

INNOVATION

FAIR

12

MARCH
2024

14



Session 6

Digitalizing certification processes:
for more robustness and efficiency



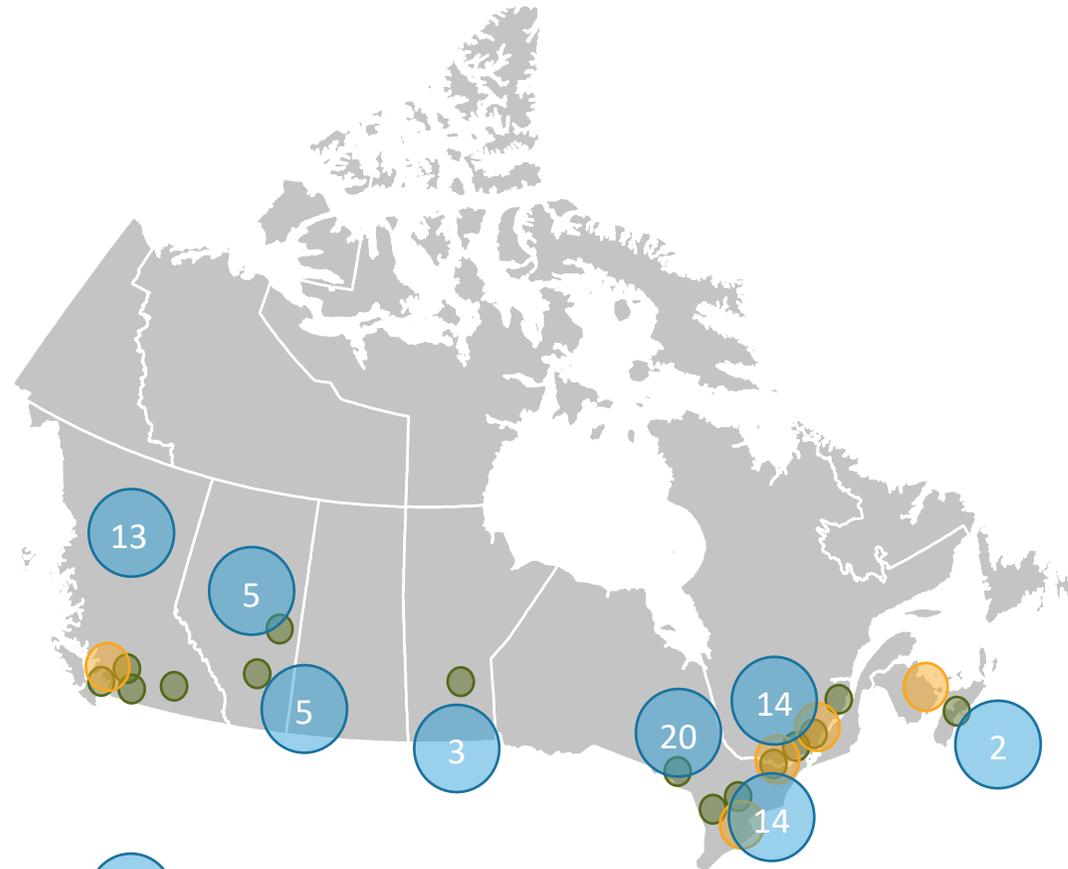
Phil Cole

VP Business Development, Certification Center
Canada

Certification Map of Canada

Background

Setting the scene in Canada for this panel discussion



- DARs across Canada
- 5 TCCA Regions across Canada
- DAOs across Canada

The goalposts keep moving and the stakes keep getting higher



Everything is changing - fast

- New technologies
- New infrastructure
- New operational models
- New target pricing paradigm
- New propulsion and energy
- New industry players
- More and more software
- More and more complexity

Overarching environment

- Less experienced certification and regulatory staff available
- Must maintain safety and security
- Must develop new regulations and guidance materials

Business imperative is eternal

MUST DO IT QUICKER AND CHEAPER

Which came first, the chicken or the egg?

How can we resolve these two conflicting positions

Why is digitalizing certification processes for more robustness and efficiency so important right now

How is it going to help

Let's find out

Panel Speakers



Paweł Stężycki, PhD. Eng

IFAR Vice Chair

Director General at Institute of Aviation



Derek Graham

Head of Business Innovation, SITA for Aircraft



James Bell

Innovation Strategy Lead

UK Civil Aviation Authority



Roei Ganzarski

CEO, Alitheon



Alain Leroy

EASA Chief Engineer



Paweł Stężycki, PhD. Eng.

IFAR Vice Chair

Director General at Institute of Aviation

IFAR

International Forum
for Aviation
Research

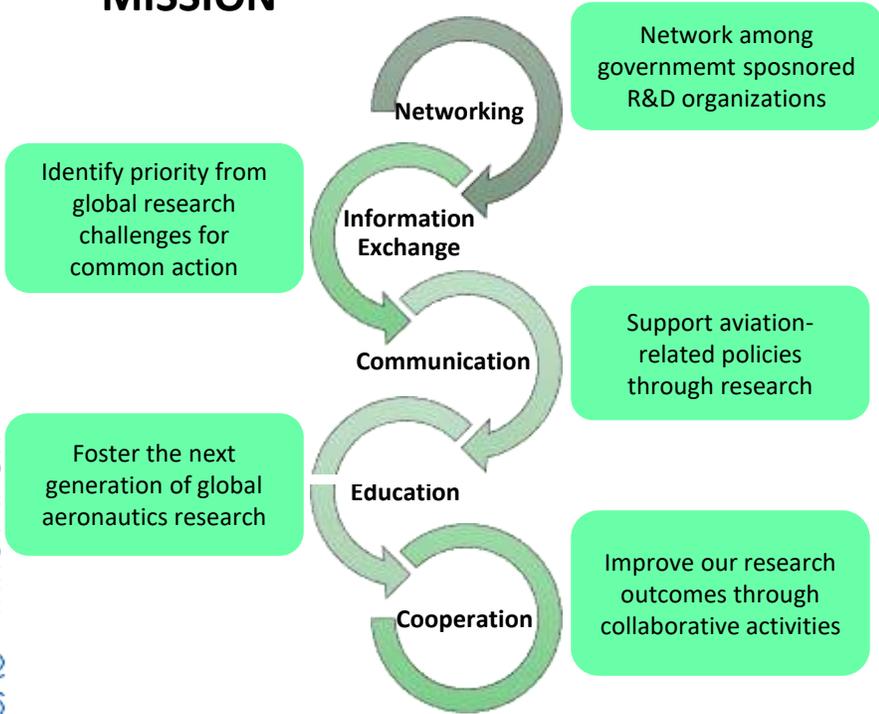


40 000
researchers



International Forum for Aviation Research (IFAR)

MISSION



WORKING GROUPS

- Supersonic Transport
- Air Traffic Management
- Aircraft Design
- Vertical Lift
- Noise
- Sustainable Aviation
- Composites
- Deep Learning for CFD
- Electric-Hybrid Propulsion
- Research Infrastructure Database
- Advanced Air Mobility

IFAR joints national R&D's into global effort



Past



<https://blogs.sw.siemens.com/simcenter/apollo-13-the-first-digital-twin/>

1970
Physical
Twin

2000s.
The
Emergence
of Digital
Twins

2015 - ...

Evolution
of DT



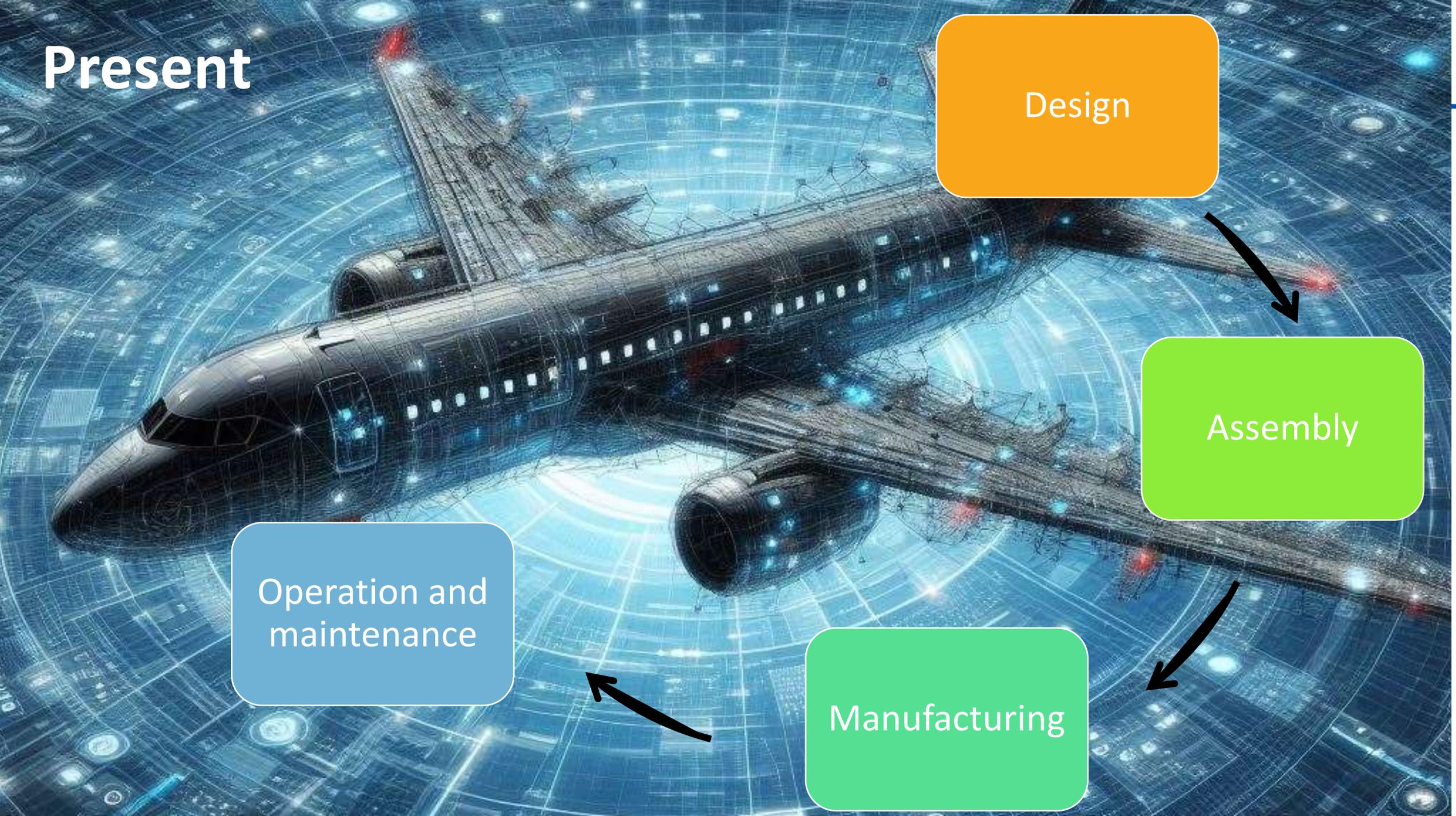
Present

Design

Assembly

Operation and
maintenance

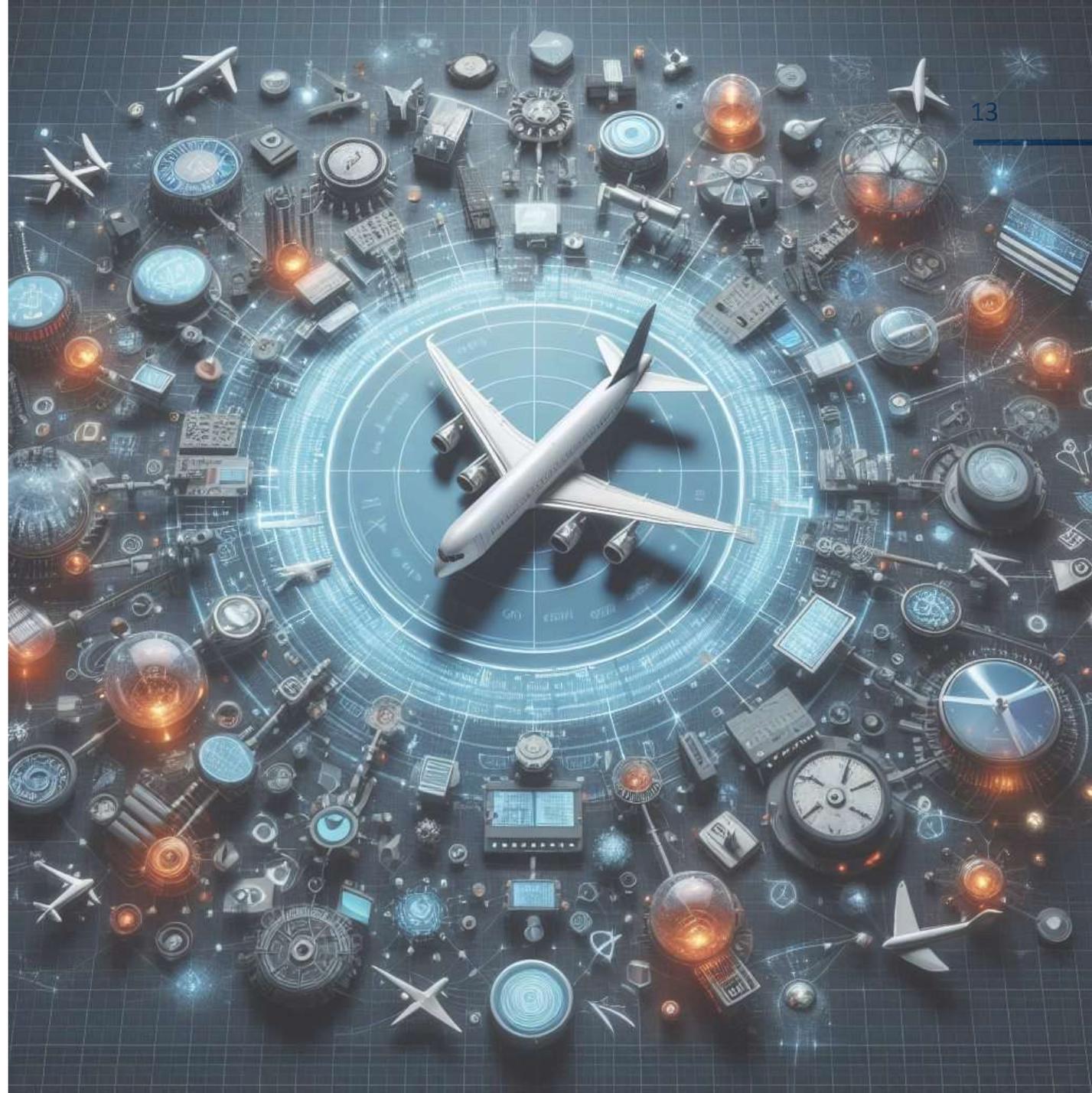
Manufacturing



Present & Future

Supporting technologies

- 5G Technology
- AI
- Cloud Computing
- Edge Computing
- Big Data
- Internet of Things



Future

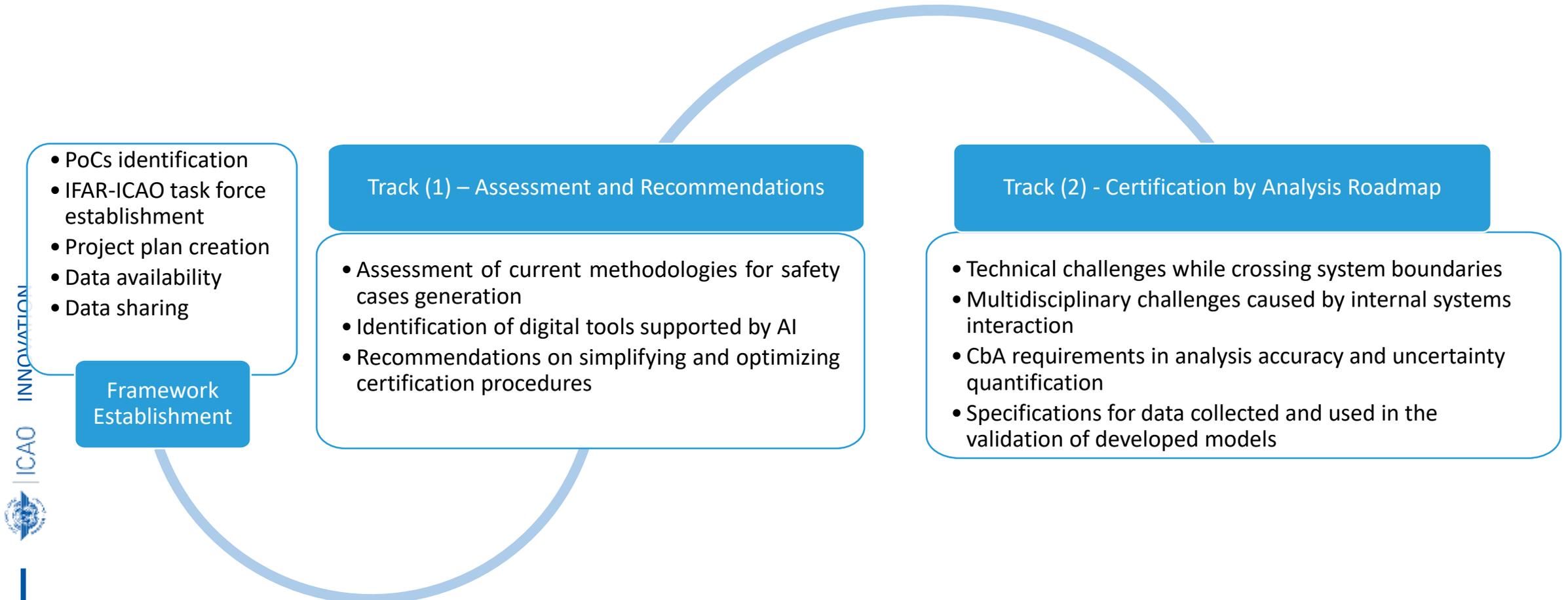
Challenges:

- *Accuracy of the initial data*
- *Quality of data collection*
- *Human factor*
- *Cybersecurity*

Development areas:

- *Human-machine interface (AR and VR)*
- *Advanced Data Analytics*
- *Automation and Autonomy*
- *Expansion to System and Fleet Levels*
- *LifeCycle Assessment*

“PATH TOWARD DIGITAL TWINS AND FURTHER APPLICATIONS FOR ACCELERATING CERTIFICATION PROCESSES FOR FASTER AND COST-EFFICIENT AVIATION MARKET ENTRY”

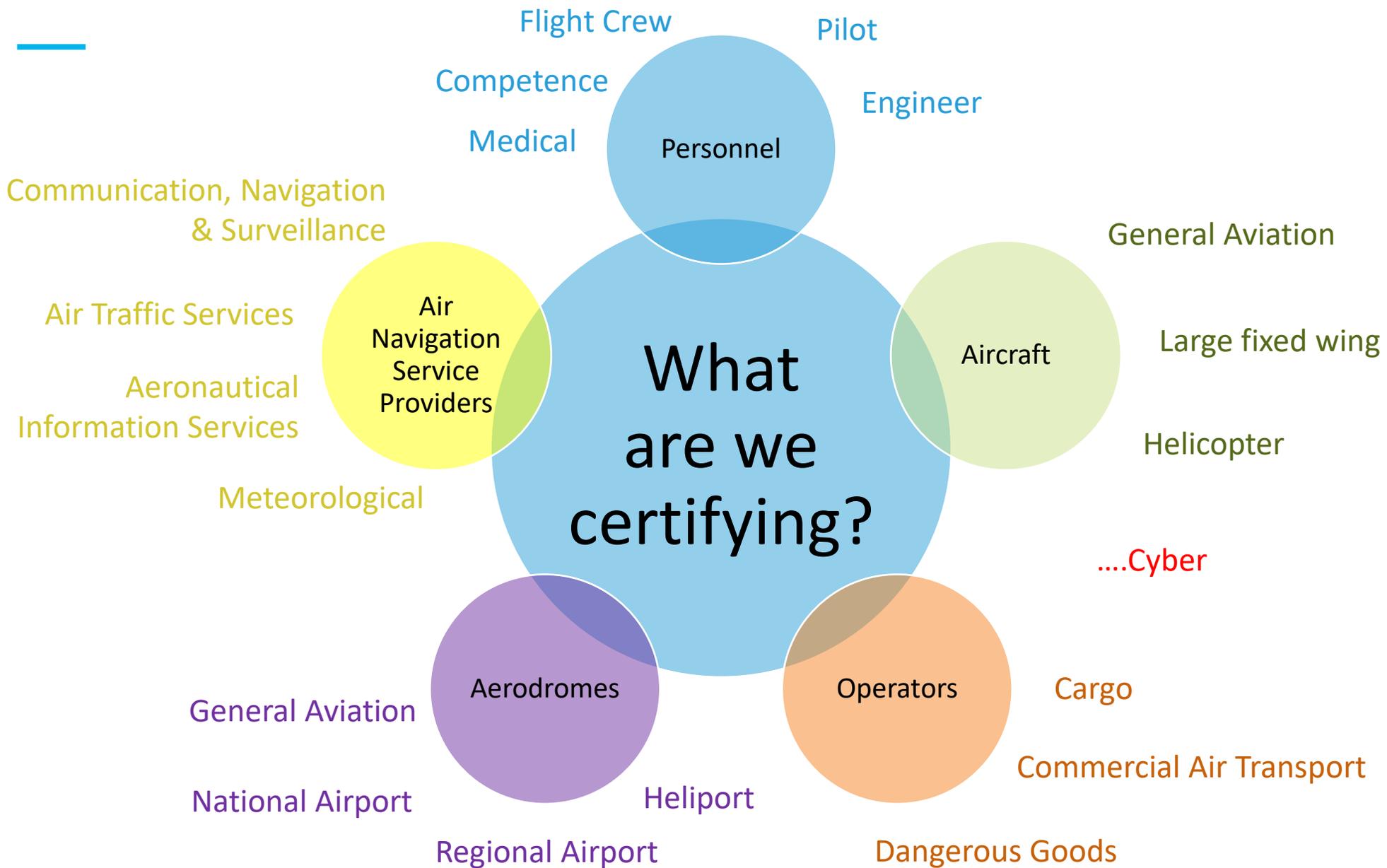




James Bell

Innovation Strategy Lead
UK Civil Aviation Authority

*Drivers for Digitization:
A Regulator's Perspective*





ATOL Claims Processed
15,587
As at end FY22-23



ATOL Licences Granted
1,994
Through FY22-23



Airspace Change Request Applications
114
Through FY22-23



PACT Cases Received
4,056
Through FY22-23



Foreign Carrier Permits Granted
10,628
As at end FY22-23



Air Traffic Service Providers
69
As at end FY22-23



Training Organisations
280



Active Aerodromes

THE UK CAA... IN NUMBERS



(AOC) Holders
118
As at end FY22-23

UK Registered Aircraft
19,072
As at end FY22-23

Active Part 145 Maintenance Organisations
703
As at end FY22-23



Aeromedical Examiners
125
As at end FY22-23



Licensed Air Traffic Controllers
2,120
As at end FY22-23

Flight Crew Licensing Applications Completed for Commercial Pilots
6,953
Through FY22-23



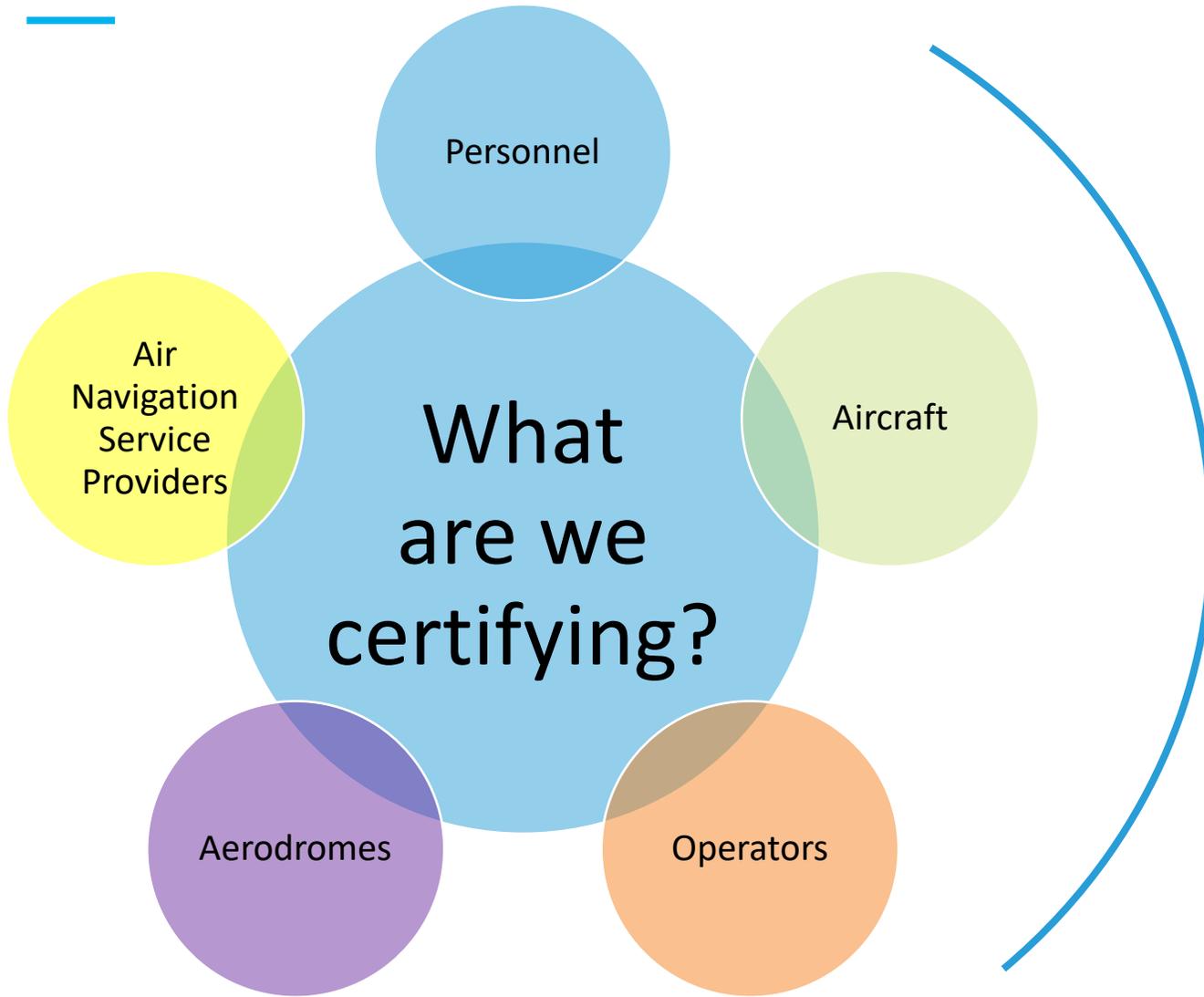
Flight Crew Licensing Applications Completed for Private Pilots
5,176
Through FY22-23



Pilot Licence Holders
52,395
As at end FY22-23

Licensed Maintenance Engineers
13,307
As at end FY22-23





Traditional

VS

Novel





ATOL Claims Processed
15,587
As at end FY22-23



ATOL Licences Granted
1,994
Through FY22-23



Airspace Change Request Applications
114
Through FY22-23



Space Orbital Licences Issued
174
As at end FY22-23



PACT Cases Received
4,056
Through FY22-23



Foreign Carrier Permits Granted
10,628
As at end FY22-23



Air Traffic Service Providers
69
As at end FY22-23



Training Organisations
280
As at end FY22-23



UK Registered Aircraft
19,072
As at end FY22-23

Active RPAS Operational Authorisation
3,620
As at end FY22-23



Active Aerodromes
133
As at end FY22-23



Aeromedical Examiners
125
As at end FY22-23



Air Operator Certificate (AOC) Holders
118
As at end FY22-23

Active Part 145 Maintenance Organisations
703
As at end FY22-23



Licensed Air Traffic Controllers
2,120
As at end FY22-23

Flight Crew Licence Applications Completed for Commercial Pilots
6,900
Through FY22-23

Licensed Maintenance Engineers
13,307
As at end FY22-23



Flight Crew Licensing Applications Completed for Private Pilots
5,176
Through FY22-23

Pilot Licence Holders
52,395
As at end FY22-23



Active RPAS Users
513,860
As at end FY22-23

The impacts of Aviation Innovation

The **DRIVERS** for Digitizing Certification



Customer Experience

The need to provide services to our customers in line with modern expectations.



Data Management

The need to capture, store and utilize the growing volumes of data more effectively.



Risk Management

An increasing number risks presented by outdated and inefficient processes and systems.



Operational
efficiency

Reduction in operational budgets, increase workload and remit, new types of aviation



Pro-active Regulator

Growing expectations and benefits from being pro-active, rather than a traditional regulator

The **BENEFITS** of Digitizing Certification

Acting as “one CAA”, delivering consistent advice and outputs, resulting in greater engagement from customers



Customer Experience

Earlier identification of issues and opportunities, and ability to maximise the value of data.



Data Management

Reducing unnecessary risk, increasing compliance, meeting global standards.



Risk Management

Doing more with less, uncovering new opportunities, being more agile to requirements of the sector.



Operational efficiency

Meeting the expectations of a modern government, customer base, and workforce.



Pro-active Regulator

RPAS: Digitization of Specific Category Operations (DiSCO)

An Example of Digitizing Certification for RPAS operations

FROM



TO

For each application:

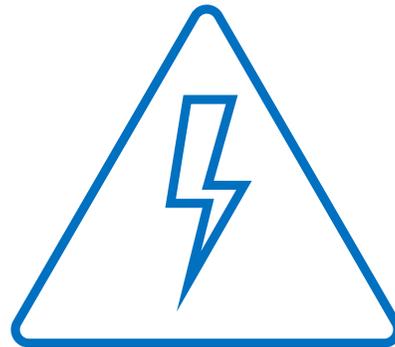
- 4+ different teams
 - 13 discrete systems
 - 1 month for simple applications
 - 5+ months for complex applications
 - 3 to 23 days of delays due to issues
- A single digital platform for CAA and applicant
 - Consolidated information and approvals
 - Immediate approval for simple applications
 - 1 month for complex applications
 - Reduced workload, increased satisfaction

Must not lose sight of the threats!



Digitization

...introduces new opportunities
for malicious actors



Supply Chains

...targeted by cyber threats
...multiple attack fronts



Resilience Plans

...must exist
...must also be regularly tested



New UK CAA Guidance!

CAP2973 – Cyber Guidance for Innovators

Accessible guidance applicable to novel aviation

www.caa.co.uk/cap2973

Digitizing Certification: A Regulator's Perspective

Balancing the benefits against the risks

The benefits from digitizing certification processes are extensive. But to deliver digitization effectively, we must do so carefully.



Manage the change

Following widely recognised change management processes



User-centric

Making sure that digitization embraces the users' needs



Communicate

...widely, regularly, and openly



Don't digitize a broken process

Digitization is also an opportunity for a fresh start



Alain Leroy

EASA Chief Engineer

The EASA Ecosystem Digital Transformation

Digital Transition -> a Partnership between EASA and Industry



Digital Transformation: key challenges for the EASA Ecosystem

Info management models

- standardisation of exchange of data between Industry and Authority (e.g. digital standard set of data which, aggregated, constitute the Cert Programme)

Collaboration and transparency

- improved predictability
- industry cooperating at global level to support a coordinated approach to Info Management and Model Based development
- Should we look for coordinated Industry and Authority program offices?

Safety/Environmental Protection

- proportionate to the risk associated to the type of products, operations and activities

Suitable regulation

- performance based regulation with data driven requirements

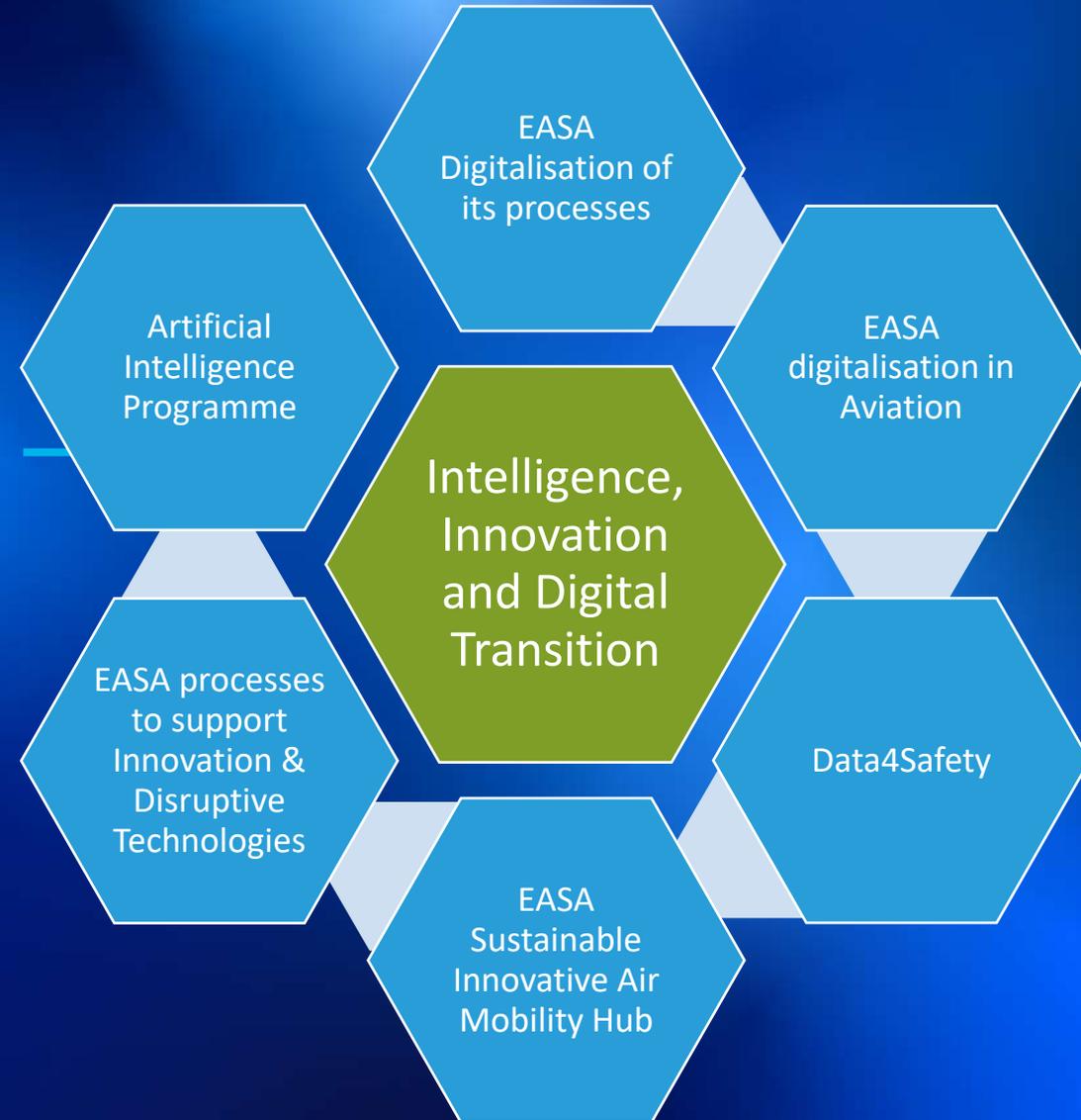
Aviation Safety Common Plan

- connected and harmonised rulemaking programs for all the authorities

Model based certification

- certify models instead of physical compliance verification. Authority will increasingly certify algorithms and not the physical compliance verification tests

Multiple initiatives
converging towards a
unified stream
towards digitalisation





Derek Graham

Business Development Director
SITA for Aircraft

Digitalizing Licences for Aviation Personnel

Lessons Learned

SITA



Born to foster collaboration



100% owned by the industry



Steered by the expertise of 45 industry professionals

SERVING

2,500+

airlines, airports, ground handlers and governments

AT OVER

390

locations

WITH OVER

4,600

employees



SITA's Personnel Licensing

Solution overview

1. Protected license

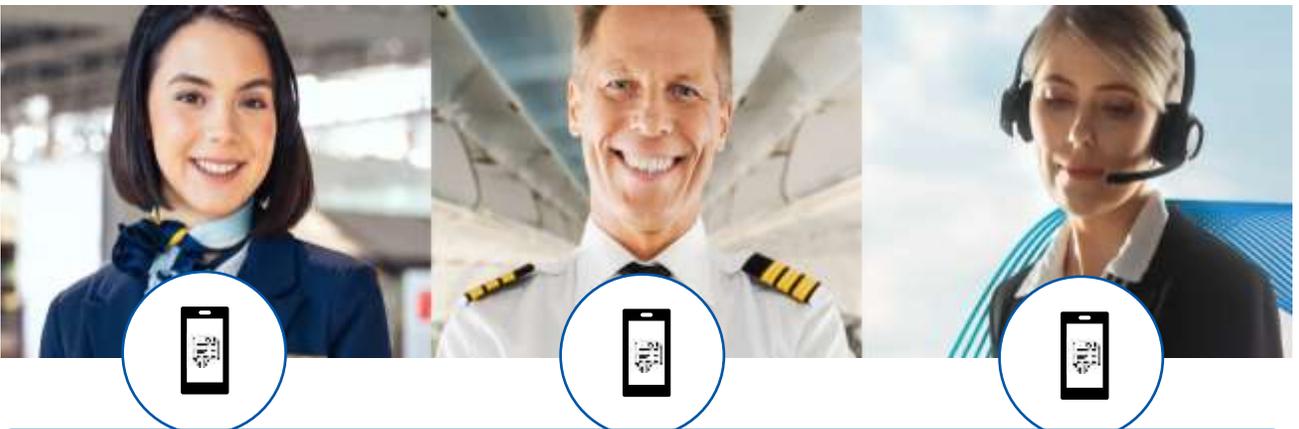
Our flexible software allows you to issue fully secure digital licenses.

2. Smooth delivery

We brought digital wallets to ensure quick and secure distribution

3. Reliable validation

Our smartphone application for ramp agents on any device and allows frictionless and effective validation of domestic and international licenses, offline and online.



License Holders

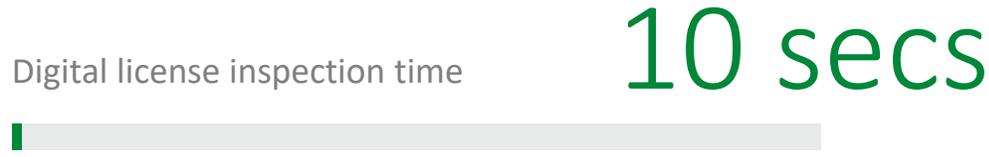
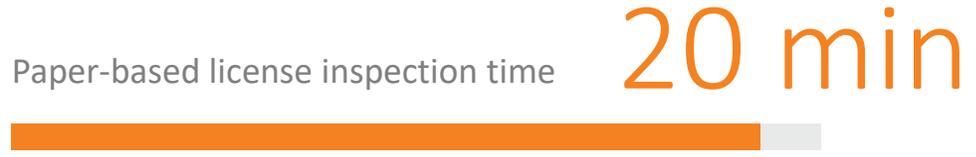


Implementing Digital Licences

What we learned while working with States

LESSON #1:

Time- and cost-efficient process



States need an end-to-end solution

from applying to issuing

Digital licenses for all aviation professionals

from pilots to maintenance

Real-live testing will show the real value

from concept to success case

More States need to be involved

from concept to more trials

Thank you!
And let's connect



Derek Graham
Business Development Director





Rои Ganzarski

CEO
Alitheon

Connecting the Physical to the Digital

‘Certified’ parts... that aren’t

A Safety problem hiding in *plane* sight



FAA WARNS AIRLINES OF COUNTERFEIT TCAS TRANSMITTERS CIRCULATING IN THE MARKET
 August, 2023 | Americas, Regulatory | G ● | ●●●●●



Unveiling the AOG Technics Scandal: Implications for the Aircraft MRO Industry
 BY ANSA SOLUTIONS GROUP | 2023-10-31 | 03 MINUTE READ

Thank You





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Coffee Break by Our Bronze Sponsor

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