INTERNATIONAL CONFERENCE ON CURRENT CHALLENGES IN AVIATION AND SPACE LAW

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Air Transport is rapidly expanding and the introduction of drones, small unmanned aircrafts etc are on the rise. In order to universally facilitate the regulations ICAO has played a very vital role in order to synchronise with IATA regulations and has taken the local legislation of contracting states and added SARPs in order to make a framework for the future. ICAO has been constantly working on improvements towards civil aviation and regularly updating the regulations for the future. In order to do so, ICAO has set up committees and working groups in various areas to fulfil this.

To determine the future state of civil aviation, it is useful to examine the key drivers of international civil aviation regulation. The aviation industry is of fundamental importance for the economy of all countries, as we rely on this transport mode so as to ensure reaching respective destinations at the earliest. Due to the international nature of these industries, it is important that there is a forum for creating globally consistent regulations. The International Civil Aviation Organization (ICAO) plays significant role in the technical regulation of their respective industries.

The standards set by ICAO is critical to air transport, as without agreed international standards it would be difficult to sustain a safe and

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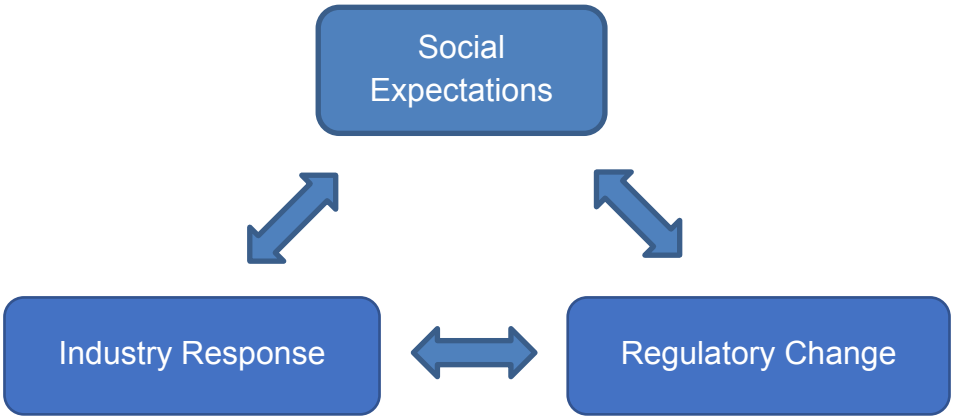
viable international aviation industry. The international nature of the industry encourages Member States of ICAO to cooperate in setting universally applicable international standards. Member States are responsible for incorporating these international regulations into their national laws so that the objectives of these organisations cannot be achieved without national legislation that promotes the application of these international regulations. The drivers of regulatory change are often intertwined and not easy to separate.

External shocks such as terrorist attacks or environmentally damaging events that create public outcry are the primary driver of international regulatory change. Shifts in societal expectations and technological innovations are also drivers. The initial push for major regulatory change tends to come from leading or influential nations, such as the United States of America (the USA). The pace and scale of change tend to increase with the involvement of more influential nations. Responses to events or changes in less influential nations may be limited, unless other more influential countries also feel the impact or risk.

The international regulatory response to external shocks is likely to remain the same. How nations react, however, may change over time. From recent acts of terrorism and aviation incidents, we see public pressure for change and reactive regulatory responses. In the future, it is possible that regulators will not react to social expectations in such a responsive manner. The three key players driving regulatory change are society (through their response to external shocks), the regulator and the industry. Society creates expectations for regulatory change because of highly publicised adverse events causing death or environmental damage (eg. the recent aviation incidents). In turn, this affects the role of the regulator, which is pressured to amend and create new regulations in response.



Regulators are also pressured by industry, which bears the costs of any regulatory changes (such as the proposal to more closely track aircrafts in flights). The nature and pace of regulatory change may depend on the role and power of the three players. The international context of the civil aviation exacerbates this tension. ICAO has a significant role in establishing international regulations, but national regulators are also important. Influential nations can affect the impact of international rules through their implementation speed or by the nature of their national regulations.

The USA is a dominant driver of regulatory change in civil aviation. Its regulatory response to the September 11, 2001 terrorist attacks was an immediate tightening of its aviation security regulation, and all nations flying to the USA were required to implement matching regulation. In hindsight, some of these changes may have been knee-jerk and heavy-handed. It also raises a question about the regulatory response if the tragedy had occurred in a less influential nation, rather than the USA. Shifts in social expectations drive regulatory change. Deregulation of civil aviation economic regulation in the late 1970's and early 1980's saw a shift in thinking about regulation. Its purpose shifted from

protecting industry to encouraging a free market system. Recently, we have seen this shift continue with the encouragement of new disruptive technologies, for example, SUAs used by amazon.

In the civil aviation industry, there is a relationship between technology standards and environmental impacts. Designers invent new composite construction materials to improve both aircraft efficiency and to reduce noise and emissions. The pace of international regulatory change is typically slow, unless external shocks create public outcry in powerful nations. The pace of regulatory change is affected by many factors. The international nature of ICAO imposes cumbersome processes to adopt or amend international standards, which usually requires involvement by all or a significant portion of the Member States. International regulatory change is also affected by a nation's pace of change, as smaller or developing countries may wait for influential countries (in terms of fleet or wealth) to implement these changes.

International coordination between Member States may hinder the pace of regulatory change. It also provides smaller countries with an opportunity to create innovative national regulations or to showcase itself as a test bed. This might be a means for nations that otherwise have little influence over the development of international rules, to help shape these rules.

Civil aviation regulation dates back to the 18th century and hot air balloons, when regulation was focused on the safety on ground, rather than safety on board. As aviation developed as an industry, countries passed national laws that were inconsistent with other countries and it became apparent that international regulation was required to ensure public safety. It was in 1944 that an international aviation regulatory system was developed after 54 countries met for a conference in Chicago to discuss the future of international aviation. The conference resulted in the Convention on International Civil Aviation, commonly known as the Chicago Convention. This Convention established the rules under which

international aviation operates and became a specialized agency of United Nations Economic and Social Council (ECOSOC) in 1947.

The Chicago Convention established the International Civil Aviation Organization (ICAO) with a vision to achieve sustainable growth of the global civil aviation system. The ICAO Council adopts Standards and Recommended Practices (SARPs) which are specifications to achieve "the highest practicable degree of uniformity in regulations, standards, procedures and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation.

Member States are encouraged to comply with SARPs and develop their national regulations accordingly. Articles 37 and 38 of the Chicago Convention require Member States to adopt SARPs to the practicable extent. Member States therefore have an obligation to secure, to the highest degree possible, compliance with these SARPs. Member States implement the SARPs wherever they are relevant in their respective State's context and justified by cost-benefit economic analyses. ICAO SARPs do not have the same legally binding force as the Chicago Convention itself, as Annexes are not international treaties. States are required to give notification of differences to SARPs.

The Chicago Convention was influenced by the desire to protect national interests. Discussions between the USA and the UK the two big aviation powers at the time, on the economics and regulation of international air transportation dominated the Conference. The UK, whose air fleet had been largely destroyed during World War II, wanted to protect their airlines and advocated for an intergovernmental regulation of civil aviation with bilateral agreements between States. Civil aviation was a new and developing industry and many nations wanted to protect and promote the development of their own national carriers. The USA favored a more liberal approach and was committed to establishing multilateral open skies agreements, which would enable carriers to freely offer services with minimal government intervention.

The USA's view did not succeed, and the protectionist notion was incorporated into the Chicago Convention.

Article 1 holds that 'the Signatory States recognize that every State has complete and exclusive sovereignty over the airspace above its territory'. Aviation routes must be pre-approved by governments and the State is able to restrict access to certain airports. Article 1 has a significant impact for the development of multilateral agreement on international traffic rights and still provides a basis for regulation of aviation markets today. Initially the International Airline Transport Association (IATA) regulated airlines frequencies and fares. This heavily regulated system broke down in the 1970s and traffic rights are now regulated through "open skies" and other liberal regimes. Route restrictions remain at the will of every sovereign state and other foreign states entering the agreements. As ICAO is tasked with standardising the technical requirements of civil aviation and largely leaves the economic regulation to Member States, it has little oversight of bilateral and open skies agreements.

Aviation safety management systems Aviation safety is one of ICAO's core objectives. ICAO collaborates with the air transport community to continuously improve aviation's safety performance by the development of SARPs, the global strategies outlined in the Global Aviation Safety Plan (GASP), audit programmes and implementing safety programmes to address safety deficiencies. GASP establishes safety objectives and initiatives, and safety management SARPs assist Member States to manage aviation safety risks. These safety management provisions provide proactive strategies for improved safety performance. Safety management systems allow for the proactive identification of hazards to encourage the improvement of safety performance and help avoid the negative consequences of serious incidents.

Annex 19 (Safety Management) contained the ICAO safety management provisions from November 2013.

To overcome the problem of implementation issues, ICAO launched the Universal Safety Oversight Audit Programme (USOAP) in 1999 with the objective of promoting global aviation security by auditing ICAO Member States. USOAP determines the status of States, establishes safety oversight measures, as well as associated procedures and provides guidance material. In 2005, USOAP was expanded to cover provisions contained in all safety-related Annexes to the Chicago Convention. In 2011, USOAP developed from periodic audits to a new approach based on continuous monitoring, the Universal Security Audit Programme Continuous Monitoring Approach. The audits allow ICAO to evaluate safety oversight capabilities and achieve a comprehensive understanding of issues relating to air transport's growth and development. This proactive risk-based approach to monitoring provides ICAO with the ability to perform audits as well as additional activities, such as ICAO Coordinated Validation Missions that help States resolve safety deficiencies. ICAO also assists States to implement its SARPs. The "No Country Left Behind" campaign seeks to ensure that SARP implementation is globally harmonised. This recognises that some States may struggle to meet the requirements for some SARPs, and that large discrepancies remain in how some States implement them.

ICAO now plays a more direct role in assisting developing countries to implement SARPs by taking an active coordination role between States. There is potential for reputational damage on behalf of Member States if they fail to implement ICAO SARPs. The potential for economic loss due to reputational damage can create pressure to comply with international regulations. This can act as an effective enforcement tool to ensure that signatory States implement and enforce ICAO SARPs.

Technological innovation in air transport centers on the continued improvement in air transport efficiency and safety. The emergence of larger and more powerful engines and composite construction materials has resulted in improvements to aircraft size and speed, resulting in higher productivity for the airline industry.

New aviation technology (such as the components of aircraft) creates noise, pollution and safety concerns. Aircraft are required to meet certain environmental certification standards adopted by the ICAO Council, which are contained in Annex 16 to the Chicago Convention. Annex 16 consists of two volumes, Aircraft Noise and Aircraft Engine Emissions. The growing demand for air travel has significantly outpaced technological innovations to mitigate the increase in environmental impacts. This has resulted in the aviation sector being a significant source of greenhouse gas emissions. ICAO is mandated to develop a range of standards, policies and guidance material for measures to address a range of environmental problems, such as aircraft engine emissions, aircraft noise and alternative fuels.

ICAO has taken a number of steps to address emissions, such as urging States to promote scientific research to address the issues. These policy measures have been criticised for making slow progress in developing market-based mechanisms to deal with carbon dioxide emissions. Virtually all of ICAO's work In the area of climate change has been in the form of resolutions or guidance. In 2012, the technical committee of the ICAO Council, the Committee on Aviation Environmental Protection (CAEP), reached an agreement on a carbon dioxide (CO_2) metric system to underpin the CO_2 standard. This represents a consensus between the States on the Committee as well as major airlines and stakeholders who observed the process. ICAO seeks to develop an appropriate regulatory limit for the aircraft CO_2 standard using ICAO criteria. While no standards have been developed, this is a significant step for ICAO. The CAEP made it clear that emissions regulations will be stricter only when the need is recognised; the move is technically feasible; and the impacts economically fair.

Remotely Piloted Aircraft Systems (RPAS)

The regulatory response to the introduction of RPAS is an example of nations amending their regulations ahead of ICAO

developing SARPs. Aviation regulators struggled to address the challenges posed by increased RPAS activity, which has the potential to disrupt the current aviation system. Significant safety risks include mid-air collisions with aircraft or a mid-air failure, posing a threat to the people and property. New Zealand, for example, recently updated its rules applying to RPAS, as the existing rules were not fit for purpose for the safety risks that modern RPAS bring. However, it has yet to develop a comprehensive set of rules to fully integrate RPAS into New Zealand's aviation system. This approach appears similar to other countries which have addressed the immediate safety risks and continued to monitor international developments at ICAO. In Europe, national safety rules apply to RPAS but these differ across the EU and key safety issues are not addressed in a consistent or coherent manner. There is currently no international uniformity of RPAS rules. ICAO faces a number of key challenges in adopting SARPs for RPAS, such as the rapid evolution of technologies and the high variability of systems (RPAS Panel, 2015). ICAO's RPAS Panel is focusing "on development of SARPs for adoption by the Council of ICAO in 2018 related to airworthiness, operations (including RPAS operator certification) and licensing of remote pilots".

Dangerous Goods Regulations (DGR)

The transportation of dangerous goods to, from, or through any State is subject to the Civil Aviation Requirements and law of each National Regulatory Authority. If the transport of dangerous goods will be by aircraft entirely (origin till destination including transit (if any)) the transportation shall be subject to the regulations of Annex 18, ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air and IATA.

ICAO Annex 18 – The Safe Transport of Dangerous Goods by Air (SARPs) and its related ICAO Doc 9824-AN/905 details the transport of dangerous goods by air. However, the cargo-carrying airlines of the world – organized as IATA, the International Air Transport Association –

created their own regulations for the international transportation of dangerous goods by air. They did this to make the international regulations easier to understand and to comply with, not to reduce their stringency in any way. In fact, the IATA Dangerous Goods Regulations contains all the elements of the ICAO Technical Instructions and has added requirements concerning operational considerations.

If the transportation of HazMat (aka. Dangerous Goods) to, from, or through the U.S., then it is also subject to the Hazardous Materials Regulations of PHMSA/USDOT. Though similar to the domestic Hazardous Materials Regulations, the dangerous goods regulations of ICAO/IATA differ in many substantial ways.

What makes ICAO/IATA Dangerous Goods training mandatory?

The transportation of dangerous goods by air creates unique potential for hazards to people, property, or the environment. It also creates modal-specific dangers for the flight crew of an aircraft. I will put it in a different way to think about the heightened risk to carriers of dangerous goods by air: **at 35,000 feet there's no place to pull over if your cargo becomes a threat.**

That is the reason international regulations for the safe transportation of dangerous goods by air were created. However, the regulations themselves are not enough without a requirement to provide training for anyone responsible for the safe transportation of those dangerous goods.

Since information provided by the shipper is used by all persons who handle the dangerous goods – the information is essential and very important all the way from the freight forwarder till the pilot in command of the aircraft. Only qualified persons who have received the prescribed training can safely perform the role.

The purpose of IATA dangerous goods training is to ensure persons involved in the transportation of a dangerous goods are familiar

with the regulations and can complete their job duties in compliance with them.

Human Factors

The term "human factors" has grown increasingly popular as the commercial aviation industry has realized that human error, rather than mechanical failure, underlies most aviation accidents and incidents. If interpreted narrowly, human factors is often considered synonymous with crew resource management (CRM) or maintenance resource management (MRM) or ramp resource management (RRM). However, it is much broader in both its knowledge base and scope. Human factors involves gathering information about human abilities, limitations, and other characteristics and applying it to tools, machines, systems, tasks, jobs, and environments to produce safe, comfortable, and effective human use. In aviation, human factors is dedicated to better understanding how humans can most safely and efficiently be integrated with the technology. That understanding is then translated into design, training, policies, or procedures to help humans perform better.

Despite rapid gains in technology, humans are ultimately responsible for ensuring the success and safety of the aviation industry. They must continue to be knowledgeable, flexible, dedicated, and efficient while exercising good judgment. Meanwhile, the industry continues to make major investments in training, equipment, and systems that have long-term implications. Because technology continues to evolve faster than the ability to predict how humans will interact with it, the industry can no longer depend as much on experience and intuition to guide decisions related to human performance. Instead, a sound scientific basis is necessary for assessing human performance implications in design, training, and procedures, just as developing a new wing requires sound aerodynamic engineering.

Aircraft manufacturers have addressed this issue by employing human factors specialists, many of whom are also pilots or mechanics, since the 1960s. Initially focused on flight deck design, this group of about 30 experts now considers a much broader range of elements, such as cognitive psychology, human performance, physiology, visual perception, ergonomics, and human-computer interface design. Applied collectively, their knowledge contributes to the design of airplanes and support products that help humans perform to the best of their capability while compensating for their natural limitations.

Because improving human performance can help the industry reduce the commercial aviation accident rate, much of the focus is on designing human-airplane interfaces and developing procedures for both flight crews and maintenance technicians. Manufacturers also continue to examine human performance throughout the airplane to improve usability, maintainability, reliability, and comfort. In addition, human factors specialists participate in analysing operational safety and developing methods and tools to help operators better manage human error. These responsibilities require the specialists to work closely with engineers, safety experts, test and training pilots, mechanics, and cabin crew to properly integrate human factors into the design of all airplanes.

Training Requirements

Competency Based Training (CBT) – The Future of Training

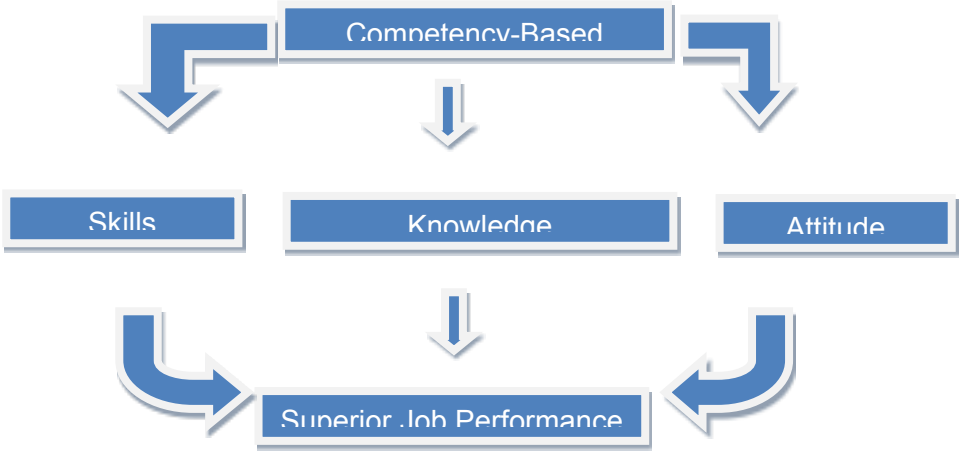
The first introduction by ICAO of competency-based training provisions (Procedures for Air Navigation Services – Training (PANS-TRG, Doc 9868) was in 2006. ICAO strategy towards aviation training in Assembly Resolution A38- 12 was completed.

Background of Competency Based Training

ICAO Audit results have shown that personnel are often not properly trained in dangerous goods. CBT ensures that personnel is trained to perform their designated functions competently.

In order to ensure that the personnel attain superior job performance, the CBT was introduced by ICAO to be mandated for Dangerous Goods training. The Competency Based training shall be mandatory with effect from January 1st, 2021. The elements of the competency-based training are given in Appendix H of the IATA Dangerous Goods Regulations (manual) and shall be mandated in the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air, 2021-22.

What is CBT and Why?



CBT versus Traditional training

Traditional training	Competency Based Training
Conventional training is typically designed around the job title and is subject-matter driven	CBT is designed to ensure that trainees are able to perform their job and is function driven.

Fundamental Elements of CBT

- **Determine what employees need to do**: Conduct a task analysis – This analysis must be done by every level of persons commencing from the top managerial level all the way to the team leaders.
- **Determine how well it needs to be done:** Set performance standards based on regulatory and business requirements and check if it has been accomplished.
- **Train them to do it**: Demonstration and Practice. Training off-late has been a last resort so as to cut costs. This factor is one of the main causes of human error and results in aircraft incidents and/or accidents. ICAO therefore has mandated training at every level for all staff from ground, maintenance, crew, catering, navigation etc. and one of the main reasons for ICAO to introduce the Competency Based Training is to see if the persons at their respective positions are competent enough to accomplish their task.
- **Verify they can do it:** Assess Performance - Staff performance must be assessed at all levels to verify if the person is competent to do his/her task effectively. This is one way to check for minimal errors.

Roles and responsibilities in CBT

- Employer - What the employee must do
- Instructor – Trains the employee based on his/her competency
- Trainee – Attends the training and must write an examination in order to verify his/her understanding of competence.
- Regulator – Conducts audit to check if the employees have attained competency

Benefits of CBT

- Supports Safety Management Systems (SMS)
- Improves performance on the job
- Facilitates development of effective training and reduces risks

Proposed changes to the ICAO training provisions

Objective

- Clarifying the intent of the training provisions
- To prevent conflicts with the principle of CBT
- Encourage CBT - it is the intention to make it mandatory in the future
- The employer must ensure that personnel are competent to perform the functions for which they are responsible prior to performing any of these functions.
- This must be achieved through training and assessment

Example – Competency Based Training in Dangerous Goods Regulations

- Removal of all references to job titles in Chapter 4 of the ICAO Technical Instructions (TIs).
- Replaced by "functions" in the Technical Instructions (new 4.1.1)
- Removal of the current Training Tables
- Tables often considered as mandatory requirements
- Contradicts with the principle of "commensurate with your responsibility" and CBT
- Table 1-4 and 1-5 in the TIs refer only to the aspects of knowledge and are job specific

Assessment

- Technical Instructions currently only refers to "test".
- A test is just one method of assessing required competence.
- Replacing "test" with "assessment" provides for more flexibility to demonstrate the required competence is achieved.

Guidance on a competency-based approach to training

Driving Principle - Function Approach

- A tool to assist identifying functions.
- A basic competency framework for dangerous goods personnel is provided in the ICAO Technical Instructions guidance and Appendix H of IATA Dangerous Goods Regulations. This guidance material is a very systematic approach to accomplish the Competency units, competency elements and performance criteria.

Structure of a competency-based framework and definitions

- **Competency units -** A discrete function consisting of a number of competency elements.
- **Competency elements** - An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits, and an observable outcome.
- **Performance criteria -** Simple, evaluative statements on the required outcome of the competency element and a description of the criteria used to judge whether the required level of performance has been achieved.

Future Direction of ICAO towards Safety, Security and Environment

Safety

The challenge for aviation is to develop more sophisticated tools and techniques to proactively improve safety in an operating environment that is increasingly complex, due to the growth in the number of flights worldwide, the wider range of technologies from older and latest generation aircraft flying in the same airspace, and the progressive introduction of remote-controlled airborne vehicles. The challenge is also to further improve the safety of the global system while focusing on those regions of the world with the highest levels of safety risks. Accordingly, the ICAO assembly will review for adoption a proposed safety strategy based on transparency and the sharing of safety information, the greater involvement of regional safety organizations and increased cooperation between regulators and industry stakeholders.

Security

The World Trade Centre attack (also referred as 9/11) intensified efforts to protect commercial aircraft and air transport facilities from terrorist attacks. The ICAO Assembly evaluated a range of proposals to deal with new and emerging threats to the security of flights, as well as persons on the ground, while accelerating the flow of passengers at airports. It is also expected to adopt a comprehensive security policy to further tighten the global security net.

Environment

ICAO Assembly, in what is expected to be a landmark decision, shall plan to adopt a policy on climate change that includes even more ambitious goals than those contained in a Programme of Action in aviation and climate change. This will constitute the first and to date only globally-harmonized agreement from a sector for addressing its CO_2

emissions. Member States will look at a number of mitigating measures to further reduce civil aviation's impact on the environment, including market-based approaches and alternative fuels for aviation, as well as other technological and operational initiatives to support the sustainable growth of international aviation.

Remotely Piloted Aircraft Systems

As the RPAS revolution is now spreading all over the world, including multiple developing and lesser developed countries (including Small Island Developing States, Land Locked Developing Countries, Least Developing Countries), which do not have the competencies, nor the finances, to participate in the meetings of the «budget-less» JARUS, nor to independently tackle the creation of a national RPAS regulation, it would appear that ICAO could play an important role as «facilitator and harmonizer» of national drone regulations, and thereby permit the growth of safe RPAS operations is such countries. However, the ICAO Council does not see this as part of the organisation's mandate. Should the Member States make a concerted effort to change the opinion of the ICAO Council? Could the solution be closer cooperation between ICAO and JARUS? In this case, would JARUS have to be transformed into having a «legal entity»?

If a solution is not found, the risk of seeing a multitude of inadequate national regulations being created in many countries where the societal benefits and/or the financial rewards of drone use could outweigh their safe use. In turn, this could result in decreasing aviation safety overall in the countries concerned.

In light of the accelerating pace of technology development and innovation, Drone Enable also gave ICAO the chance to announce the necessity of a stronger and more vocal participation of industry in its activities, because it, as well as the regulatory authorities of the ICAO Member States, no longer have all the required capabilities and talents to

cope. This is one of the principal justifications for the creation of national civil drone councils.

- Praise for the work of EASA relative to the preparation (with limited resources and in record time) of the upcoming EU RPAS regulation.
- Notification that the necessary technical and operational standards (including product safety standards), as well as the required standard scenarios, still do not exist.

Note: At the EASA High Level Conference on Drones in Helsinki, Finland in November 2017, Violeta Bulc, European Commissioner for Transport, highlighted the lack of standards as being extremely worrisome and called on the standards organisations and industry to urgently tackle this issue.

- Applause for the results of the work undertaken by JARUS.
- Emphasis on the importance of small and medium-sized companies (SMEs) in the field of RPAS-related technology development and a request to ICAO to evaluate how such companies could be included in the ICAO process without systematically being called on to travel to Montreal for meetings.
- A request to ICAO to open up communications to a wider (drone) community and to consider starting to make such communications in not only English, but also the other official ICAO languages (Arabic, Chinese, French, Russian, Spanish).
- A stressing call for recognition of the critical importance of getting the general public to understand and agree with the drone community's (regulators & industry) common views of the RPAS future, which implies that such a common view has to be produced and implicates outreach to non-aviation general media and adapting the language and possibly the content of the communications.
- The international, European and national standards organisations have still not agreed on a common way forward.

- A commonly agreed priority listing of the standards urgently required for VLL (< 120 m) VLOS and BVLOS operations with Light RPAS (< 25 kg/55 lbs) has still not been produced.
- Not a single standards organisation has developed any standards (including product safety standards for VLOS operations), that have actually officially been adopted by a national aviation authority.

In view of the large amount of Light RPAS already flying VLL missions, it is imperative to tackle, with the utmost urgency and with priority over standards for large RPAS, the creation of the standards applicable to these systems. In addition, with less than a year away from the new RPAS regulation being implemented in Europe, the «standard scenarios» required for the successful functioning of the «specific» operations category, no understanding has yet been reached between EASA, the EU Member States and all the other stakeholders on the format of a standard scenario, nor on how nationally elaborated standards scenarios will be dealt with.

The Light RPAS community [manufacturers & operators (current & future)] should pay attention to what is going on. If they are not careful and act pro-actively in a coordinated manner, their commercial future may be conditioned by standards & standard scenarios defined by entities that are not representative of their communities, nor really understand it.

At the same time, the RPAS (<25 kg & >25 kg) communities should both remember that airspace safety is the common responsibility of all airspace users. This responsibility should be proportionately shared by all RPAS community members (small & large). Defining & applying this proportionality will be one of the keys to success.

Getting RPAS to the next stage, now hinges around the creation of a U-Space (UTM) regulatory framework. This requires political understanding of the urgency and true cooperation willingness amongst all the implicated stakeholders.

In the traditional aviation community, moving from design to certification and then to series production, can take years, and requires substantial investment. Civil RPAS manufacturers tend to have a design-to-production cycle that is comparatively short, adapt rapidly to evolving technologies, and can come up with product improvements in months. The majority of these companies are micro companies and SMEs (often start-ups), which are less capital intensive, have short decision chains, and can react to the market in a very nimble way. Many of these companies have an in-depth knowledge of the latest information technologies, but no real «aviation experience». The lack of aviation experience and understanding of the aviation safety culture can generate disruptive attitudes towards aviation safety and the necessary processes to prove it. Herein lies the current challenge for the world's aviation and RPAS communities.

Conclusion

In order to have a safe air transport, the role of ICAO in the future regulation of civil aviation plays a very vital role. It is therefore recommended that the industry needs a new Annex that shall address International Air Transport Regulatory matters and defines its requirements in a binding legal text through Standards and Recommended Practices, while taking into consideration developing and underdeveloped countries. ICAO also must add the SARPs in relevant Doc series.

Summary of key themes

► The ICAO, specialised UN body for air transport is systematically structured and is responsible for technical regulations while leaving economic regulation to the Contracting States.

► Performance based regulatory change is becoming more common.

► International coordination between Contracting States may hinder the pace of regulatory change. This may provide developing countries with an opportunity to create innovative national regulations or to showcase itself as a test bed for new technology, as a means of possibly influencing the development of international rules.

► It is common for nations to regulate ahead of international organisations. Many States have recently introduced and developed rules for Remotely Piloted Aircraft Systems despite ICAO's absence of technical regulations for the new technology.

► The pace of regulatory change increases in response to external shocks, e.g. events resulting in the loss of life or adverse environmental impacts.

Removal of the training tables

► "Test" is replaced by "Assessment"

►The proposed changes will currently only encourage CBT (intention to make it mandatory in the future)

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