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ICAO's perspective on Innovation

Capt. Ian Knowles

Chief. Operational Safety Section

Air Navigation Bureau

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Introduction

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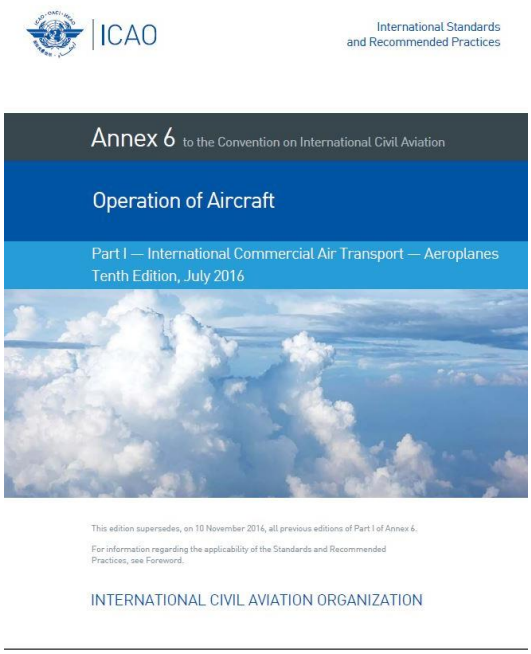
Background on ICAO

- UN Specialized Agency
- Established 1944
  - International convention on Civil Aviation ("Chicago Convention")
- 19 Annexes
  - Covers all areas from Met to Safety Management
- Standards and Recommended Practices applicable globally
- Support to the UN Aviation Technical Advisory Group (UN ATAG)
  - WFP and UN DOS



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UAS for humanitarian missions

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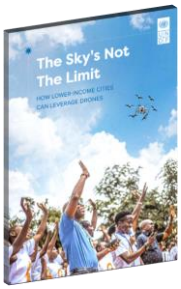
UAS Use Cases in support of the UN Sustainable Development Goals



- Aerial Mapping helps inform redistributive efforts and equitable economic policy

- Aerial Mapping and UAS data collection inform climate action, awareness, and warning measures in cities.

- Aerial surveys inform recovery efforts for marine litter from anthropogenic activities near coastal urban centres.

- UAS mapping of endangered urban ecosystems, and monitoring urban wildlife health with little disturbance.

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UAS benefits

- Fast deployment tool
- Provides improved area assessment and data gathering
- Reach remote areas faster
- Operations in challenging environments (terrain, infrastructure, conflict)
- Cost

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Limitations of UAS

- States` UAS Regulatory Framework,
- UAS operator training for Humanitarian Missions,
- Clear Guidance and Operational Standards,
- UAS Equipment Availability.

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UN UAS Harmonized framework

- ICAO, UNDOS, and WFP are conducting a program development whose objective is to mitigate limitations, especially those related to States`s regulatory framework,
- In this context, the UN UAS Harmonized Framework Program intends to improve the time required to obtain the airspace access allowance for UAS/RPAS equipment in Humanitarian Missions and other UN mandates, enhancing efficiency for UAS/RPAS deployment.

DEPARTMENT OF OPERATIONAL SUPPORT

WFP

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- ICAO's role as the forum for aviation is crucial to enhance the usage of *UAS in Humanitarian Missions*.

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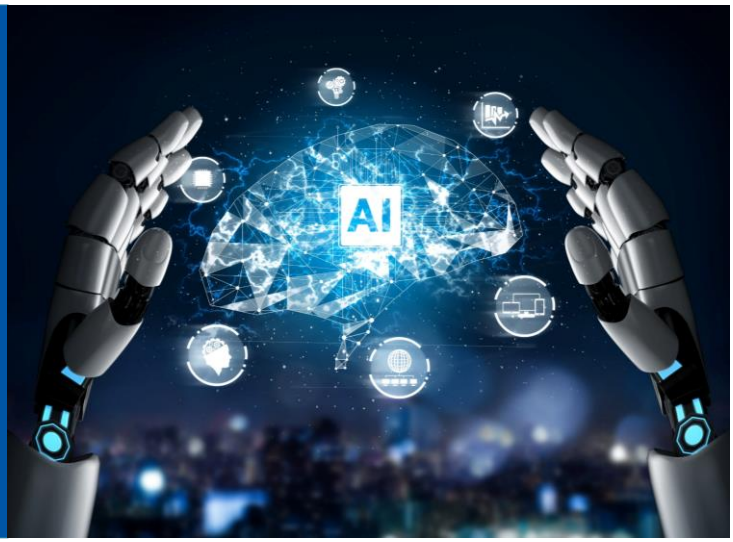
Hybrid and Electric Aircraft



Hybrid and Electric Aircraft

Benefits

- Flexibility of fuel / charging
- Environmental benefit

Limitations

- Range limitations
- Regulations lagging development

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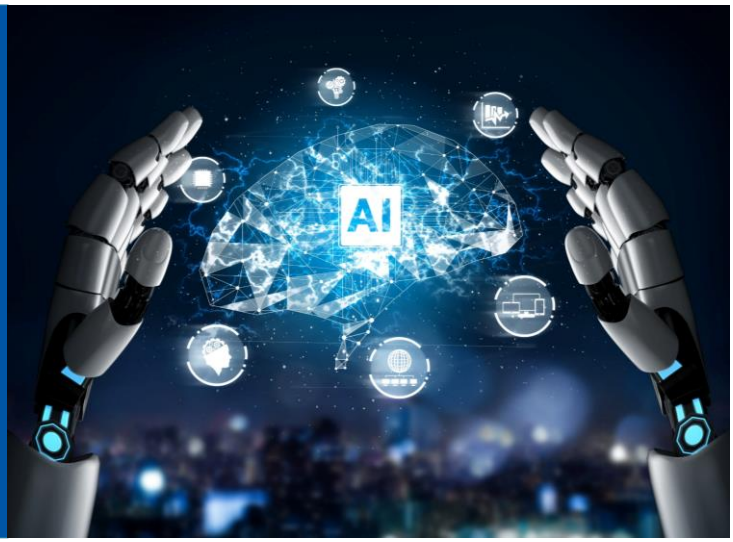
AI and Data Analytics



Data and AI applications

Benefits

- Optimizing flight routes
- Improved weather predictions
- Training AI on past crisis data to assist with future crisis logistics
- Optimization of resources

Limitations

- Requires machine readable data

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Standardization roadmap

ICAOs role – International Harmonization

- ICAO is not an innovator
- Mandate to facilitate international aviation by developing harmonized standards
- Work to ensure interoperability
- How to respond to the fast pace of change?

Standardization Roadmap

- A path towards determining where to focus our efforts
- Current Triennium budget is approx. 70% funded for the work program
- Establish a mechanism to determine which innovations will require ICAO response

Standardization Roadmap - Objectives

- serve as a means of collecting information on innovations to enable forward-planning with respect to ICAO's mandate;
- provide a dynamic view of expectations in terms of the innovators' timelines for new technologies, processes and operational innovations, with regard to their maturity as well as their anticipated dates for entry into service; and
- provide a clear picture, across all disciplines, of where and when new provisions might be needed to enable those innovations to be implemented in a safe and globally harmonized manner.

Standardization Roadmap - Gates

- Establishment of three gates
- Each gate is a point of assessment where each developing innovation can be evaluated against a set of criteria
- Global applicability, interoperable harmonized implementation

Standardization Roadmap – Gate 1

- To ensure that the submission merits inclusion into the Roadmap for monitoring purpose.
- The innovation demonstrates potential for global suitability
- Innovation is under development; and is undergoing testing or prototyping in a relevant environment
- Timeframe for entry into service is understood

Standardization Roadmap – Gate 2

- To confirm the developing innovation has reached a sufficient level of maturity to warrant further consideration by ICAO.
- The innovation is stable in design, and under testing and/or validation. This may include flight testing, in a relevant environment
- The extent that the innovation is compatible with ICAO global plans, concepts, and policies, as applicable, is known
- Impact on aeronautical frequency spectrum usage, if applicable, is compatible with ICAO related strategies

Standardization Roadmap – Gate 3

- To confirm the innovation has reached an adequate level of maturity to require further consideration by ICAO.
- For technology and systems, a prototype demonstration in an appropriate operational environment has been completed
- For operational changes, the new process has been satisfactorily tested in a real-world environment
- Certification and/or other approvals, if needed, are underway, for example test flight approval or equivalent

Conclusion

- ICAO is already working in many areas that are of interest to humanitarian aviation
- New ways of working, including more flexibility, are being developed to cope with the pace of change
- ICAO continues to support UN DOS and WFP through the UN ATAG
- Further developments are being tracked through the standardization roadmap for action as and when they mature

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