EASA
European Union Aviation Safety Agency

Funded by the European Union

8TH EASA INTERNATIONAL COOPERATION FORUM

JOINING FORCES FOR SAFER AND GREENER AVIATION WORLDWIDE

EU-SOUTH ASIA APP

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.

MODERATOR

Mr Sascha Oliver Schott

Drones Section Manager
EASA

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
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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*

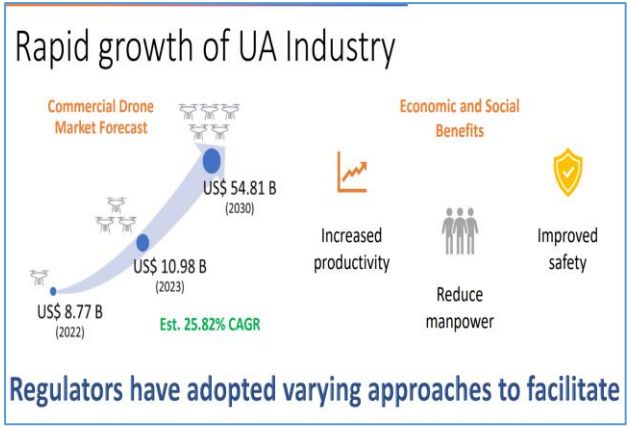
- UAVs/Drones are the newest addition to the skies all over the world, so **versatile** in terms of performance, maneuverability & numerous use-cases , also being **user-friendly** & so simple to operate remotely *(ie almost anybody can operate from/to anywhere)*.

Multiple use of Drones/UAVs

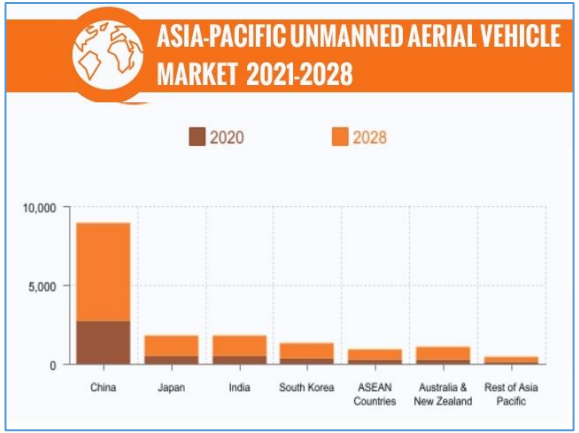
UAVs/Drones are rapidly growing as an Industry across the world, APAC Region *& also in Sri Lanka*

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

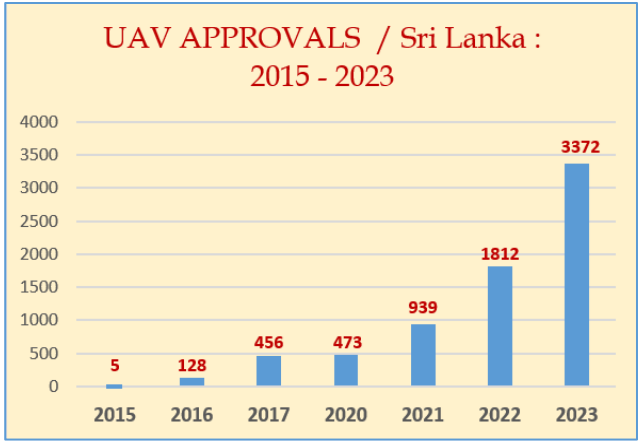
GLOBAL



REGIONAL (Asia-Pacific)



LOCAL/SRI LANKAN



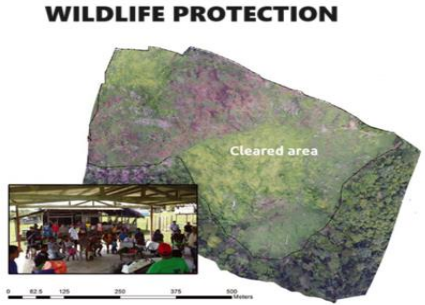
There is a Rapid Growth in UAV Industry Globally & Regionally & Sri Lanka is no exception !

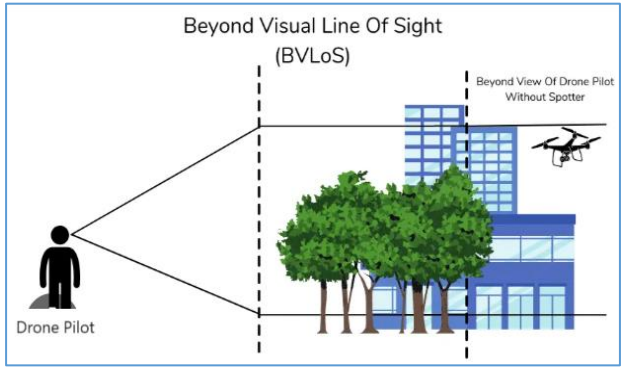
Local/Sri Lankan perspective on UAV

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



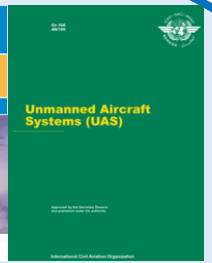


- These UAV Use Cases need proper Regulation for Safe & Efficient Operation

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.

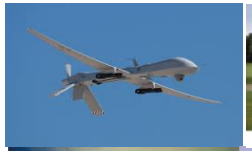
Aviation Legislation Vs UAV/Drone Operations



Needs to be Supported by UTM System to monitor UAV's Adherence to Rules of the Air

UAV Technology Advancement & Industry Expansion

Manufacturing



Medical emergencies

Disaster response

Farm management

Public safety

National Security

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

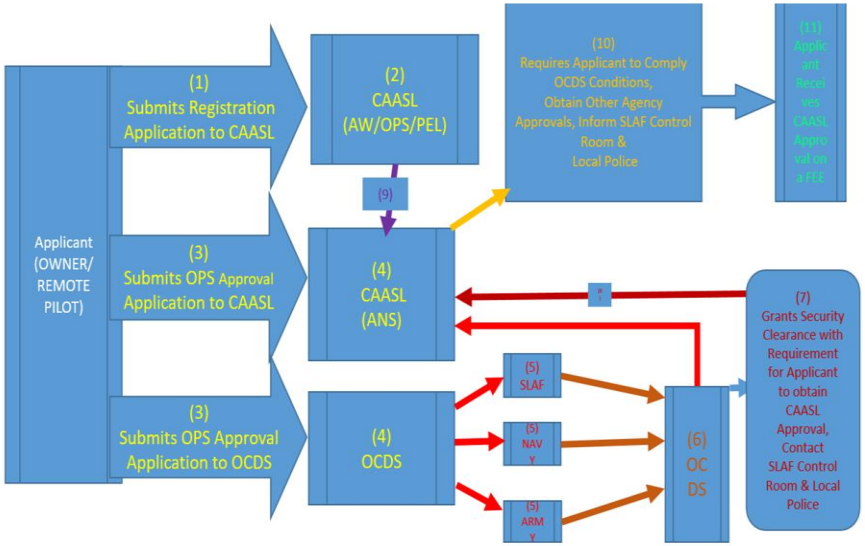
→ *Next : New Drafting is in-progress adopting Risk-based approach of EASA /FAA Regulations etc; on UAV/Drones Operations to offer even more flexibility & user-friendly Approval process,*

- 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

CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Emerging
Technologies
Programme

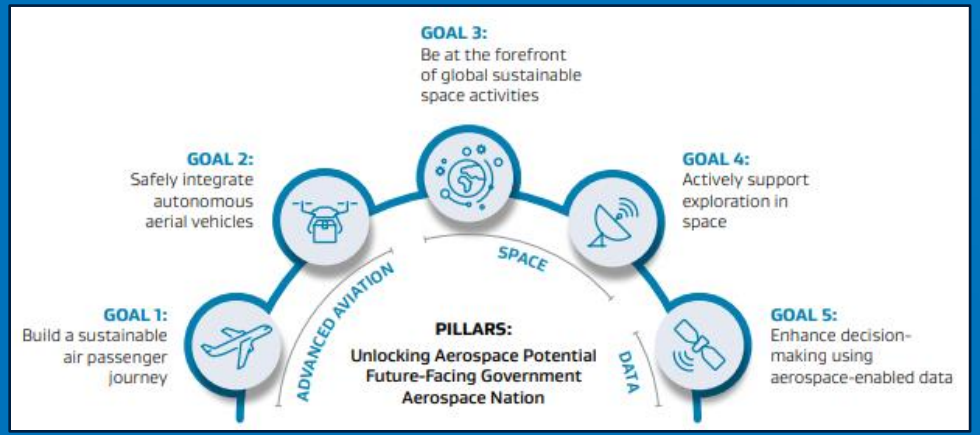
REGULATORY CHALLENGES AND POTENTIAL SOLUTIONS TO THE GROWING UAV SECTOR

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

Emerging Technologies Programme

New Zealand's Aerospace Strategy for Advanced Aviation



Everyday application: not so new anymore…

Real Estate Photography

Agricultural Ops

Powerline Inspections

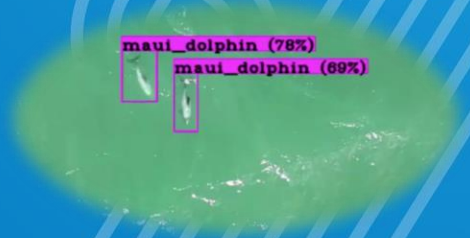
UAV Aircraft Inspections

Surveying & Mapping

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*

Emerging Technologies Programme



Current and planned UAV utilisation

These are far more complex applications that are currently challenging our regulatory framework

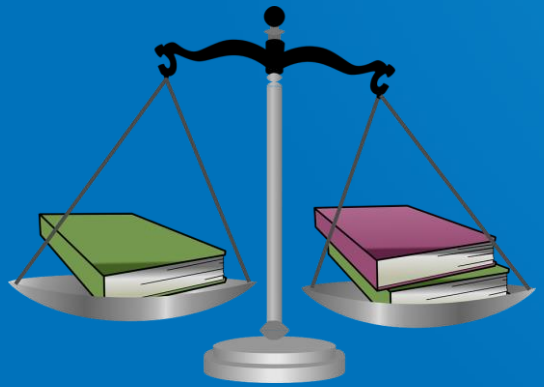
Prospects for AAM in New Zealand

- 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….



Prescriptive

Performance

Emerging Technologies Programme

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

Hazard Register

Licensing and Training

Maintenance Plan

Airworthiness

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

CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Kererangi Tūmatanui o Aotearoa

Emerging Technologies Programme

Thank You

Allan.Menard@caa.govt.nz

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SPEAKER

Mr. Patrick McKay

UAS Data Operations Manager
World Food Programme

March 2024

WFP DRONES

WFP Technology Division

WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

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

Search and Rescue

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 **R**esponse **C**onnectivit y **C**arriers (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

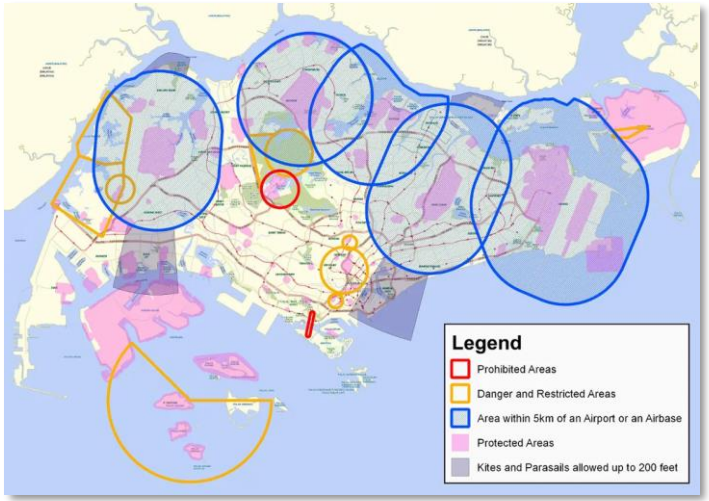
Deputy Director for UAS & Emerging Tech
CAA Singapore

EASA 8th ICF
Innovative Aerial Services

Jonathan Tan
Deputy Director (Policy and Regulations)
Mar 2024

CAAS
Civil Aviation Authority of Singapore

Singapore's highly-congested airspace and highly-urbanized environment



HIGHLY-CONGESTED AIRSPACE

5 Aerodromes

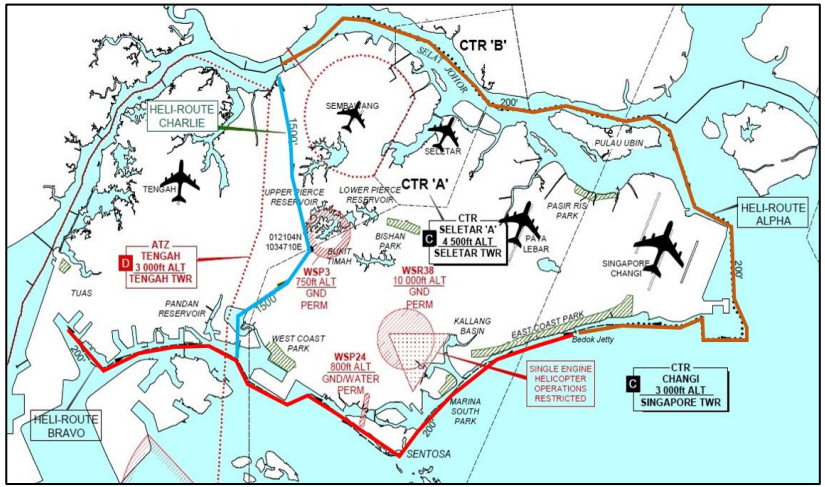
UAS users, military aviation operators, civilian aviation operations

HIGHLY-URBANISED ENVIRONMENT

Land area: 721.5 sq km / Population: 5.92 million

Dense road network, highly built-up areas, dense population

Challenges and Opportunities



Reservoir Monitoring

Façade Inspections

Surveillance

Shore to ship Deliveries

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

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

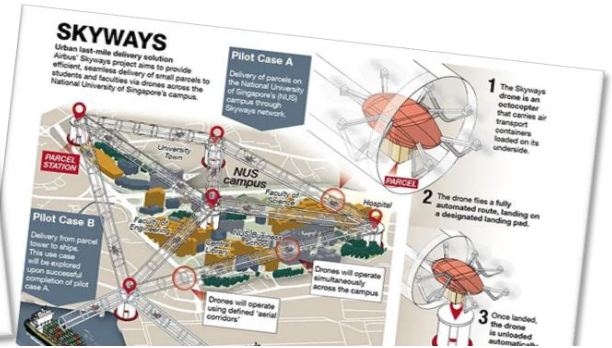
- Remote *Identification*
- *UAS Traffic Management* System
- *Complex UA operations*

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

S'pore and Japan to work together to boost air connectivity, aviation sustainability

S'pore, EU to work together to make flying taxis a reality



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

- ....

Civil Aviation Authority of Singapore

Questions?

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