



Flight Safety Foundation

72nd International Air Safety Summit 2019

State of Aviation and Aerospace Industry in Asia-Pacific Region

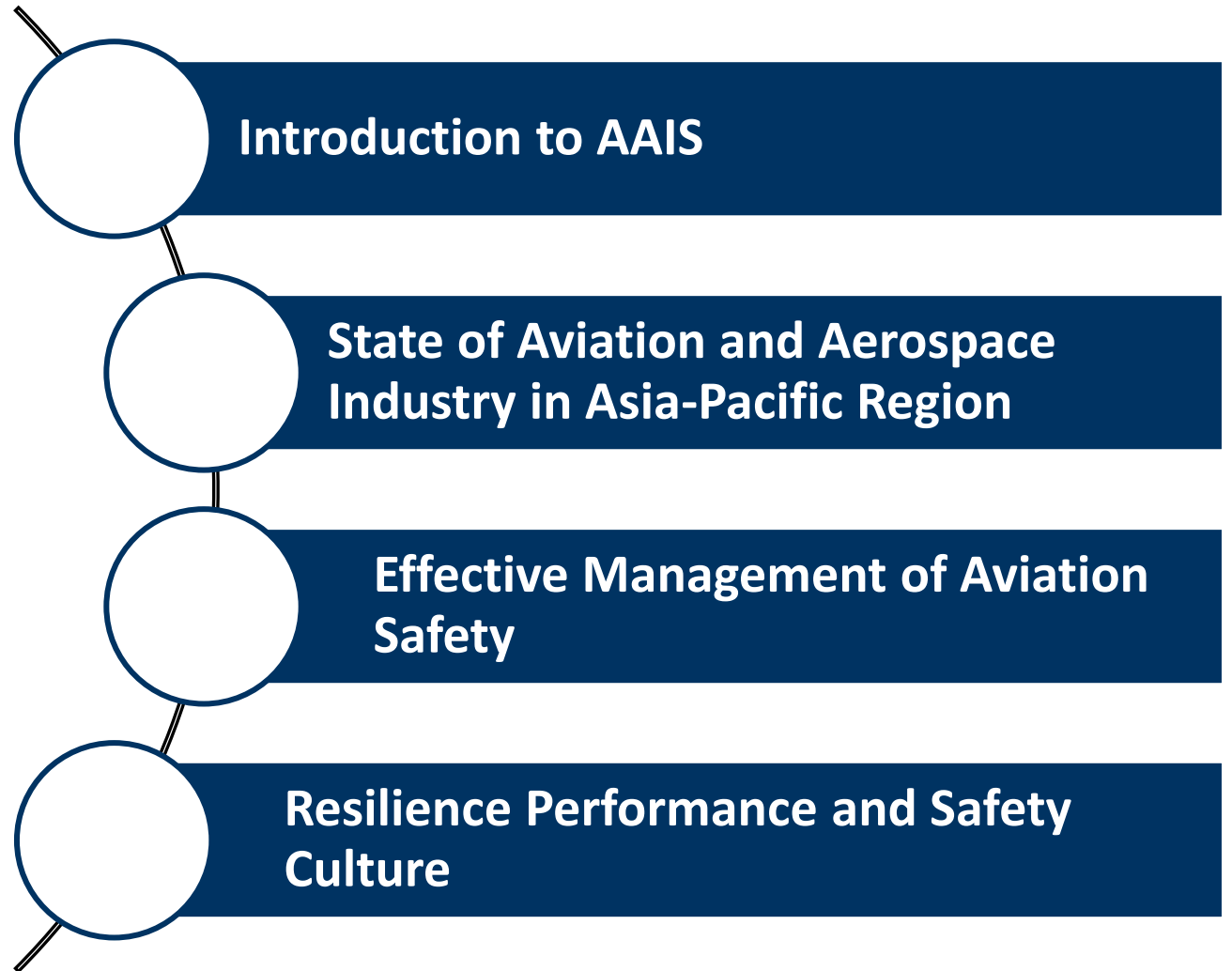
Chow Kok Wah
Member, Panel of Experts
Former Hon. Treasurer/Asst Hon. Secretary
Association of Aerospace Industries Singapore

For more information, visit www.aais.org.sg



*Association of
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(Singapore)*

Agenda



Our roles

Association of Aerospace Industries Singapore (AAIS)

Voice of Industry



Government dialogue
Thought leadership
International relations

Facilitate Business



Trade events
Technology seminars
Business seminars

Engender Community



Business networking
Corporate team bonding
Careers & development

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Some members of AAIS



Singapore Institute of Aerospace Engineers



ST Engineering
Aerospace



BOMBARDIER

members:

145

companies

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Our education institution members



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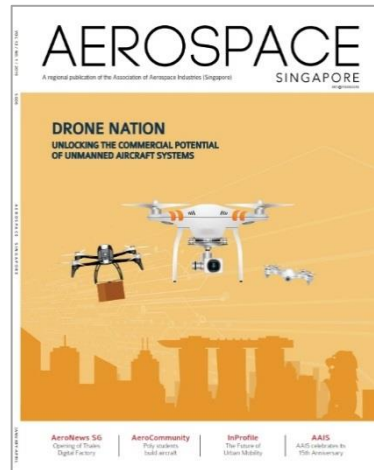
Introduction to AAIS

*“An innovative
Aerospace community
for a sustainable future”*



*Unmanned Aircraft Systems

Our publications



Aerospace
Singapore



Singapore
Industry Directories



Asia-Pacific Aviation
Directory (online)

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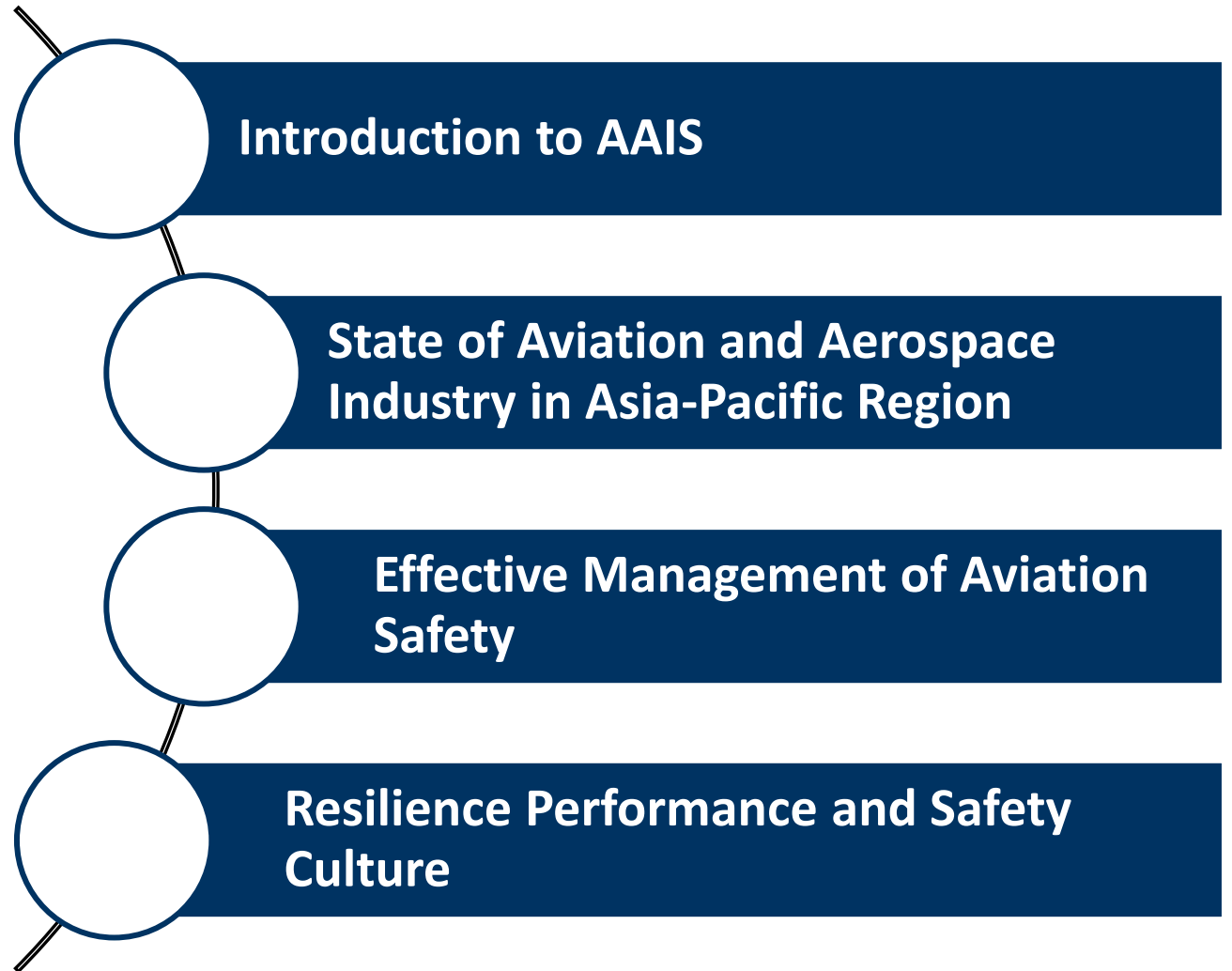
Our international cooperation partners



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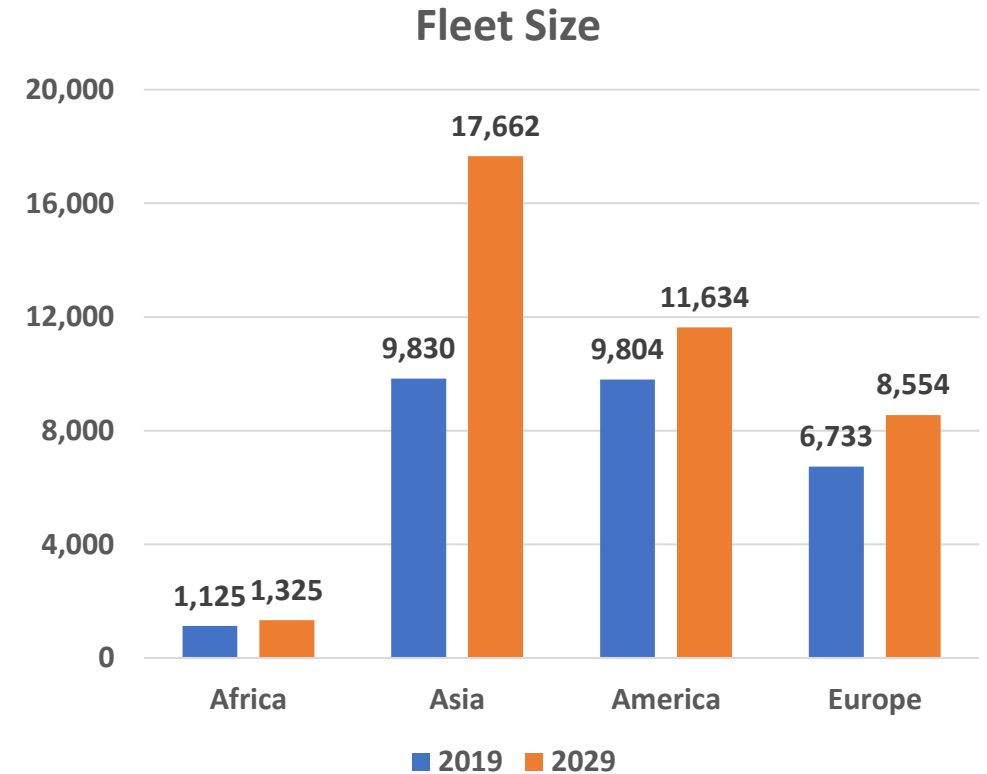
Global Projected Fleet Size:

- 27,492 aircraft (2019)
- 39,175 aircraft (2029)
- 42% increase



Asia Pacific Fleet Size:

- 79% increase



Source from Oliver Wyman Global Fleet & MRO Market Forecast Commentary (2019-2029).

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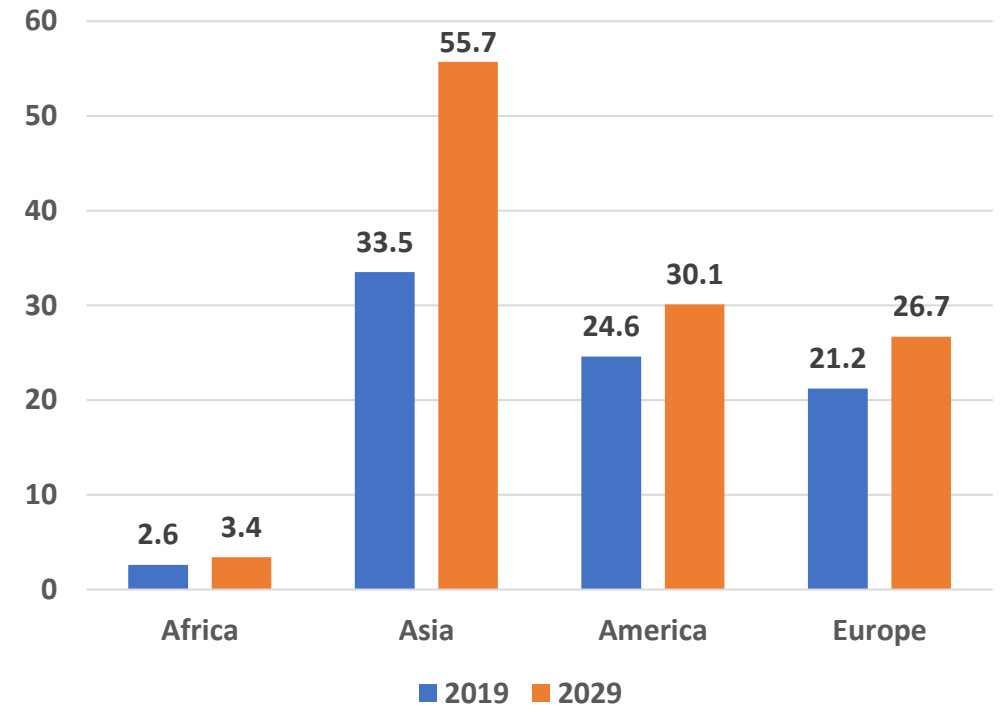
Global MRO spending:

- US\$81.9bil (2019)
- US\$116bil (2029)
- 41% increase



- 66% increase

MRO Spending (in US\$ Billions)



Source from Oliver Wyman Global Fleet & MRO Market Forecast Commentary (2019-2029).

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Global Industry Rate:

- 0.29 (2013-2017)
- 0.19 (2018)

Asia-Pacific Rate:

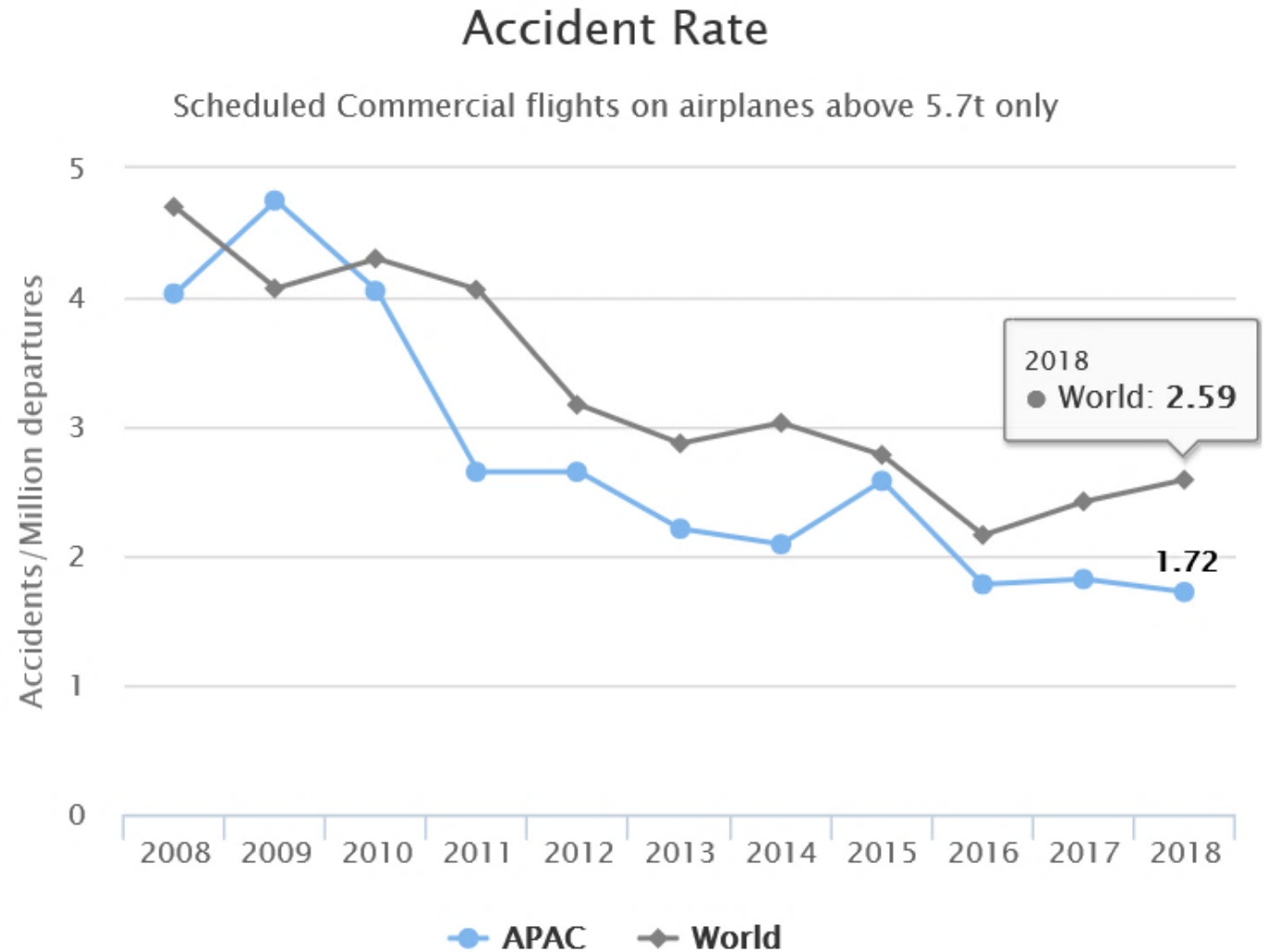
- 0.37 (2013-2017)
- 0.32 (2018)

Safety Performance



Source from IATA Annual Review 2019.

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Source from ICAO Accident Statistics.

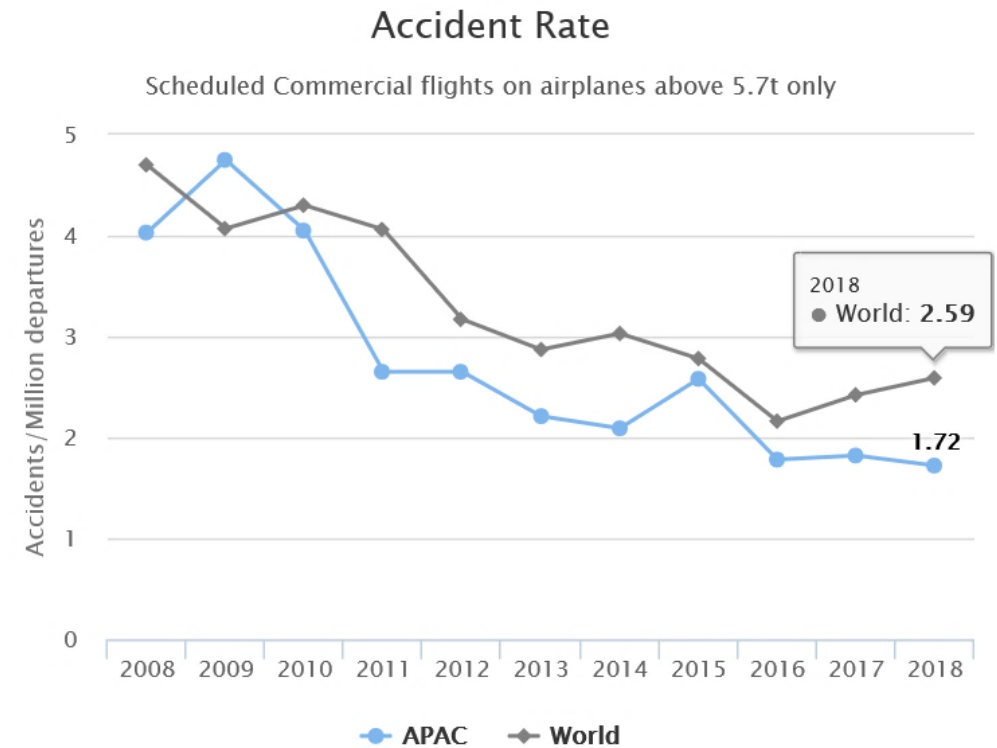
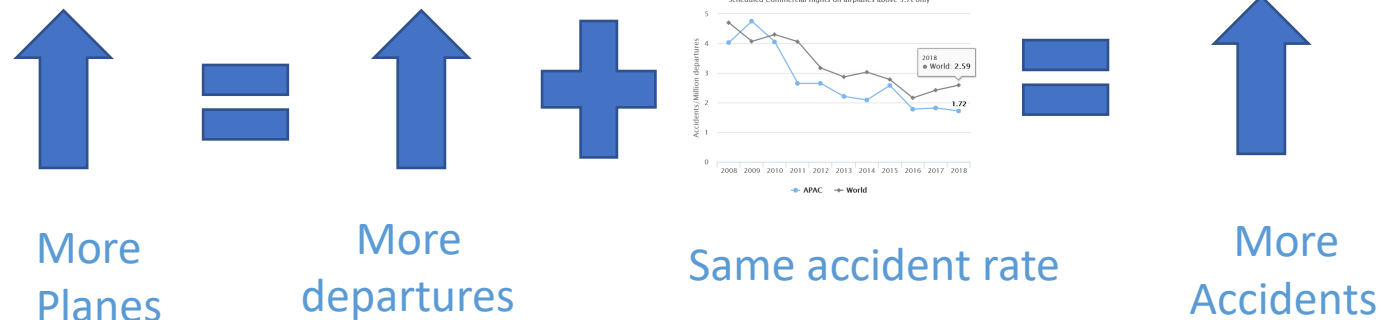
<https://www.icao.int/safety/iStars/Pages/Accident-Statistics.aspx>

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Source from ICAO Accident Statistics.

<https://www.icao.int/safety/iStarsPages/Accident-Statistics.aspx>

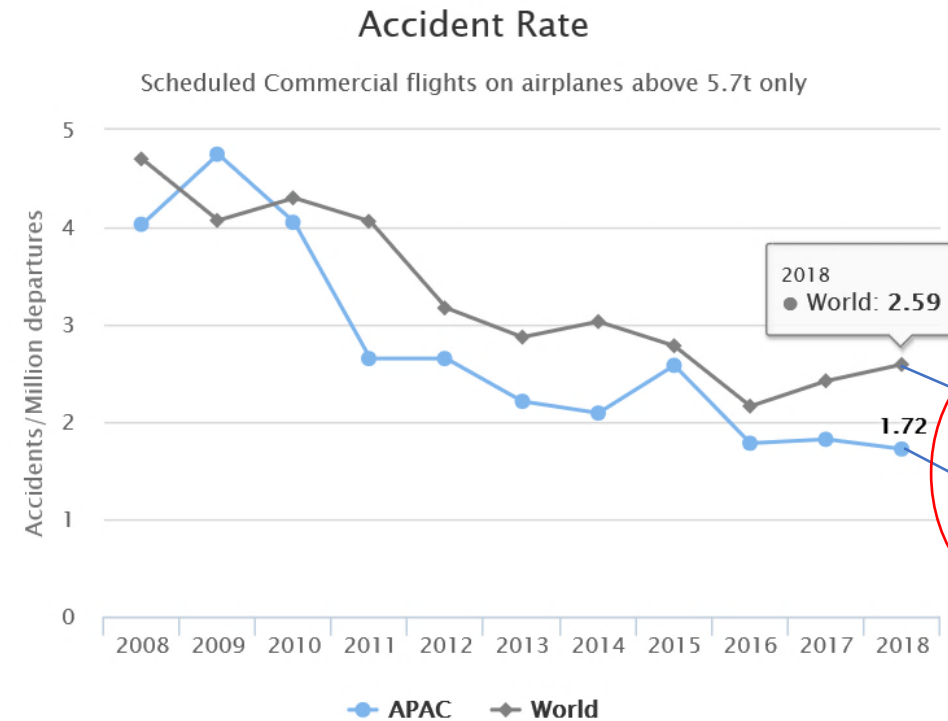
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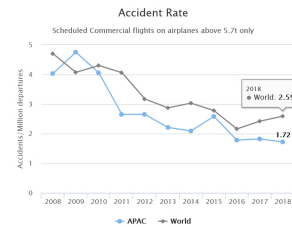
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More
Planes



More
departures



Same accident rate



More
Accidents

Source from ICAO Accident Statistics.

<https://www.icao.int/safety/iStarsPages/Accident-Statistics.aspx>

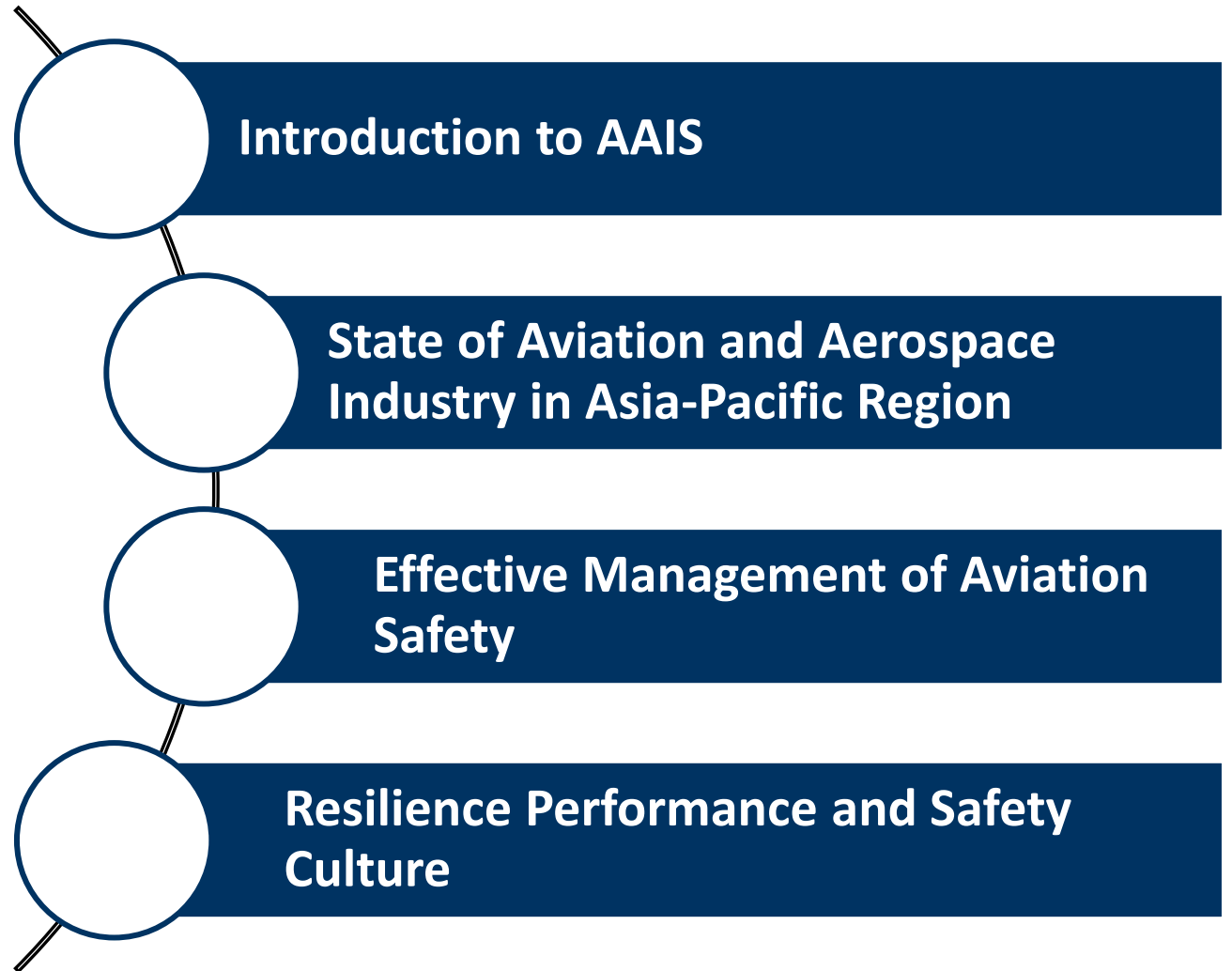
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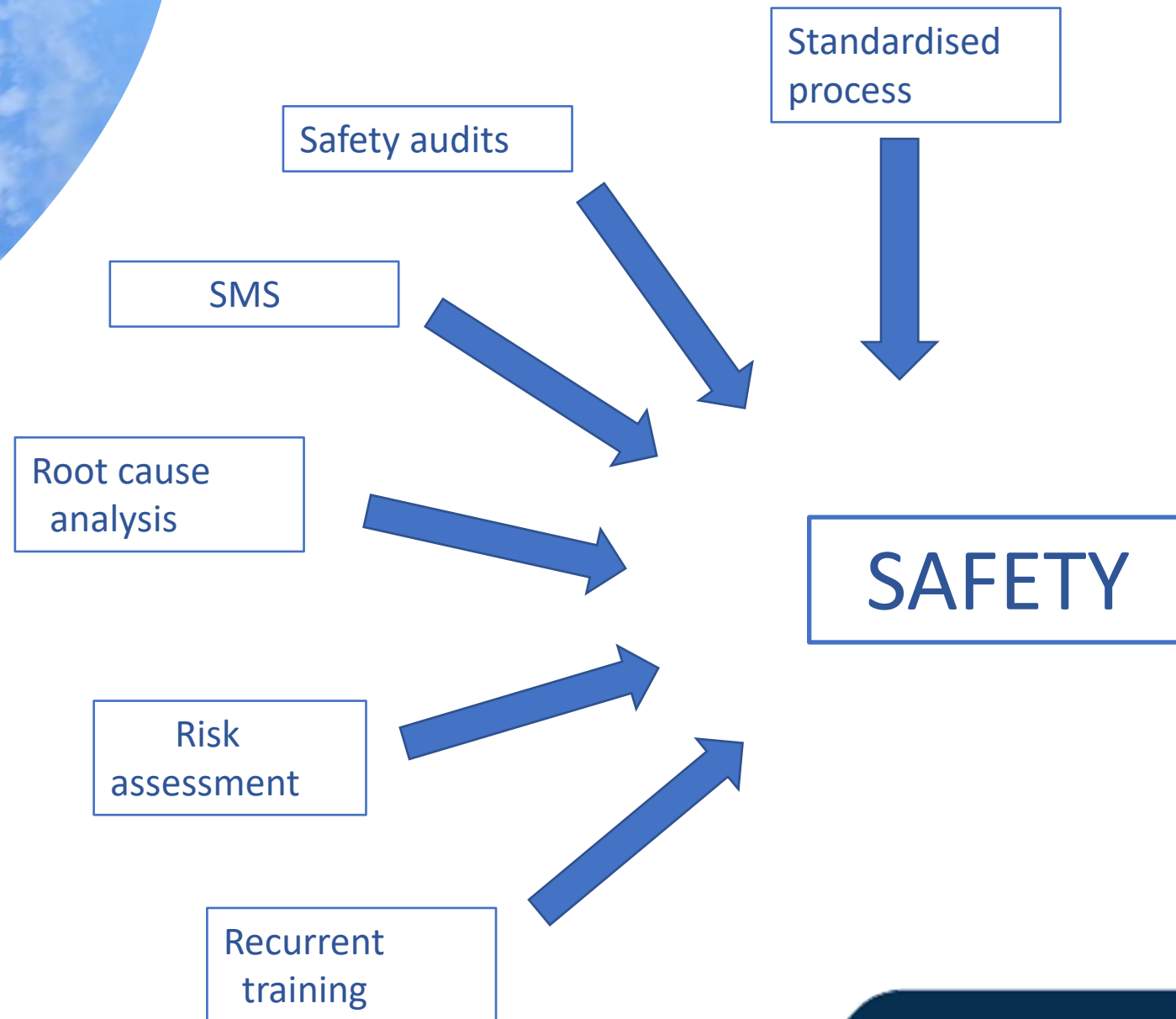


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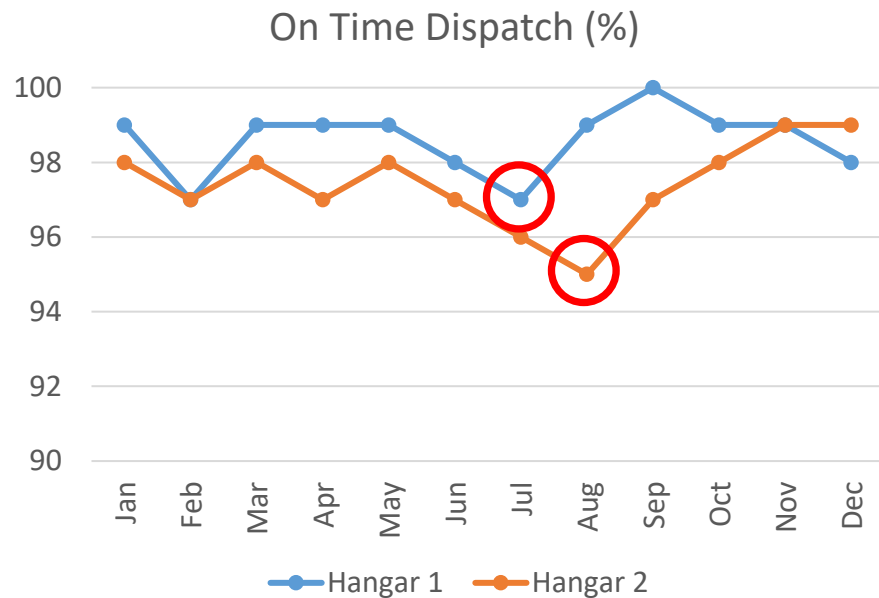


Effective Management of Aviation MRO Safety- -- Past Tools



Traditional Approach to Safety (Reactive)

- Usually focus on what went wrong (i.e. incidents, accidents, near misses)
- Corrective actions are derived based on negative/adverse outcomes to prevent further occurrences
- Constantly trying to avoid errors and reducing it to the minimum
- Reactive approach to safety (we act after something went wrong)

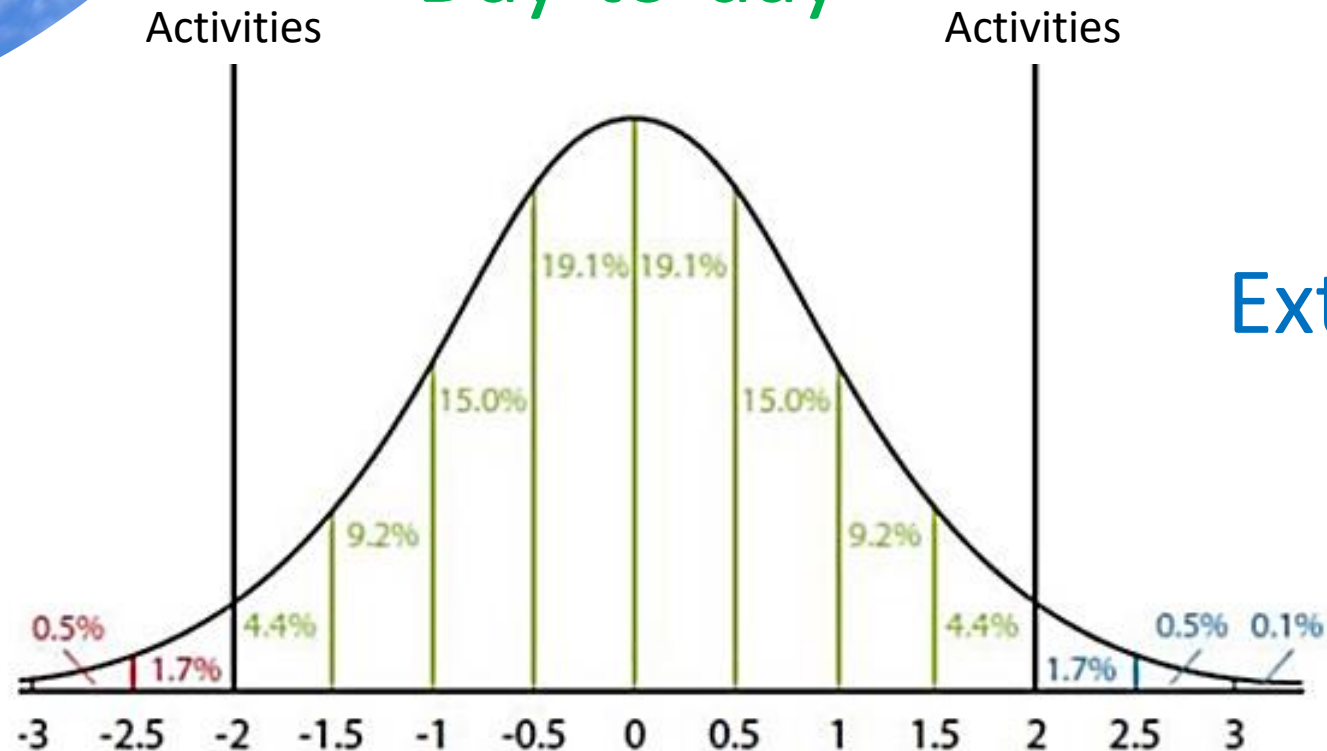


Traditional Approach to Safety (Reactive)

Mishaps

Day-to-day

Extraordinary



New Approach to Safety

Concept introduced by Prof Erik Hollnagel,
University of Southern Denmark

- Instead of focusing solely on errors/what went wrong, also understand what went right
- Processes are implemented based on positive outcomes to enforce successful behaviors
- Constantly trying to achieve success
- Proactive approach to safety (what went right)

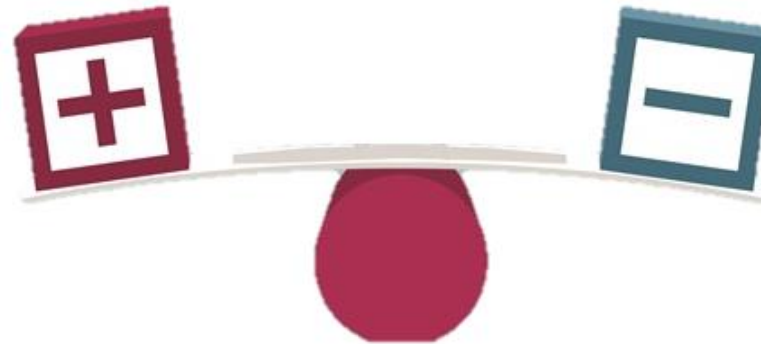
Traditional versus New Approach

New Approach

- New approach looks at the 'positive'
- Proactive/Anticipating events
- More resources are required

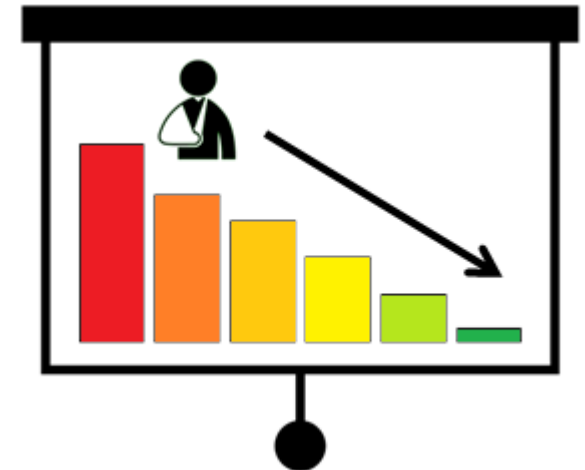
Traditional approach

- Traditional approach looks at the 'negative'
- Reactive
- Corrective actions devised only when something happens



Both have to complement each other

**Strong Safety
Culture: Promote
Safety Awareness**



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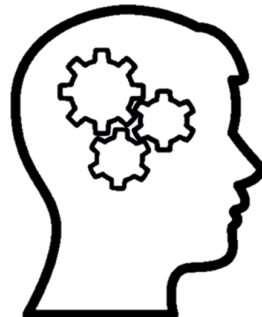


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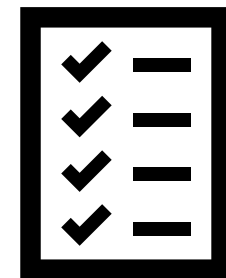
Case Study: SIA Engineering Company Quality Initiatives

Initiatives to Further Enhance Safety Performance

Safety Promotion
Centre



Maintenance Line
Operations Safety
Assessment
(M-LOSA)



Initiative #1: Safety Promotion Centre



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Initiative #2: Maintenance Line Operations Safety Assessment (M-LOSA)

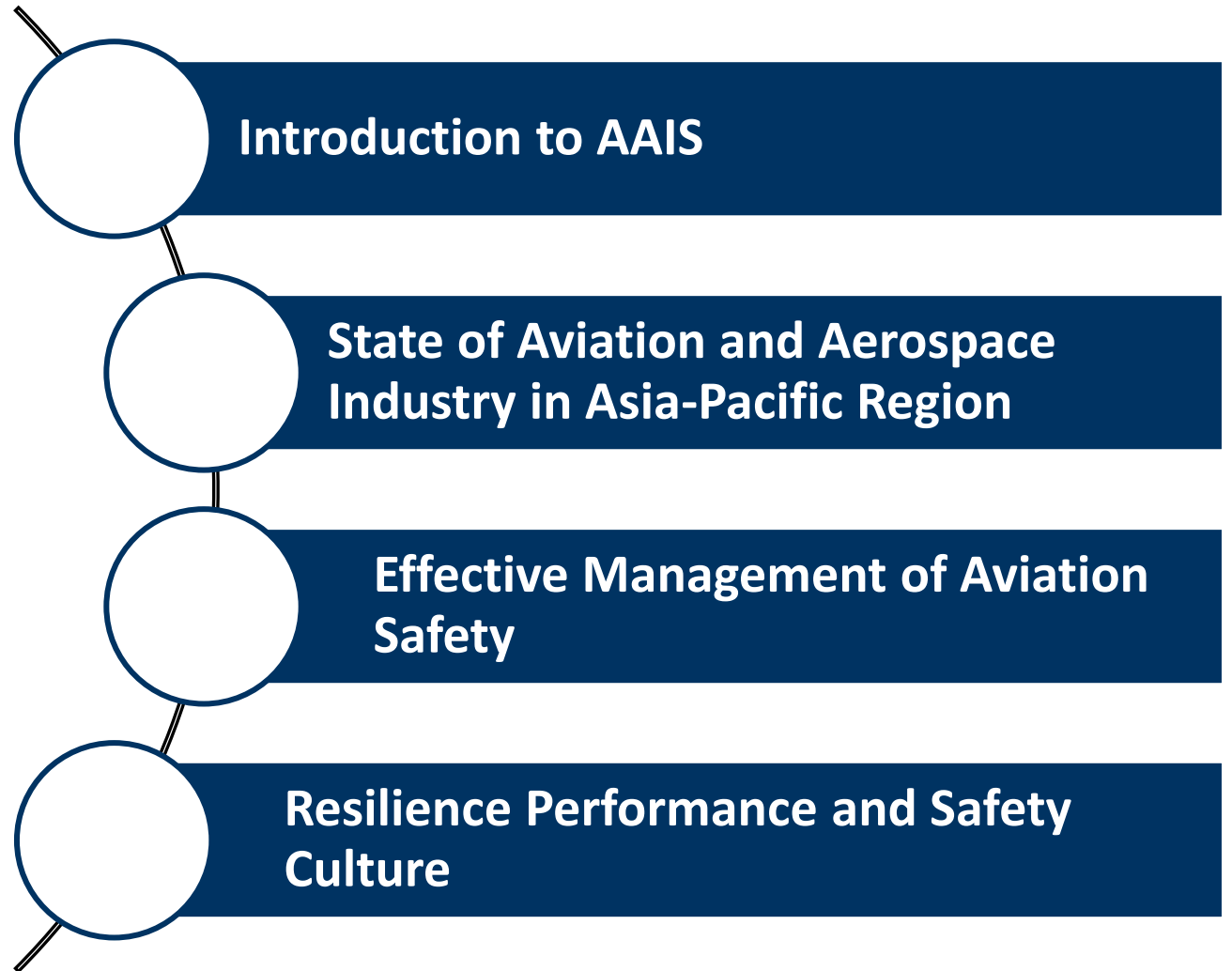


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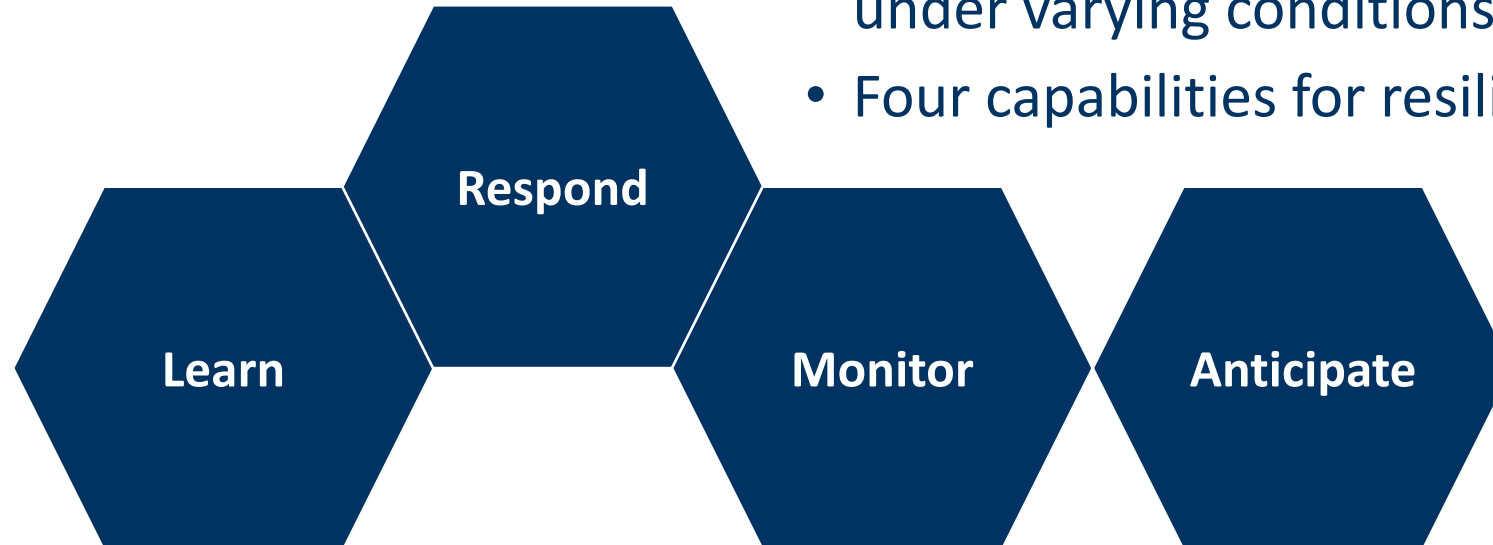
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Resilient Performance

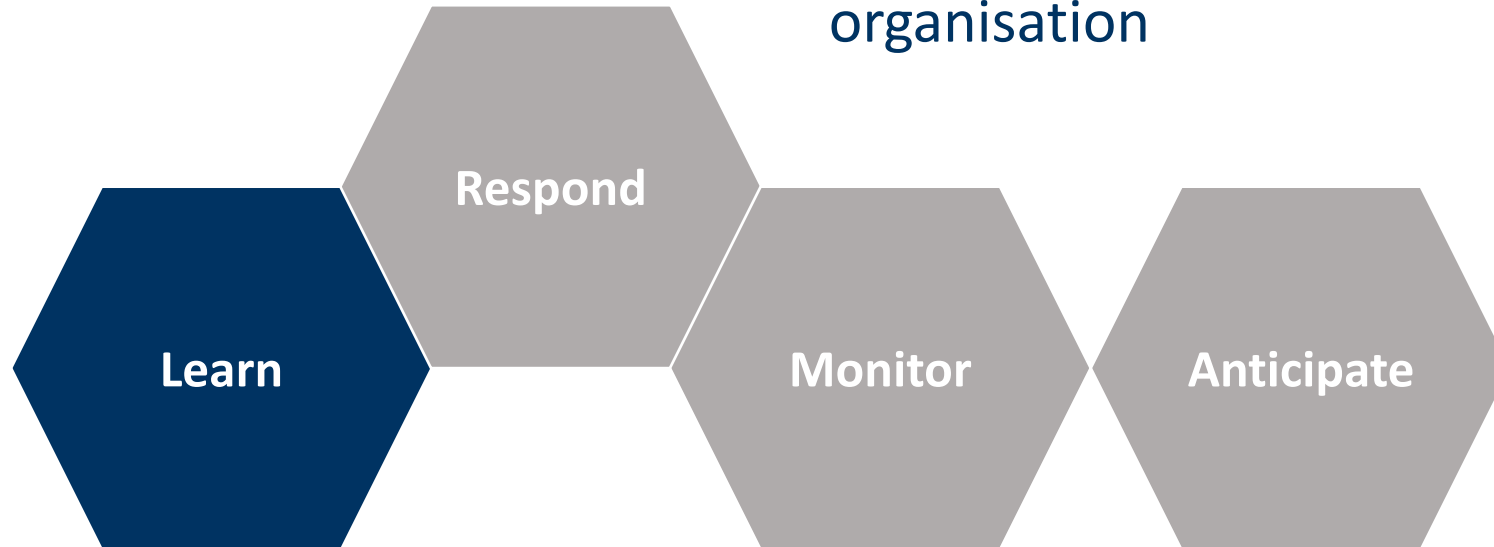
**Concept introduced by Prof Erik Hollnagel,
University of Southern Denmark**

- Resilience (noun)
 - an ability to recover from or adjust easily to misfortune or change
- Organisation is resilient if it can function under varying conditions
- Four capabilities for resilient performance



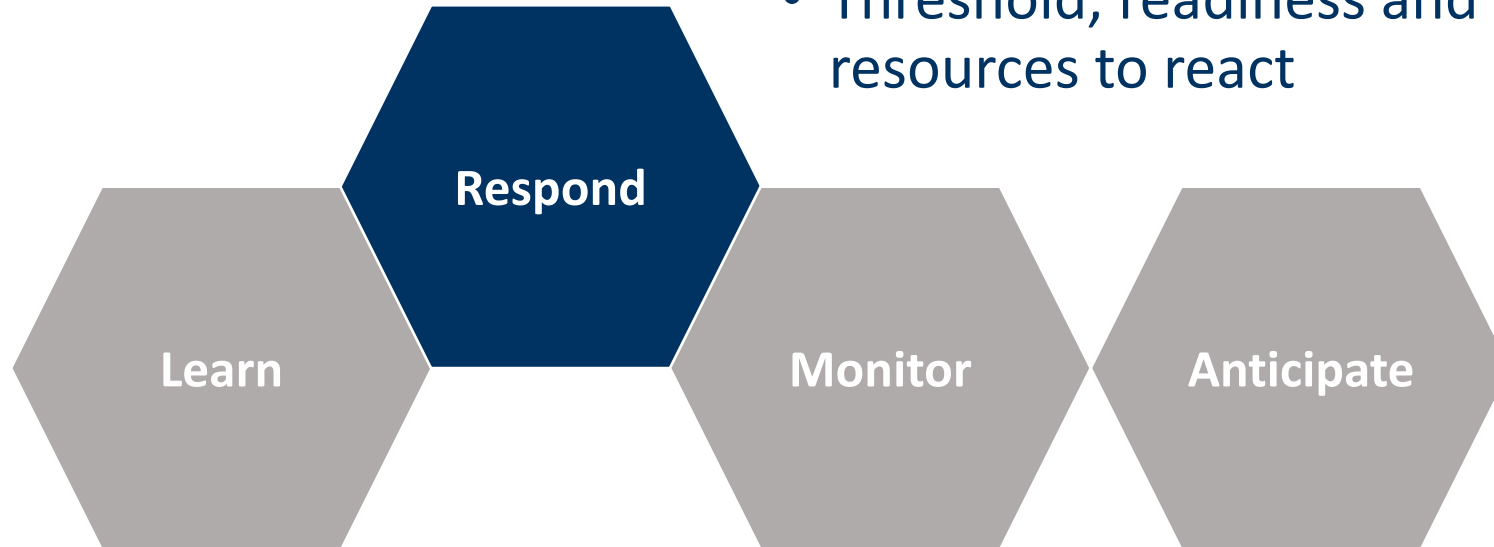
Resilient Performance

- Able to learn from the experiences and improve from it
- Data collection and analysis
- Learn from failures as well as successes
- Dissemination of learning within the organisation



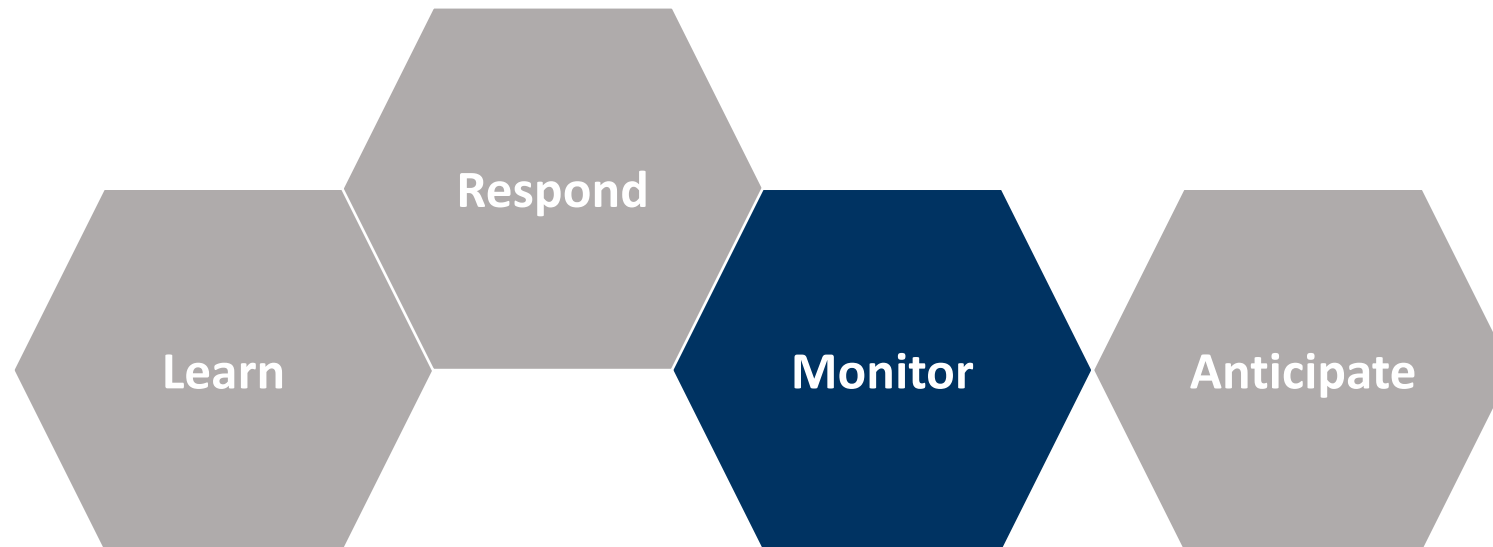
Resilient Performance

- Able to react/respond to opportunities and risks
- Identification of possible risks and reaction plan
- Routine verification of risks
- Threshold, readiness and allocation of resources to react



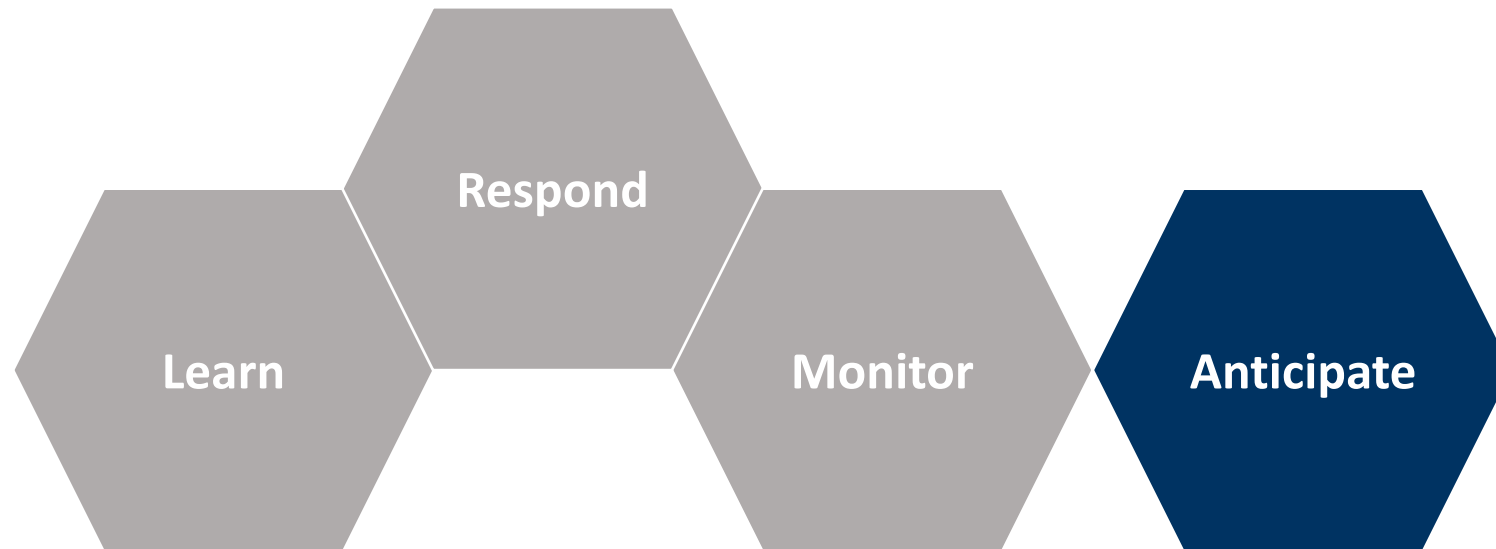
Resilient Performance

- Able to monitor performance
- Establish performance indicators/indices for measurement
- Indicators reviewed on a regular basis



Resilient Performance

- Able to expect prospective opportunities and risks
- Frequency of assessment
- Short and long term evaluation of opportunities and risks

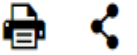


Conclusion

- With the growth in global air traffic and increasing complexity of aviation systems, there is also a demand and expectation for parallel improvements in aviation safety
- Traditional regulatory approach which is mostly based on the establishment of prescriptive requirements, should be complemented by performance-based approach
- Promotion of a strong safety culture can be done through the use of enabler tools, such as Safety Promotion Centre and M-LOSA programme
- Having a resilient mindset in an organisation allows one to achieve safety in a VUCA landscape

New Tools for Safety – Data Analytics

IATA and CAAS Launch Global Safety Predictive Analytics Research Center



The International Air Transport Association (IATA) and the Civil Aviation Authority of Singapore (CAAS) have signed a Memorandum of Collaboration (MoC) to establish a Global Safety Predictive Analytics Research Center (SPARC) in Singapore.

SPARC will utilize predictive analytics to identify potential aviation safety hazards and assess related risks by leveraging the research capabilities in Singapore, and operational flight data and safety information that are available under IATA's Global Aviation Data Management (GADM) initiative. End users across the aviation community can then work collaboratively at the system level to address and implement appropriate safety



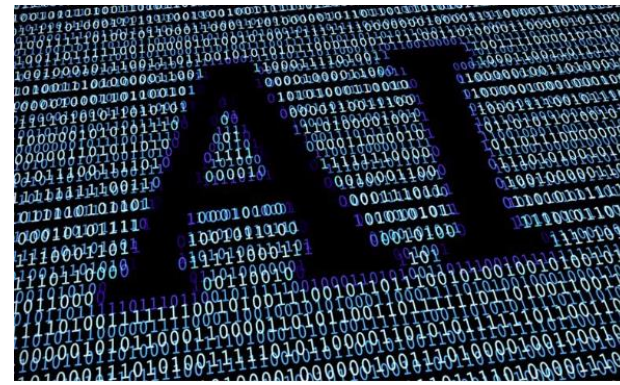
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New Tools for Safety – Artificial Intelligence (AI)

- AI has tremendous potential and is being used in many fields
- AI and image recognition have relevant applications to aviation e.g. to identify hazardous situations on the airport apron



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My Observations of Safety

- Change in personnel structure in aerospace industry.
- New generation of aircraft will require less maintenance. This will lessen number of maintenance lapses
- But new generation of aircraft is highly automated and require less intervention. But it is also more complex and more training is needed

My Observations of Safety

- Safety is ranked No. 4 by human nature
- There is no cruise level in safety. Safety is walking up the down escalator. If you do not keep moving up, you are going down
- If you stop at a red light on a country road with no one in sight, then you are a true believer in safety
- Do not take away a traffic light because there are no more accidents. There are no accidents because there is a traffic light



Thank you!

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