



# ICAO Competition: Innovation and Resilience

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## ICAO guidelines for the competition

### Team Requirements:

- Teams of max 5 students
- Final year of the Bachelor (with official letter)
- Master students



### Content guidelines:

1. Focus on resilience
2. Cover the 5 ICAO Strategic Objectives
3. Take into account the ICAO SDGs (~SDG 9)



1. „By resilience, we mean the ability of the sector to ensure the continuity of air mobility“
2. <https://www.icao.int/about-icao/Council/Pages/Strategic-Objectives.aspx>
3. <https://www.icao.int/about-icao/aviation-development/pages/sdg.aspx>

“Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”

### Competition Requirements:

- Deadline **30.09.2023**
- Write a report of **2000** words
- Create renderings and videos
- Prepare a presentation (5 slides)



### Opportunities:

- Participation in the **Innovation Fair 2024 in Montréal** as winning team
- **Demonstrator** of the concept (3D printer, simulations, etc.)
- Conversion of the work into a **thesis at the ILR**, for each student respectively



# ICAO Innovation Competition: Innovation and Resilience

Resilience is the goal of the ICAO competition

- **What?** Propose a **resilient** concept
- **How?** Support the **advancement** of the **SDGs**, especially **SDG 9**  
*“Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”*
- **Why?** Ensure the **continuity** of aviation!

What is **Resilience**? Capability to deal with disruptions:

1. **Preparation:** be prepared to adverse events
2. **Prevention:** avert and decrease the occurrence of events (be disincentive/adaptive)
3. **Protection:** minimize negative impacts (be robust)
4. **Reaction:** respond quickly to adverse events (be flexible)
5. **Recovery:** use learning effects to be better prepared for the future




Technologies  
Sustainability  
Digitalisation  
Management

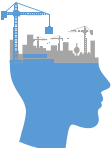
# ICAO Innovation Competition: Innovation and Resilience

How to be resilient in Aviation?

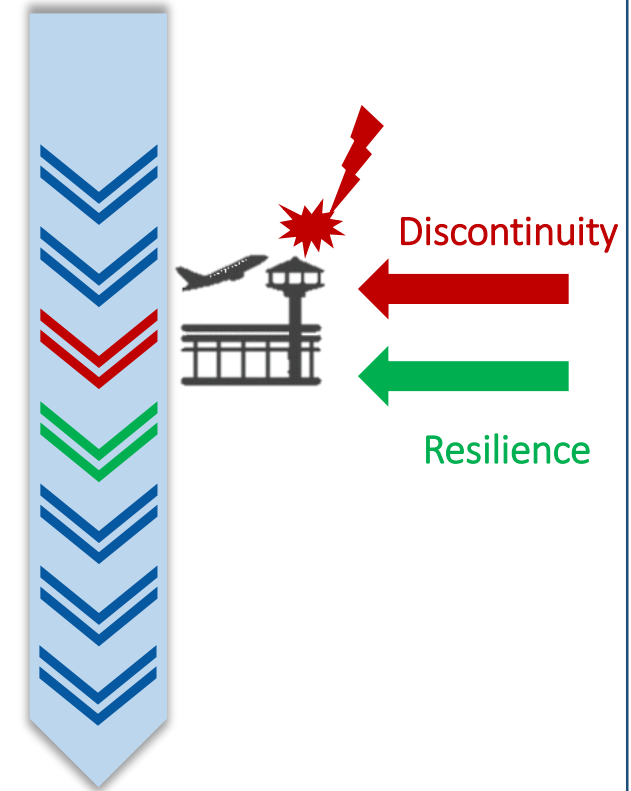
What is Resilience? Capability to deal with disruptions

 **Technologies** → Engine, Fuel, lightweight materials, system integration

 **Sustainability** → Social, economical and ecological

 **Digitalisation** → Database, simulations, prognosis and optimisation

 **Management** → Knowledge management



Sustainable, safe, secure, enhanced, economical-viable Aviation

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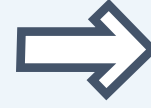
What might happen in Aviation where Resilience is needed?

Resilience in the aviation: be prepared to face *potential* disruptions....

Avoid closed borders or countries → Security:

- New travel rules and guidance
- Digitalisation 

1

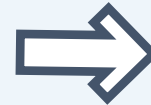


2

Reduce CO2 → Sustainability:

- New technologies (e.g. fuel solutions)
- Reusable aircraft (avoid/change the production)

3




4

Too much air traffic → Air Navigation Efficiency:

- New solutions (e.g. lower altitude)
- New infrastructure
- New aviation sectors (UAM)

Not enough pilots → Air Navigation Capacity:

- New training process (Digitalisation) 
- New aviation management

...

... or unexpected problems.



Politics (crises, etc.), Finance (crises) , Economics, Environment (apart from CO2-emissions related sources, also volcanos, deserts, etc.), Cybersecurity, etc.

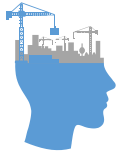
# ICAO Innovation Competition: Innovation and Resilience

How to deal with the ICAO competition?



What to do →

Design an aerial vehicle concept with innovative technologies (related systems/processes) that makes the aviation system able to counteract to one or many threats



Aviation system-wide perspective → Aircraft, airport, traffic management, production, services, other (e.g. training for the pilot, etc.)



**Always in mind:** Reduce inequality, inclusive development, economic growth, education and health for everyone, decent work for all (SDG 8, 9, 12, 13)



# ICAO Innovation Competition: Innovation and Resilience

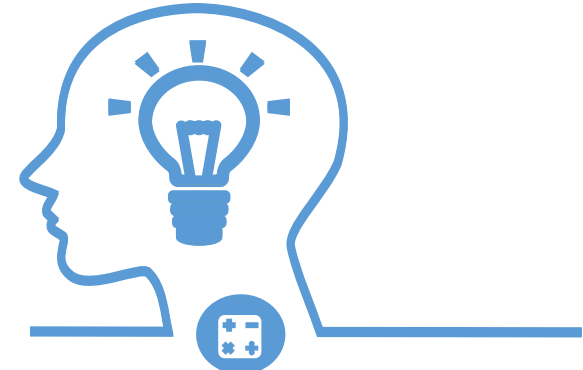
How to deal with the ICAO competition?



What is the most significant **scenario to tackle**?



Which **aviation sector** is the target?  
Global civil aviation, private aircraft, UAM, etc.



What **resilient approach** to face the selected adverse event(s)?  
Propose an **idea/solution!**



- Design something totally new or adjust already existing?
- Focus on aircraft concept, system and/or the context?
- How to realise and integrate it into the aviation?

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*Suggestion only*



# Join us to ensure the continuity of aviation!

Contact:

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- Questions?

