出國報告(出國類別：開會)

參加「美國FAA/歐盟EASA國際航空安全合作年會」出國報告書

服務機關：交通部民用航空局
姓名職稱：林國顯 局長
　　　　　林俊良 組長
　　　　　張泰誠 檢查員
派赴國家：美國
出國期間：107.06.17-107.06.26
報告日期：107.08.08

摘　　要

一、美國 FAA 與歐盟 EASA 是航空業的兩大巨頭，每年所舉辦的國際航空安全合作年會(International Aviation Safety Conference)，是雙方在適航驗證及航空監理法規標準取得共識的平台，不僅探討現階段的航空議題，也針對未來環境(如科技演進、中國大陸的崛起…等)逐漸浮現的關切要項討論。

二、國際航空安全年會擇於美國華盛頓特區舉辦，本次會議主題為「實現全球化航空安全」，內容涵蓋航空器驗證與適航標準一致性、飛航標準全球化與模擬機訓練重要性，主要研討新興航空技術管理、無人機管理以及針對未來發展技術團隊以提升航空安全。

三、在全球化的演變下，台灣地方及規模較小，運輸安全案件調查能量可利用參訪或其他有效的合作方式發展最有效的經濟規範，強化現有飛安會調查能量，同時與民用航空局安全監理相互配合下，保持與國際間相同的標準，透過持續參加各類國際航空安全會議與教育訓練，並獲得最新的航空業資訊，是提升飛行安全的最佳途徑。

目　　　錄

壹、目的

美國 FAA 與歐盟 EASA 是航空業的兩大巨頭，每年所舉辦的國際航空安全合作年會(International Aviation Safety Conference)，是雙方在適航驗證及航空監理法規標準取得共識的平台，不僅探討現階段的航空議題，也針對未來環境(如科技演進、中國大陸的崛起…等)逐漸浮現的關切要項討論。

2018 國際航空安全年會擇於美國華盛頓特區舉辦，本次會議主題為「實現全球化航空安全」，內容涵蓋航空器驗證與適航標準一致性、飛航標準全球化與模擬機訓練重要性，主要研討新興航空技術管理、無人機管理以及針對未來發展技術團隊以提升航空安全。與會者包含航空產品設計製造、航務、維修、訓練及民航主管機關之代表計三百餘人，我國參加單位除本局外另有航發會、飛安基金會、及中華、長榮、華信等航空公司代表參加。

我國非 ICAO 會員國，利用本次國際航空安全會議於華府召開期間，同時拜會美國 FAA 及國家運輸安全委員會藉以交換國際監理規範、研討新興航空技術管理並識別航空業界之安全趨勢，可加強雙方於飛安與適航驗證合作關係，建立合作平臺，並利用議程結束返國前，安排考察約翰甘迺迪機場行李安檢機制及飛航服務相關建設，其成功運作範例可做為我國內機場借鏡。

貳、過程

一、 出國行程

（一）搭乘航班：

日期	航空公司	航班編號	航段	時間
6月17日	長榮航空公司	BR-32	桃園→紐約	1910~2205
6月18日	達美航空公司	DL-5245	紐約→華盛頓	1125~1259
6月22日	達美航空公司	DL-5937	華盛頓→紐約	1100~1227
6月25日	長榮航空公司	BR-31	紐約→桃園	0125~0515+1

（二）參與人員：

單位	姓名	職稱
交通部民用航空局	林〇〇	局長
交通部民用航空局	林〇〇	組長
交通部民用航空局	張〇〇	航務檢查員

（三）行程摘要

日期	地點	行程說明
06/17（日）	桃園/紐約	桃園→紐約 國際線
06/18（一）	紐約/華盛頓	紐約→華盛頓特區 國內線轉機
6/19（二）	華盛頓特區	上午：拜會美國國家運輸安全委員會(NTSB) 下午：參加2018國際航空安全合作年會
6/20（三）	華盛頓特區	參加2018國際航空安全合作年會

日期	地點	行程說明
6/21 (四)	華盛頓特區	參加 2018 國際航空安全合作年會
6/22 (五)	華盛頓特區	華盛頓特區→紐約 國內線轉機
6/23 (六)	紐約	考察紐約機場及聯外交通運輸
6/24 (日)	紐約	考察資料綜整/候機
6/25(一)- 6/26(二)	紐約/桃園	25 日凌晨自紐約機場起飛返抵桃園國際機場

二、 會議摘要:

本次會議主題為「實現全球化航空安全」，內容涵蓋航空器驗證與適航標準一致性、飛航標準全球化與模擬機訓練重要性，主要研討新興航空技術管理、建立合作平臺、無人機管理以及針對未來發展技術團隊以提升航空安全。「實現全球化航空安全」會議過程以論壇的方式執行，邀請美國及歐洲各國民航主管機關首長及航空業者管理階層，針對各項議題進行研討。

本次會議出發前，本局即與 FAA 聯絡，洽詢利用會議的期間，安排本局與 FAA 加強雙邊飛航安全的會議，可使我國對 FAA 組織重整後的功能了解及新的人事與主管的認識，進而活絡溝通管道。

(一) 會議的主題演說 Keynote Speech 由太空工業協會(AIA Aerospace Industries Association)總經理兼執行長 Mr. Eric Fanning,與 FAA 代理署長(Acting Administrator) Mr. Daniel Elwell 開場致詞，致詞摘要如下：

1. 「實現全球化航空安全」主題上，FAA 和 EASA 期待與國際各民航主管機關、相關業者及各領域專家一起合作的團隊，透過共同的承諾、清楚明確的溝通和合作、協調一致的安全標準、政策和程序，

確保全球的航空運輸無縫接軌和安全。

2. 經由來自歐美與其他行業領導者與會，一起參與有關主題的重要對話與討論，包括啟動技術改進和最佳實務作法，以及安全數據和風險分析、測試、訓練和驗證等措施，以降低事故風險。

3. 安全無疆界，希望經由政府和航空安全專業人員分享技術、程序、想法和安全數據，以利更佳的識別和管理風險、加強協調和全球可互用性及加強航空基礎設施並提高全球飛行安全監理能力。最後確認，飛行安全才是最重要的輸出。

（二）大會論壇:多邊夥伴及成員參與下的系統分析(A Systems Approach under Multilateral Partnerships and the Players)

1.論壇主持及 4 與談人:

主持人 Moderator: Pete Bunce, President and CEO, General Aviation Manufacturers Association

與談人 FAA: Ali Bahrami, Associate Administrator for Aviation Safety

與談人 EASA: Patrick Ky, Executive Director

與談人 Industry: Elizabeth Pasztor, Vice President of Safety, Security, and Compliance, Boeing Commercial Airplanes

與談人 Industry: Belinda Swain, Head of Airworthiness, Rolls-Royce Plc

2.本論壇主要是從美國 FAA 及歐洲民航局 EASA 的角度，對各國進口波音飛機或是空巴飛機前，均需執行航空器型別驗證之規定，造成

美國 FAA 及歐洲民航局 EASA 極大的負擔。希望經由各民航主管機關簡化驗證流程多方直接認可 FAA 或是 EASA 的驗證結果，以去除各國執行航空產品驗證及認證程序之障礙。

3. 在現有國際民航組織系統規範下，經由民航主管當局間的夥伴信任關係，透過最小化或消除歧見的方式，降低在進行航空器適航驗證過程中，各國民航主管機關認為重要項目，但其實卻是可交易性和重複性的非技術障礙。民航主管當局和航空業者之間的多邊夥伴關係已經成熟。理論上，各國及業者間可使用系統性方法以減少航空器適航驗證項目及其過程的不同看法，並降低各國對航空器及相關產品的適航特殊條件限制的需求。

4. FAA 及 EASA 分別從監管機構擔任適航安全的角色和責任，以及使用程序化方法取得成功完成驗證的因素進行說明。

5. 工業界由波音及羅斯萊斯代表，從新技術和可能面臨挑戰的新問題論述其驗證過程之分享。

6. 我國目前適航標準及航空器型別認可亦依民航法授權公告援用 FAA 及 EASA 的適航標準，並與 FAA 及 EASA 簽有雙邊協議及工作安排，在適航標準更新及執行面協調均保持暢通，亦在會議上與 FAA 及 EASA 相關人員保持互動，建立良好關係。

(三)小組會議(PANEL)

1. 發展與維持以風險為基準系統間之互信(Developing and Maintaining Mutual Confidence in Risk-Based Systems)。保持可信度是相互間飛機認證系統的關鍵要素，本主題探討民航主管機關如何有效率的運用有限的監理資源，建立以風險為基準導向

的安全系統，屏除本位主義，消彌可能的危安因子。

2. 通往航空安全管理解密之道(Approaches to De-Mystifying Safety Management)。

安全管理系統(SMS)的目標是提供一個架構性的管理以控制風險,有效的安全管理應該考量組織的架構及跟安全有關的運作過程,在科技蓬勃發展的時代,管理者應考量如何攜手合作讓 SMS 更有效率執行,並適度的修調傳統的監理方式,以因應這個世代的安全管理需求。

我國早已推動 SMS 系統並建立飛安績效指標,有關會議中的分享經驗 與我國業者在推動過程類似,將持續參考 EASA 的 SMS 績效制度繼續推動。

(四)小組會議(PANEL)

1. 運用資訊以強調安全與威脅:建置適合全球航空業之安全標準(Leveraging Information to Address Safety and Threats: Establishing Appropriate Safety Standards for a Global Industry)。

各國民航主管機關多年來致力於法規制定之協調性與相容性,但也形成目前發展中和執行面的法規的差異及見解分岐,我們的目標是未來符合全球可接受度外,並應減少重複性的檢查認證措施,此外,也應檢視業者所扮演的角色及 ICAO 所能提供的各類協助,如果各國民航主管機關均能朝相同目標進行,對於建立當前及後續修訂的標準將有莫大的助益。

這部份我國持續依據 ICAO 的文件進行相關法規修訂,可避免因本土

性的規定造成後續法規及執行與國際差異的情形。

2. 多重"樣態"的維修：數位時代下的航空維修(Various " States" of Repair – Aviation Maintenance in the Digital Era)。

在飛機維修領域，新的範疇正在發展中而且部份已經進入商業用途，例如電子飛行書/維修紀錄，運用無人機檢視飛機，採用視頻遠端檢測，這些大數據導向的維修技術改革等討論，無紙化的維修紀錄產生的潛在問題，包括委外維修的界面及紀錄系統的參與，各國民航主管機關說明面對業者技術進步的監理挑戰，以及業者的觀點分享。

我國維修產業亦持續成長中，有關電子飛行書或電子維修紀錄本局亦建立核准作業程序並華航及長榮航太等業者實施中，未來業者若引進新的維修技術工具，本局亦會配合執行驗證及許可程序。

(五)小組會議(PANEL)

1. 面對創新前瞻安全：新航空科技與產品的挑戰(Proactive Safety in the Face of Innovation: Ensuring Readiness for New Aviation Technology and Products)。

因應科技持續以驚人的速度發展及成長，航空工業的發展概念例如電/混合(electric/hybrid)推進器，新一代超音速飛機等，民航主管機關必須找出方法早期與工業結合，及早思考因應，明訂法規框架以及需要改變的策略，以期能同時與全球接軌，探討相互認證計畫的合作，尤其須特別重視在法規的差異分析及未來法規的發展。

2. 文件範例的轉變：未來文件標準探討(Shifting the Documentation Paradigm: Discussion on Future Documentation Standards)。

現今各國民航主管機關之間，針對出口至其他國家的航空器材認證

的文件格式與內容已有相當程度的共識，也奠定全球的標準化的基礎(例如 EASA Form 1,FAA Form8130-3,TCCA Form One, SEGVOO 003)。這個領域若有標準不一致，將會造成原本適航飛機的零組件因為與安全無關的技術原因遭到剔退，進而肇致因無法適時取得組件而衍生不預期的負面影響。主管機關間應規劃完善的合作/採行條款，可運用有限的飛安監理資源應用於最高風險值處，本議題重點在討論目前與未來經由核准的航空器設計資料大數據，以數位解決方案取代傳統的文件表格。

我國與 FAA 及 EASA 簽有雙邊協議及工作安排，在適航標準更新及執行面協調均保持暢通，本局依規定業者可執行使用 EASA Form 1,FAA Form8130-3,TCCA Form One,為適航核准文件，適航標準一致。

(六) 大會論壇:歷史上最安全的期間，維持安全避免自滿(The Safest Period Ever: Maintaining Safety while Avoiding Complacency)

1.論壇主持及 5 位與談人:

主持人 Moderator: David Silver, Vice President, Aerospace
    Industries Association

與談人 FAA: Ali Bahrami, Associate Administrator for Aviation
    Safety

與談人 EASA: Patrick Ky, Executive Director

與談人 Industry: Terry McVenes, Director of System Safety and
    Regulatory Affairs, Boeing Commercial Airplanes

與談人 Industry: Yannick Malinge, Senior Vice President –

Chief Product Safety Officer, Airbus

與談人 Industry: Francis Heil, Managing Director, America
Airlines

2. 在過去 20 年中，航空死亡人數逐步下降，2017 年是航空有記錄以來，最安全的一年。FAA 及 EASA 監理機構分別對安全監理及航空製造業者與航空公司的安全管理系統提升進行報告。並表示各國之間應更積極主動維持互動，保持在飛行安全所作之努力，以及面對新興技術的風險進行掌握與開放。

3. 波音、空巴及美國航空的代表亦分別對其安全提升及保障方面所作的努力進行說明。波音、空巴說明其新科技之改良及與航空公司間之安全合作。美國航空代表對安全管理系統 SMS、安全數據之收集和委託商之管理要求議題分享。

4. 我國對 FAA 及 EASA 的安全監理計畫均保持高度關注，除了解歐美航空年度飛航安全重點與 SMS 推動情形外，亦對波音及空中巴士二大製造廠對其航空器安全不定期發布的服務通報資訊進行掌握，以確保我國籍航空器的飛航安全的各項監理措施。

(七)小組會議(PANEL)

1. FAA 與 EASA 適航技術實施程序第 6 版修訂(FAA-EASA TIP Revision 6)
2018 年 3 月 22 日，FAA 和 EASA 之間的技術實施程序修訂版 6 生效。這個最新版本 TIP，正在進行的審議與當前的努力及其在未來版本中的擴展有關文件。本技術會議將為 FAA 和 EASA 提供機會，討論即將進行的 TIP 修訂的規畫內容。

2. UAS ／ RPAS 發展的步伐繼續挑戰運營商和監管機構尋求平衡確保安全與滿足不斷增長和復雜的運營整合需求之間的關係。UAS 使用的新業務案例比比皆是，但每個人都必須解決航空技術能力限制和安全問題。本技術會議是分享有關監管變化，運營商責任，擬議的新的或新穎的運營以及任何相關經驗教訓的信息的機會。

(八)小組會議(PANEL)

1. 模擬機訓練重要性與新科技(Emerging Technology and the Importance of Simulator Training)

因應遙控飛機的發展，人員操作的訓練亦應該有系統性的先進模擬器以利各類人員培訓的進行。技術會議中針對無人機飛行員的需求以及如何提供模擬器培訓的項目進行討論。

2. 維修技術人力之未來發展(Developing a Technical Workforce for the Future: Part 147 Aviation Maintenance Technician Schools)

美國聯邦航空 FAA 最近提出修改無人機規則，其中包括無人機訓練課程和操作規則的要求、管理航空維修技師學校。本技術會議對未來無人機的技術及操作人員能力的培訓進行討論，包含使用視覺模擬（CBT）和衛星方式進行培訓。

美國 FAA 對無人機管理規則的修訂，主要是增加營利用無人機之管理，在對無人機的操作面管理及操作人證照制度與我國已通過的民航法無人機類似，但 FAA 將無人機的操作人訓練課程亦納入在通告之內，雖無強制性，但可作為業者在申請訓練機構時的課程參考，這部份可供我國作為後續法規修訂之參考。。

圖左:訪團成員於會場合影　　　　　　　　　圖右:民航主管機關與業者代表舉行論壇

(九)聯邦航空總署(Federal Aviation Administration, FAA)雙邊會議

　　1.我國不是國際民航組織ICAO的會員,在落實飛航安全的各項資訊與規範,實有賴 FAA 的各項協助,包括 FAA 執行的國際飛安評鑑(IASA International Aviation Safety Audit),代表ICAO 的全球飛安評鑑(USOAP Universal Safety Oversight Audit Program),維持我國在國際間的飛航安全在第一的等級;在飛航安全的各項新規範資訊、實務經驗交流、提供專業人員訓練的機會等給予我國直接的協助;另亦持續協助我國參加國際民航主管機關的飛航安全會議,我國在國際飛安專業會議的場合仍可與其它國家的民航主管機關維持互動的機會。

　　2.本次雙邊會議安排於會議的第 2 天 6 月 20 日的 10:30 至 12:00,美方出席的人員為飛航標準部門(Flight Standards Service)的主管:

　　Mr. Michael Zenkovich, Deputy Executive Director

　　Mr. Tim Shaver, Acting Director, Office of Safety Standards

　　Mr. Van Kerns, Deputy Director, Safety Standards

　　Mr. Steven Gottlieb, Executive Director, Office of Accident Ivestigation

Mr. Bruce DeCleene, Director, Office of Foundational Business

Mr. Robert Duffer, Senior Technical Advisor

Mr. Monico Robles, Flight Inspector

Ms. Katherine Haley, Regional Coordinator

Mr. Paul Devoti, Foreign Affairs Specialist, Office of International Affairs

Mr. Brian Hutchins, Asia Pacific Regional Coordinator

我方出席人員：

林○顯局長

林○良組長

張○誠檢查員

3. FAA 最近 2 年因應全球航空產業的新興變化及發展，在 FAA 的願景前題，考量飛航安全的策略、新的安全管理系統、改良組織、變革管理及產業的發展等任務，進行組織重新改組；FAA 介紹過去 2 年來飛航標準及適航驗證部門的改組情況，以及各部門到場的新主管介紹及認識。

適航驗證部門的組織及新任主管
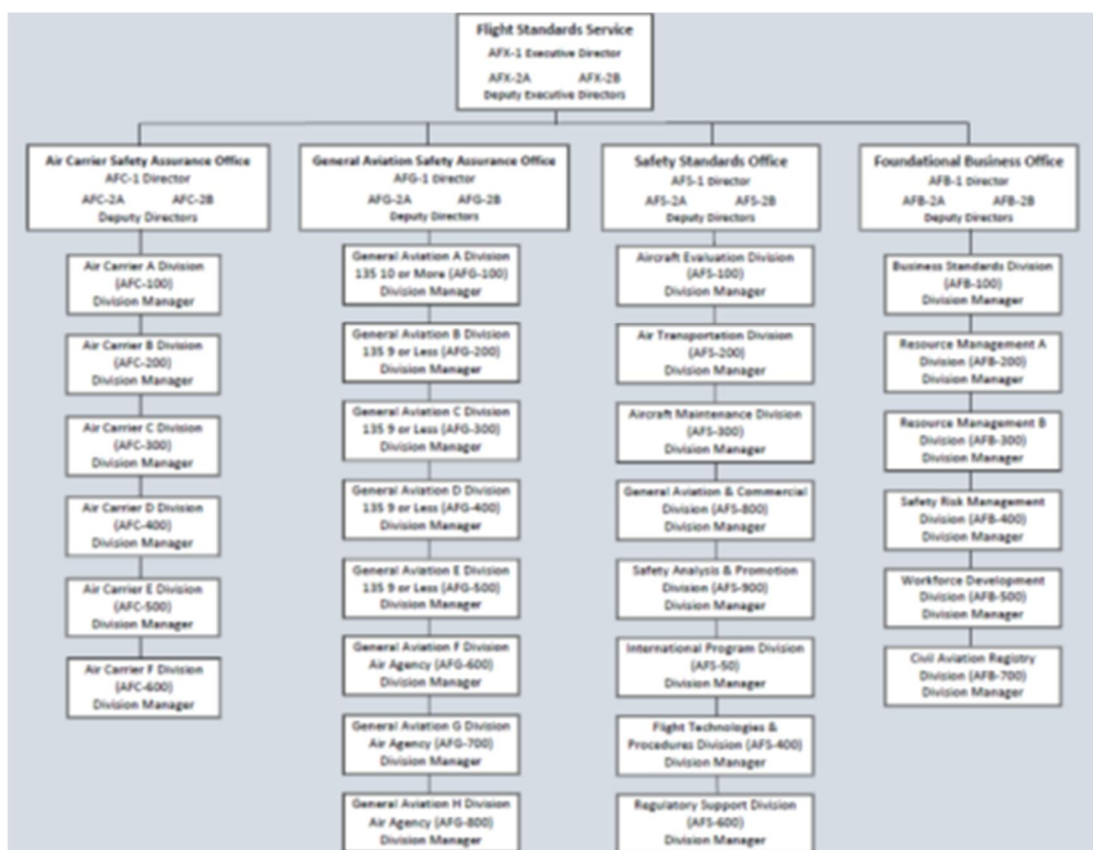
飛航標準部門的組織及新任主管職稱

4.會議交流議題

(1)有關安全管理系統的推動：

FAA 在推動安全管理系統上有深入的研究，並在監理系統上進行組織的調查、設立安全管理系統委員會進行推動、監控並調整相關政策及執行過程。所以與 FAA 簡短交換並了解其內部在安全管理系統運作的分工及管理，包括檢查員訓練的情況。FAA 表達與本局在飛航安全合作交流的意願，特別在安全管理系統及人員訓練二大議題，除了本局後續派員參訪 FAA 總部或是各地區監理辦公室的實際安全監理運作外，如果本局有各類飛安專業會議或是航空飛安相關訓練需求，FAA 均可評估派人員參與。

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(2)飛安監理組織的重整

FAA 飛航標準部門因應航空飛航作業持續增加及新科技應用需求，必須持續降低事件發生率提升飛航安全的監理制度而進行的組織重整，本局與 FAA 交換其組織重整的功能性、觀點及變革。FAA 本次改組重點為將運輸業及普通業的監理分開，因為其飛航作業性質及要求規範均不同；另設有飛航標準部門進行相關標準的研究及律定，以及增設基礎業務部門負責安全管理系統監理所需的資源監控及風險分析管理與工作流程管控之事務。FAA 特別提到的全美國現有約 5200 位航務、客艙安全及機務等檢查員，每位檢查員派駐於業者公司執行飛安檢查業務，對外均代表 FAA，雖然法規標準相同，但如何降低每位檢查員間的要求差異是非常重要的工作，要降低檢查員間的差異就必須從檢查員訓練作起。FAA 也說明對於飛安事件的調查設有專職的部門負責，以區隔平日監理部門的業務，如此可對安全管理風險的分析更為客觀。

(3)無人機管理

FAA 對無人機設有專職辦公室，雖訂有 250 公克以上必須註冊及初步 FAR PART 103 管理規則，FAA 表示因無人機發展快速，前述的管理規則無法符合目前商業發展使用之情況，所以 FAA 正在擬訂商業用無人機的管理規則，但表示進展緩慢。本局分享我國無人機法規的法制作業進度及規劃情況，FAA 對我國的商業用管理原則贊同並對本局與地方政府的分工原則亦表示興趣並討論。

(4)有關風險分析的決策機制

FAA 表示依據安全管理系統，FAA 剛完成內部組織改組，對於飛安大數據的應用亦尚在評估階段，包括風險資訊的蒐集也由各地區辦公室進行

中。所以相關的風險分析或是決策機制均尚在研究評估階段，相關主管都表示這不是件容易達成的工作，但必須持續進行。並表達未來本局可派員到各地區監理辦公室了解實務飛安資訊之分析及其應用。

(5)美國當前(2018-2022)交通策略

安全(Safety)、基礎建設 (infrastructure)、創新(Innovation)、當責(Accountability)是美國交通部目前施政四大主軸:

在安全方面，致力降低與運輸關聯的致命意外與嚴重傷害；投資基礎建設，確保流動性、實用性，並刺激業界經濟成長、提高勞工生產率及競爭力；在創新的工作面，領銜發展並推行可改善國家交通系統安全的創新科技；在當責方面，在位者有義務減輕法規面負擔並增強工作效率。每個策略目標(goals)都有相對應的策略目的(objectives),並真實反映交通部試著達成的策略結果，每個策略目的同時包含績效目標(performance goals)用以評估完成的績效水平，這些都可參考列入我國交通建設白皮書。

我國民航局與 FAA 雙邊會談

三、 參訪紀實：

(一)國家運輸安全委員會（National Transportation Safety Board，NTSB）

　　1. 國家運輸安全委員會簡介

　　　　該委員會是一個獨立的美國政府調查機構，成立於 1967 年，負責民用運輸事故調查，總部位於華盛頓哥倫比亞特區。NTSB 調查和報告航空事故、同時也針對某些重大的高速公路事故、船舶和海洋事故、管道和鐵路事故進行調查。該委員會在安克拉治、阿什本、丹佛、和西雅圖設有四個區域辦事處，其中位於阿什本區域辦事處設有國家訓練中心，每年針對失事調查相關課程定期開課。

　　　　「國家運輸安全委員會」是一個五名首腦組成的調查委員會，其五名成員由總統提名，並由美國參議院確認，任期五年。五名成員中不得超過三人來自同一政黨。五位首腦中的一位由總統提名為主席，並由參議院批准為期兩年的任期；另一人被指定為副主席，並在沒有正式主席時擔任代理主席。此委員會由國會根據美國法典第 49 卷第 11 章授權，調查民用航空、公路、海運、管道和鐵路的事故和事故徵候。五人組成的委員會有權建立和管理高速公路、海洋、航空、鐵路、管道和危險材料調查的單獨分支機構。「國家運輸安全委員會」、「安全委員會」或「NTSB」是指由這個五人委員會建立和管理的整個調查機構。目前 NTSB 主席為克里斯多福•哈特，副主席為 T. Bella Dinh-Zarr。委員會還包括羅伯特•森華特和 Earl F. Weener，以及一個空席位。

　　　　NTSB 成立以來，其主要任務是「確定運輸事故和事件徵候的可能原因，並制定安全建議以改善運輸安全」。NTSB 可提出安全建議，防止未來民用運輸事故，但是 NTSB 沒有權力強制施行其安全建議，必須由聯邦或州的監管機構或各運輸公司施行。

NATIONAL TRANSPORTATION SAFETY BOARD
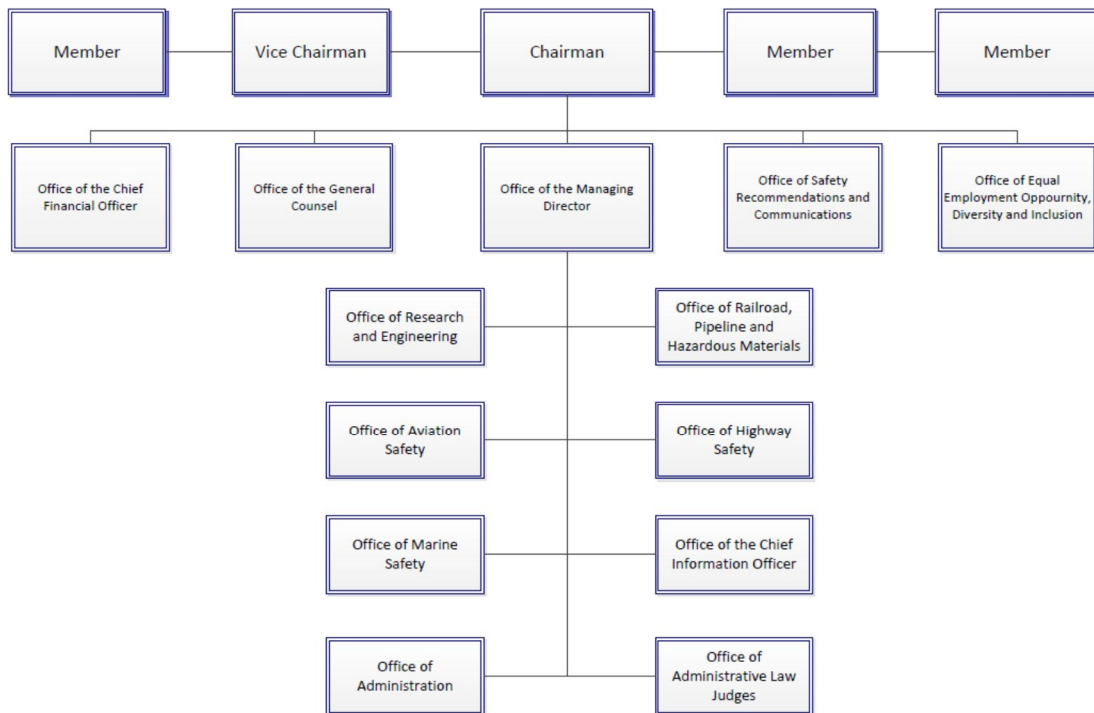
國家運輸安全委員會組織架構圖

局長與委員 Mr.Weener 合影

訪團與委員會成員討論議題

2. 運輸安全急需改良清單(MOST WANTED LIST of transportation safety improvements)

委員會以往宣導事項以手冊方式每年發行乙次，因推廣及改善流程繁瑣，短期內不易達到預期目的，因此近期改成每兩年依據事故趨勢發行乙次。

2017-2018 年推行重點計下列十項:

--增強防撞科技執行力度

--預防普通航空業飛行中失控

--終結酒精及藥物影響

--良好體適能的要求

--強化乘客保護

--確保危險物品之安全運送

--改善鐵路安全監理

--降低與疲勞相關之意外

--排除注意力分散

--發展紀錄器使用以強化安全

2017-2018 運輸安全急需改良清單

3. 實驗室器材裝備

委員會內有多間實驗室/調查室，高科技的產品用來還原或重建事件發生的場景與根因(root cause)判定，例如航空器座艙語音紀錄器所記錄之座艙聲響與組員對話即為飛安事故調查之證據之一。有些聲音由於音頻差異，無法以人耳辨別，因此必須採用頻譜分析技術或聲音能量分布，探討座艙內聲音的來源、起始時間與持續時間，以及特定警告音響制動(Warning Activation)狀況，因此採用聲紋辨別、動力組件失效分析等技術，以協助調查一些發生過程不明確或缺乏飛航資料紀錄器之事故。
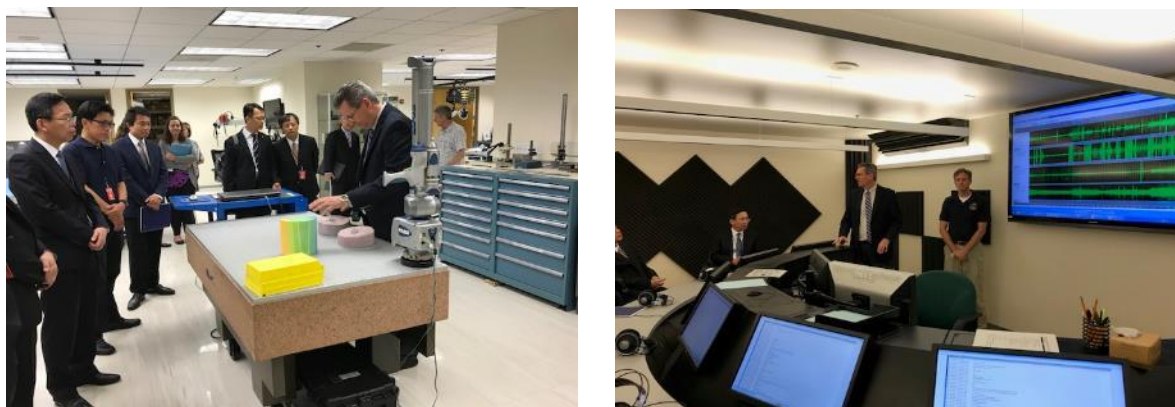
國家運輸安全委員會實驗室器材裝備

4. 世界主要國家調查機構與預算:

機構名稱	組織結構	總員額	近年預算
美國國家運輸安全委員會 National Transportation Safety Board	委員 5 名由美國總統提名後經國會同意任命，委員會主席並應另經參議院同意。現 NTSB 委員共 4 名(未足額提名)，具航空背景者高達 3 名，比	400 人	100 百萬 美元 (約台幣 30 億)

	例 75%。因委員會中航空專業佔比較多,故仍需負擔其他運輸模式調查報告審查工作。		
澳洲運輸安全局 Australian Transport Safety Bureau	最高決策機制為委員會(Commission),4名委員中具航空專業者2名,佔50%。	100 人	24.7 M澳元 (約台幣5億6千萬)
英國航空事故調查局 Air Accident Investigation Branch	檢查長(Chief Inspector)1人主持局務,下有紀錄器、作業及工程專業之主任檢查員(Principal Inspector)及資深檢查員(Senior Inspector)多人。	約50 人	6.7 百萬英磅 (約台幣2億7千萬)
日本鐵道航空運輸安全委員會 Japan Transportation Safety Board	現職委員計13名,專管航空部會者5名,比例為38%。5名專管航空者中,其中有4名具航空實務經驗,1名具法律背景,比例為80%。	180 人	2 0億日億 (約台幣6億)

5.國內飛航安全調查委員會現行做法流程和工作量

(1)飛航安全調查委員會之現行做法流程係依據其「飛航事故調查標準作業

程序」,該程序針對該會之組織架構、飛航事故通報及前置作業、事實資

料報告、調查報告、超輕型載具/自由氣球飛航事故調查等作業流程均有明確規範。

(2)現行飛航安全調查委員會之工作量，以每年「調查中事故」之案件計算，104 年為 7 件(飛機 4 件、直昇機 1 件、超輕型載具 2 件) 105 年為 12 件(飛機 8 件、直昇機 2 件、超輕型載具 2 件)、106 年(截至 11 月 10 日)為 4 件(飛機 1 件、直昇機 2 件、超輕型載具 1 件)，其調查係依飛航事故調查法第 2 條第 1 款之飛航事故係依民用航空法所定之航空器失事或航空器重大意外事件。

(二)約翰甘迺迪機場(JFK Airport)

1. 約翰甘迺迪機場（John F. Kennedy Airport, JFK）簡介

約翰甘迺迪國際機場中文簡稱為甘迺迪國際機場，位於紐約皇后區牙買加灣旁，是紐約市的主要國際機場，距離曼哈頓下城 19 公里，也是全世界最大機場之一。機場由紐新航港局運營，甘迺迪國際機場內有將近 100 間航空公司營運，除了是捷藍航空的樞紐機場，也是美國航空和達美航空主要國際航班的樞紐機場。跑道 13R-31L 是北美地區第二長的商用跑道，甘迺迪國際機場設有 6 個使用中的航廈（在 2000 年時共有 8 個航廈），包括第一至二、第四至五、第七和第八航廈，共有 151 個登機門。第三和第六航廈已在 2013 年拆卸，但仍未更改航廈的號碼。

於 2013 年，約翰·甘迺迪國際機場首次在一年內處理超過 5000 萬人次。根據 2018 年 4 月紐新航港局報告，約翰·甘迺迪國際機場的年客運量達 59,464,192 人次(紐華克機場 44,027,570 人次、拉瓜地亞 29,627,249 人次分居第二及第三)，飛航 446,172 航班。在經濟及就業方面，甘迺迪國際機場為紐約地區貢獻超過 30 億美元的經濟收益、約有 40,000 人在機

場就業；機場總共創造了 22.9 萬個就業機會。

在航班起降量方面，來自 50 多個國家、近 100 家航空公司定期提供往返甘迺迪國際機場的定期航班,其中,甘迺迪國際機場至倫敦希斯洛機場的航線為全美國最高客運量的國際航線，旅客人數超過 290 萬人。
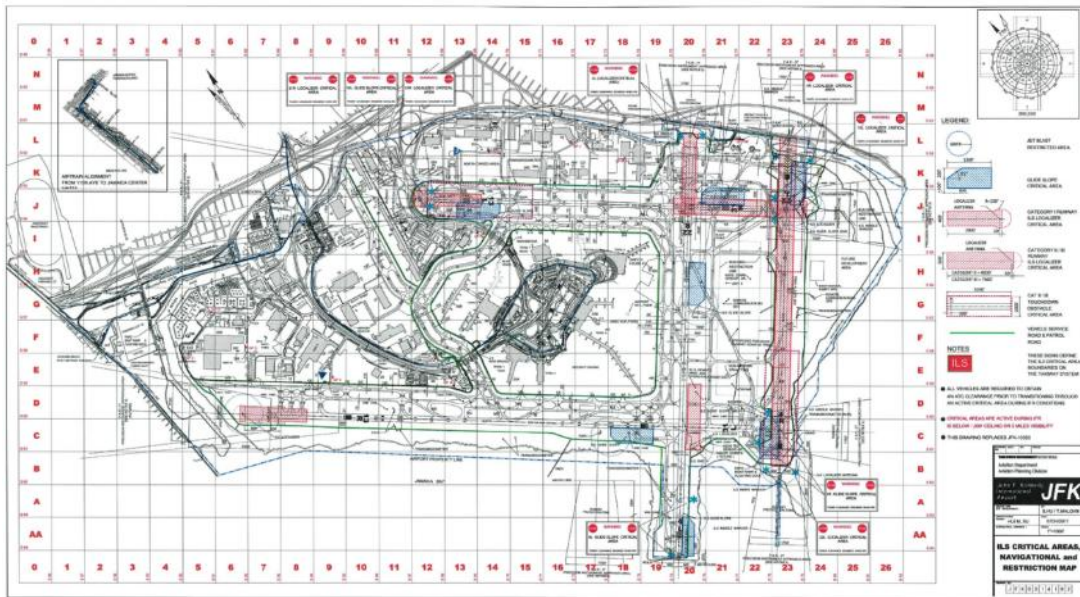
約翰甘迺迪機場平面圖

2. 運輸安全管理局（Transportation Security Administration，TSA）

TSA 是美國國土安全部下轄的一個機構,負責美國境內公共運輸的安全事宜， 該機構於九一一襲擊事件後與國土安全部同時成立。因事涉機敏，本次參訪透過美國駐新加坡大使館，國土安全部運輸安全管理局代表 Rachel McGlynn 女士申請，並由 JFK 國際機場聯邦保安辦公室經理 Mohammad Siddiqui 先生負責接洽,參訪過程中由 JFK 國際機場交通保安經理 Lance Bryer 先生對轄區內的旅客托運行李流程與裝備作介紹，因檢查流程涉及機密故不在此呈現相關內容。

左及右:價值一萬美元的滑動式行李檢查工具桌可減輕員工負荷

TSA Bryer 經理講解安檢過程

托運行李電腦自動偵測分類裝備

訪團與 TSA 成員合影

3. 紐新航港局 (The Port Authority of New York & New Jersey, PANYNJ)

本部門負責接待的是紐新航港局機場營運部航空服務經理 Teresa Rizzuto 女士，該局轄區除了約翰·甘迺迪國際機場同時還管理拉瓜地亞機場、紐華克國際機場、史都華機場及泰特波羅等大紐約都會區的其他四座機場。Rizzuto 女士首先引領團員至機場運控中心辦公室參觀後隨即對本團簡報。辦公室內大量的監視螢幕組成的電視牆可用於監控機場整體運作，其範圍包含安檢區域、進出通道、行李作業區及場面狀況，同時利用顏色區分行李安檢動線是否流暢。簡報內容提及該機場對區域經濟的重要性，以及未來發展規劃，截至目前為止已投資超過 100 億美金。由於 JFK 機場快線的成功案例，紐約州長葛謨日前簽字立法，建置連接長島鐵路、地鐵 7 號線和拉瓜地亞機場的拉瓜地亞機場快線(Air Train)項目；聯邦航空總署接著將評估該項目的大環境，建設工程 2020 年開工，2022 年完成，屆時曼哈頓中城和拉瓜地亞機場間的通勤時間亦將降至 30 分鐘以內。

Rizzuto 女士另提及 JFK 機場內有大量的鑽紋龜棲息於機場東南面，每到繁殖季就會從 04 左跑道西側跨越爬行至跑道東側，因此「烏龜防治」成了機場的一項工程。根據美國聯邦航空局有關飛機與野生動物相撞的紀錄，在 1990-2007 年間，共有 18 起撞擊事故是由鑽紋龜與民用飛機在機場相撞而引起的，所幸的是，沒有一起事故導致客機損壞。在 2009 年 7 月 8 日，甘迺迪國際機場的航班遭到延誤，起因是因為在一個半小時內有多達 78 隻鑽紋龜無意間闖入機場跑道，以致飛機無法正常起飛。後來這些鑽紋龜都被安全地帶離機場，並放回野外。在 2011 年 6 月 29 日也發生了一件相似的事件，超過 150 隻鑽紋龜企圖穿越跑道，打亂了正常

的機場交通秩序。同樣，這 150 多隻鑽紋龜都被安全地帶離機場，在經過多項驗證後決定採用障礙涵管(Terrapin Barrier)抵擋鑽紋龜的入侵，涵管的高度正好是鑽紋龜無法跨越的高度，塑膠材質的涵管經濟又實惠，唯一要做的工作就是定期巡視有無毀損的情況並予以更新。

監控中心(一)

監控中心(二)

鑽紋龜障礙涵管(Terrapin Barrier)

Rizzuto 女士簡報機場未來規劃

4. 第一航廈機坪管制台(Terminal 1/Ramp Control)

JFK 機場第一航廈空側營運經理 Valencia 先生親自帶領訪團至機坪管制台現場參觀，針對該航廈地面航機管制作業加以說明，除了飛機申請滑出及起飛的預計等候時間，其他航廈飛機滑行可能對本行廈動線的影響，管制員亦可藉由螢幕上的顯示得知空中離到場飛機航跡顯示，結合天氣狀況即時更新，對預期將會造成的影響作出適當的處置。

機坪管制台的概念在塔台負責跑道、滑道及空中航機管制，當脫離滑行道

時即交接給機坪管制，這種狀況適合大型機場且航機流量到達某一數量時管制的分工合作，亦可作為我桃園國際機場未來發展的參考。

JFK 塔台(上層)與機坪管制台(下層)

Mr. Valencia 介紹管制台工作

左及右圖:機坪管制台工作人員

區域天氣及場面監控系統
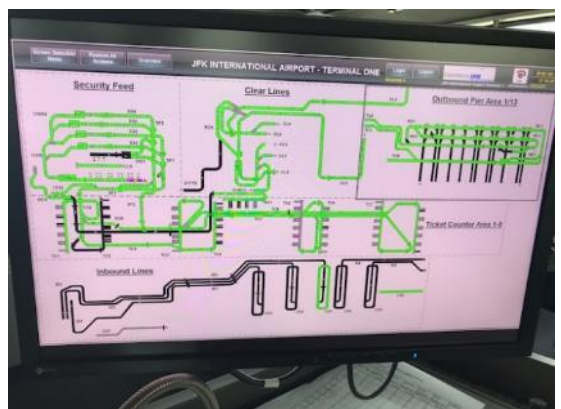
托運行李安檢動線即時顯示

參、 心得及建議：

一、 因應國際航空發展，包括 FAA 均針對監理組織進行調整以符合航空發展的監理需求，本局飛航標準組現有組織 5 個科別中，應可考量依據 ICAO 建議的 8 項監理要件進行重新檢視，對飛航標準的研究及律定、檢查員訓練、飛安事件的調查，以及增設安全管理系統監理所需的資源監控及風險分析管理與工作流程管控之功能進行評估，並提出調整或新增科別之建議，以在監理組織上符合 ICAO 8 項監理要件職掌並可落實飛安監理的績效。

二、 全球機場在航行量迅速成長情況下，對於機場建設均不遺餘力，營運管理者必須結合機場管理單位、航管、主要航空公司協同作業。JFK 機場第四航廈所使用之旅客行李安檢系統比第一航廈先進，能有效在短時間內安全地處裡大量的托運行李，且減少班機的延誤與行李遺失發生率，這樣的系統及檢查方式也可以作為國內桃園機場第三航廈參考。

三、 機場民營化的優劣需考量成本回收及空側、陸側介面，尚需多方努力做橫向連結，進而結合在地化、全球化，以 JFK 機場為例，理應有 8 個航廈其中因營運改變及機場商業考量已有 2 個航廈關閉。

四、 在全球化的演變下，台灣地方及規模較小，運輸安全案件調查能量可利用參訪或其他有效的合作方式發展最有效的經濟規範，強化現有飛安會調查能量，同時與民用航空局安全監理相互配合下，保持與國際間相同的標準，透過持續參加各類國際航空安全會議與教育訓練，並獲得最新的航空業資訊，是提升飛行安全的最佳途徑。

五、 本次會議完成後，明年輪由 EASA 主辦，地點在德國科隆。

Federal Aviation Administration

EASA European Aviation Safety Agency

2018 FAA-EASA International Aviation Safety Conference
"Achieving Safety Success in a Connected World"
CONFERENCE AGENDA
(June 19, 2018 – June 21, 2018)

TUESDAY, JUNE 19, 2018

TIME	TITLE, SPEAKER
9:00 – 18:00	**MEETING REGISTRATION AND INFORMATION DESK** *Location: Promenade Foyer*
11:30 – 13:00	**LUNCH AVAILABLE TO CONFERENCE PARTICIPANTS** *Location: State Room*
13:00 – 13:15	**Welcome to the 2018 FAA-EASA International Aviation Safety Conference** Warren Randolph, Acting Deputy Executive Director, Office of Accident Investigation & Prevention
13:15 – 13:45	**Introduction of FAA Administrator/Keynote Speech** Eric Fanning, President and CEO, AIA / Daniel K. Elwell, Acting Administrator, FAA
13:45 – 14:15	**Opening Remarks & FAA Highlights** Ali Bahrami, Associate Administrator for Aviation Safety, FAA
14:15 – 14:45	**EASA Highlights** Patrick Ky, Executive Director, EASA
14:45 – 15:00	**Introduction to the Conference Program** Warren Randolph, Acting Deputy Executive Director, Office of Accident Investigation & Prevention
15:00 – 15:30	**NETWORKING COFFEE BREAK HOSTED BY INDUSTRY** *Location: Promenade Foyer*
15:30 – 17:00	**PLENARY A: A Systems Approach under Multilateral Partnerships and the Players** Multilateral partnerships among authorities and the aerospace industry have matured under a systems approach that reduces involvement in the validation critical path by minimizing or eliminating transactional and/or redundant activities through reliance on partner authorities. Theoretically, use of a systems approach should reduce the need for special conditions. What are the roles and responsibilities of the regulators and industry, and what are the factors for success using a programmatic approach? How do these roles continue to evolve with new technologies and emerging issues that are likely to challenge and strengthen approaches to partnerships between the players? How do we leverage these successes globally? **Moderator:** Pete Bunce, President and CEO, General Aviation Manufacturers Association **FAA:** Ali Bahrami, Associate Administrator for Aviation Safety **EASA:** Patrick Ky, Executive Director **Industry:** Elizabeth Pasztor, Vice President of Safety, Security, and Compliance, Boeing Commercial Airplanes **Industry:** Belinda Swain, Head of Airworthiness, Rolls-Royce Plc
17:00 – 17:15	**Wrap-up of Day 1/Introduction to Day 2** Warren Randolph, Acting Deputy Executive Director, Office of Accident Investigation & Prevention
18:00 – 21:00	**EVENING RECEPTION AND DINNER HOSTED BY INDUSTRY - ODYSSEY WASHINGTON CRUISE** *Location: Gangplank Marina, 600 Water Street SW, Washington, DC 20024*

Note: All Conference activities on the first day will occur in the Grand Ballroom unless otherwise listed.

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WEDNESDAY, JUNE 20, 2018

TIME	TITLE, SPEAKER
07:00 – 18:00	**MEETING REGISTRATION AND INFORMATION DESK** *Location: Promenade Foyer*
07:15 – 08:15	**NETWORKING BREAKFAST** *Location: State Room*

STRATEGIC FOCUS AREA – SYSTEM HARMONIZATION: *Authorities envision seamless transfer of aviation products and efficient oversight of the industry while maintaining the highest safety standards. Authorities recognize that resources should be allocated to the areas of greatest safety risk to the flying public.*

08:30 – 10:00	**PANEL 1:** **Developing and Maintaining Mutual Confidence in Risk-Based Systems** Maintaining confidence is the key to reliance on one another's aircraft certification systems. This panel will explore how authorities can use a risk-based approach to provide a safe system, while making the most effective use of limited oversight resources. With authorities working closer with industry, what impact does this have on mutual confidence? How will these efforts affect the next decade of certification activities?	**PANEL 2:** **Approaches to De-Mystifying Safety Management** The objective of safety management systems is to provide a structured management approach to control safety risks. Effective safety management must take into account the organization's specific structures and processes related to safety of operations. In an era of rapidly emerging new technology, how can regulators work together to make SMS more effective? This panel will explore whether we have sufficiently adapted our traditional oversight methods to the era of safety management.
	Moderator: Robert Sturgell, Senior Vice President of Washington Operations, Rockwell Collins **FAA:** Dorenda Baker, Executive Director, Aircraft Certification Service **EASA:** Trevor Woods, Certification Director **TCCA:** Robert Sincennes, Director, Standards **ANAC:** Roberto Honorato, Airworthiness Superintendent **Industry:** Didier Robin, Vice President, Airworthiness and Certification, Airbus Group **Industry:** Steve Gielisch, Director, Civil Certification and ODA, Textron Aviation	**Moderator:** Michael O'Donnell, Executive Director, Air Traffic Safety Oversight Service **FAA:** John Duncan, Executive Director, Flight Standards Service **FAA:** Steven Gottlieb, Acting Executive Director, Office of Accident Investigation & Prevention **EASA:** Jesper Rasmussen, Flight Standards Director **TRAFI:** Pekka Henttu, Director General, Finnish Civil Aviation Authority **Industry:** Giancarlo Buono, Director of Flight Safety and Operations, International Air Transport Association
10:00 – 10:30	**NETWORKING COFFEE BREAK HOSTED BY INDUSTRY** *Location: Promenade Foyer*	

STRATEGIC FOCUS AREA – GLOBAL COLLABORATION: *Authorities envision optimal reliance on each other's certification and safety oversight systems, based on confidence, to reduce or eliminate redundant activities. Authorities recognize that resources should be allocated to the areas of greatest safety risk to the flying public. In keeping with the spirit of cooperation, authorities will engage each other and ICAO to develop common safety oversight principles and standards in support of new rulemaking efforts whenever possible.*

10:30 – 12:00	**PANEL 3:**	**PANEL 4:**
	Leveraging Information to Address Safety and Threats: Establishing Appropriate Safety Standards for a Global Industry	**Various "States" of Repair – Aviation Maintenance in the Digital Era**
	For several years, authorities have engaged in rulemaking harmonization efforts. This has led to the concurrent development and implementation of regulatory changes that facilitate global acceptance and minimize duplicative activity. This panel will review regulatory harmonization, its effect on authorities, and its impact on future rulemaking cooperation. Additionally, it will look at the role of industry and ICAO's assistance in facilitating the establishment of timely standards.	A range of new approaches to maintenance is under development or already in commercial use such as electronic logbooks/maintenance records, aircraft inspections using drones, remote inspections using video, and big-data driven maintenance decision-making. In this panel session, industry will present innovative maintenance solutions, discuss potential issues with paperless maintenance records (including input from leasing companies), and propose possible regulatory approaches to related issues, such as addressing duplicative MRO oversight.
	Moderator: Kenneth Quinn, Global Chair – Aviation, Baker McKenzie **FAA:** Lirio Liu, Executive Director, Office of Rulemaking **EASA:** Luc Tytgat, Strategy and Safety Management Director **JCAB:** Shigeru Takano, Direct-General of Aviation Safety and Security Department **ICAO:** Michael Brown, Alternate U.S. Representative to the Air Navigation Commission **Industry:** Tony Fazio, USCREST Group **Industry:** Vincent De Vroey, Civil Aviation Director, ASD Europe	**Moderator:** Marshall Filler, Managing Director and General Counsel, Aeronautical Repair Station Association **FAA:** Tim Shaver, Acting Director, Safety Standards, Flight Standards Service **EASA:** Ralf Erckmann, Head of Maintenance and Production Department/Deputy Flight Standards **Industry:** Marc Olson, Manager of Regulatory Compliance, FedEx **Industry:** Gilles Garrouste, Deputy Vice President – Certification, Dassault Aviation **Industry:** David Van den Langenbergh, Chief Technical Officer, Luxaviation
12:00 – 13:15	**LUNCH BREAK** *Location: State Room*	

STRATEGIC FOCUS AREA – MANAGING TECHNICAL INNOVATION: *Authorities envision keeping pace with technological advancements by engaging with each other and the international aviation safety community, including industry. The aim is to support innovation aimed at ensuring the safety of the flying public while embracing new and novel technologies. Authorities should actively engage with industry and promote common solutions and approaches to aviation safety while applying data-driven mechanisms to measure success and support decision-making.*

13:15 – 14:45	**PANEL 5:**	**PANEL 6:**
	Proactive Safety in the Face of Innovation: Ensuring Readiness for New Aviation Technology and Products	**Shifting the Documentation Paradigm: Discussion on Future Documentation Standards**
	Technological developments continue to take place at a rapid pace with industry at work on concepts such as electric/hybrid propulsion and new generation supersonic aircraft. Authorities must find ways of engaging with industry at an ever-earlier stage to help identify necessary changes to the regulatory framework and approaches, while providing for global harmonization. This panel will explore approaches to collaboration on certification projects, notably for rule gap analysis and the development of rules for these	Today, the format and content of release certification for new parts bound for export to another regulatory oversight system is harmonised among authorities, setting a global standard (e.g., EASA Form 1, FAA Form 8130-3, TCCA Form One, SEGVOO 003). Inconsistent standards in this area can lead to rejection of otherwise airworthy aircraft parts for technical reasons unrelated to safety, which can have an unintended negative consequence on safety by making safe parts unavailable, while well-written provisions can help authorities focus their limited resources on the most significant risks. This panel will discuss current and future

new areas. Collaboration could also take the form of the set-up of innovation networks.	parts documentations efforts, which includes a discussion on the forms in the context of digital solutions to replace traditional forms to document conformity with approved design data.
Moderator: Shaun Johnson, Manager-Airworthiness, Air Transport and Airworthiness , Civil Aviation Authority of New Zealand **FAA:** Dr. Michael Romanowski, Director, Policy and Innovation Division, Aircraft Certification Service **EASA:** Maria Algar Ruiz, UTM - SESAR Coordinator **TCCA:** Francois Collins, Director General Civil Aviation **Industry:** Eric Allison, Head of Aviation, Uber **Industry:** Michael Thacker, Executive Vice President for Technology and Innovation, Bell Helicopter **Industry:** Stephane Flori, Regulations Manager - Expert Airworthiness Rulemaking & Regulations , Airbus	**Moderator:** Jason Dickstein, General Counsel, Aviation Suppliers Association **FAA:** Daniel Elgas, Manager, Certification Procedures Branch, Aircraft Certification Service **FAA:** Tim Shaver, Acting Director, Safety Standards, Flight Standards Service **EASA:** Ralf Erckmann, Head of Maintenance and Production Department/Deputy Flight Standards Director **EASA:** Alain Leroy, Deputy Certification Director **Industry:** Brent Webb, President and CEO, Aircraft Inventory Management and Services **Industry:** Ric Peri, Vice President, Government and Industry Affairs, Aircraft Electronics Association **Industry:** Werner Luehmann, Head of Regulatory Compliance & Authorities, Lufthansa Technik

14:45 – 15:15	**NETWORKING COFFEE BREAK HOSTED BY INDUSTRY** *Location: Promenade Foyer*
15:15 – 16:30	**PLENARY B: "The Safest Period Ever": Maintaining Safety while Avoiding Complacency** There has been a steady decline in aviation deaths over the past 20 years with 2017 being the safety year on record for commercial aviation. How can regulators and the aerospace industry commend unprecedented aviation safety while avoiding complacency in collaborating on future efforts? How do we interact proactively to remain engaged in safety-driven efforts to address the risks of emerging technology? How does SMS, data collection activities and the agencies' regulatory agendas fit in and how can we ensure improvements that work?
	Moderator: David Silver, Vice President for Civil Aviation, Aerospace Industries Association **FAA:** Ali Bahrami, Associate Administrator for Aviation Safety **EASA:** Patrick Ky, Executive Director **Industry:** Terry McVenes, Director of System Safety and Regulatory Affairs, Boeing Commercial Airplanes **Industry:** Yannick Malinge, Senior Vice President – Chief Product Safety Officer, Airbus **Industry:** Francis Heil, Managing Director – Safety, Airlines for America
16:30 – 16:45	**Closing of panel & plenary sessions** Warren Randolph, Acting Deputy Executive Director, Office of Accident Investigation & Prevention
17:30	**EVENING RECEPTION HOSTED BY INDUSTRY** *Location: State Room*

Note: On the second day of the conference, Panels 1, 3, and 5 as well as Plenary B will occur in the <u>*Grand Ballroom*</u>*. Panels 2, 4, and 6 will occur in the* <u>*East Room*</u>*.*

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THURSDAY, JUNE 21, 2018

TIME	TITLE, SPEAKER	
07:30 – 13:30	**INFORMATION DESK** *Location: Promenade Foyer*	
07:45 – 08:45	**NETWORKING BREAKFAST** *Location: State Room*	
09:00 – 10:15	**TECHNICAL SESSION 1:** **FAA-EASA TIP Revision 6** On March 22, 2018, Revision 6 of the Technical Implementation Procedures between the FAA and EASA became effective. With this latest version of the TIP, deliberations are ongoing related to current efforts and their expansion in future versions of the document. This technical session will provide an opportunity for the FAA and EASA to discuss potential directions for upcoming TIP revisions.	**TECHNICAL SESSION 2:** **Professional UAS Operations: Policy Development and Operator Responsibility** The pace of UAS/RPAS development continues to challenge operators and regulators in finding a balanced approach between ensuring safety and meeting ever growing and complex operational integration demands. New business cases for UAS use abound, but aviation competence and safety must be addressed for each one. This technical session is an opportunity to share information about regulatory changes, operator responsibilities, proposed new or novel operations, and any associated lessons learned.
	FAA: Sarbhpreet Sawhney, Acting Manager, International Division, Aircraft Certification Service **FAA:** Robert Duffer, Senior Technical Advisor, Flight Standards Service **EASA:** Mark Kieft, Safety Information Section Manager	**FAA:** Everette Rochon, Acting Division Manager, General Aviation and Commercial Division, Flight Standards Service **EASA:** Maria Algar Ruiz, UTM - SESAR Coordinator
10:15 – 10:45	**NETWORKING COFFEE BREAK HOSTED BY INDUSTRY** *Location: Promenade Foyer*	
10:45 – 12:00	**TECHNICAL SESSION 3:** **Emerging Technology and the Importance of Simulator Training** With the advancement of remotely piloted aircraft systems comes the need for advancements in simulator training. This technical session will explore the needs of pilots and how to provide simulator training.	**TECHNICAL SESSION 4:** **Developing a Technical Workforce for the Future: Part 147 Aviation Maintenance Technician Schools** The FAA recently proposed a rule to revise the regulatory requirements concerning curriculum and operating rules governing Aviation Maintenance Technician Schools. This technical session provides an opportunity to have an open discussion about the future of competency-based training (CBT) and satellite training locations.
	FAA: Everette Rochon, Acting Division Manager, General Aviation and Commercial Division, Flight Standards Service **EASA:** Thaddee Sulocki, Principle Coordinator – Approvals and International Relations **EASA:** Alain LeRoy, Deputy Certification Director	**FAA:** Tim Shaver, Acting Director, Safety Standards **EASA:** Mark Kieft, Safety Information Section Manager
12:00 – 12:15	**Closing of technical sessions/Closing Remarks** Ali Bahrami, Associate Administrator of Aviation Safety, FAA	

12:15 – 12:30	**Next conference**
	Patrick Ky, Executive Director, EASA
12:30 – 14:00	**NETWORKING LUNCH**
	Location: State Room

Note: On the final day of the conference, Technical Sessions 2 and 4 will occur in the <u>East Room</u>. All other activities, including Technical Sessions 1 and 3, will occur in the <u>Grand Ballroom</u>.

LOI for the FAA-EASA International
Aviation Safety Conference
Subtitle

Name
20 June 2018

AIRBUS

Forthcoming Part 21 - LOI concept introduction (summary extract)

21.B.100: Level Of Involvement

(a) The Agency shall determine its level of involvement in compliance verification…. This shall be done on the basis of an assessment of the proposed compliance demonstration items for the likelihood of an unidentified non-compliance with the type-certification basis in combination with the potential impact thereof on product safety or environment. In doing so, the Agency shall … taking into account but not limited to:

  1. novel or unusual features of the certification project, …;

  2. complexity of the design and/or compliance demonstration;

  3. criticality of the design or technology and the related safety and environmental risks, …; and

  4. performance and experience of the design organisation of the applicant in the domain concerned.

AIRBUS

How is the EASA Level Of Involvement identified?

Novelty + Complexity + Severity + DOA Performance

=

Risk Class (1,2,3,4)

LOI Advance implementation: status
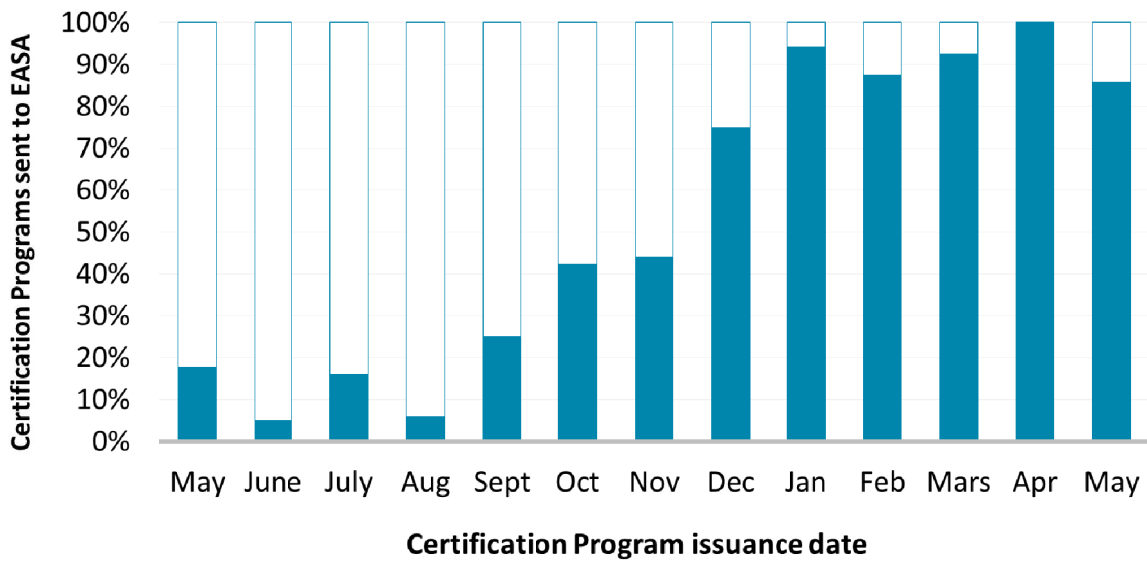
Thank you

AIRBUS

EASA Safety Conference

Emerging Technology: Importance of Simulator Training

By: Everette Rochon
         Acting Division Manager,
         General Aviation and
         Commercial Division

Federal Aviation Administration
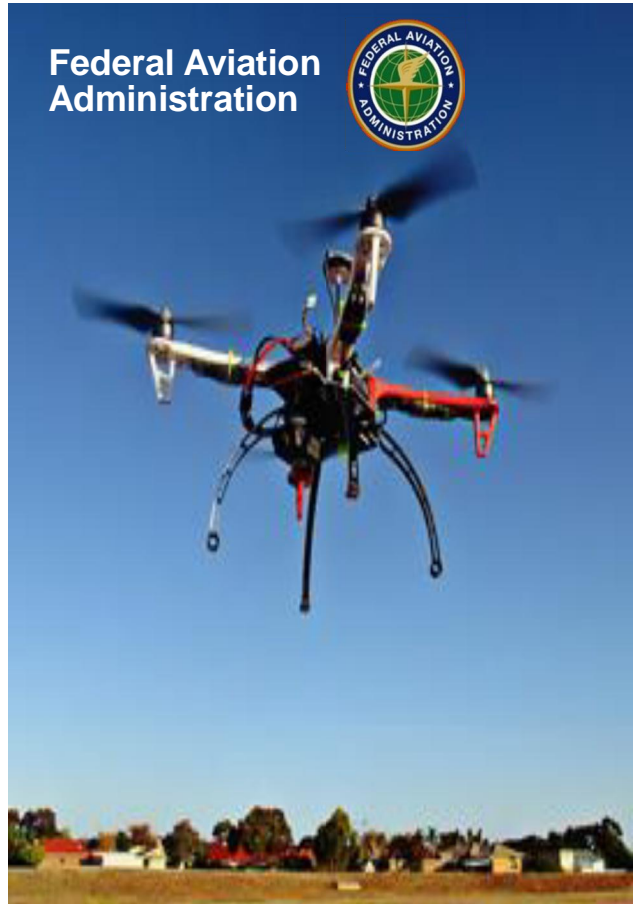
Times have changed…

New technologies bring with them new capabilities and demands.
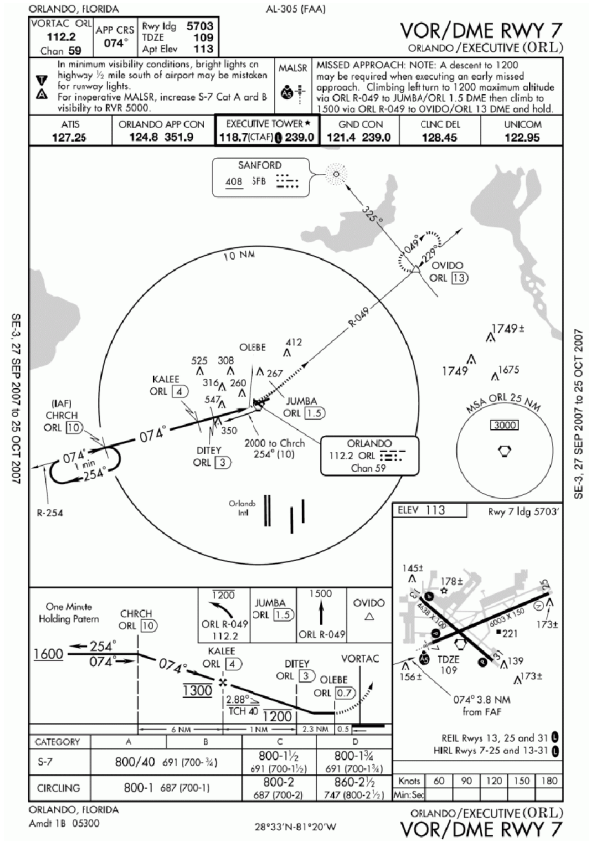
UAS demands exploring new options and new flexibilities.

By expanding the training envelope, we make flying more accessible.

Even for people who are not seated in the aircraft!

Variety of simulator training options

Variety of simulator training options
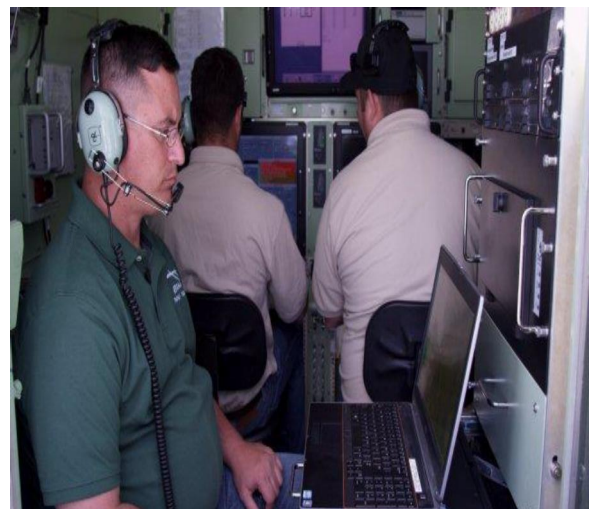
Possible Risk
Based Approach

Simulator Standards

Working with ICAO

Federal Aviation
Administration

11

Thank you!

Federal Aviation
Administration

12

FAA-EASA Conference 2018

Technical session 4

Developing a technical workforce for the future – Part 147 and 66

Mark Kieft – Safety Information Section Manager

Your safety is our mission.

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TE.GEN.00409-001

Content

➤ The EASA licensing system

➤ Operational Suitability Data

➤ Rulemaking activities

➤ Part 66 and 147 review

➤ ASK for competence

How to gain a Part 66 license

Scheme 1: Part-66 Aircraft Maintenance Licence (AML)
- B1 and B2 categories with Group 1 Aircraft -
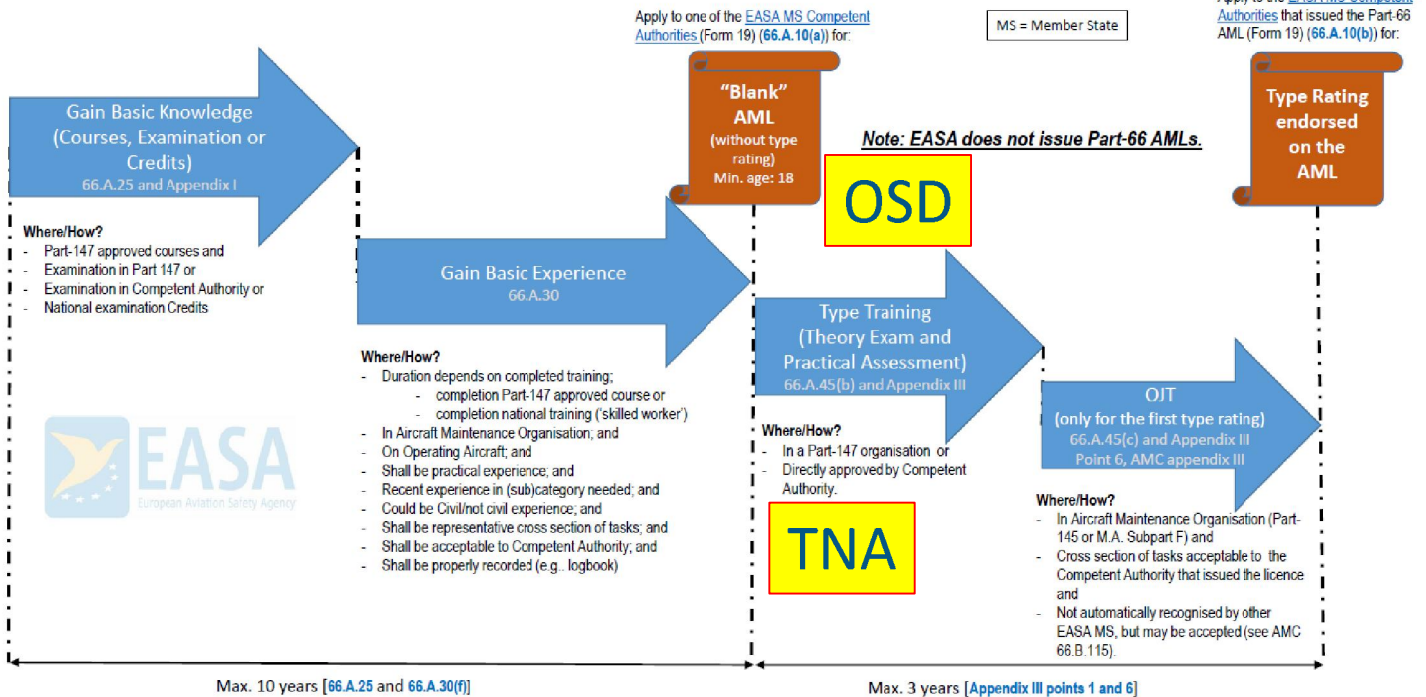
Operational Suitability Data

➤ Since 2014, all new TC applications shall contain MCSD (Maintenance Certifying Staff Data)

➤ MCSD allows Part 147 type courses to be based on the TCH's minimum syllabus, containing: lessons learned from incidents; design flaws; errors; maintenance to enhance operations of the aircraft; identification of the fundamental points of the aircraft; selection of the most relevant work cards; feedback from operations; etc.

➤ The MCSD will be updated according to relevant type design changes or to inputs coming from in-service experience

= type training based on the manufacturer's recommendations

Rulemaking activities

Other Part 147 / 66 rulemaking improvements:

➤ B2L and L licences (Opinion 05/2015, adoption August 2018)

➤ Limitation of the Part-147 privileges related to stand-alone basic examinations (Opinion 07/2015, adoption August 2018)

➤ CS-MCSD Maintenance Certifying Staff Data (RMT.0106, publication 20Q3)

➤ Aircraft type ratings for Part-66 aircraft maintenance licence (RMT.0541, publication 19Q2)

➤ New teaching & training techniques / technologies (RMT.0281, adoption 21Q1)

➤ B1 & B2 Support Staff (RMT.0097, adoption 20Q2)

Part 66 and 147 review - 1

➤ EASA launched at the end of 2016 an evaluation exercise on how effective is the implementation of the requirements of the European maintenance licensing system and maintenance training organisations

➤ Survey - to identify any existing problems in the system and to collect recommendations on how to address them

➤ The main conclusion of the survey is that the European licensing system has a strong EU added value and provides a robust system that must be kept

➤ Some room for improvement

Part 66 and 147 review - 2

Preliminary Impact Assessment now looking at:

- license categories to be deleted, merged or created
- introduction of Competency Based Training
- making the basic syllabus easier to update regularly
- training needs analysis to the practical element of type training
- continuing harmonisation with ICAO standards
- adequate level of knowledge of the training language
- introduction of a company authorization provision for legacy aircraft
- mutual recognition of direct approvals for type rating courses
- flexibility in the on the job training in Part-147
- NAA final assessment/performance based monitoring of 147 students
- Establishment of an European centralized questions database for voluntary or compulsory use by 147 organisations
- focused oversight methods in case of fraud / cheating
- safety promotion on preventing, detecting and mitigating fraud / cheating cases

ASK for competence

➤ A – Attitude

- The aviation system is built on trust. The engineers' attitude to safety is a key element in the maintenance environment. A state of mind, feelings, or beliefs about a particular matter (affective abilities).

➤ S – Skills

- Being able to execute tasks in a safe manner. The proficient manual manipulation of data or things that allow for the execution of well-specified tasks (psycho-motor abilities).

➤ K – Knowledge

- Having sufficient basic and type knowledge, both theoretical and practical. A complex process of remembering, relating, and applying an idea (cognitive abilities).

Many thanks

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De-mystifying safety management

Claudio Trevisan
Head of Air Operations Department
20.06.2018

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Make SMS simple

➤ At no or little cost, encourage the following **enablers:**

- ➤ A positive safety culture
- ➤ A reporting culture
- ➤ Sharing of experience with your fellows
- ➤ Assess the mitigation measures in place to control the risks
- ➤ Commitment to safety
- ➤ Promotion of professionalism

Implement SMS gradually

- **Start small and simple**
  - Encourage actions that everyone understands and that deliver safety benefits
  - Communicate; strive for simplicity & efficiency

- **Build progressively over time**
  - Strengthen the **existing** processes
  - Collect more and more safety information
  - By definition an SMS is dynamic, as new identified safety risks and innovative technology emerge
  - The changes should be carefully managed

Make SMS simple: the Authority's role

- **Oversight**
  - Not asking for comprehensive implementation from day 1 …
  - … Nor for a bureaucratic SMS
  - Engage towards the areas of greater risks (RBO):
    - (Big) data…a (big) game changer…(artificial) intelligence & data mining
  - Agile inspectors needed; oversight methodologies to be adapted

- **Safety promotion and communication**
  - Exploring any channel fostering cross-fertilisation
  - Relying more on industry standards and best practices:
    - Industry Standards for specific sectors or emerging, innovative technology
    - SM-ICG: 18 Authorities identifying and sharing best practices

Thank you for your attention

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EASA — European Aviation Safety Agency

Trafi — Finnish Transport Safety Agency

2018 FAA-EASA International Safety Conference

Panel 2 - Approaches to De-Mystifying Safety Management

Pekka Henttu

- Responsible traffic.
- Courage and co-operation.

Safety Management

Safety = f (operation, environment, organisation/individual, …)

Proportionality ?

Safety management Systems

Comparison of Management Systems

SMS (Annex 19)	SeMS (Annex 17)	ISMS (ISO 27001-2013)
Effects-based risk-managed	**Threat**-based risk-managed (Plan-Do-Check-Act)	**Effects**-based risk-managed (Plan-Do-Check-Act)
1.1 Management commitment and responsibility	1. Management commitment	5.1 Leadership and Commitment
1.2 Safety accountabilities	3. Accountability and responsibilities	5.2 Policy
1.3 Appointment of key safety personnel		5.3 Roles, responsibilities and authorities
1.4 Coordination of emergency response planning	6. Incident response	16. Incident response
1.5 SMS documentation		7.5 Documented Information
2.1 Hazard identification 2.2 Safety risk assessment and mitigation	2. Threat and risk management	11.1 Impact and Threat Management Vulnerability Management
3.1 Safety performance monitoring and measurement	5. Performance monitoring, assessment and reporting	12.4 Performance monitoring, and assessment (Logging, Audits & Reviews, Security Testing)
3.2 The management of change	7. Management of change	12.1 Change Management
3.3 Continuous improvement of SMS	8. Continuous improvement	10.2 Continual improvement
4.1 Training and education	9. Training and education	7.2/7.3 Training, awareness and competence
4.1 Safety communication	10. Communication	7.4 Communication
	4. Resources	7.1 Resources

The global chain in aviation safety

ICAO
- Safety Management Programme
- Global Aviation Safety Plan

EASA
- European Aviation Safety Programme
- European Plan for Aviation Safety

Trafi
- Finnish Aviation Safety Programme
- Finnish Plan for Aviation Safety

Aviation organisation

- **Safety Management System**

Trafi — Finnish Transport Safety Agency

Finnish Transport Safety Agency
Kumpulantie 9, 00520 Helsinki
PO Box 320, FI-00101 Helsinki, Finland
Telephone +358 29 534 5000
www.trafi.fi

Stakeholder Advisory Body

European Aviation Safety Agency

Giancarlo Buono

SAB Chairman

EASA/FAA Safety Conference

Washington D.C. June 2018

All Accident Rate

for IOSA Operators vs Non IOSA

(includes Jet & Turboprop aircraft)
Period: 2012 to June 2017

IOSA vs. Non-IOSA Registered - All Accident Rate - Jet&Turboprop

	AFI	ASPAC	CIS	EUR	LATAM	MENA	NAM	NASIA	WORLD
NON-IOSA	9.96	3.25	9.79	1.57	4.92	6.08	1.75	2.66	3.16
IOSA	1.98	2.08	1.18	1.52	1.19	2.76	0.80	0.27	1.22

Regional Sector Count Distribution (Percentage)

■ NON-IOSA ■ IOSA
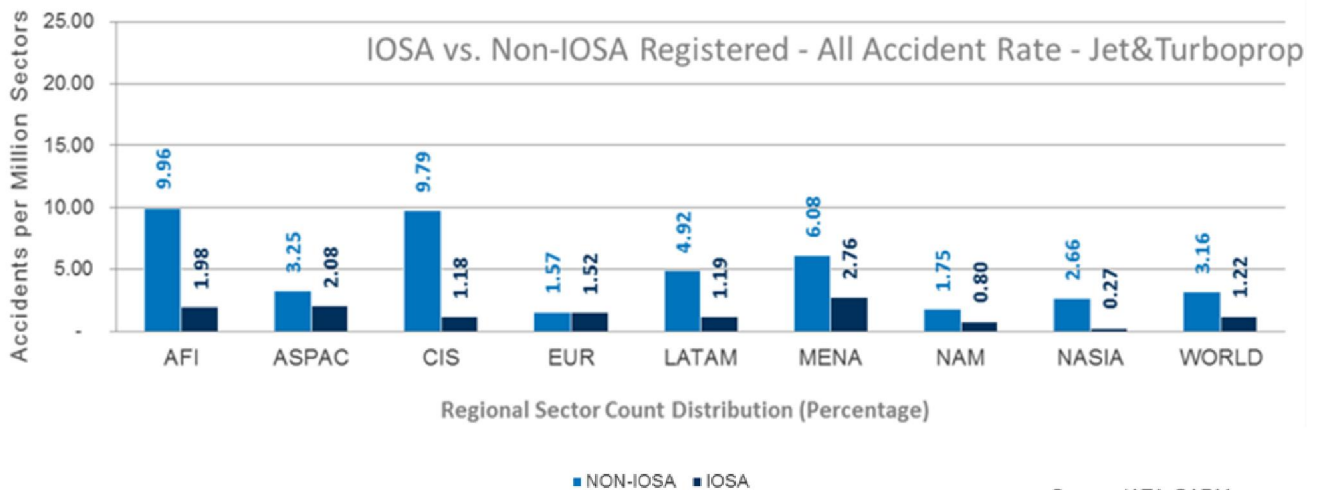
Source: IATA GADM

Top 10 Findings – Global – ISM Ed10

ORG 1.1.10 SMS implemented and integrated throughout the organization

5 out of 10 (50%) - SMS Related ISARP

8 out of 10 (80%) - ORG

39%	20%	19%	16%	13%	12%	12%	12%	11%	11%
ORG 1.1.10	ORG 3.2.1	ORG 3.4.13	ORG 1.6.5	DSP 1.12.5	MNT 4.7.3	ORG 2.1.1	ORG 3.4.3	ORG 3.4.1	ORG 3.4.8
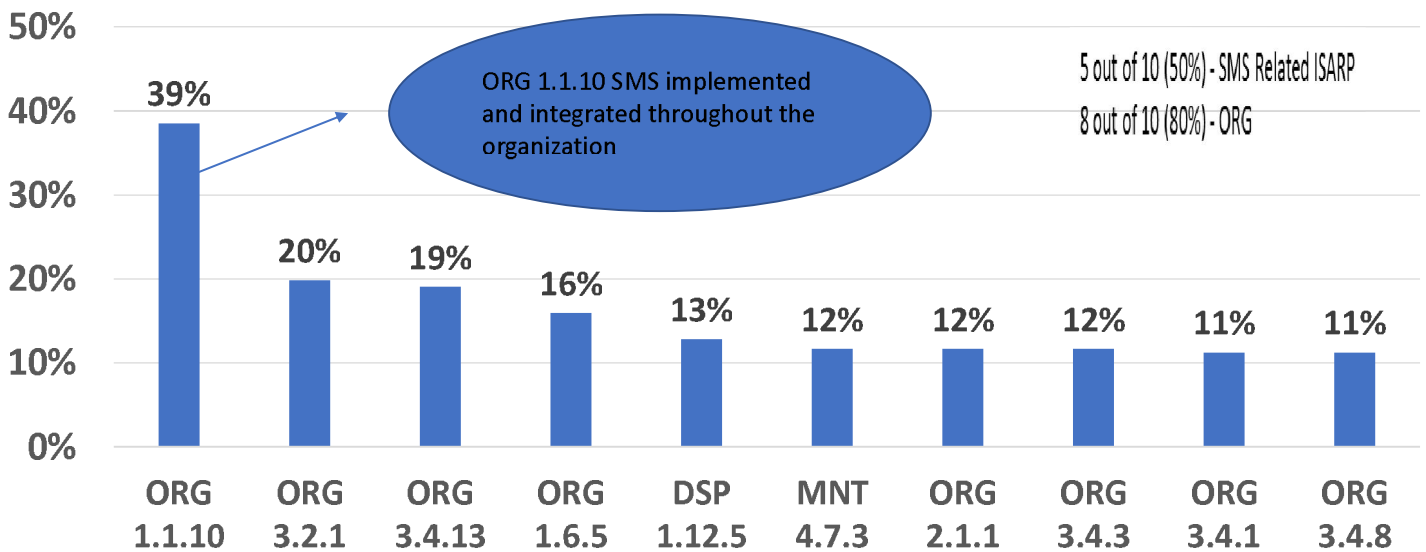
Top 10 Findings Per SMS ISARPs - Ed.10

6 out 10 (60%) - Processes for setting performance measures

2 out 10 (20%) - Training

39%	20%	16%	13%	11%	11%	11%	10%	10%	9%
ORG 1.1.10	ORG 3.2.1	ORG 1.6.5	DSP 1.12.5	ORG 3.4.1	FLT 2.5.1	MNT 1.12.5	CGO 1.11.5	CAB 1.11.5	GRH 1.11.5
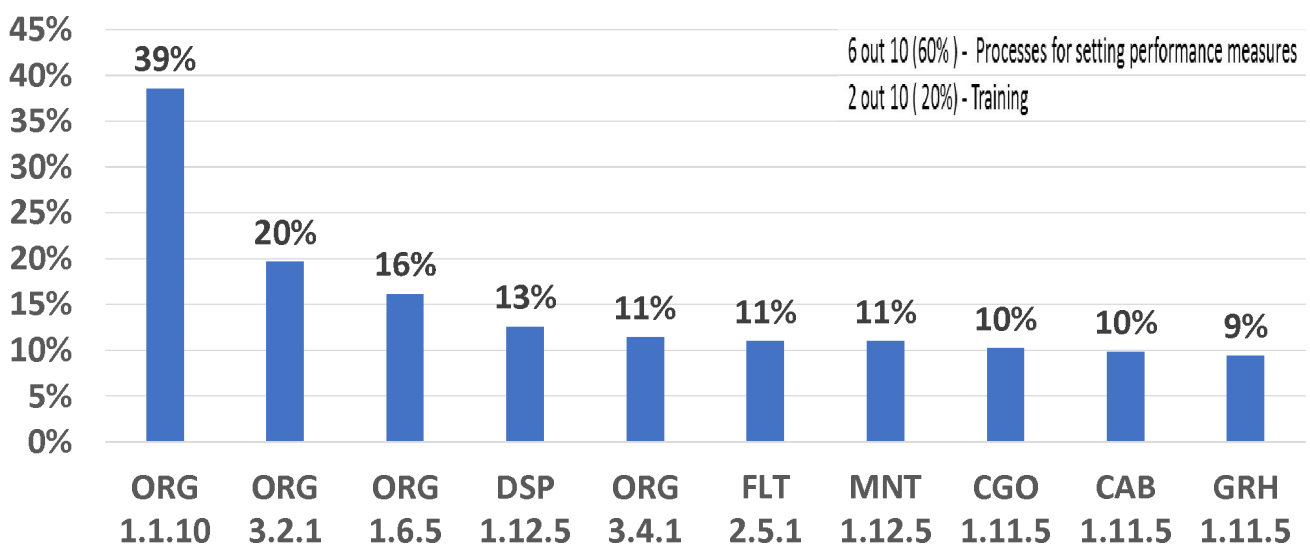
2018 FAA-EASA International Safety Conference

Panel 4: Various "States" of Repair – Aviation Maintenance in the Digital Era
20 June 2018, Washington, D.C.
Marshall S. Filler, Moderator

Panelists

- Marshall S. Filler, Managing Director & General Counsel, ARSA, Moderator
- Gilles Garrouste, Deputy Vice President - Certification, Dassault Aviation
- Marc Olson, Manager, Regulatory Compliance, FedEx
- David Van den Langenbergh, Chief Technical Officer, Luxaviation
- Ralf Erckmann, Head of Maintenance & Production Department and Deputy Flight Standards Director, EASA
- Tim Shaver, Acting Director, Safety Standards, Flight Standards Service, FAA

Topics for Today's Discussion: Maintenance in the Digital Age

- A range of new (and not so new) approaches to maintenance is under development or already in commercial use such as --
  - Electronic manuals, records and signatures
  - Remote connectivity (video, streaming, etc.)
  - Big-data driven maintenance decision-making (real-time monitoring, collecting and transmitting operations and maintenance data)
- Where we are, where we're going and what challenges remain

Topics for Today's Discussion: Update on Efforts to Reduce Duplicative Oversight of AMOs

- The Elephant in the Room
  - ICAO's legal structure
  - Redundancy is expensive, often not value-added from a safety perspective
- What's ICAO doing to bring relief?
- What's a realistic expectation and timeline?

About the Aeronautical Repair Station Association

ARSA is devoted to the worldwide civil aviation maintenance industry—from its global corporations to the small, independent businesses. ARSA members are located on five continents and in nearly 20 countries.

The association's experts create the tools for members to navigate the maze of government mandates while enhancing safety, efficiency and productivity.

ARSA is managed by the law firm of Obadal, Filler, MacLeod & Klein, which provides management, government affairs, and legal services to trade associations and transportation-centric companies.

About Obadal, Filler, MacLeod & Klein, P.L.C.

OFMK is a boutique law firm based in Alexandria, Virginia (across the river from Washington, D.C.).

It provides management, government affairs and legal services to trade associations and transportation-centric companies with particular emphasis on international aviation safety regulations.

It helps clients navigate the maze of government mandates while enhancing safety, efficiency and productivity.

About the Moderator – Marshall S. Filler

Marshall S. Filler is managing member of OFMK and the managing director and general counsel of the Aeronautical Repair Station Association. He has advocated for individuals and companies on international aviation safety law, policy and compliance issues for over 40 years.

Mr. Filler obtained his bachelor of arts and law degrees from The American University in Washington, D.C.

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USE OF ELECTRONIC LOGBOOKS IN BUSINESS AVIATION ENVIRONMENT

DATA DRIVEN DECISION MAKING & ACCEPTANCE

Shifting the Documentation Paradigm

Discussions on Future Documentation Standards

2018 FAA-EASA International Aviation Safety Conference

Panel 6: Shifting the Documentation Paradigm
Discussions on Future Documentation Standards

- Jason Dickstein
  - Aviation Suppliers Association
- Daniel Elgas
  - Federal Aviation Administration
- Ralf Erckmann
  - European Aviation Safety Agency
- Alain LeRoy
  - European Aviation Safety Agency

- Werner Luehmann
  - Lufthansa Technik
- Ric Peri
  - Aircraft Electronics Association
- Tim Shaver
  - Federal Aviation Administration
- Brent Webb
  - Aircraft Inventory/CAVU

Panel 6: Shifting the Documentation Paradigm Discussions on Future Documentation Standards

Topics for Today

- TOPIC: What role does documentation play in aviation safety?

- TOPIC: What information do we feel should be found in the documentation?

- TOPIC: Which parts ought to need documentation?

- TOPIC: What does the future of documentation look like?

EASA/FAA TIP Revision 6

EASA-FAA Safety Conference 2018

Sarbhpreet Sawhney, FAA
Acting Manager, International Division, Aircraft Certification Service

Robert Duffer, FAA
Senior Technical Advisor, Aircraft Maintenance Division, Flight Standards Service

Mark Kieft, EASA
Safety Information Section Manager, Certification Directorate

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What drove the EU/US TIP change ?

- In 2015, the U.S.-E.U. Bilateral Oversight Board (BOB) directed Certification Oversight Board (COB) to develop a Validation Improvement Roadmap (VIR)

- Objective: By 2022, reduce validation effort (time and costs) to a level of 20% compared to first TIP implementation in 2011

➡ Objective, under a **risk-based approach**, is to **maximize full acceptance** by the Validating Authority **without any technical review** or issuance of validation approval

➡ Objective is to have:

  ➤ **More directly accepted approvals**

  ➤ **More Basic changes** where the Validating Authority is not involved

  ➤ **Less involvement in Non-Basic Changes** where the Validating Authority gets involved.

EASA-FAA Certification Oversight Board Validation Improvement Roadmap - 2022

Certification Director

Director, Aircraft Certification Service

Date 29 February 2016

Date 29 February 2016

Major TIP 6 change to Validation

All design approvals follow now
one of three paths:

- Accepted

- Streamlined validation (Basic)

- Technical Validation (non-Basic)

TIP rev 6 Detail Changes

➤ All TSO/ETSO articles are now accepted

➤ All repair designs are accepted

➤ The concept of Basic TC is introduced for Piston Engines and Propellers (streamlined validation)

TIP rev 6 Detail Changes

◈ All design changes subject to validation are classified basic or non-basic using a list of 10 non-basic criteria, including Safety Emphasis Items

◈ Non-basic changes are validated according to a validation work plan

◈ Any difficulties identified during the validation process which can be lessons learned for other partners, will be shared with the Certification Authorities Group (CAG) under the Certification Management Team (CMT) with TCCA (Canada) and ANAC (Brazil)

TIP rev 6 Detail Changes

Safety Emphasis Items (SEI) list

◈ Are part of the Non-Basic classification criteria

◈ Consist of items of VA interest for all products of a certain category

◈ SEI lists developed and approved separately (but in coordination) by the FAA and EASA

◈ Are available to the public on FAA and EASA websites

◈ Shall be frequently revised **with the goal of reducing** the size of the list through targeted harmonization effort

◈ SEI list revisions are approved by the management responsible for maintenance of the list

The Validation Work Plan

What is a Work Plan?

- Document establishing the scope and depth of VA involvement for non basic changes
- Used to document the VA certification basis

Objective of the Work plan

- Limits the scope and depth of validation to only those items that triggered the Non-Basic classification
- Establishes a more disciplined procedure for VA involvement

How is controlled is the Work plan?

- Requires VA project office management approval and compliance to TIP procedures

VIR Issue 2

➤ An Issue 2 to the COB VIR is being prepared in order to adjust the schedule of TIP revisions, as TIP rev 6 was issued later than expected

➤ It will include:

- ➤ the introduction of provisions for the validation of drones
- ➤ Extend the concept of Basic TC to other products (small aircraft and rotorcraft)
- ➤ Streamlined validation of OSD items
- ➤ Streamlined environmental validation procedures
- ➤ Streamlined AD acceptance procedures

Industry Role in Supporting the TIP

➤ The implementation of TIP revision 6 and these future revisions will be a success if industry support this process:

  ➤ training sessions have been provided to industry
  ➤ Industry as the expert in their design is expected to develop of validation packages
  ➤ Industry engagement in development of workplan items based on the SEI list is necessary
  ➤ Industry is expected to take an active role to support the certificating authority in their validation
  ➤ The hope is that this will lead to more concurrent certification –validation to align the authorities certification basis from the start.

BOB Decision 008

➤ Thanks to the COB VIR, the level of involvement of the Validating Authority is being progressively reduced

➤ The Bilateral Oversight Board (BOB) signed a Decision which will lead to the reduction of EASA fees in order to reflect the lower level of involvement of the Validating Authorities

➤ This decision sets clear thresholds for process time of basic and non-basic projects and requires metrics for measuring success.
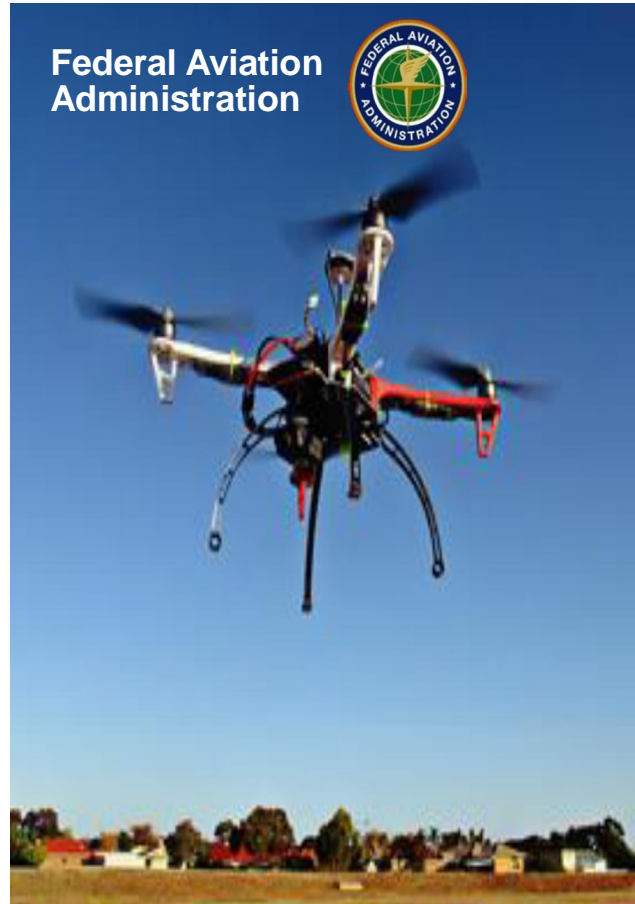
Thank you.

Questions ?

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EASA Safety Conference

Professional UAS Operations: Policy Development and Operator Responsibility

Federal Aviation Administration

By: Everette Rochon
Acting Division Manager,
General Aviation and
Commercial Division

UAS development continues to challenge operators
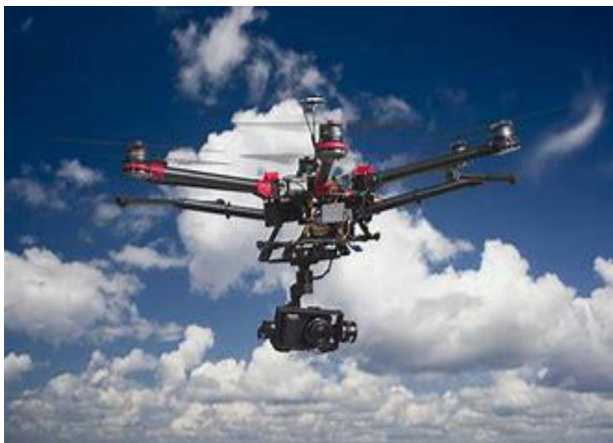
The growth of UAS is a challenge to the regulatory process

14 CFR Part 107. Public Law 112-95 Section 336

The rule sets out operational limitations

Remote PIC Certification Requirements

Over 1M UAS in the national airspace

Increase in Unsafe UAS Operation Reports

Taking Steps to Improve Data

Working with industry and UAS operators

Efforts to Ensure UAS Operate Safely are Ongoing

UAS Integration Pilot Program

UAS Implementation Plan

Phased in approach to UAS integration

UAS Implementation Plan (cont.)

External UAS Coordination

Thank you!

EASA
European Aviation Safety Agency

**EASA-FAA Safety Conference
Technical session 2: Professional UAS Operations:
Policy Development and Operator Responsibility**

Maria Algar Ruiz SESAR-UTM Coordinator, EASA

Washington, June 21, 2018

TE.GEN.00409-001

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- clear and simple rules that keep the burden for citizens, operators and authorities as light as possible,

- lower the threshold for entering the EU drone services and U-Space markets;

- commitment of all stakeholders to open the EU drones services market by 2019 by working in parallel on three pillars:

  - The legal requirements for drones and drone operations, for the safe and effective use of the airspace, and for the delivery of cost-effective U-Space services;

  - Further investment in demonstrators to open the drone services market, and longer term R&D projects to prepare for more autonomous vehicles and more dense traffic;

  - An effective standard setting process that is adapted to fast evolving digital technologies from all sectors, and uses and adapts existing standards where available.

- need for protection of citizens based on safety, security, privacy and the environment

17

New Basic Regulation envisages that all civil UAS are

OPEN	SPECIFIC	CERTIFIED
Low risk	Increased risk	Risk as manned aviation
NO-PRE APPROVAL	Authorisation by NAA based on specific operation risk assessment (SORA)	Certification of UAS and operator and licenced pilot (unless autonomous flight)
LIMITATIONS : 25 kg; Visual line of sight (VLOS), height <120m; system of zones	STANDARD SCENARIOS	EASA accepts

3 SUB-CATEGORIES: fly over, close, far from people

Optional concept of approved operator with privilege

CE MARKING allows for design

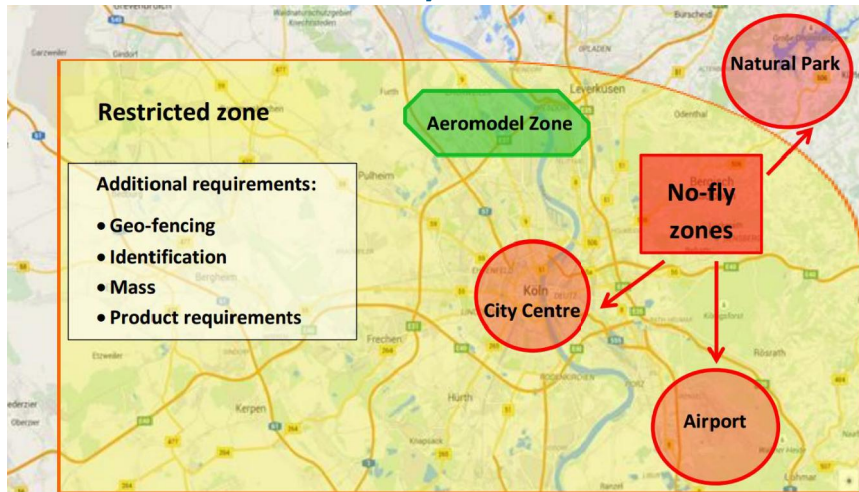Some systems (Datalink, Detect and Avoid ...) may

CATEGORIES

- Adopt a first set of standard scenarios that will make it simpler to obtain authorizations for well-defined operations (Autumn 2018):
  - Workshop scheduled for 9-11 July in Cologne.
- Draft in cooperation with standardization bodies and Industry the necessary standards to support the performance-based rule (2019 for the most urgent)
- Develop in cooperation with Member States the necessary actions to ensure a uniform implementation of such rules (2020)
- Certified category:
  - NPAs will be published between Q2/2019 and Q1/2022.
 - Opinions or decisions will be published between Q2/ 2019 and Q2/ of 2023

EASA
European Aviation Safety Agency

Mitigating Air Risk

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Zones defined by Member States

Geo awareness on drones to support remote pilot

- The EASA Opinion strives to define, for each Open UAS Category, a mix of product / pilot requirements and Operational restrictions which are proportionate to the inherent risk of the category of operation and address both Air and Ground Risk
  - Air Risk: risk of collision with manned aircraft (or other unmanned aircrafts)
  - Ground Risk: risk of harming people or critical infrastructure
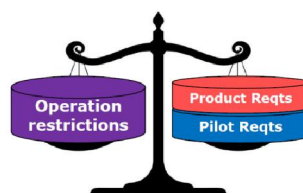
- Operational restrictions:
  - Only VLOS
  - Fly far away from aerodromes
  - Fly below 120 m from ground / surface (*)
  - The set-up of no-drone zones / limited drone zones in particular around aerodromes
- Pilot Aspects:
  - Competences
  - Minimum Age
  - Consumer information including dos and don'ts

  (*) The mandatory installation of an height limiting system does not mean that the pilot ceases to be responsible

The Specific Category Concept

The Specific Category is centered on the concept of **Operational Authorisation** based on a **Risk Assessment** process

1. In order to obtain the Authorisation, the Operator shall give evidence of risk mitigation factors that have been put in place to mitigate the risk of the specific operation

Operato r

Competen t authority

Operation Authorisation (OA)
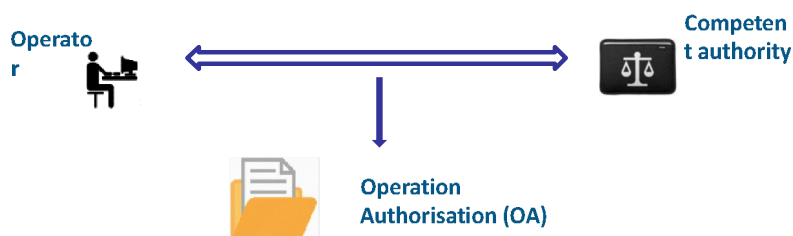
2. In order to identify the necessary **mitigation factors**, the operation is analyzed by means of a risk assessment model adopted by EASA as AMC:
   - the JARUS **SORA** (specific operation risk assessment)
- The **SORA** identifies the necessary risk mitigation factors in terms of harm barriers and threat barriers necessary to reduce both the AIR risk class (ARC) and GROUND risk class (GRC) to a level deemed acceptable

To facilitate the task of Operators and promote operations in the specific category, EASA is developing Standard Scenarios.

If the Operator elects to carry out an operation already covered by one of the "Standard Scenarios", mitigation means to be put in place (harm barriers and threat barriers) will be **already available** in the documentation published with that standard scenario, as well as the precise Conops within which the Operation is permitted

"Low risk" and "High risk" standard scenarios will be addressed

U-Space and Demonstrators

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- Captured by Drone Addendum to the ATM master plan "Roadmap for the safe integration of drones into all classes of airspace",
- U‑Space a reality by 2019 with a **step by step regulatory approach:**
    - **Registration, E-identification, Geo-fencing** are the 3 foundation services
    - They are included in EASA Opinion and, together with the definition of **drone zones** (as per slide 5) and the **air risk model of the SORA (Annex D)** constitute the first regulatory phase of U-space
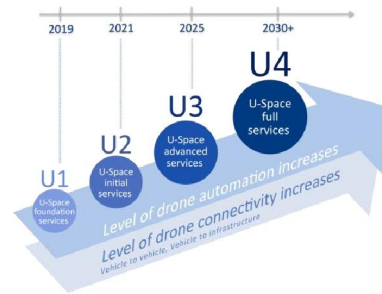
U-space roadmap is adopted

- Initial Operational capability and developments:
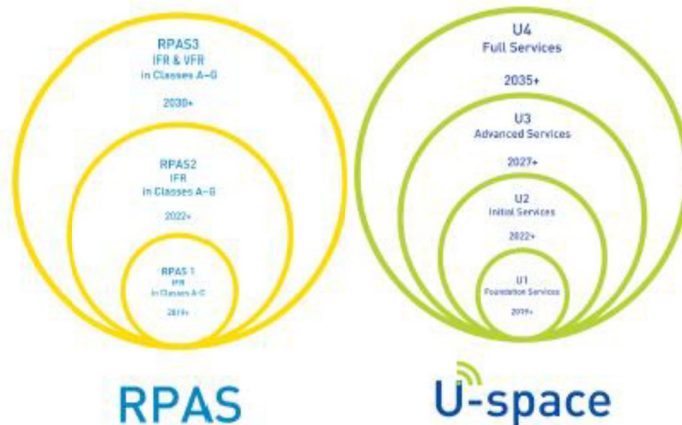   - Stepped approach but dates are not mandatory

Figure 2: Initial operating capability (IOC) dates for the integration of RPAS with manned aviation and development of U-space services at scale

U-Space regulation in the longer term

- The foundation services, the zones definition and the SORA Annex D will be complemented, in the longer term, by:
  - 2 step review of the SERA (European rules of the Air)
  - Regulatory framework for further U-space services and providers (including the services description, performance, certification/declaration/oversight provisions, service providers requirements cybersecurity, etc)

U-Space demonstrators

- ➢ SESAR funded projects – focus on integration efforts of more automated drones in more complex operations – results by 2019-2020
- ➢ Smart Cities funded projects – focus on UAM in wider transport chain – results by 2019-2020
- ➢ EU demonstrator network – focus on gaining regulatory experience on the basis of **private/public partnerships** with clear business needs to speed up opening market – **results now**

Questions and comments welcome

maria.algar-ruiz@easa.europa.eu

EASA documents on UAS
available at
http://www.easa.europa.eu/eas
a-and-you/civil-drones-rpas

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