8th EASA International Cooperation Forum

Joining Forces for Safer and Greener Aviation Worldwide

Colombo, Sri Lanka
19-21 March 2024
Panel 6 – Innovative aerial services

Drones are here to stay with air taxis soon to come. The EU is about to complete its regulatory framework enabling safe integration of these new entrants. This panel will take stock of upscaling innovative aerial services using uncrewed aircraft (drones) in service today, VTOL-capable aircraft (air taxis) that are undergoing certification, and regulatory approaches. Panelists will present experiences from real-life use cases from various world regions, discussing approaches and challenges of regulators to keep up with developments.

SPEAKERS

Ms. Andile Mtetwa-Amaeshi
Director General
CAA Eswatini

Mr. Rohan Manukulasooriya
ANS Expert
CAA Sri Lanka

Mr. Allan Menard
Project Advisor Airspace
CAA New Zealand

Mr. Patrick McKay
UAS Data Operations Manager
World Food Programme

Mr. Jonathan Tan
Deputy Director for UAS & Emerging Tech
CAA Singapore
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SPEAKER

Mr. Rohan Manukulasooriya
ANS Expert
CAA Sri Lanka
AGENDA ITEM : PANEL 6 – INNOVATIVE AERIAL SERVICES

GROWING UAV INDUSTRY &
REGULATORY CHALLENGES
OF
SRI LANKA

Presented by
Rohan Manukulasooriya
ANS Expert/Compliance Monitoring & Technical Assistance
Civil Aviation Authority of Sri Lanka
21st March 2024
UAVs/Drones - the newest addition to the skies all over the world

• UAVs/Drones are the newest addition to the skies all over the world, so versatile in terms of performance, maneuverability & numerous use-cases, also being user-friendly & so simple to operate remotely (ie almost anybody can operate from/to anywhere).
UAVs/Drones are rapidly growing as an Industry across the world, APAC Region & also in Sri Lanka

- Global, Regional & Local Trends of Evolution of UAV Operations as an Industry;

There is a Rapid Growth in UAV Industry Globally & Regionally & Sri Lanka is no exception!
Local/Sri Lankan perspective on UAV

Sri Lanka is also experiencing a Significant Expansion in the use of UAVs into a wider list of Use-cases from its Initial most common simpler uses.
Emerging Further Diversified Use cases of Drones

In the Pipeline Awaiting Regulatory Approvals in Sri Lanka

- Payload Delivery Over Land
- Medical Assistance
- Perimeter Surveillance
- Wildlife Protection
- Shore to Ship Payload Delivery

Beyond Visual Line Of Sight (BVLoS)

Beyond View Of Drone Pilot Without Spotter

Quasi-Stationary Airships for Internet to Remote Areas

- These UAV Use Cases need proper Regulation for Safe & Efficient Operation
Emerging Risks & Impact on Public Trust in Aviation Safety & Privacy by UAV/Drone Operations

- Drones could become a Collision Hazard to other Aircraft.
  - Hence an acute need has arisen either to:
    - Segregate UAV Airspace from Conventional Airspace, OR,
    - Insist appropriate Sensors on-board UAVs which are compatible with ATM Systems for real-time monitoring by Air Traffic Control (Eg: ADS-B)

- Other Potential Risks & Hazards include the following:
  - Security of the Country/State & Economically Sensitive Locations such as Power Plants, Oil Refineries, Irrigation
  - Loss of Life of General Public, Damage to Property & Privacy of People
  - Disturbance to Public/Religious Gatherings
  - Exploitation of our Heritage in Wildlife, Archeology/History & Culture
  - Road Accidents due to Distractions
  - Electrification if struck on Power Lines.
Aviation Legislation Vs UAV/Drone Operations

UAV Technology Advancement & Industry Expansion

Needs to be Supported by UTM System to monitor UAV’s Adherence to Rules of the Air
Aviation Legislation Vs UAV/Drone **Design & Manufacturing**

- Sri Lanka also has a great potential for Designing & Manufacturing Drones for all purposes including for Commercial use;

- In addition to Private Corporate Sector, Universities have also initiated numerous Start-up Companies engaged in designing Drones with appropriate customization to suit the needs of potential use-cases of their clientele;

- Accordingly, the Regulator has the important additional task of granting UAV Design Approvals & Airworthiness Engineering Approvals to such local designs and manufactures of Drones in Sri Lanka;

- **Hence, while performing this task at present to its best ability, nevertheless, CAASL aspires to further strengthen its Airworthiness capability in this specialty, as a giant step forward in the UAV/Drone Industry of Sri Lanka.**
Evolution of UAV / Drone regulations of Sri Lanka

- ICAO Chicago Convention – Article 8
- Air Navigation Regulation -ANR 1955,
- Civil Aviation Act No. 14 of 2010,
- Sri Lanka Government’s Gazette Publication
- Implementing Standard- SLCA/IS 053/2016, 2017 & 2022

→ Next : New Drafting is in-progress adopting Risk-based approach of EASA /FAA Regulations etc; on UAV/Drones Operations to offer even more flexibility & user-friendly Approval process,

o Other/Multiple Approving Agencies : Ministry of Defence, Police, Wildlife Department, Archeological Department, Cultural Ministry, Sri Lanka Tourism Promotion Bureau, Power & Irrigation Ministries, Insurance etc;
Methodology used at present for issuance of Regulatory approvals in Sri Lanka

In the Methodology used at present for issuance of Regulatory approvals:

- **Positives**: On-line option
- **Negatives**:
  - Multiple approving agencies requiring Applicants to obtain prior-approval from too many offices operated in different locations,
  - Too restrictive even over no-risk & less risky areas, and,
  - Non-availability of a UTM to monitor adherence to rules.
Present efforts in progress - to revise Sri Lanka's Drone Regulations

- Progressive efforts are in progress at present to revise:
  - Sri Lanka's Drone Regulations to be more Risk-based towards granting more relaxation towards less-Risky Areas;
  - Approval & Monitoring process to simplify with the use of modern tools such as Smart Mobile Phones

- In this regard, CAASL has embarked on a deep study on the following:
  - ICAO Guidelines & Recommendations on UAS/RPAS (Eg: Doc 10019, Circ 328 AN/190 etc;)
  - FAA Regulations on UAV Operations
  - EASA Guidelines on UAV Operations
  - Best practices of other countries.
Points to Ponder

CHALLENGES & EXPECTATIONS

CONSIDERING LESSONS LEARNT FROM OTHER COUNTRIES

1) How could the regulatory regime be evolved to ensure efficient use of Drones as an industry, without compromising safety of Drones themselves, Drones Vs conventional aircraft, Drones Vs General public/Property?

   (Eg: Segregation of UAV Airspace from Conventional airspace, ATM compatible Monitoring sensors such as ADS-B on-board UAVs, introduction of UTM Systems etc;)

3) What is the best methodology/process to be adopted as a much simpler yet most effective and efficient regulatory approval procedure to sustain and promote the use of UAVs as an efficient component of Aviation Industry?

3) How best a country/State could further strengthen its Airworthiness capability to cover ‘UAV Engineering’ aspects?

4) Discuss the benefits of the adoption of appropriate provisions of EASA UAV Regulations.
Thank You
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SPEAKER

Mr. Allan Menard
Project Advisor Airspace
CAA New Zealand
REGULATORY CHALLENGES AND POTENTIAL SOLUTIONS TO THE GROWING UAV SECTOR

8th EASA International Cooperation Forum Colombo, Sri Lanka, 19-21 March 2024 Panel 6 – Innovative Aerial Services

Allan Menard, Project Advisor – Airspace
Emerging Technologies Unit
New Zealand’s Aerospace Strategy for Advanced Aviation

GOAL 1: Build a sustainable air passenger journey

GOAL 2: Safely integrate autonomous aerial vehicles

GOAL 3: Be at the forefront of global sustainable space activities

GOAL 4: Actively support exploration in space

GOAL 5: Enhance decision-making using aerospace-enabled data

PILLARS: Unlocking Aerospace Potential Future-Facing Government Aerospace Nation

Aotearoa New Zealand Aerospace Strategy 2023-2030
Te Rautaki Ātea-ā-rangi o Aotearoa 2023-2030

JULY 2023
Current count of UAV/drones in New Zealand: **77,000**  
Current number of UAOC issued to date: **165**

- **UAV/drones have gone from the novel and new, to an accepted application across many industries, and continues to grow**
- **The CAANZ certification process has matured considerably: the above applications are now considered more routine**
- **However, we are in the ‘Model-T Ford phase’ of the trajectory to where these technologies can take us**
Current and planned UAV utilisation

These are far more complex applications that are currently challenging our regulatory framework.
Prospects for AAM in New Zealand

➢ Total population of New Zealand is 5,269,200 people, of which 32% live in Auckland
➢ Currently limited economic justification for AAM
➢ Future use cases may include remote community applications
➢ There have been enabling trials activities to support AAM development
How do we currently regulate innovative aerial services and unmanned aircraft systems?

A balanced approach:

It’s the mix that matters....
How do we currently regulate innovative aerial services and unmanned aircraft systems?

Is facilitated through a *performance-based ruleset*: the Part 102 Rule, Unmanned Aircraft Operator Certification
Challenges

• Restriction of operation to state territory <12nm
• BVLOS operations within controlled airspace
• Scalable and proportionate UAV certification
• UTM certification
• Development of CAA/Space Agency working relationship
Solutions

• Flight beyond 12nm enabled for R&D on a case-by-case basis

• Time-bounded IFR equivalency for BVLOS in controlled airspace (trials only)

• National Airspace Research Centre

• Risk-based regulatory decision-making
Thank You

Allan.Menard@caa.govt.nz
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SPEAKER

Mr. Patrick McKay
UAS Data Operations Manager
World Food Programme
WFP DRONE OPERATIONS

**Data Collection**
- Mapping
- Search and Rescue
- Drones and AI
- Capacity Building
- Flood Modeling
- Film and Photos

**Connectivity**
- Tethered drone with Wi-Fi
- Airship with Wi-Fi
- Tethered drone with LTE

**Cargo Delivery**
- Health Supplies (<5kg)
- Food (100kg to multiple tons + airdrop)
Cyclone Idai
Mozambique, March 2019

Drone maps meant that for the first time in an emergency every responder could see what the situation was like.

Search and Rescue identified people needing rescue and safe areas.

Drone videos told the story.
Our first priority is to save lives.
Search and Rescue

Our first priority is to save lives
Hurricane Fiona
Dominican Republic, September 2022

The use of DEEP allowed responders to have preliminary data for decision making in just 2 days, compared to other manual methods that could take 3 weeks to produce the same information.
Rapid Response Connectivity Carriers (R2C2)

Tethered drone with WiFi

Tethered drone with 4G

Airship drone with WiFi
Data Collection Efficiency

VTOL

Fixed Wing

Multirotor
DRONE SWARMING

DronePort, Belgium
February 2024
Thank you!
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SPEAKER

Mr. Jonathan Tan
Deputy Director for UAS & Emerging Tech
CAA Singapore
EASA 8th ICF
Innovative Aerial Services

Jonathan Tan
Deputy Director (Policy and Regulations)
Mar 2024
Singapore’s highly-congested airspace and highly-urbanized environment

**HIGHLY-CONGESTED AIRSPACE**

- 5 Aerodromes
- UAS users, military aviation operators, civilian aviation operations

**HIGHLY-URBANISED ENVIRONMENT**

- Land area: 721.5 sq km
- Population: 5.92 million
- Dense road network, highly built-up areas, dense population
SINGAPORE’S APPROACH TO REGULATING UNMANNED AIRCRAFT SYSTEMS (UAS)

Challenges and Opportunities

**CHALLENGES**
- Highly-urbanised
- Complex airspace

**OPPORTUNITIES**
- Reservoir Monitoring, inspections and surveillance
  - Multiple use cases, providing access to new capabilities
- Shore to ship deliveries
  - High-value deliveries
  - 140,000 ships annually
  - Low risk to public

Reservoir Monitoring, Surveillance, Façade Inspections, Shore to ship Deliveries
Evolution of Singapore’s UAS Regulations: Individual, Organisation, System

**2015**
- **PERMIT FRAMEWORK**
  - Differentiation of User Groups

**JAN 2020**
- **MANDATORY REGISTRATION for UA > 250 g**
  - Instilling individual responsibility

**FEB 2021**
- **PILOT LICENSING FRAMEWORK**
  - Establishing baseline pilot competency

**JUN 2022**
- **CENTRALISED FLIGHT MANAGEMENT SYSTEM (CFMS)**
  - Tracking UAS Permit holder operations

**>2024**
- Remote Identification
- UAS Traffic Management System
- Complex UA operations
Regulators cannot do it alone – international collaborations and partnerships are pertinent to accelerate the development of the industry

- ICAO Remotely Piloted Aircraft Systems Panel
- CAAS-EASA MOU on Unmanned Aircraft Systems and Urban Air Mobility
- CAAS-JCAB Memorandum of Cooperation
- U.S. – Singapore Joint Aviation Steering Committee
- CAAS-UKCAA Memorandum of Understanding
- Airbus-CAAS MOU on Urban Air Mobility
- CAAS-ST Aerospace MOU on BVLOS UAS Operations
- Meeting of Asia-Pacific Regulators
SINGAPORE’S APPROACH TO REGULATING AAM

Taking a Stepped Approach

- Manned AAM operations as a start
- Leveraging on existing manned regulations to facilitate AAM operations
- Regulations to target “Energy Agnostic” aircraft
- Realistic on equipage requirements
- Conduct oversight on Manned AAM operations
- Data collection for eventual unmanned AAM operations
Questions?

The information contained within is privileged and CAAS’s approval must be sought prior to the release of any information.
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