The need for International approach and framework for operations in near-space

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Background

- The commercialization of space activities and active involvement of private sector are bringing into reality a number of projects which plan a wide use of *"near-space",* defined as space above where commercial airliners fly but below orbiting satellites. At the same time traffic to/from outer space will intensify in the coming years and decades, with the use of both existing methods of transportation and innovative ones.

- Manned and unmanned vehicles - like High Altitude RPAS and sub-orbital aircrafts - are being developed that will operate in both domains (i.e. air and near-space).

- Important elements of aviation infrastructure and services (e.g. air traffic control, communication, meteorology) are becoming space-based.

- The need to anticipate rather than react to the regulatory developments which will be needed.

- Potential future integration of traffic to/from space and near-space into non-segregated airspace.

Background (cont.)

- Is it a good time to identify and possibly make international guidelines?
  - Segregated areas vs accommodation/integration of activities?
  - Do we need a framework for point-to-point transportation operations via near-space?
  - Does uncontrolled re-entry of objects from space and near-space pose a risk to ATM?
  - What are the safety targets for human operations in near-space?
- At the moment IAASS recommendation is that "unregulated" suborbital human spaceflight should be treated according to safety rationale similar to those being adopted to allow civil RPAS in the airspace (i.e. a number of safety requirements apply in any case).

ICAO Space Learning Group

- The recent developments in the civil space transportation industry, specifically the potential increased frequency of suborbital flights, have focused ICAO attention on how these activities can be integrated into non-segregated airspace.

- On 6 June 2014, ICAO State letter (AN 1/64-14/41) was issued inviting States to provide information to the ICAO Secretariat on a space sector or activity being developed in their territories, or near-term plans in this regard.

- ICAO Space Learning Group was established to assist the Secretariat in further studying this matter and relevant international organizations were invited to inform ICAO about the possibility of nominating an expert.

ICAO Space Learning Group's objective

- The task of the group is to study the issue closely together with those actively engaged in civil space transportation to better understand the industry's future needs and, in particular, begin to plan for a safe, efficient and more routine activity in non-segregated airspace.

- The Space Learning Group will review the relevant regulatory and guidance material produced by Member States; and

- develop an outline for a work programme to be considered by the ICAO Air Navigation Commission, including a "space" thread within the Global Air Navigation and Global Aviation Safety Plans (GANP/GASP).

Access and equity to aero-space services

- Aero-space services require seamless flight of a vehicle through airspace and near-space.

- 'Equity' has two aspects: economic affordability & freedom to access (use).

- For the economic viability of aero-space services, maximum access (use) to newest means of transportation will be indispensable.

- Maximum access, if achieved, will enhance economic affordability.

- Freedom to access (use), if ensured on a non-discriminatory and global basis, will stimulate world-wide demand for aero-space services.

- Consequently, there will be maximum equity in aero-space services.

How to ensure freedom of access (use) to aero-space services?

- The first step should be to initiate global understanding of the freedom of access (use) and the importance of global aero-space services.

- This should be done with the adoption of an international declaration of basic, broad and high-level voluntary principles, through an appropriate intergovernmental organization; (e.g. ICAO Assembly or UN General Assembly) .

- No need to reinvent the wheel for drafting the contents of such a declaration.

- One may borrow and adapt some principles from universally acknowledged beliefs that are the foundations for international activities relating to outer space, air transportation, telecommunication, trade, etc.

Possible principles

- The principles should relate to:

- Universal access

- Highest degree of safety and security

- Uniformity of standards

- International cooperation

- Opportunity for participation

- Single international organization

- Etc. etc.

Possible principles (cont.)

Principle I:

- States should co-operate so as to promote the availability of aero-space services to all countries and people of the world as soon as is feasible and practicable on a global and non-discriminatory basis.

Principle II:

- Global aero-space services should be established on the basis of highest possible degree of safety, efficiency, reliability and security, and take into careful consideration the safety of existing aviation transportation and other uses of air space, near-space, and outer space.

Principle III:

- In order to secure the highest practicable degree of uniformity in standards and procedures, all international standards and recommended practices and procedures relating to global aerospace transportation services should be adopted by the International Civil Aviation Organisation, after active consultation with all stakeholders.

Possible principles (cont.)

Principle IV:

- Free and fair world-wide competition, in accordance with fundamental principles governing international trade and commerce, should be fostered in relation to all aspects of global aero-space operations.

Principle V:

- All interested intergovernmental and non-governmental organizations, national policy makers, regulatory authorities, aerospace operators, service providers and manufacturers should make every possible effort to follow these voluntary principles with a view to facilitating coordinated solutions and the full implementation of a safe and efficient global aerospace transportation industry as soon as possible.

Conclusions

- It is hoped that this suggested first step may go a long way in bringing the required access to and equity in aero-space operations and in its speedy availability.

- The precise wording of the suggested Declaration is not important, as it may be modified to achieve the suggested approach, objective, ideas and the process.

- As the need arises, eventually the principles of the Declaration should be further elaborated, into more detailed binding and non-binding governance principles, rules, procedures, etc.

- Aero-space operations will carry passengers, cargo, mail, scientific experiments, or will provide air-launch services for spacecraft, etc. Their specific requirements would need to be accommodated as well.

Conclusions (cont.)

- Finally, as suggested by Dr. Joseph Pelton, the international community (through consultations among the UN, ICAO, ITU, UNEP, WMO, WHO and all other stakeholders) would need to:

- Consider – for instance in ICAO - a broader definition of 'aero-space operations' in terms of new applications that are emerging especially in the aerospace.

- Recognize that uses of the aerospace would need to be considered as different from traditional thoughts about the use and control of traditional concepts of 'national airspace'.

- Recognize that the new applications raise interdisciplinary regulatory considerations that involve: (i) the environment; (ii) frequency regulation and coordination; (iii) health standards and perhaps other areas.

- Recognize that many of these considerations are of particular concerns and interests of countries that are not necessarily space powers and countries that may have a greater interest in these new applications.