



REMOTELY PILOTED AIRCRAFT SYSTEMS SYMPOSIUM 23-25 March 2015

Next steps and conclusions

Stephen Creamer

Appointed Director, Air Navigation Bureau, ICAO

Commonalities

- **Time critical:** global guidance for national operations
- Global regulatory framework
- Common terminology, understanding
- Education is key
- Priorities and roadmaps
- Convergence on technology, procedures and processes

Comprehensive picture

- RPAS and UAS are everywhere
- RPAS must fit into the aerospace system
- Existing frameworks provide foundation
- States need guidance for national regulations
- Harmonization of national regulations to support international operations
- Regulations are ahead of SARPs

Industry level

- Collaborative approach facilitating harmonized RPAS operations
 - Build strong relationship with authorities to share goals, exchange information and establish common expectations
- RPAS industry without traditional aviation background should connect with aviation partners to learn processes and requirements

National level

- Collaborative approach facilitating harmonized RPAS provisions
 - Work with existing entities: e.g. military, JARUS, industry associations, ICAO
- Take a safety management, risk-based approach to addressing regulations
- Collect and analyze data from operators, manufacturers, service providers, users

Regional level

- Collaborative approach to facilitating harmonized RPAS provisions
 - Agreements amongst States on common expectations and solutions, for both civil and military
 - Inter-Regional collaboration and coordination during implementation

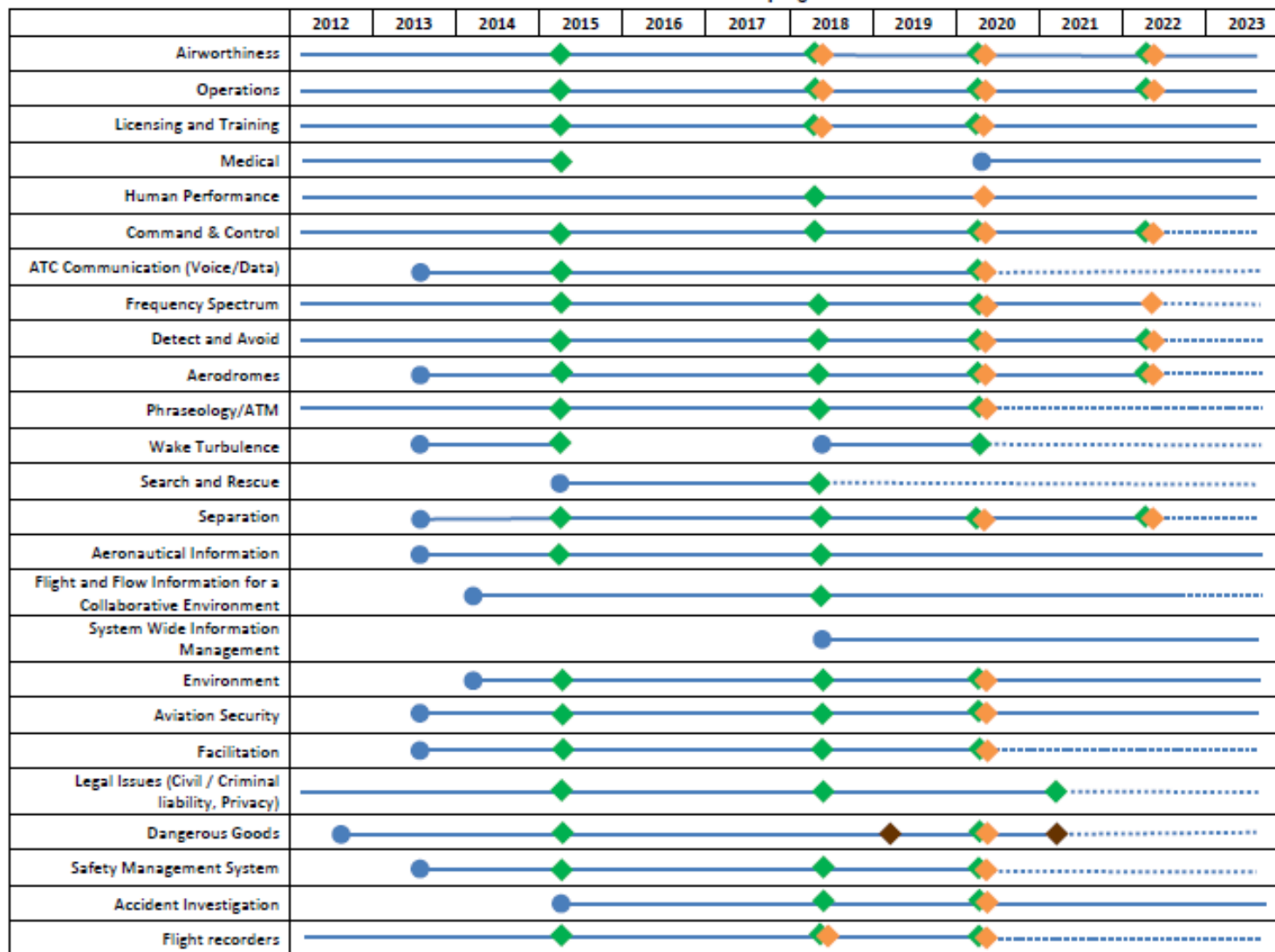
Global level

- Collaborative approach facilitating globally harmonized RPAS provisions

ICAO timeline

- Existing Standards in Annexes 2 and 7;
 - Annex 2 / Initial Standards for operating rules, certificates and licensing and Special Authorization
 - Annex 7 / Standards on nationality and registration marks and identification plates
- > 50 individual tasks in the existing RPAS Panel work programme

Timeline related to RPAS work program



Legend: ● Start ◆ Guidance Material ◆ SARP / PANS ◆ Technical Instructions — Development ... Maintenance

ICAO 2018 Standards

- Annex 1, licencing for remote pilots
- Annex 6, RPA integration into non-segregated airspace, RPAS operator certificate (ROC), safety management
- Annex 8, initial airworthiness (phase 1), process to support the C2 link
- Annex 19, safety management on RPAS operators and operations



ICAO 2018 Procedures for Air Navigation Services (PANS) and RPAS Manual

- PANS-TRG (Doc 9868), training provisions for Remote Pilots
- Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019), updated and expanded guidance on airworthiness, operations, licensing, command and control, detect and avoid, ATM, flight recorders and aerodromes

ICAO 2020 Standards

- Annexes 2, 3, 6, 8, 10, 11, 14 and 19, initial mitigation means applicable to RPAS which are missing from the Annexes
- Few identified examples:
 - Airworthiness, operations and spectrum requirements for C2 link Required Communication Performance (RCP)
 - Security requirements of the C2 link, oversight of C2 link service providers, ATM contingency procedures for loss of C2 link
 - Requirements for handovers between Remote Pilot Stations (RPS)
 - Initial requirements for IFR RPAS operations in controlled airspace / aerodromes

Collaboration & Harmonization

- States (civil and military) / Regions / JARUS
- States (civil and military) / JARUS / industry / industry associations
- States (civil and military) / JARUS / industry / ICAO

Conclusions

- Government / industry collaboration (civil and military)
- Definitions
- Operational procedures (civil and military)
- Spectrum utilization
- Safety oversight methodology
- Safety management at all levels
 - Feedback loops



ICAO

**North American
Central American
and Caribbean
(NACC) Office**
Mexico City

**South American
(SAM) Office**
Lima

**ICAO
Headquarters**
Montréal

**Western and
Central African
(WACAF) Office**
Dakar

**European and
North Atlantic
(EUR/NAT) Office**
Paris

**Middle East
(MID) Office**
Cairo

**Eastern and
Southern African
(ESAF) Office**
Nairobi

**Asia and Pacific
(APAC) Sub-office**
Beijing

**Asia and Pacific
(APAC) Office**
Bangkok



THANK YOU