



Serving the Global Aerospace Safety Ecosystem with a Proactive, Integrated Systems Approach



An OEM Perspective on Aircraft Accident and Incident Prevention

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Ahsan Naseer, Manager Aviation Safety Strategy

The Boeing Company

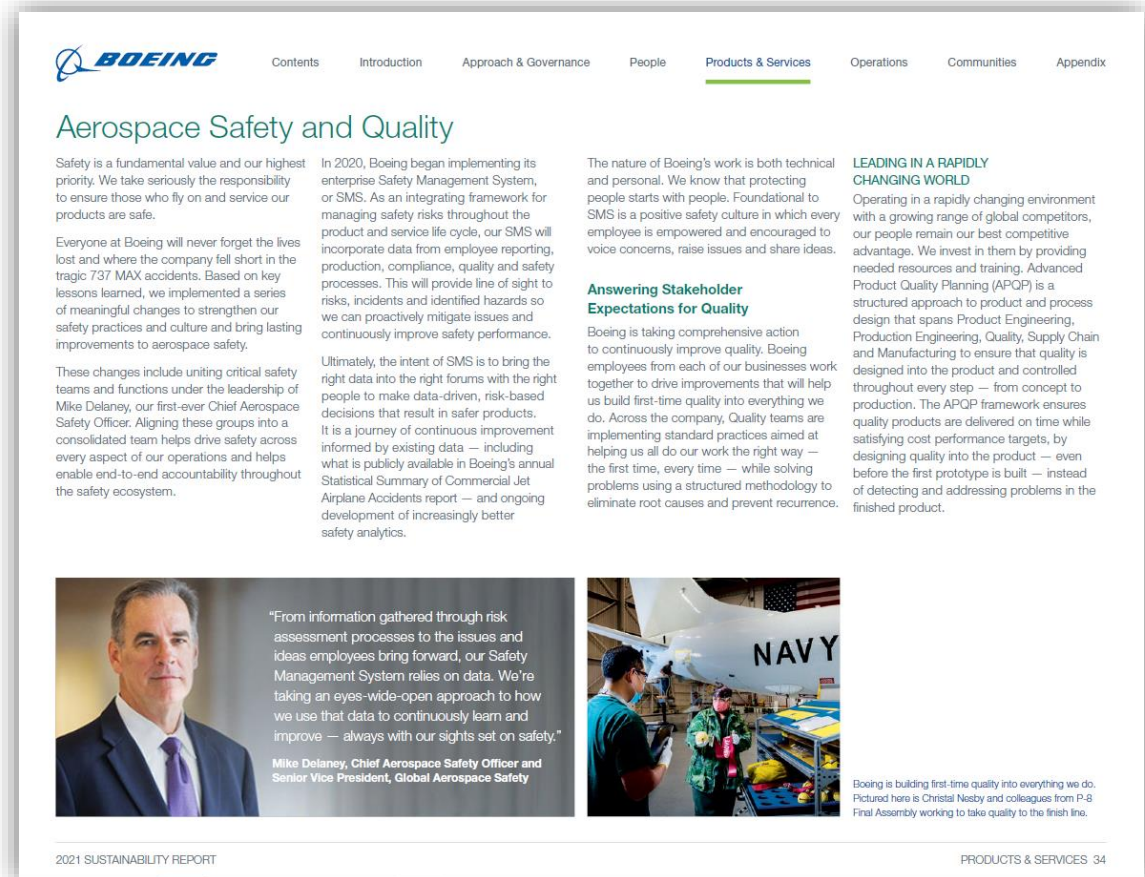
Chief Aerospace Safety Office

Mission:

- Drive aerospace safety to prevent accidents, injury or loss of life with our Boeing culture and actions rooted in safety

Guiding Principles

- We value human life, health and safety above all else
- We own safety, acting with integrity and transparency
- We serve the global aerospace safety ecosystem through a proactive, integrated systems approach
- Safety, compliance and conformance of our products and services without compromise



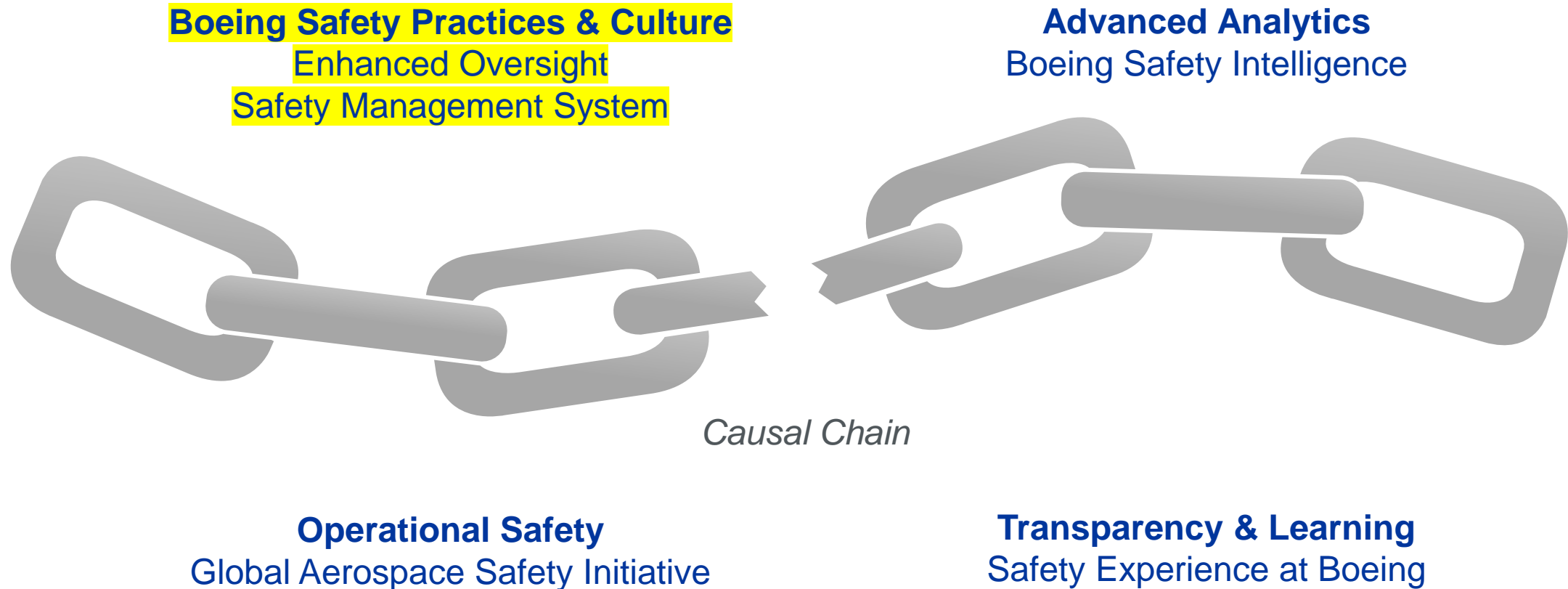
Global Air Transportation System



Design → Build → Operation → Maintenance → Infrastructure → Regulation

Working together for a Safe and Efficient Global Air Transportation System today and in the future.

Safety Initiatives



Serve the global aerospace safety ecosystem

Adherence to Airworthiness Regulations

Compliance and conformance ensure safety at delivery:

Airworthiness regulations establish the minimum standard for design safety

Boeing requirements exceed regulatory standards in some cases

Type certification process ensures compliance to applicable airworthiness regulations

Production processes / certification ensures product conformity to the type design

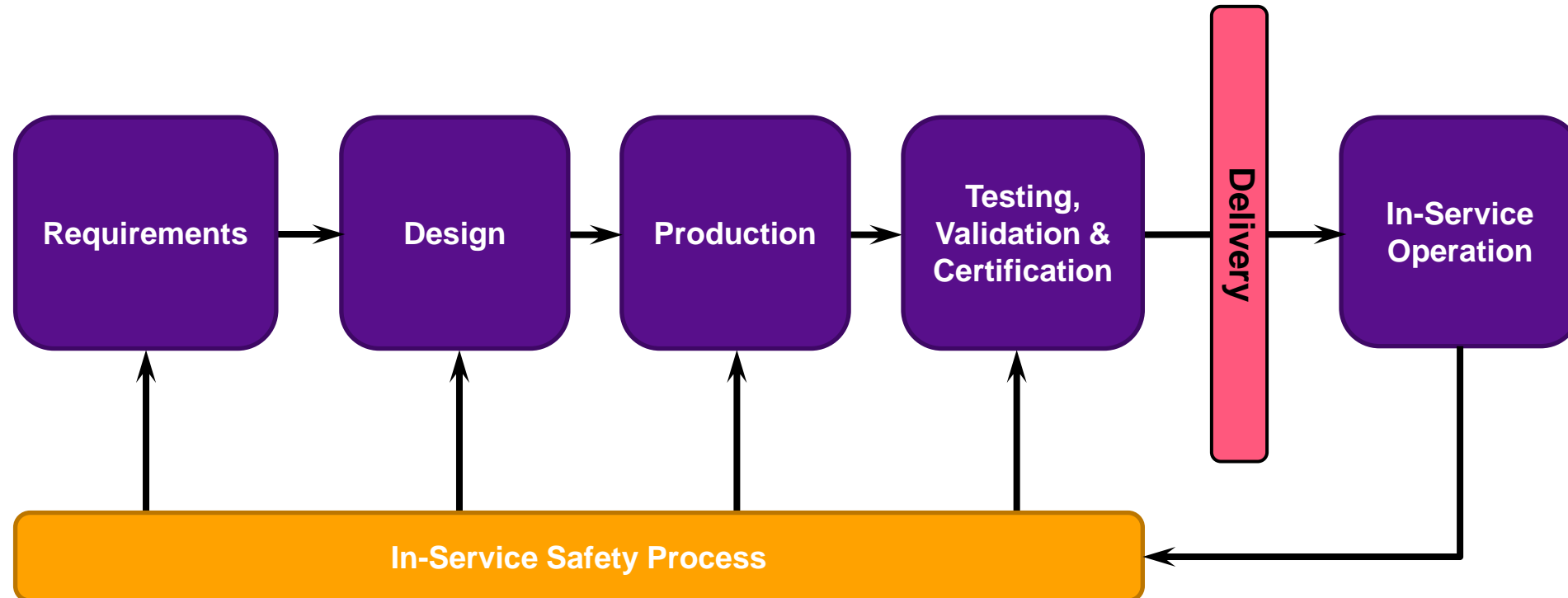
The In-Service Safety Process (ISSP) ensures the continued operational safety of the fleet throughout the product lifecycle:

Continuous monitoring of product performance to identify potential safety issues

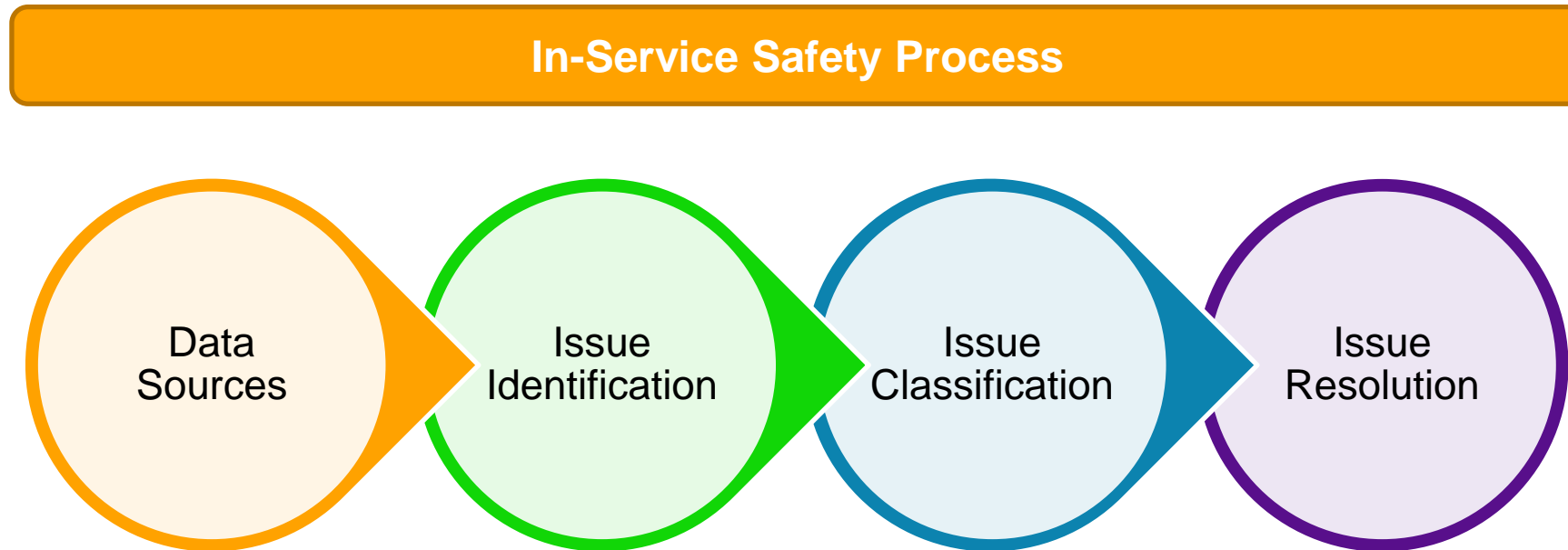
- Boeing ISSP develops recommended corrective actions to maintain or restore the airworthiness of the fleet
- Safety decisions and corrective actions may exceed regulatory standards
- FAA may mandate corrective actions via Airworthiness Directive

Certification and production conformity ensure the safety upon delivery and the In-Service Safety Process ensures safety throughout the product lifecycle

Boeing Commercial Airplanes' In-Service Safety Process



BCA In-Service Safety Process

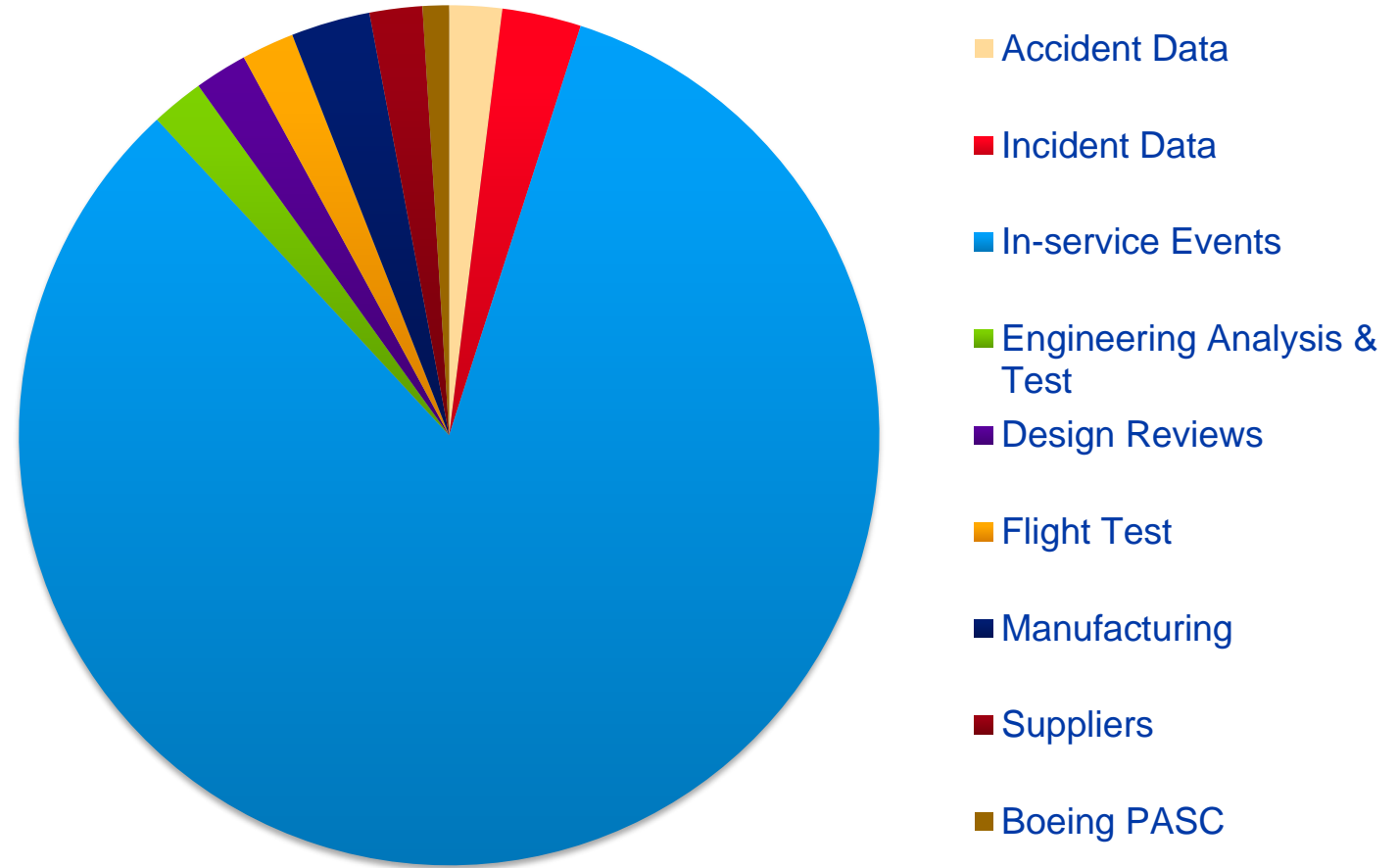


BCA In-Service Safety Process

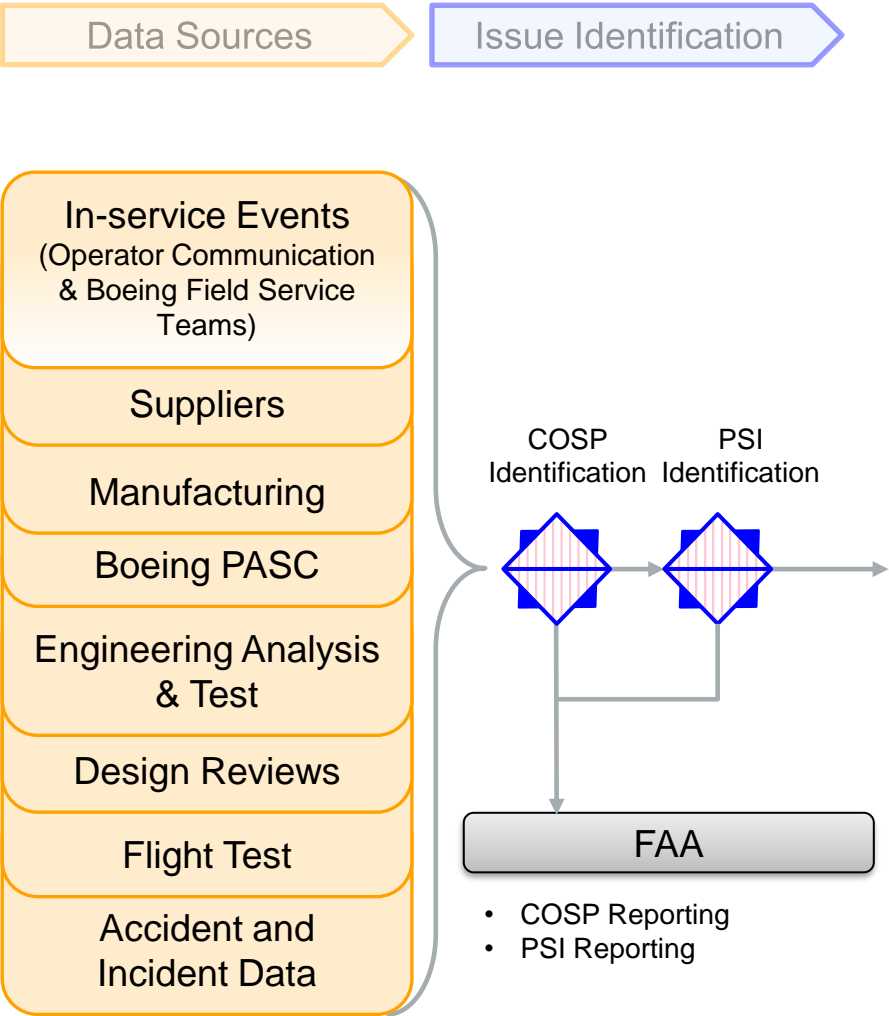
Data Sources



Approximate Data Source Distribution

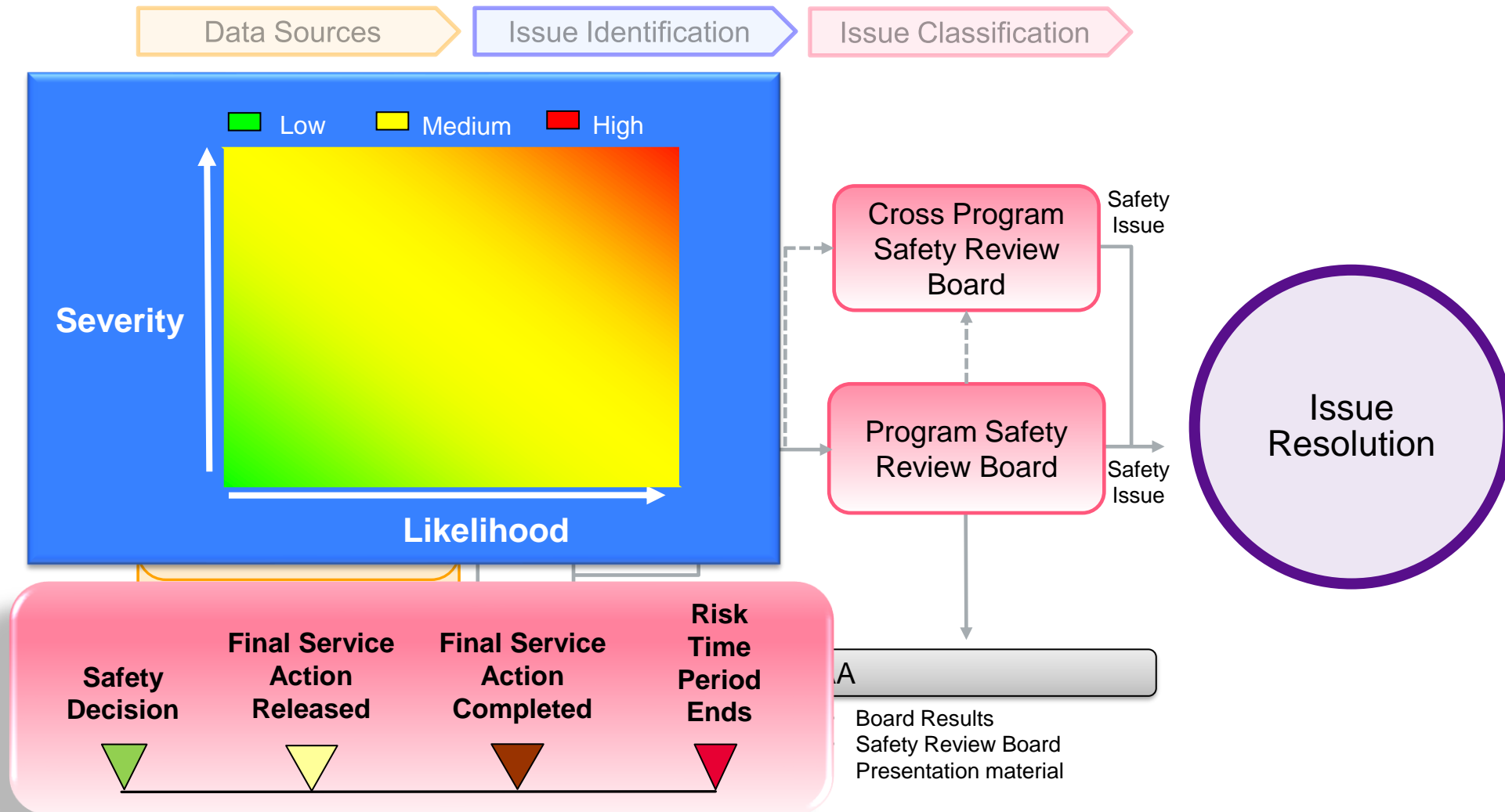


BCA In-Service Safety Process

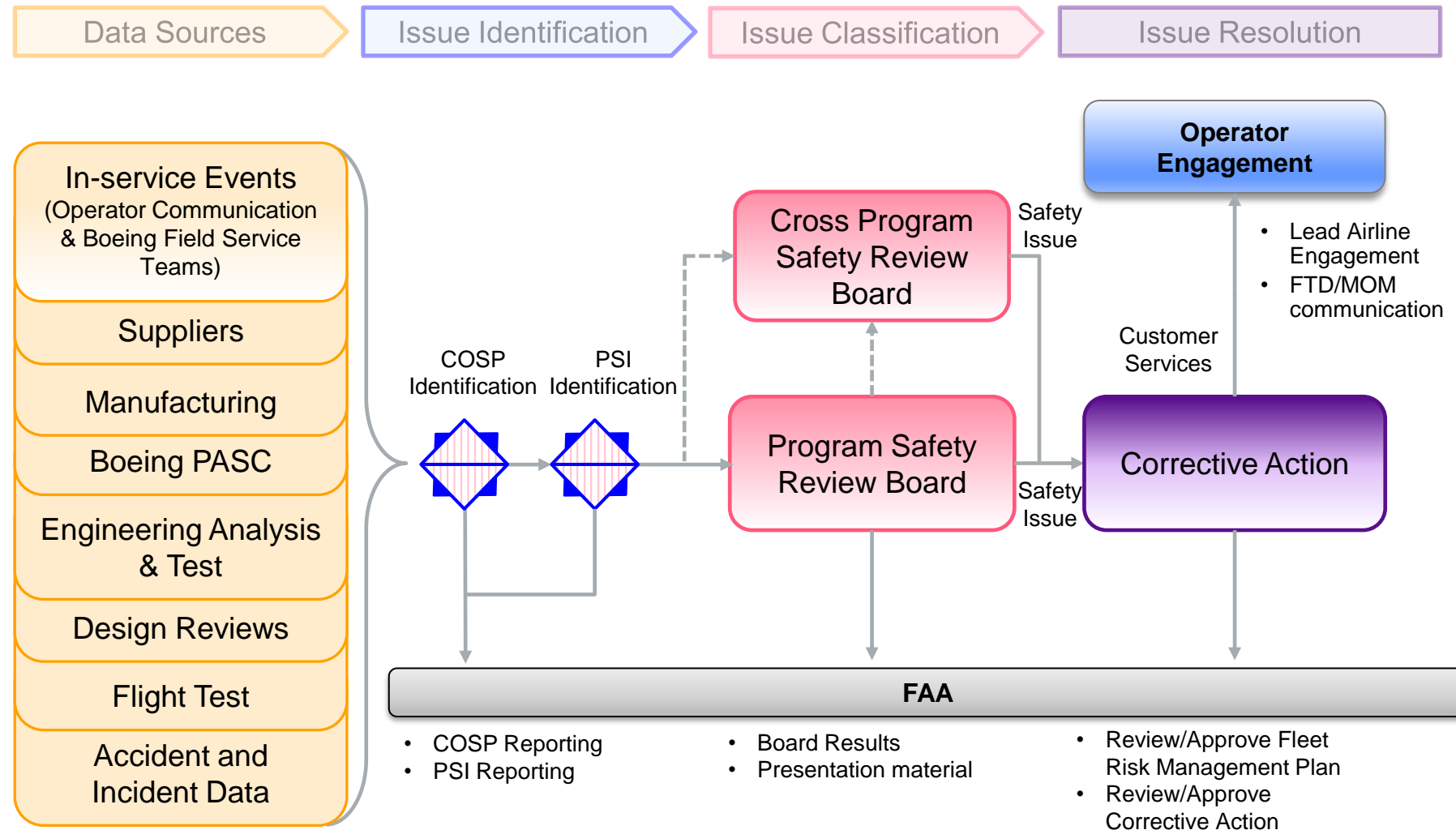


COSP Criteria	PSI Criteria
Satisfies and expands upon the reporting requirements in FAR 21.3	Identifies safety-significant events and conditions
Example: Any event that results in Engine, wing, or fuselage contact with the runway	Example: Any event that results in Engine, wing, or fuselage contact with the runway. Exclude events related to weather conditions such as gusting crosswinds, microbursts, or downdrafts associated with thunderstorms.

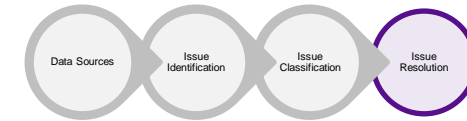
BCA In-Service Safety Process



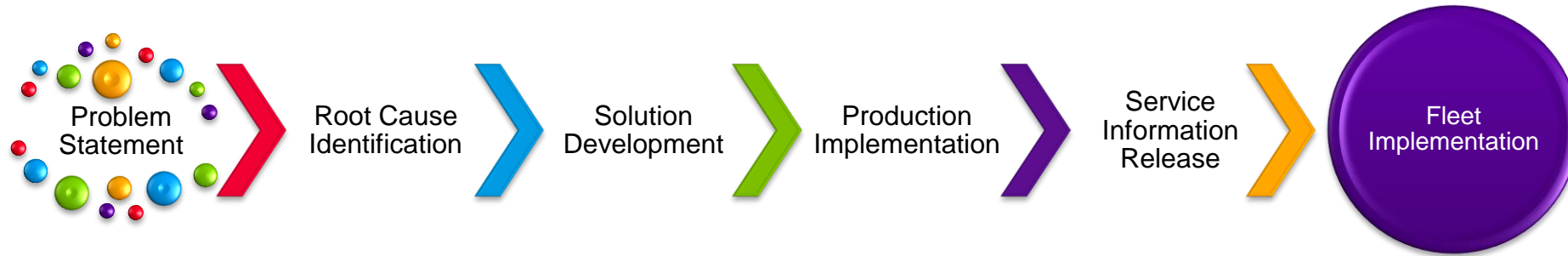
BCA In-Service Safety Process



BCA In-Service Safety Process



Safety Solution



The solution process, led by Boeing, engages operators, the FAA, and suppliers

The output of the process is production implementation and/or service information released to the affected fleet

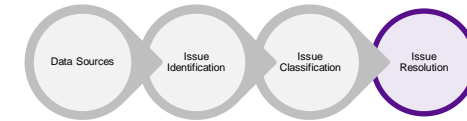
Compliance Recommendation

The compliance time associated with recommended accomplishment time for operators in service actions (e.g. service bulletins)

Considerations include, but are not limited to, the following:

- Overall risk for the issue
- Complexity of the change and time needed for incorporation
- Operators maintenance schedules
- Time needed for develop and certify the solution

BCA In-Service Safety Process



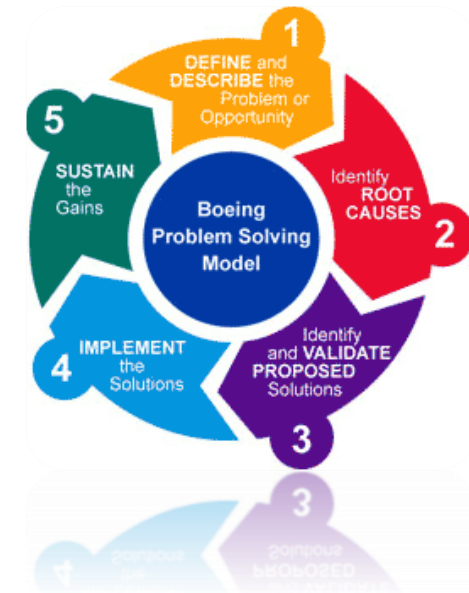
Safety Lessons Learned

The process identifies what within the Boeing design or build system allowed the unsafe condition to develop, and modifies the system to prevent reoccurrence

- Provides a variety of root cause analysis tools
- Includes review of design guides, process documents, requirements

Boeing uses the Boeing Problem Solving Model (BPSM) for development of Safety Lessons Learned

- Process provides a rigorous approach for determining actionable root causes and developing corrective actions



Safety Initiatives

Boeing Safety Practices & Culture

Enhanced Oversight
Safety Management System

Advanced Analytics

Boeing Safety Intelligence



Causal Chain

Operational Safety

Global Aerospace Safety Initiative

Transparency & Learning

Safety Experience at Boeing

Serve the global aerospace safety ecosystem

Global Aerospace Safety Initiative

Vision

- We will be industry leaders in global aerospace safety

Mission

- We serve, integrate and champion aerospace safety through humility and inclusion for those who depend on, operate, build, train and maintain our products



Boeing Global Aviation System Safety

Aviation Safety

Accident Prevention Initiatives

FAA CAST/JIMDAT Working Groups

ASIAS Data Requirements and Analysis

Regional Aviation Safety Groups (RASGs)

Collaborative Safety Teams (CSTs)

Safety R&D and Product Safety Enhancement

Human Factors

Regulatory Capability

Enhance CAA Oversight

CAA Gap Assessment and Audit Preparations

- FAA IASA
- ICAO USOAP
- EU Safety List
- ICAO SSP-IA

Assistance with Corrective Action Plans

Training Coordination Assistance

Regulatory Readiness

Operator Regulatory Approvals

New Airplane Model Introductions

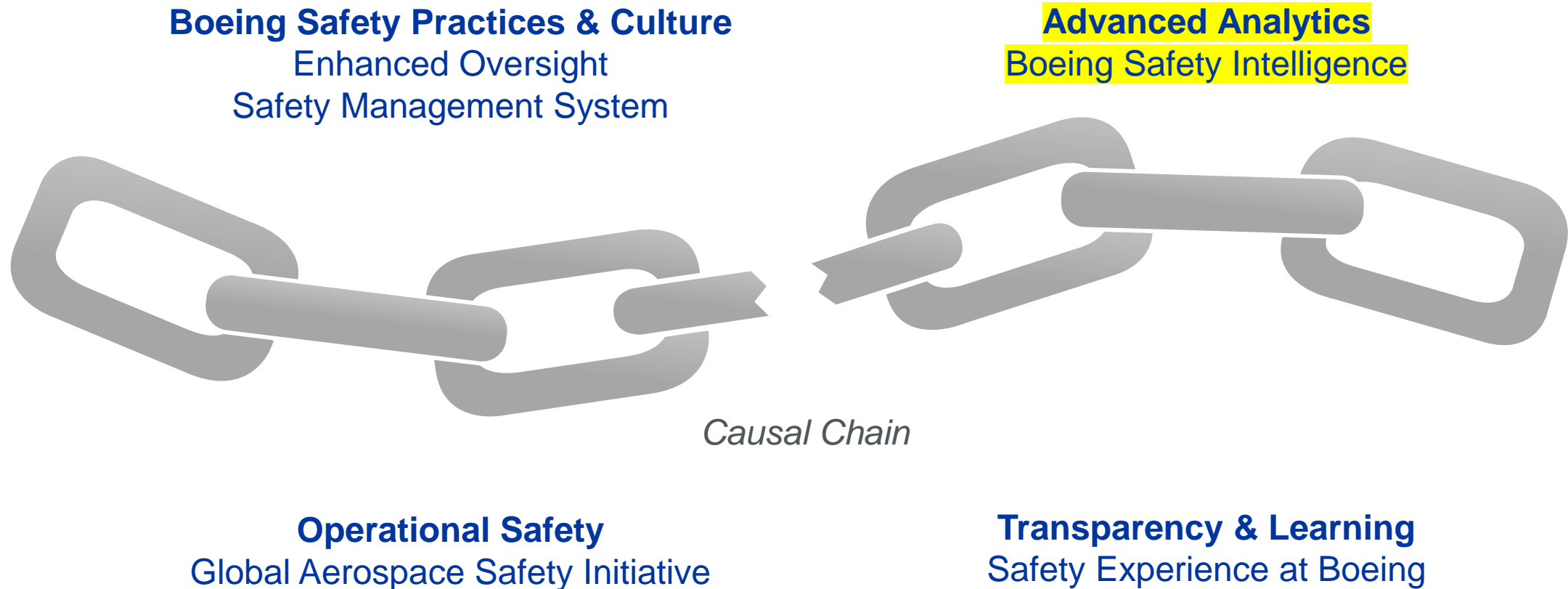
FAR-129, ETOPS, Polar Ops, Network Security Programs

Equipment Compliance

Regulatory Engagement Facilitation



Safety Initiatives



Serve the global aerospace safety ecosystem

Aerospace Safety Analytics



Delivering Insights for Predictive Action

Predict hazards to prevent accidents and improve fleet safety



Acquiring and Aggregating Data

Monitor safety performance across design, manufacturing, and global fleet operations



Data Analytics Enables SMS

Build on a standard industry approach to advance a more holistic and predictive Safety Management System (SMS)



Building Analytics Capability

Enable a culture of transparency and engineering excellence; improve product and services safety performance

Our mission is to prevent accidents, injury, or loss of life

Safety Initiatives

Boeing Safety Practices & Culture

Enhanced Oversight
Safety Management System

Advanced Analytics Boeing Safety Intelligence



Causal Chain

Operational Safety

Global Aerospace Safety Initiative

Transparency & Learning
Safety Experience at Boeing

Serve the global aerospace safety ecosystem

Safety Experience at Boeing

- A global digital safety experience
- Scalable and intimate learning
- Drawing from history, accidents and design decisions



<https://safetyexperience.boeing.com/>

Advance Boeing's learning, safety culture through a digital experience

