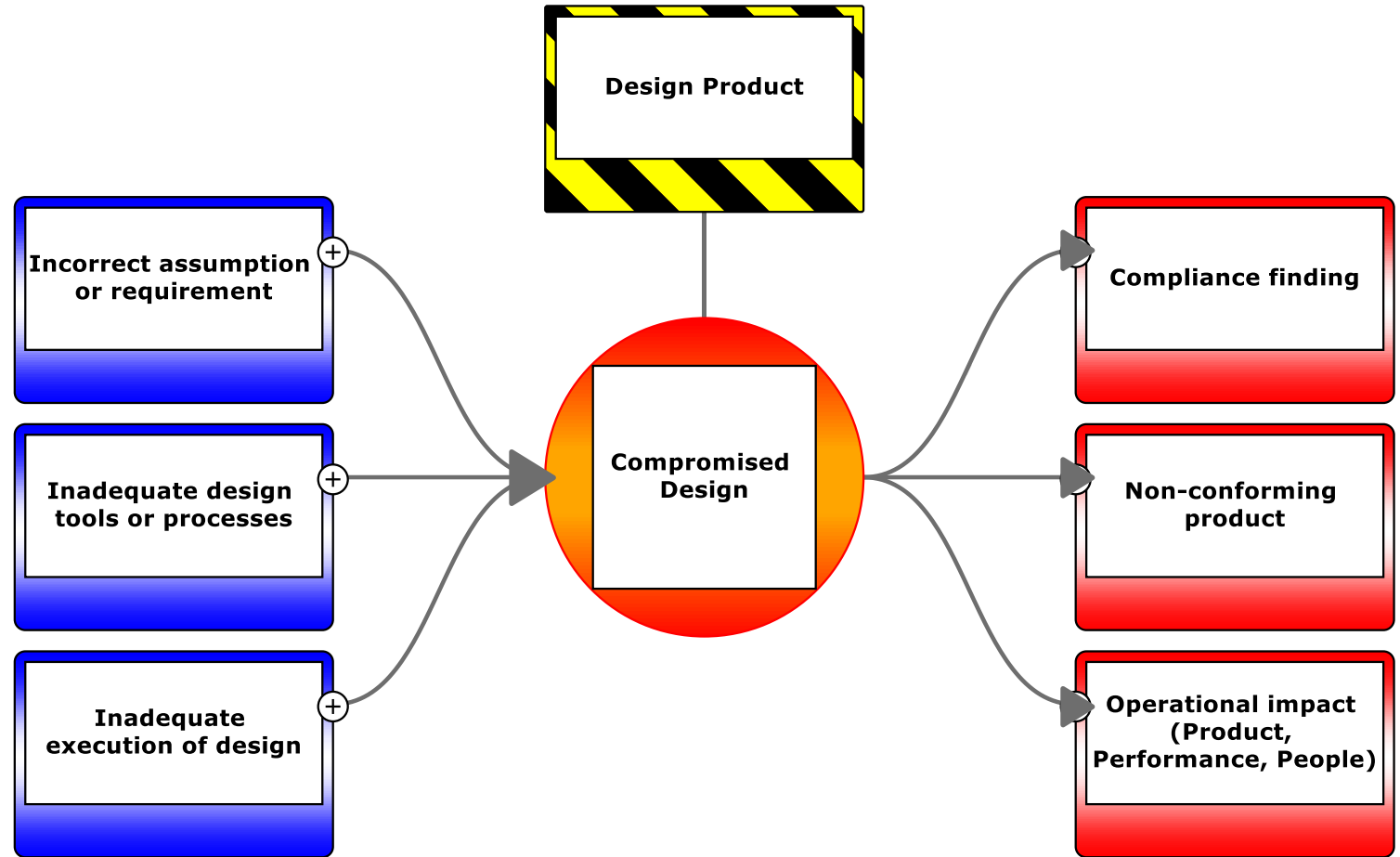
Loose wiring, which could lead to...

CAUTION in-flight requiring...
Emergency Procedure.

Bowtie as an SMS Tool



- Collaborative
- Connects organizations
- Visualizes complex risk
- Forms common mental model
- Enables ongoing monitoring

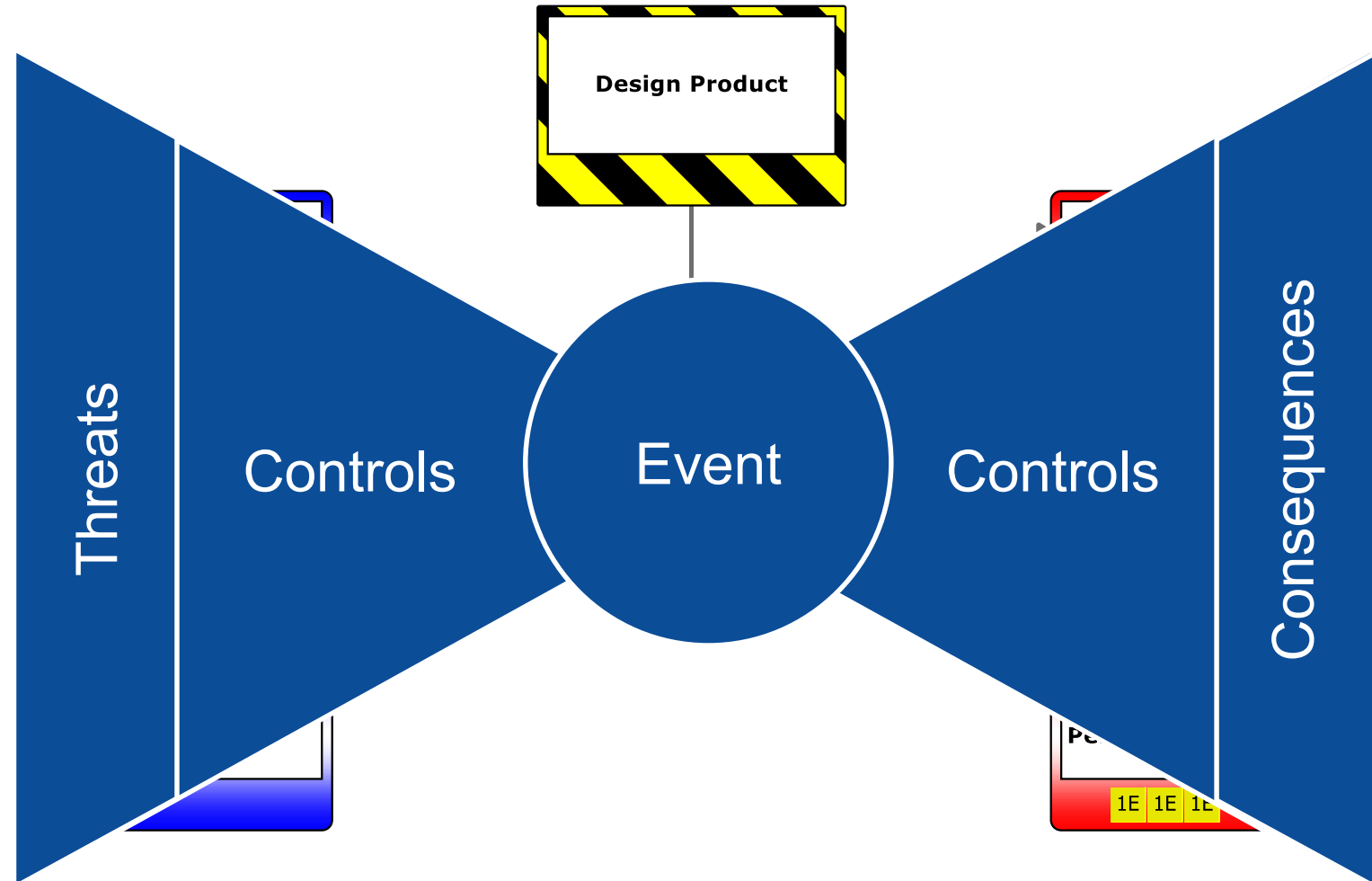


Threat could lead to **Event** could lead to **Consequence**

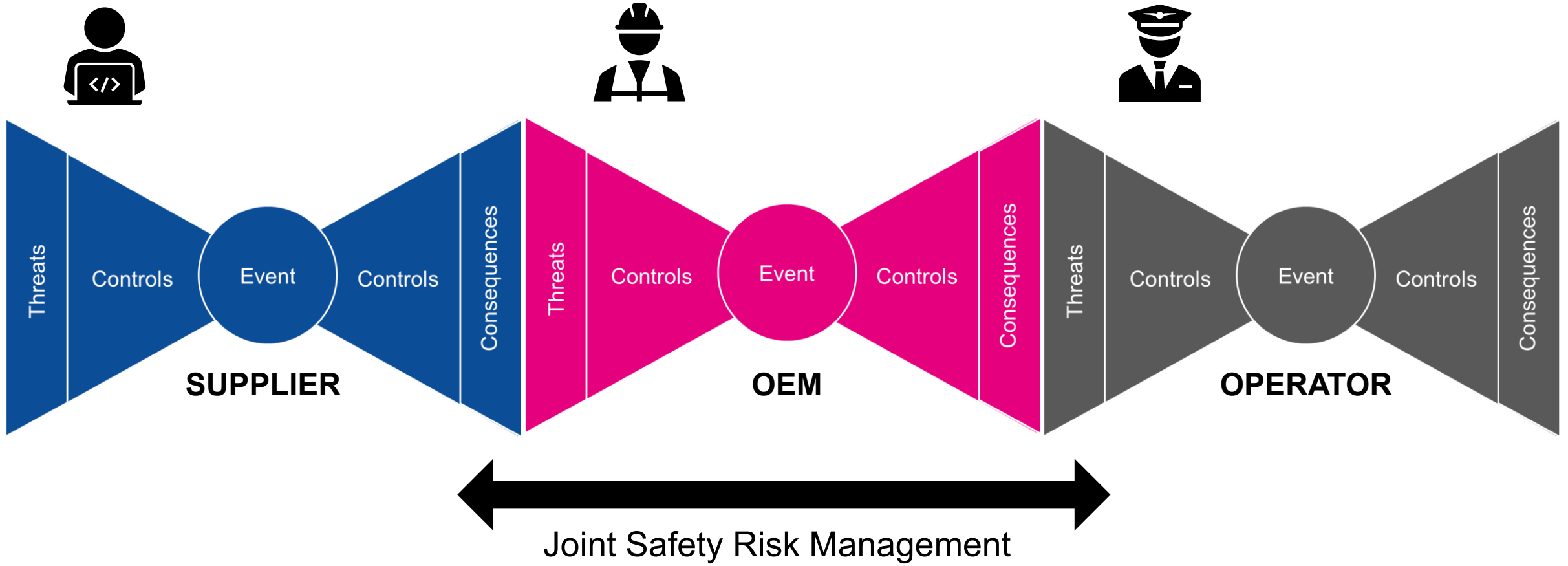
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Risk Integration



Joint Safety Risk Management

- Misconfigured system delivered to Airline
- Boeing partnered with Airline on risk modeling (bowtie)
 - Different perspectives on scope of system (system description)
 - Different SMS risk matrices
 - Required common risk & mitigation language

