出國報告 (出國類別：其它)

2021 美國亞太區域航空安全雙邊協議國年會視訊會議報告 (2021 FAA/Asia Pacific Bilateral Partners Dialogue Virtual Meeting)

服務機關：交通部民用航空局

姓名職稱：黃洸洋簡任技正

耿　驊簡任技正

林日新科長

張泰誠代科長

陳玉成技正

派赴國家：臺灣，中華民國

會議期間：**110.09.28-09.30**

報告日期：**110.11.29**

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提 要 表

系統識別號：	C11000193
視訊辦理：	是
相關專案：	無
計畫名稱：	執行推動中美國際雙邊協議會議
報告名稱：	2021美國亞太區域航空安全雙邊協議國年會視訊會議報告
計畫主辦機關：	交通部民用航空局
出國人員：	姓名 / 服務機關 / 服務單位 / 職稱 / 官職等 / E-MAIL 信箱 黃洸洋 交通部民用航空局 飛航標準組 技正 簡任(派) 耿驊 交通部民用航空局 飛航標準組 技正 簡任(派) 林日新 交通部民用航空局 飛航標準組 科長 薦任(派) 張泰誠 交通部民用航空局 科長 薦任(派) 陳玉成 交通部民用航空局 飛航標準組 技正 薦任(派) 聯絡人ericchen@mail.caa.gov.tw
前往地區：	臺灣，中華民國
參訪機關：	視訊會議方式辦理
出國類別：	其他
實際使用經費：	年度 / 經費種類 / 來源機關 / 金額 110年度 本機關 交通部民用航空局 0元
出國計畫預算：	年度 / 經費種類 / 來源機關 / 金額 110年度 本機關 交通部民用航空局 355,000元
出國期間：	民國110年09月28日 至 民國110年09月30日
報告日期：	民國110年11月29日
關鍵詞：	雙邊協議，無人機檢驗，先進空中運輸（AAM），Part 21，持續操作安全（COS）
報告書頁數：	21頁
報告內容摘要：	本報告說明美國FAA與亞太區域民航主管機關航空安全雙邊協議國對談會議（Asia Pacific Bilateral Partners Dialogue Meeting, APAC），各項工作小組成果彙報及研討項目，包括：(一)無人機檢驗工作小組（UCWG），有關遙控無人機檢驗議題。(二)先進空中運輸（Advanced Air Mobility, AAM），討論遙控無人機進行載運（乘客或貨物）飛航相關管理機制。(三)航空產品檢定人員訓練一致性，討論建立航空產品檢定人員證照及職能訓練議題。(四)航空產品檢定法規現代化（Part 21 Modernisation），討論航空產品檢定法規配合產業科技發展之修訂方向。(五)FAA持續操作安全（Continued Operational Safety, COS）論壇，討論有關航空器持續適航相關議題。(六)針對後續將召開之國際民航組織（ICAO）高階會議（HLCC）相關內容預先討論。
報告建議事項：	建議事項 / 狀態 / 說明 積極參與各項APAC無人機檢驗工作小組（UCWG）會議及各項國際會議，汲取各國驗證制度發展趨勢與經驗，做為我國無人機相關法規、程序調整修訂之依據。 已採行 利用我國為APAC AAM工作小組成員之一的機會，持續了解國際間針對此新興類型航空器之檢定考量及檢定方式。 已採行 已採行

	利用APAC Part 21工作小組機會，了解檢定法規修訂方向及修訂重點內容，掌握最新資訊，做為我國更新修訂「06-07A航空產品與其各項裝備及零組件適航檢定管理規則」之參考。	
	因應美國聯邦航空總署（FAA）與亞太各國職能矩陣（Competency Matrix）商議結果，評估建立我國航空產品檢定人員職能分級及搭配相應訓練之可行性。	已採行
	定期派員至國外接受SMS相關訓練，以接收最新訊息，俾利我國落實安全管理與訂定SMS監理策略之參考。	已採行
電子全文檔：	C11000193_01.pdf	
出國報告審核表：	C11000193_A.pdf	
限閱與否：	否	
專責人員姓名：		
專責人員電話：		

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目　　錄

壹、目的

美國聯邦航空總署（Federal Aviation Administration, FAA）舉辦 2021 年美國與亞太區域航空安全雙邊協議國年會（Asia Pacific Bilateral Partners Dialogue Meeting, APAC），此為 FAA 每年定期舉辦與簽署 BASA（Bilateral Aviation Safety Agreement）之亞太區域民航主管機關之對談會議，本次會議與新加坡民航局（Civil Aviation Authority of Singapore, CAAS）聯合舉辦，由於 COIVD-19 疫情影響，本次採線上會議方式召開。

本次會談提供 FAA 與其雙邊協議國交換意見、分享重要資訊並解決雙方所關切衝擊亞太區域航空安全議題的機會，本次年會的主題為各工作小組（Working Group, WG）成果彙報與研討，會中所討論之議題包含如下：

一、無人機檢驗工作小組（Unmanned Aircraft Certification Working Group, UCWG）：討論有關遙控無人機檢驗議題。

二、先進空中運輸（Advanced Air Mobility, AAM）：討論以遙控無人機進行載運（乘客或貨物）飛航之相關管理機制。

三、航空產品檢定人員訓練一致性（Workforce Training Alignment, WTA）：討論有關民航主管機關從事航空器產品及其零組件（簡稱航空產品）之檢定人員訓練議題。

四、FAA 持續操作安全論壇（Continued Operational Safety/COS Forum）：討論有關航空器持續適航相關議題。

五、航空產品檢定法規現代化（Part 21 Modernisation）：討論航空產品與其各項裝備及零組件檢定法規配合產業科技發展之修訂方向。

六、針對後續將召開之國際民航組織（ICAO）高階會議（High Level Conference on COVID-19 , HLCC）相關內容預先討論。

貳、過程

一、會議參與單位：

本次會議由美國聯邦航空總署航空器檢定部門（Aircraft Certification Service, ACS）執行長官（Executive Director）Mr. Earl Lawrence 及新加坡民航局（Civil Aviation Authority of Singapore, CAAS）安全法規部門主管 Mr. Alan Foo 共同主持，新加坡民航局局長（Director General）Mr. Han Kok Juan 並進行線上會議開幕致詞，亞太地區主要民航主管機關均出席，如中國大陸、香港、澳門、日本、韓國、澳洲、紐西蘭、印尼、越南、馬來西亞、印度等共有約 90 位代表與會。

二、議程摘要：

本次會議共 3 天，議程摘要如後：

Tuesday 28 September 2021

0945-1000	**Meeting Registration**	**All delegates** **Zoom link or ID: 969 4359 4277** **Passcode: 1369**
1000-1010	Welcome Remarks	Mr. Han Kok Juan, Director-General CAAS Mr. Earl Lawrence, Executive Director, Aircraft Certification Service, FAA
1010-1020	FAA-APAC Executive Committee – Annual Report	**Speakers**: Mr. Sarbhpreet Sawhney (EC Secretariat)
1020-1040	**Topic 1**: **Unmanned Aircraft Certification Working Group (UCWG)** Objective: Promote a common approach to UAS certification principles/standards amongst authorities. Lead by FAA, Co-lead by CAAS	**Speakers:** Mr. James Foltz, Mr. Jonathan Tan
1040-1050	Comfort Break	

1050 -1110	**Topic 1**: CAA Executive deliberations	**Moderator**: EC Secretariat
1110-1130	**Topic 2: Advanced Air Mobility (AAM)** Working Group Objective : 1) Ensuring common understanding of AAM framework 2) Sharing CAA priorities and pending changes within their respective systems, and leveraging the experiences and lessons learned 3) Sharing operational safety data Lead by FAA, Co-lead by CAANZ	**Speakers:** Mr. James Foltz, Ms. Rebecca Langton
1130-1150	**Topic 2**: CAA Executive deliberations	**Moderator**: EC Secretariat
1150-1200	Day 1 Review and Close	Mr. Earl Lawrence, Mr. Alan Foo

Wednesday 29 September 2021

0945-1000	**Meeting Registration**	**All delegates** **Zoom link or ID: 969 4359 4277** **Passcode: 1369**
1000–1020	**Topic 3: Workforce Training Alignment (WTA)** Objective: Determine the workforce needs for aircraft certification and create structure to qualify/credential that workforce. Lead by FAA, Co-lead by CAAS	**Speakers:** Mr. Luis Ramirez, Mr. Nick Leow
1020-1040	Topic 3: CAA Executive deliberations	Moderator: EC Secretariat
1040-1050	Comfort Break	
1050–1110	**Topic 4: FAA Continued Operational Safety (COS) Forum** Working Group Objective: Sharing of safety information and provide early notification of potential mandatory continuing airworthiness information (MCAI). Lead by FAA	**Speakers:** Mr. Christopher Spinney, Ms. Melanie Violette, Mr. Mike Linegang
1110-1130	**Topic 4**: CAA Executive deliberations	**Moderator**: EC Secretariat
1130-1150	Managing the impact of COVID while supporting recovery	Group discussion moderated by Mr. Sarbhpreet Sawhney
1150-1200	Day 2 Review and Close	Mr. Earl Lawrence, Mr. Alan Foo

Thursday 30 September 2021

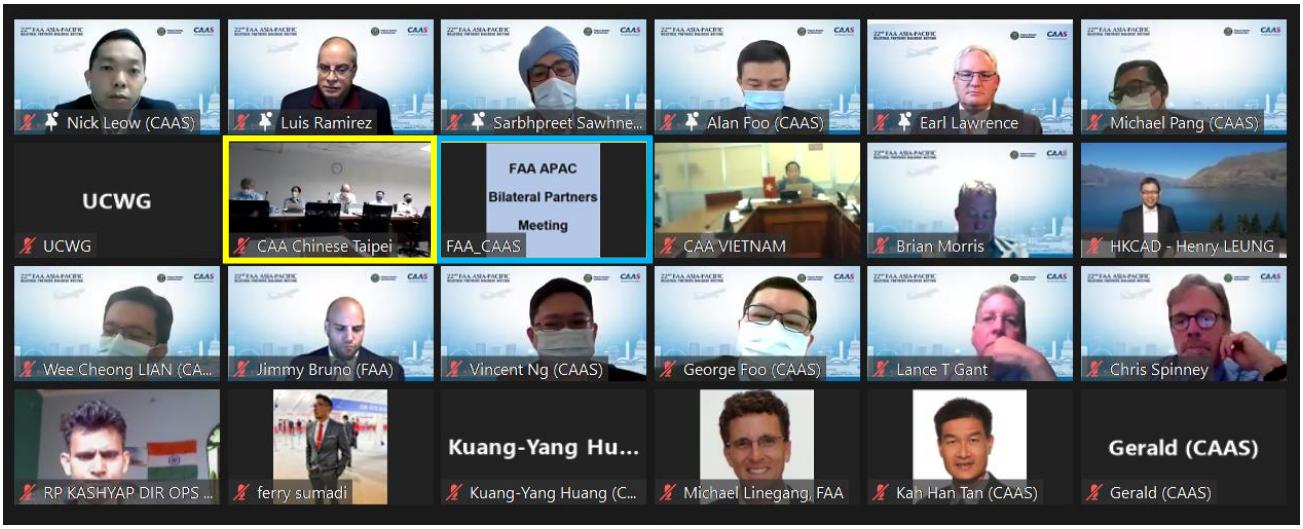
0945-1000	**Meeting Registration**	**All delegates** **Zoom link or ID: 969 4359 4277** **Passcode: 1369**
1000–1020	**Topic 5: Part- 21 Modernisation** Working Group Objective: • Ensure common understanding of each authority's current Part 21 regulatory framework • Sharing of each other of priorities and pending changes within their respective systems (regulation and policy), and leverage the experiences and considerations of the partner authorities • Identify common priorities and initiatives, and present them to the Executive Committee for discussion and determination of next steps	**Speakers:** Mr. Dan Elgas, Ms. Chen Ye

	• Work toward common outcomes to enhance bilateral relationships Lead by FAA, Co-lead by CAAC	
1020-1040	**Topic 5**: CAA Executive deliberations	**Moderator**: EC Secretariat
1040-1050	Comfort Break	
1050–1120	**Topic 6: Discussion on ICAO High Level Conference on COVID-19 (HLCC)** Discussion Objective: Build consensus and coalition for support of the working papers prior to the HLCC in October. Lead by FAA	**Speakers:** Mr. David Higginbotham (FAA), other CAA participants invited to briefly share their HLCC papers.
1120-1140	**Topic 6**: CAA Executive deliberations	**Moderator**: EC Secretariat
1140-1200	**Round-Table:** Final wrap-up session, discussion on outcomes and 23rd FAA APAC Announcement of new EC member. Adjournment of 22nd APAC Meeting and Handoff of 23rd FAA APAC Meeting 2022	Speakers: Mr. Alan Foo Mr. Earl Lawrence KOCA - 2022

參、會議紀要

一、主席致詞及大會報告：

本次會議主席美國聯邦航空總署航空器檢定部門（Aircraft Certification Service, ACS）執行長官（Executive Director）Mr. Earl Lawrence 提到，透過 APAC 工作小組（Working Group, WG）可對相關議題探討內容、凝聚共識，並可有效將相關結論，推展至亞太各國，有助於法規架構及執行面的一致性（Alignment）。



本局與 FAA 及亞太各國會議情形

執行委員會（Executive Committee, EC）秘書 FAA Mr. Sarbhpreet Sawhney 則進行大會報告，說明自 2019 年於紐西蘭之 APAC 會議，各國咸認因應航空產業全球化趨勢及創新科技日益發展，因此成立 APAC 執行委員會（EC），由 5 個主要國家擔任委員，分別是：美國（FAA）、紐西蘭（CAA New Zealand, CAA NZ）、新加坡（CAA Singapore, CAAS）、韓國（Korea Office of Civil Aviation, KOCA）、中國（CAA China, CAAC）。執行委員會成立的目的在檢視目前檢定專案執行經驗、分享國際飛航安全趨勢資料，以研商安全相關策略性議題，交由各工作小組進行細部研討及意見回饋，並希望亞太各國落實相關議題結論的推動，並提供所需之資源。

總結執行委員會的策略願景，是希望達成下列目標：

1. 降低航空產品於亞太各國認可之技術障礙。
2. 共同合作促進產業創新、安全資訊分享、促進飛航安全。
3. 調和並達成一致性檢定及技術水準。

4. 凝聚全球飛航安全標準之共識。

而策略性議題則聚焦於下列重點：

1. 發揮夥伴合作力量：汲取航空產品設計國之檢定及飛航安全經驗、降低雙邊航空產品認可障礙、提昇檢定及安全監理人員技術水準。
2. 建立對於彼此檢定水平及飛安維持能力之信心度。
3. 建立因應創新科技之法規架構。
4. 維持檢定及持續適航政策的一致性，提供維持飛安所需之各項支持與協助。

二、主題 1：無人機檢驗工作小組（Unmanned Aircraft Certification Working Group, UCWG）

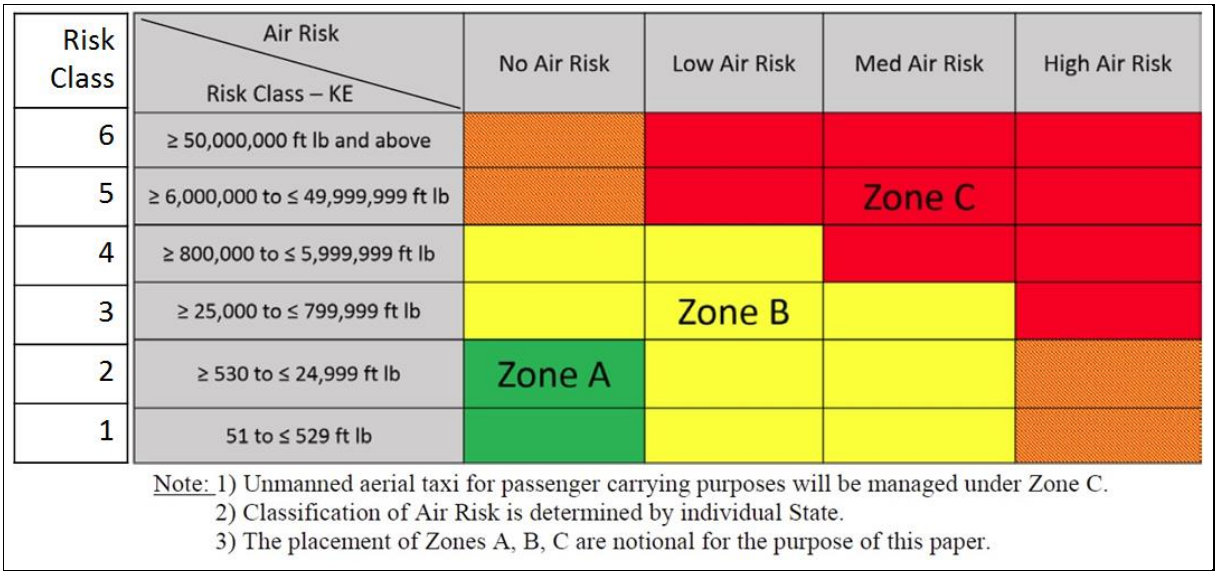
本工作小組係討論有關遙控無人機檢驗議題，由 FAA Mr. James Foltz（Manager, Strategic Policy Emerging Aircraft）及新加坡民航局 Mr. Jonathan Tan（Deputy Director of Unmanned Systems Policy & Regulation / Head of Integration Office）擔任共同主持人。

本局亦為此工作小組成員之一，並積極參與議題研討，曾於 2020 年 11 月 4 日視訊會議，分享我國無人機檢驗制度，復於 2021 年 5 月 18 日視訊會議，再次更新說明我國無人機檢驗制度及案例介紹，並分享下列心得：

1. Special Conditions – Effective approach for diversified UAS application and technology to complement current certification basis.
   （訂定特別要求以因應對於新科技之檢驗需求）
2. Professional Organization – Counting on to effectively complete UAS certifications.
   （強調檢驗機構協助完成無人機檢驗的角色至關重要）
3. Nonconventional Lighter-Than-Air (LTA) Unmanned Airship – Using manned FAA-P-8110-2, plus C2 link and Ground Control Station (GCS) requirements.
   （分享對於無人飛艇檢驗基準制定方式）

本次 APAC 會議新加坡民航局提到無人機檢驗須考量各種構型及應用面的風險評估分析，工作小組成員亦認同推動無人機檢驗之必要性，有關各種中型（25kg ~ 150kg）等級之無人機其風險值，依航空器速度產生之動能（KE）分類，約屬 Risk Class 1, 2, 3，而

大型等級之無人機，如 AAM（Advanced Air Mobility 先進空中運輸）（150kg 以上）無人駕駛航空器則為 Risk Class 4, 5, 6，後續並應考量各種無人機風險等級訂定相關檢定基礎。



無人機依動能大小之風險等級分類

FAA 則於會中提出針對風險等級較高的 Risk Class 4, 5, 6 無人駕駛航空器，已成立另一個新的 AAM（Advanced Air Mobility 先進空中運輸）工作小組，從無人機檢驗工作小組（UCWG）劃分出去，以聚焦特定大型無人機議題，但與 UCWG 保持密切配合與聯繫。

FAA 同時提及 2021 年 9 月 15 日視訊會議，亞太各國已針對低風險（Risk Class 1, 2, 3）之無人機提供檢驗制度及經驗，而本局亦分享我國相關無人機檢驗制度及經驗如下：

1. 針對耐久性及可靠度（Durability & Reliability, D&R）飛行試驗符合方法（Means of Compliance, MOC）提供我國檢驗做法及應用。
2. 針對無人機適航證書（Certificate of Airworthiness）提供我國實體檢驗合格證做法，並說明我國對於物流無人機之檢驗及作業核准方式。
3. 說明自國外進口無人機之型式認可（Type Validation）做法。
4. 說明檢驗流程及對於階段性試飛核准（Phased Approach）之做法。
5. 說明我國對無人機檢驗「自我驗證符合」（Self-Certification）簡化檢驗程序概念。
6. 對於 ICAO 所提出之低風險無人機檢驗架構經評估我國做法可予符合。

FAA 亦提及 2021 年 9 月 15 日視訊會議，亞太各國同意持續研議 ICAO 針對無人機

所提出之法規架構（ICAO Model UAS Regulations），該法規架構說明如下，並包含相應的諮詢通告（Advisory Circular, AC）：

1. Part 101：25kg 以下無人機操作及作業要求，利用專業機構（Approved Aviation Organization/AAO, Part 101.21）協助進行人員測驗及無人機檢驗作業。
2. Part 102：25kg 以上操作人員證照及作業管理要求、安全管理作業（SMS, Part 102.49），以及無人機檢驗要求（Subpart E – Requirements for Manufacturer, Part 102.301~102.311，此部份要求大部份參考加拿大 Standard 922 & Canadian Aviation Regulations 901.76, 901.78, 901.79 etc）。
3. Part 149：對授權專業機構（AAO）的核准及管理要求。
4. AC 101-1：提供 25kg 以下無人機操作及作業管理指引。
5. AC 102-1：提供 25kg 以上無人機作業能力審查及手冊規範指引，及無人機製造廠符合性基本說明。
6. AC 102-37：提供無人機載運「危險品」管理指引及作業手冊規範要項。
7. Draft AC 922-001：提供無人機製造廠符合性、檢驗基準、安全評估相關指引。

由於仍有無人機檢驗相關工作尚待推展，無人機檢驗工作小組（UCWG）工作將持續至 2022 年，未來的工作重點包括：

1. 中度風險等級之無人機檢驗制度走向。
2. 針對視距外飛航之無人機檢驗方式。
3. 有關無人機地面控制站的檢驗方式。

三、主題 2：先進空中運輸工作小組（Advanced Air Mobility Working Group, AAM WG）

本工作小組係討論有關遙控無人機檢驗中，風險等級較高的 Risk Class 4, 5, 6 無人駕駛航空器載客與載貨相關管理議題，由 FAA Mr. James Foltz（Manager, Strategic Policy Emerging Aircraft）及紐西蘭民航局 Ms. Rebecca Langton（Emerging Technologies Program Manager）擔任共同主持人，本局亦為此工作小組成員之一，大部份工作小組成員與無人機檢驗工作小組（UCWG）一致，可確保兩個工作小組研議項目不致於重疊，並保持緊密的銜接與配合。

本工作小組主要研討的主題為：

1. 城市空中運輸（Urban Air Mobility, UAM）（空中載客計程車）：包含有人駕駛及無人駕駛兩種型態。
2. 城際貨物運送。
3. 電動垂直起降航空器（eVTOL）。
4. 複合式營運操作（Complex Concept of Operation/CONOPS）。
5. 新穎的航空器構型設計。

工作小組針對 AAM 航空器驗證議題，有下列幾個面向的研討項目：

1. 檢定基礎：基本上以引用 FAR Part 23 等最新之性能規範要求（Performance Based Requirements, PBR）做為檢定之適航標準。
2. AAM 航空器驗證的特殊考量點：
   (1) 系統安全分析（System Safety Analysis, SSA）目標之設定。
   (2) 高強度輻射場域（High Intensity Radiated Fields, HIRF）防護及抗雷擊能力。
   (3) 遭受鳥擊（Bird Strike）之結構安全。
   (4) 重要動力失效時之航空器性能要求。
   (5) 全部動力失效之共模分析（Common Mode Analysis, CMA）與處置能力。
   (6) 對於採用線傳控制（Fly-by-Wire）之航空器操控安全設計。
3. 對於純電引擎之驗證方法與要求，並考量是否需與機體分別驗證。
4. 航空器適墜性（Crashworthiness）驗證考量：包括乘客（及/或駕駛員）座椅與其搭接結構強度要求，以及對於燃油箱及電池安裝之安全要求。此項尚需考量各種不同的新穎航空器構型設計而訂。
5. 避免人為操作疏失：電量使用情形指示要求、保留備用電量需求，以及電能輸出功率指示。
6. 由有人駕駛過渡至無人駕駛之階段式驗證要求。

四、主題 3：檢定人員訓練標準化（Workforce Training Alignment, WTA）

本工作小組係討論有關民航主管機關檢定人員訓練標準化議題，目的在於檢視制訂因應未來科技發展所需航空產品檢定人力之培訓需求。由 FAA Mr. Luis Ramirez（Workforce Development Branch Manager of Aircraft Certification Services）及新加坡民航局 Mr. Nick Leow（Head of Strategy & Planning）擔任共同主持人。此工作小組於 2020 年 4 月新成立，主要研討的主題為：

1. 訂定檢定人員所需具備之技術能力、必要的教育、資格、經驗水平及專業訓練。
2. 制訂可適用亞太各國民航局、學校、工業界之標準化訓練課程架構，以利儲備目前及未來之專業檢定人力。
3. 建立亞太各國檢定人員共通任用資格，以廣建民航主管機關可予利用之人才庫。
4. 探討建立檢定相關學經歷證照制度之可行性，並期待能於不同國家民航主管機關之間通行適用。

本工作小組主要成員國包含美國、新加坡紐西蘭、韓國及印度等 5 個國家，截至本次會議期間總共開了 4 次視訊會議，目前達成之重要工作成果包含：

1. 建立章程並獲 APAC 執行委員會核准。
2. 發展並已完成職能訓練差異分析問卷。
3. 完成檢定人員法規及標準熟悉度職能矩陣表（Competency Matrix）草案如下：

<table>
<tr><th colspan="3">Competency: Standards and Regulations
職能項目：標準與法規專業度</th></tr>
<tr><td>Behavioral Definition
專業能力定義</td><td colspan="2">Interprets and applies safety and other regulations, policies, standards, or procedures
能解釋及應用飛航安全及其他相關法規、政策、標準或程序。</td></tr>
<tr><td>Work Behaviors
工作能力指標</td><td colspan="2">● Acquires and maintains a working knowledge of relevant laws, regulations, policies, standards, technical guidance, or procedures.
學習並維持檢定工作所需相關法規、政策、標準、指引文件或程序專業知識。
● Interprets and/or applies safety and other regulations, policies, standards, or procedures to ensure program or project compliance.
解釋並應用飛航安全及其他相關法規、政策、標準或程序，以確保專案或計畫執行之法規符合性。
● Participates in the development, evaluation, or revision of safety and other regulations, policies, standards, or procedures.
參與制訂、評估或修訂飛航安全及其他相關法規、政策、標準或程序。</td></tr>
<tr><td>Proficiency Level
專業度分級</td><td>Definition
等級定義</td><td>Behavioral Indicators
能力指標</td></tr>
<tr><td>Level 5
Expert
專家級</td><td>● Applies the competency in exceptionally difficult situations.
能應用專業能力處理極為困難事務
● Serves as a key resource and advises others.
扮演處理事務之關鍵角色並能指導他人</td><td>● Identifies and manages potential areas of conflict regarding existing and future regulations, policies, standards and procedures between stakeholders, clients, and regulators.
能指出並處理目前法規、政策、標準或程序與未來需求之間的差異與衝突
● Leads committees, groups, and task forces to develop, update, and improve, engineering regulations, policies, standards, and procedures.
能領導委員會、工作小組制訂、更新並改進相關法規、政策、標準或程序
● Provides guidance on laws, regulations, policies, standards, or procedures in complex situations.
對於複雜專案能就法規、政策、標準或程序給予相關工作指引</td></tr>
</table>

		● Updates standard design specifications, orders, and procedures. 能更新修訂相關設計標準、規範及程序
Level 4 **Advanced** 高級	● Applies the competency in considerably difficult situations. 能應用專業能力處理相當困難事務 ● Generally requires little or no guidance. 僅需少量或不需指導即能妥善處理事務	● Ensures that novel or non-routine projects conform to regulations, policies, standards, or procedures. 執行新穎而獨特的專案時能確保其符合法規、政策、標準或程序 ● Develops and documents procedures for compliance with regulations, policies, and standards. 能制訂符合法規、政策、標準之相關程序 ● Advises others on interpretation of regulations, policies, standards, and procedures. 能妥為解釋法規、政策、標準或程序 ● Identifies deficiencies and proposes changes to regulations, policies, standards, and procedures. 能指出目前法規、政策、標準或程序不足之處並提出修正建議
Level 3 **Intermediate** 中級	● Applies the competency in difficult situations. 能應用專業能力處理困難事務 ● Requires occasional guidance. 處理事務時偶而需要指導	● Applies and explains common regulations, policies, standards, and procedures in both routine and nonroutine situations. 對常態及非常態專案能應用並解釋一般性法規、政策、標準或程序 ● Independently interprets regulations, policies, standards, and procedures. 能獨立說明法規、政策、標準或程序
Level 2 **Basic** 基本級	● Applies the competency in somewhat difficult situations. 能應用專業能力處理略為困難事務 ● Requires frequent guidance. 處理事務時需要經常指導	● Evaluates compliance with basic and routine aspects of common regulations, policies, standards, and procedures. 僅能就一般性常態專案確認其符合法規、政策、標準或程序 ● Applies and explains standards and regulations, policies, standards, and procedures under close oversight.

		可在監督下應用並說明法規、政策、標準或程序
Level 1 **Awareness** 入門級	● Applies the competency in the simplest situations. 能應用專業能力處理簡單事務 ● Requires close and extensive guidance. 處理事務時需要密切指導	(Individuals who do not meet the definitions or examples at the Basic level demonstrate the characteristics of the Awareness proficiency level.) 凡未達基本級能力者皆歸屬於此等級

會議提出 2022 年的工作重點包括：

1. 將職能矩陣擴展落實於亞太各國民航主管機關對於檢定人員之任用與訓練。
2. 確認並同意針對工程檢定人員所訂立的資格條件，並推行公用認證系統（Common Credential System）。
3. 美國 FAA 針對航空產品檢定部門（Aircraft Certification Service, ACS）檢定人員要求完成安全管理系統（System Management System, SMS）訓練，建議亞太各國民航主管機關也可比照列入訓練要求。

五、主題 4：持續操作安全論壇（Continued Operational Safety/COS Forum）

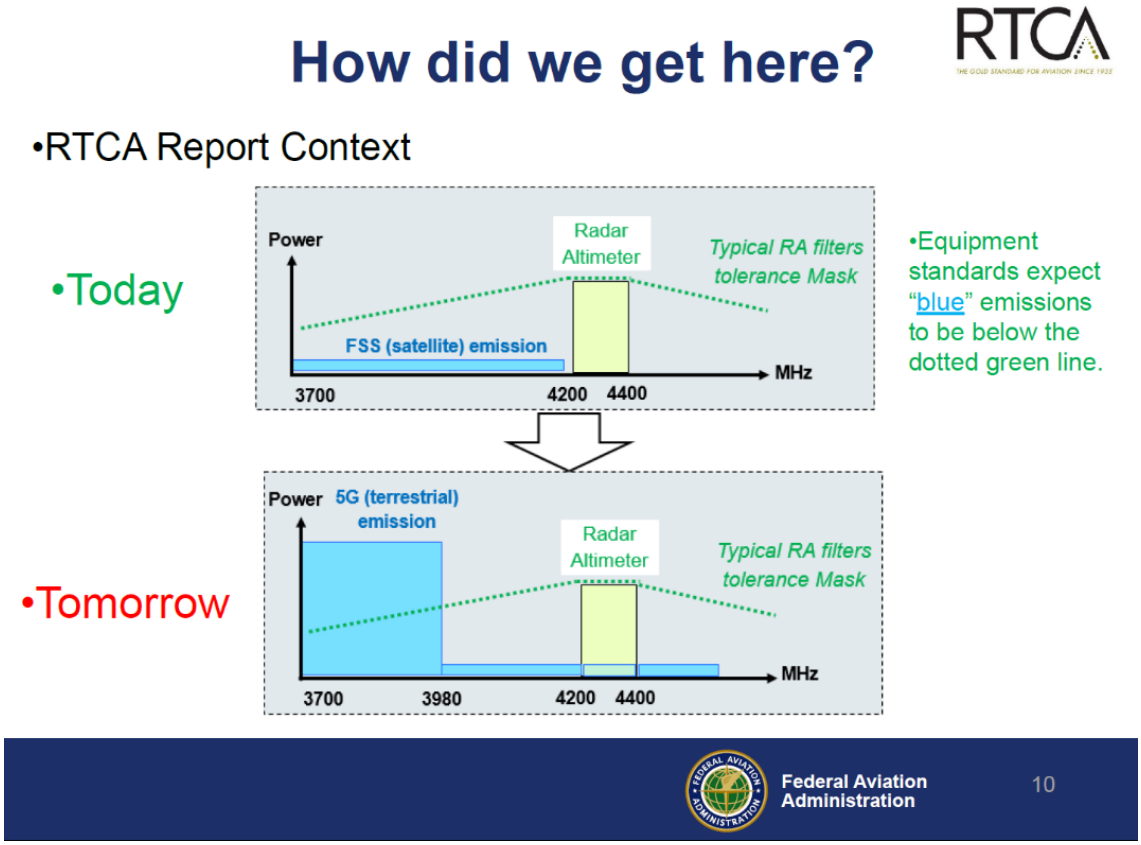
本工作小組於 2019 年由 APAC 執行委員會（EC）同意成立，旨在分享航空產品設計國（State of Design, SoD）檢定及飛航安全經驗，而航空器註冊國（State of Registry, SoR）則反應或分享航空器運作遭遇困難點或經驗，以達到安全資訊分享之目的，同時可了解安全回報機制及處理流程，以促進飛安事件之通報順暢與處理，並可針對潛在之操作安安議題及時傳達訊息並研議處理方案，以達到提昇亞太區域飛航安全之目標。

APAC COS Forum 約定每 3 個月由 FAA 與亞太各國民航主管機關召開 1 次，截至 2021 年 9 月共召開 10 次會議，本局皆積極與會，以掌握相關飛安趨勢與發展資訊。其中討論許多受矚目的安全議題如下：

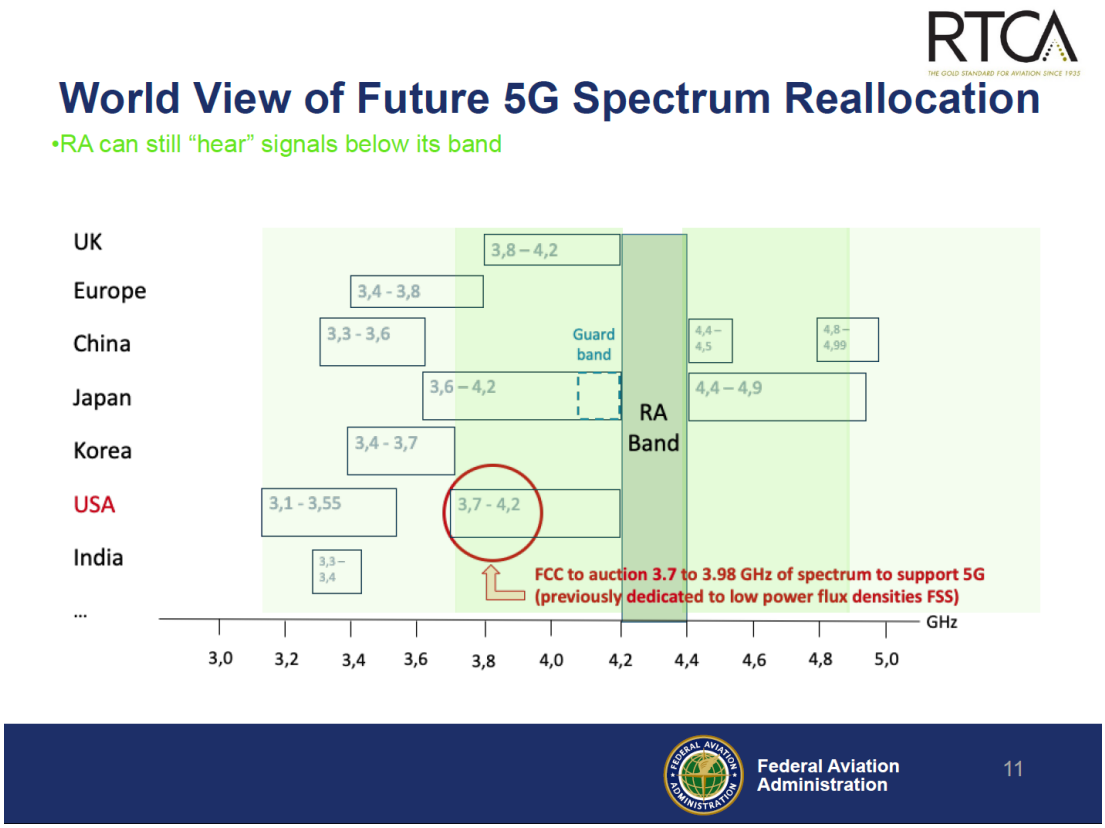
1. 波音 737 NG 機型：加強檢查及改正機身與機翼結構搭接主要結構（Pick Fork）出現裂紋問題，後續 FAA 並發布取代版適航指令（AD）2021-09-06。

2. 波音 777 使用 PW4000 發動機之機型：2018, 2019, 2020 分別於美國境內及日本發生風扇葉片斷裂導致發動機失效，並造成發動機外罩飛脫之危險情況，因此 FAA 要求執行發動機葉片之熱聲成像檢查法（Thermal Acoustic Imaging, TAI）。

3. 5G 行動通訊射頻可能造成航空器雷達高度計（Radio Altimeter, RA）失效問題：由於各國 5G 行動通訊技術使用的頻段 C-Band 3.7 GHz~ 3.98 GHz 與航空器機載設備雷達高度計（Radio Altimeter）使用頻段 4.2 GHz~ 4.4 GHz 非常接近，有信號干擾之虞，嚴重則可能導致其失效，而危害飛航安全。FAA 於 2021 年 2 月 10 日與亞太各國民航局 COS Forum 視訊會議首次揭露此項潛在飛安風險議題。（註：FAA 後續 2021 年 11 月 2 日發布特殊適航資訊通報 SAIB AIR-21-18，對相關航空業者提出建議）



5G 行動射頻強度超過雷達高度計容許限制



各國 5G 行動頻段非常接近雷達高度計頻段

目前我國電信業者使用 5G 頻段與飛機雷達高度計頻段相隔較遠，但為主動防範可能風險，可採用前述 FAA SAIB AIR-21-18 內容，後續要求國籍航空公司採取以下措施：

(1) 對各構型雷達高度計如何影響飛航進行 SMS 風險評估。

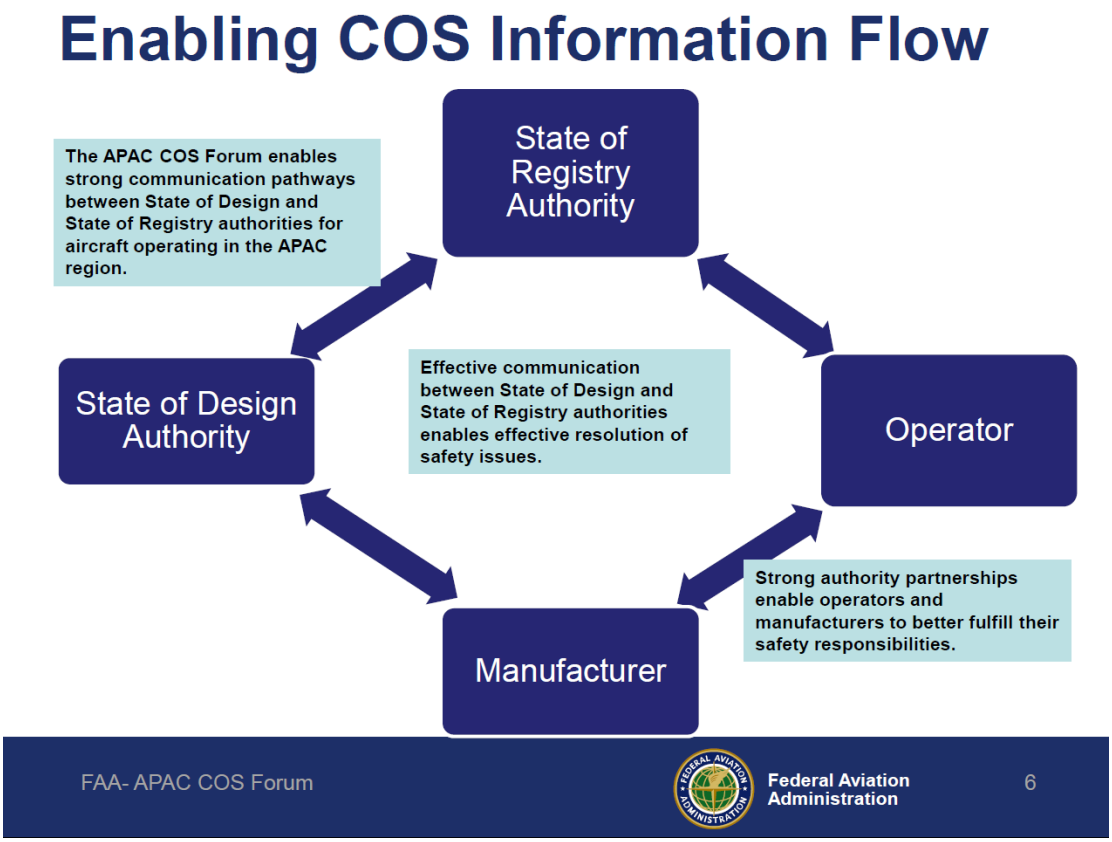
(2) 提醒乘客在飛行期間應關閉 5G 設備或切換成飛航模式。

(3) 從航空器或雷達高度計製造者取得相關資訊。

(4) 航空器使用人應確使其駕駛員了解可能的雷達高度計異常情況，及因而導致之相關系統功能喪失，與後續緊急操作程序。

(5) 發生雷達高度計異常情況時，航空器使用人與駕駛員應向飛航管制單位詳實通報。

APAC COS Forum 所建立之亞太各國飛安資訊通報及分享機制如下：



會議中 FAA 提到 APAC COS Forum 未來涵蓋及研議的主題方向為：

1. 將亞太各國主要使用之航空產品列為會議探討研議之標的。
2. 提供發展中的飛安相關議題與資訊。
3. 對於亞太區域高矚目的飛安議題，探討可能發生因子。
4. 由亞太各國提出其所關心之安全議題，並進行研討。
5. 優化持續操作安全（COS）風險評估流程。
6. 探詢提昇航空器持續操作安全的協力合作機會。

六、主題 5：航空器檢定法規現代化（Part 21 Modernization）

本工作小組係討論航空產品檢定法規配合產業科技發展之修訂方向。由 FAA Mr. Daniel Elgas（Manager, Certification Procedures Branch of Aircraft Certification Service）及

大陸民航總局 Ms. Chen Ye 陳曄女士（航空器適航審定司適航法規標準處副處長）擔任共同主持人。本局亦為此工作小組成員之一。由於 Part 21 為一個國家航空產品之檢定法規基礎，亦是洽談雙邊適航合作協議之基石，但 FAA 考量目前 Part 21 已行之有年，未能完全符合當今檢定作業需求，且無法因應新興科技發展與航空產品全球產製現況，因此 FAA 推出航空器檢定法規現代化的議題，並成立此一工作小組，其目的如下：

1. 了解亞太各國民航主管機關目前 Part 21 法規現況及未來修訂計畫。
2. 相互分享法規修訂優先次序及所遭遇挑戰與困難，並汲取他國經驗與協助。
3. 透過資訊分享調和各國修法重點及須處理之議題，並由 APAC 執行委員會（EC）提出後續策略方向。
4. 透過工作小組達成上述成果並促進 FAA 與亞太各國雙邊適航關係。

目前工作小組已提出修法時須關注之議題如下：

1. 無人機檢定及如何因應相關創新科技發展。
2. 民航主管機關對於各項航空產品檢定案的涉入程度（Level of Involvement, LOI），包括航空產品之設計檢定及製造檢定案。
3. 針對航空產品製造廠推展安全管理系統（SMS）要求。
4. 如何針對航空產品設計變更訂定適用之檢定基礎（Changed Product Rule, CPR）。

會議提出 2022 年的工作重點包括：

1. 商議特殊類航空器（例如：無人機）檢定做法，以及 Part 21 所需之相應修訂。
2. 對於航空產品設計變更之檢定基礎（CPR）訂立做法持續協調研議。

七、主題 6：國際民航組織（ICAO）高階會議（High Level Conference on COVID-19 , HLCC）相關內容預先討論

除上述 5 個工作小組成果彙報及研討外，本次會議尚針對即將於 ICAO 舉行之高階會議（High Level Conference on COVID-19 , HLCC）相關內容預先討論。由 FAA 資深國際代表暨國際民航組織適航專家小組主席 Mr. David Higginbotham（FAA Senior International Field Representative, and Chair, ICAO Airworthiness Panel/AIRP） 擔任主持人。他提及將於此次高階會議中研議三項議題，並提出相對應之 1 份「工作文件（Working

Paper, WP）」及 2 份「訊息文件（Information Paper, IP）」，分述如下：

第 1 份：工作文件（Working Paper, WP）HLCC 2021-WP/74：

本工作文件主要訴求為，美國向 ICAO 提出小型飛機檢定標準修訂建議，將 Annex 8, Part VB “Small Aeroplanes” 檢定重量上限由 5,700 kg 提高至 8,168 kg。

FAA 於 2017 年 8 月 30 日訂立新的小型飛機之適航標準 New Part 23，由過去指示性規定要求（Prescriptive Design Requirements），改為性能規範要求（Performance-Based Airworthiness Standards）後，已同步將適用此適航標準之航空器重量上限由 12,500 lbs 提高至 190,00 lbs（5,700 kg 提高至 8,168 kg）（註：過去 Part 23 Normal Category 重量上限 12,500 lbs，Commuter Category 重量上限 19,000 lbs；新的 Part 23 則統一將檢定類別稱為 Normally Category，重量上限則統一為 19,000 lbs / 8,168 kg，並將適航標準名稱改為：*Part 23 - Airworthiness Standards: Normal Category Airplanes*）。

其原因是 FAA 因應 2001 年 ICAO Annex 8 Amendment 98 將 5,700 kg 以上大型飛機檢定要求 Part III，改為 2004 年前之型別檢定申請案所須符合之 Part IIIA 檢定要求，以及 2004 年後之型別檢定申請案所須符合之 Part IIIB 檢定要求，而 Part IIIB 為全新的章節，增訂了有關飛機性能、操控穩定性、貨艙防火、客艙安全、電路安全、緊急逃生、電磁干擾防護、防冰、系統軟體等新的檢定要求。FAA 鑒於針對 5,700 kg ~ 8,168 kg 之型別檢定基礎僅能適用舊有 Part 23，但舊有 Part 23 其內容已多年未更新，且無法滿足 ICAO Annex 8 Amendment 98 對於 2004 年後型別檢定申請案所須符合新的 Part IIIB 檢定要求，且同時考量科技日新月異的發展，以及為了增加對於不同複雜等級（New Part 23, Level 1 ~ Level 4）飛機的檢定彈性，因此於 2008 年啟動 「小型飛機檢定程序研究案（Small Airplane Certification Process Study）」（註：研究報告 *“Part 23-Small Airplane Certification Process Study", OK-09-3468, Dated July 2009”*），其研究結論如下：

1. 全新改寫 Part 23，以因應不同飛機重量及動力來源，並考量飛機性能及複雜度。
2. 與國際溝通有關 Part 23 檢定重量上限提昇至 8,168 kg 相關事宜，以求全球一致性之檢定基準。（註：目前歐洲航空安全署 EASA 已於 2020 年 6 月 24 日公布最新之 CS-23 Amendment 5，將等同於 FAA New Part 23 納為 *“CS-23 Certification Specifications for Normal-Category Aeroplanes”*）

而 FAA 則於 New Part 23 公布後之 2017 年 11 月 ICAO 第 5 次適航專家小組會議（AIRP），聯合 EASA 向 ICAO 提出 Annex 8 檢定標準修訂提議，並組成工作小組（Working

Group 4, WG-4），將 Annex 8, Part VB “Small Aeroplanes” 重量上限由 5,700 kg 提高至 8,168 kg，並考量 9 人座以下小型飛機以較簡化檢定要求進行驗證工作。後續 ICAO 飛航操作專家小組（Flight Operations Panel, FLTOPSP）認為此項修訂將涉及其他附約之修正，因此建議提高於 ICAO 提高討論層級，因此 FAA 備妥此份工作文件擬於 ICAO HLCC 中提報，並指出提昇小型飛機檢定重量上限除涉及 Annex 8 之修訂外，亦將涉及第 1 號（航空人員證照）、第 2 號（空中航行規則）、第 6 號（航空器操作）、第 13 號（失事及意外事件調查）、第 16 號（環境保護）、第 18 號（危險品運送）、第 19 號（安全管理系統 SMS）附約之修訂。

第 2 份：訊息文件（Information Paper, IP）HLCC 2021-WP/201：

本訊息文件主要為說明美國在疫情期間，利用視訊會議進行遠距修理廠、製造廠及供應商監督、適航檢查、改正行動確認等作業，共於 50 餘國執行超過 500 次以上之遠距監理作業，此次 APAC 會議亞太各國亦提出類似作業模式，但一致認為遠距監理仍無完全取代現場檢查工作，此方法僅是疫情期間的權宜做法。

第 3 份：訊息文件（Information Paper, IP）HLCC 2021-WP/198：

本訊息文件主要為說明美國正在研究航空器導航日益倚賴的全球定位系統（GPS）訊號可能被干擾之風險，由於 GPS 訊號屬於公開發送資訊，其傳遞管道之間通常無加密機制，因此處於易於被侵入竄改的風險中，因此美國正積極蒐集並準備擬訂相關措施，對於利用 GPS 進行精確導航之裝置，將規定其相關防偽驗證機制（Authentication），以提昇空、地相關裝備之安全性。

肆、心得與建議

一、 遙控無人機檢驗是近來各國所面臨的航空器檢定新課題，本局自 2020 年 3 月 31 日施行「遙控無人機管理規則」以來，已陸續針對 25kg 以上無人機，完成 5 項市售型無人機型式檢驗、9 項業者自製使用或研發型無人機特種實體檢驗，並完成型式檢驗通過後量產之無人機實體檢驗共 254 架次，相較於日本預計於 2022 年底開始執行無人機檢驗，而美國目前以 FAR 21.27(b) Special Class Aircraft 方式執行部份無人機型別檢定，我國執行無人機檢驗之步伐算是走在各國之前。但思考此差距將隨各國陸續開始執行無人機檢驗後隨之消失，屆時各國無人機產品之流通及進出口，將面臨型別認可的問題，而能執行認可之前提為該國無人機檢驗制度須符合國際標準，且將帶動 FAA 與亞太各國之雙邊協議拓展至無人機檢驗項目。因此，本組在規畫相關的無人機檢驗程序時，即參考有人駕駛航空器之型別檢定、補充型別檢定及適航證書機制，惟因應無人機不同重量及飛航高度所衍生風險之高低予以簡化流程，同時因應創新科技之發展，利用「特別檢驗要求（Special Conditions）」，針對無人機所應用之新穎科技，訂出適用之檢驗要求，以求檢驗作業兼顧無人機設計複雜性及作業風險，以達到確保無人機操作安全與相關產業科技發展之平衡點。並在未來各國開始將雙邊協議延伸至無人機檢驗時，我國已能做好最佳準備及具備相關驗證實績，可以開始與 FAA 等國進行相關雙邊協議之洽談，使我國無人機產品得以拓展行銷於國際。於此同時，本局亦將積極參與各項 APAC 無人機檢驗工作小組（UCWG）會議及各項國際會議，汲取各國驗證制度發展趨勢與經驗，做為我國無人機相關法規、程序調整修訂之依據。

二、 先進空中運輸（Advanced Air Mobility, AAM）航空器（AAM 航空器）是世界各國目前方興未艾的新興航空器設計發展趨勢，目前世界上已陸續有近 500 項 AAM 航空器發展專案進行或發表，我國短期雖無此發展專案成型，但亦可能面臨將國外 AAM 航空器引進國內營運之可能，屆時將面臨型別認可檢定問題，因此對於國際如何檢定此類似空中計程車之航空器，其適航標準及檢定程序如何制訂，本局刻正參考國際經驗據以研擬制訂相關策略方針，舉凡有人駕駛航空器之 FAA New Part 23 或 EASA eVTOL Special Conditions 皆為歐美 AAM 航空器研發廠商所據以符合之適航標準，惟在控制與通訊鏈路（Command & Control, C2 Link）之相關標準較為缺乏，此部份或可參照現行 ASTM 或歐盟 JARUS 相關規範予以補足，另外為使續航力加強而採用氫燃料亦是新興趨勢，而本局有執行田屋公司與工研院材化所 AXH-E230FC 氫燃料無人直昇機特種實體檢驗之初步經驗，以及美國近期訂定 magniX USA Inc.純電引擎型

別檢定基礎（參照 FAR 33 訂定 Special Conditions）可做未來純電引擎之檢驗基準參考。而本局為 APAC AAM 工作小組成員之一，將藉此機會了解國際間針對此新興類型航空器之檢定考量及檢定方式。

三、 Part 21 是 FAA 航空器檢定法規，檢定法規是亞太各國與 FAA 訂立雙邊適航協議之基礎。我國航空器檢定法規為「06-07A 航空產品與其各項裝備及零組件適航檢定管理規則」，民國 89 年發布時，係參考當時 Part 21 而制訂，多年以來僅作小幅修正。而當 FAA 因應科技發展趨勢進行 Part 21 修訂時，本局可利用 APAC Part 21 工作小組機會了解其修訂方向及修訂重點內容，以掌握最新資訊，做為我國更新修訂「06-07A 航空產品與其各項裝備及零組件適航檢定管理規則」之參考。

四、 FAA 與亞太各國商議訂定之檢定人員職能矩陣（Competency Matrix），同時搭配相應之訓練項目，並推行檢定人員證照制度，可有效培植目前與未來需求之民航主管機關檢定人員，同時對於學校及業界亦可據此訂定相關檢定基礎人員培訓，不僅厚實檢定人才來源，並可使檢定人員逐級落實訓練及考核晉升，也為後續高階檢定管理人才建立職涯路徑，充實各國檢定能力，確保各項檢定案之法規符合性。

五、 有鑑於 FAA 針對初始適航之航空產品檢定人員要求完成 SMS 訓練，足見 FAA 對 SMS 的重視。雖本局檢查員皆已完成 SMS 年度複訓，但歐美民航主管機關及 ICAO 對於 SMS 持續發展與修訂，因此建議本局仍應定期派員至國外受訓，以接收最新訊息，俾利我國落實安全管理與訂定 SMS 監理策略之參考。

伍、附件：會議簡報資料

Federal Aviation Administration

FAA-APAC Bilateral Partners: Executive Committee Annual Report - 2021

Briefing to APAC Authorities

Presented to: Asia Pacific Civil Aviation Authorities

By: Sarbhpreet S. Sawhney, EC Secretariat

Date: September 2021

Objective

To inform Asia-Pacific Authorities of the progress made by the FAA-APAC Executive Committee.

To promote strategic initiatives chartered by the Executive Committee and solicit input, participation and support from CAAs for greater alignment of our regulatory systems.

Agenda

- History & Background
- Executive Committee Strategic Vision/Focus Areas
- Executive Committee Implementation Strategy
- Progress and Achievements in past year
- Future Outlook

History & Background

- FAA has convened an annual multi-lateral meeting with APAC CAAs for past 21 years in the region
- At the 2019 annual meeting, hosted by CAA-NZ, leaders expressed the need for a strategic framework to address challenges from globalization and the pace of innovation
- Decision was made to charter an Executive Committee (EC) to provide strategic direction
- The EC was formed in November 2019 and has since held fourteen (14) virtual meetings.
- The EC defined a strategic vision with focus areas and working groups to implement the strategy

History & Background - Continued

- As all are aware, due to the pandemic the 22nd annual FAA-APAC Bilateral Partners' Dialogue Meeting was cancelled in 2020
- During this period the EC has continued its work and the working groups are functioning effectively
- The EC consists of five (5) members with FAA as the permanent member, three members based on the last, current and next host of the annual partners meeting and a rotating member.

Executive Committee Vision and Focus Areas

Strategic Vision

- **Reduce barriers to acceptance of compliance findings**
- **Collaborate to:**
  - Foster innovation
  - Promote info sharing
  - Enhance safety
- **Alignment of technical expertise**
- **Actively shape global standards**
- **Share lessons learned**

Strategic Focus Areas

- **Partnership Leveraging**
  - SoR maximize leveraging of SoD
  - Reduce/eliminate duplicative efforts in validation
  - Share safety data
  - Enhancement of workforce
- **Continued Confidence Building**
  - Robust mutual confidence building
- **Foster Innovation**
  - Collaborate to develop agile and responsive regulatory framework
  - Facilitate innovation
- **Policy Alignment**
  - Align certification and airworthiness policies
  - Promote seamless transfer and COS support of products.

Executive Committee – Implementation Strategy

- **Set strategic direction at the executive level and oversee initiatives at the international affairs, technical and policy subject matter expert level.**
- **Focus authority resources on aligned priorities and high safety value areas**
- **Promote regulatory cooperation and alignment between CAAs and position regulators to embrace innovation and new entrants.**
- **Charter multi-lateral Working Groups to carry out strategic initiatives.**

Working Groups

- **Currently there are five Working Groups (WG):**
  - UAS Certification Working Group (UCWG)
  - Advanced Air Mobility (AAM)
  - Continued Operational Safety (COS) Forum
  - Workforce Training Alignment (WTA) Working Group
  - Part 21 Working Group
- **WG membership is based on aligned priorities. CAAs may request to join or participate as an observer.**

Note: During this difficult period the EC and these working groups continue to meet virtually and make progress on their initiatives.

Progress and Achievements 2020-21

- **Executive Committee – Innovation in Collaboration**
  - Set a new format for annual FAA-APAC meeting - Boardroom
  - Promoted Information Paper development for sharing key topics

- **Formation of the Advanced Air Mobility (AAM) WG**
  - EC approved Charter April 2021 – Co-led by FAA & CAA-NZ
  - Promote common AAM certification principles
  - Close coordination with UCWG

- **UCWG**
  - Successfully agreed on a safety continuum concept
  - Performance based regulatory framework – Industry Standards

Progress and Achievements 2020-21

- **COS Forum**
  - Enhanced sharing of COS information and safety analysis
  - Platform for COS dialogue in support of SoR safety responsibility
  - Sharing best practices for mitigating COVID impact

- **Workforce Training Alignment WG**
  - Pursuing common core competency model for certification engineer

- **Part 21 Modernization WG**
  - CAAs sharing their Part 21 structure
  - CAAs highlighting challenges from emerging technology and innovation, seeking to align
  - Changed Product Rule (CPR) emerged as a common interest

FAA-APAC EC Future Outlook

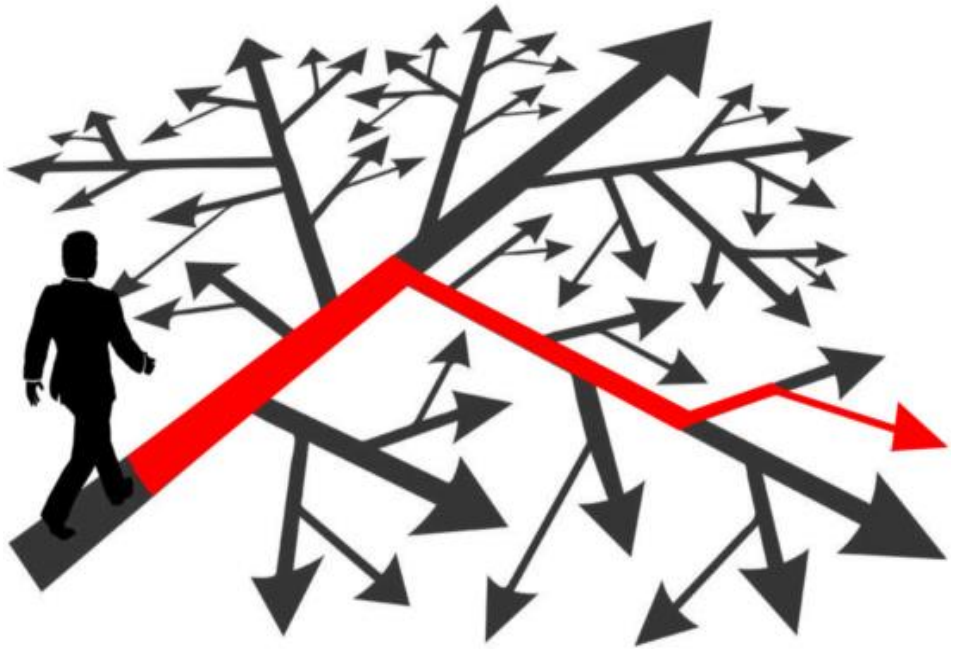
1. **Plan and execute the 23rd annual FAA-APAC Bilateral Partners Dialogue Meeting.**
   - Focus on emerging technology and innovation
   - EC to monitor progress of working groups to optimize value
   - Need APAC CAAs to engage with challenges and solution options
2. **COVID-19 Impact**
   - EC discussed impact to regulators and industry of the pandemic
   - EC directed the COS Forum to assess COVID-19 impact related to certification and airworthiness.
   - EC emphasized collaboration on lessons learned to support recovery and prepare for next global emergency.
3. **The EC will continue to meet virtually and monitor progress on the initiatives presented.**

APAC UAS Certification Working Group

September 2021

Strategic Outcome – Risk-based Approach

- Certification of Unmanned Aircraft Systems (UAS) and their safe integration into national airspace systems present challenges
- The UCWG is a body to exchange information, promote mutual acceptance of respective approaches, and to define common safety risk elements for UAS certification, using a risk-based approach



UCWG Mission

- Promote a common understanding of UAS certification principles
- Align UAS certification approaches across civil aviation authorities
- Exchange lessons learned, cooperate in development of new policy
- Provide for a seamless exchange and integration of products into national airspace systems

Federal Aviation Administration

Membership

- Co-led by CAAS and FAA
  - James D. Foltz, FAA – USA
  - Jonathan Tan, CAAS – Singapore
- Members and observers also include
  - CAAC – China
  - CAA-NZ – New Zealand
  - CASA – Australia
  - DGAC – India
  - DGCA – Indonesia
  - JCAB – Japan
  - KOCA – South Korea
  - CAA – Chinese Taipei
  - CAA – Macao
  - CAA – Hong Kong

Federal Aviation Administration

Charter & Extension

- Original UCWG charter signed March 2017
- Charter extension was approved by Executive Committee in 2019 to extend UCWG through 2022
- Included in the charter extension were focus areas:
  - For UAS under risk class 1, 2 and 3 to be used for cargo delivery, to focus on certification standards, framework to develop the concept of operations for such service offerings to occur,
  - For UAS under risk class 3 and 4 to be used for urban mobility applications, to use a step-by-step approach in identifying the standards on VTOL, automation, autonomous battery capability and communication standards
  - For UAS under risk class 5 and 6 that are meant for unmanned transport aircraft, to similarly adopt a step-by-step approach by exploring the standards required for a single flight crew operation.

Now covered by AAM Working Group

Working Group Progress

Virtual meeting held May 2021

- Spanned two weeks
- Discussed APAC-FAA Advanced Air Mobility Workgroup formation
- CAA updates provided by
  - CAAC
  - CAA - Chinese Taipei
  - FAA
- FAA also provided a presentation on the Durability & Reliability (D&R) Means of Compliance

Working Group Progress

- Homework assignment for UCWG due mid-August
- Asked members to provide information regarding their State's approach and status of type certification for risk classes 1, 2, and 3
  - Responses will provide framework to address first charter extension item
- Virtual meeting planned for mid-September to discuss homework

Future Plans

- UCWG will continue to make progress against charter and extension deliverables
- Many open items still being worked by authorities across the globe that the UCWG can discuss
  - Medium-risk UAS pathways
  - Beyond Visual Line of Sight Operations
  - Approaches towards Associated Elements

APAC AAM Working Group

September 2021

AAM Working Group Establishment

- FAA-APAC Bilateral Partners Executive Committee meeting in November 2020 discussed the challenges associated with the certification of Advanced Air Mobility (AAM) aircraft
- AAM pose unique challenges from Unmanned Aircraft Systems (UAS), so it was decided to establish a separate working group from the APAC UAS Certification Working Group (UCWG)
- This new AAM Working Group aims to promote a common understanding of AAM certification principles

AAM Working Group Purpose

- Ensuring common understanding of each authority's regulatory framework for AAM
- Sharing CAA priorities and pending changes within their respective systems (regulation and policy) regarding AAM, and leveraging the experiences and lessons learned
- Sharing operational safety data
- Using the collaboration of the AAM Group to inform potential future rulemaking and policies in an effort to work towards common outcomes and to enhance bilateral relationships

AAM Working Group Scope

- The working group will focus on collaboration and coordination on the certification of AAM aircraft such as
  - Urban air taxi/cargo (UAS or piloted)
  - Passenger carrying UAS
  - eVTOL aircraft
  - Highly automated aircraft
  - Complex CONOPS
  - Novel configuration aircraft
- Will have close coordination with the UAS Certification Working Group (UCWG) to ensure there is no overlap or duplication of efforts

Membership

- Co-led by CAA-NZ and FAA
  - Rebecca Langton, CAA-NZ – New Zealand
  - James D. Foltz, FAA – USA
- Members and observers also include
  - CAAC – China
  - CAAS – Singapore
  - CASA – Australia
  - DGCA – Indonesia
  - JCAB – Japan
  - KOCA – South Korea
  - CAA – Chinese Taipei
  - CAA – Hong Kong
  - CAA – Macao

AAM Working Group Topics

Potential topics for the AAM Working Group to discuss include:

- Certification approach leveraging performance based regulations (PBR)
- Safety Continuum for AAM aircraft
  - System safety design targets
  - High-Intensity Radiated Fields (HIRF) and Lightning
  - Bird strike protection
  - Aircraft performance following critical loss of thrust
  - Common mode all engine out scenarios
  - Design assurance for fly-by-wire flight controls

AAM Working Group Topics

Potential topics for the AAM Working Group to discuss include:

- Electric engine certification
  - Certified separately or with the aircraft
- Crashworthiness
  - Seats and Structure
  - Fuel and Battery Storage
- Human factors
  - Electrical Energy Indication and Required Reserves
  - Engine Power Indications
- Piloted operations transitioning to Remotely Piloted

Working Group Progress

Virtual meeting held June 2021

- Solicited input for membership
- Meeting planned for September with homework assignment for members to determine initial focus areas

APAC Training Workgroup

Presented to: APAC Members

By: APAC Training Workgroup

Date: September 29, 2021

Workforce Training Alignment Working Group

- **Newly formed group in April 2020**
- **Objective is to look into competencies and future training needs of the future aircraft certification workforce.**
- **In terms of outcome, the workgroup envisions the following:**
  - Identification of commonly accepted skill-sets, experience level, qualifications, formal education, or professional training that constitute the necessary aircraft certification competencies required;
  - Creation of standardized curricula by CAAs, academic institutions and industry to educate and train the current and future aircraft certification professionals needed; and
  - Potential establishment of common qualifications for aircraft certification personnel with the aim of widening the talent pool for CAAs to leverage.
  - Portability of qualifications/credentials; primarily between our industry and the FAA, but also between the different national authorities.

Progress and Status

- **Chaired and co-led by FAA and CAAS respectively.**
  - Currently includes CAA-NZ, KOCA, CAAC, JCAB, DGCA Indonesia as participants

- **Held 4 meetings since establishment including the conduct of a virtual panel in 2020**
  - Developed charter and approved by APAC Executive Committee
  - Developed and completed a workforce competency and training gap analysis questionnaire
  - Developed a draft competency matrix for ASE

Competency Matrix

Competency: Standards and Regulations		
Behavioral Definition	Interprets and applies safety and other regulations, policies, standards, or procedures	
Work Behaviors	• Acquires and maintains a working knowledge of relevant laws, regulations, policies, standards, technical guidance, or procedures. • Interprets and/or applies safety and other regulations, policies, standards, or procedures to ensure program or project compliance. • Participates in the development, evaluation, or revision of safety and other regulations, policies, standards, or procedures.	
Proficiency Level	Definition	Behavioral Indicators
Level 5 Expert	• Applies the competency in exceptionally difficult situations. • Serves as a key resource and advises others.	• Identifies and manages potential areas of conflict regarding existing and future regulations, policies, standards and procedures between stakeholders, clients, and regulators. • Leads committees, groups, and task forces to develop, update, and improve, engineering regulations, policies, standards, and procedures. • Provides guidance on laws, regulations, policies, standards, or procedures in complex situations. • Updates standard design specifications, orders, and procedures.
Level 4 Advanced	• Applies the competency in considerably difficult situations. • Generally requires little or no guidance.	• Ensures that novel or non-routine projects conform to regulations, policies, standards, or procedures. • Develops and documents procedures for compliance with regulations, policies, and standards. • Advises others on interpretation of regulations, policies, standards, and procedures. • Identifies deficiencies and proposes changes to regulations, policies, standards, and procedures.
Level 3 Intermediate	• Applies the competency in difficult situations. • Requires occasional guidance.	• Applies and explains common regulations, policies, standards, and procedures in both routine and non-routine situations. • Independently interprets regulations, policies, standards, and procedures.
Level 2 Basic	• Applies the competency in somewhat difficult situations. • Requires frequent guidance.	• Evaluates compliance with basic and routine aspects of common regulations, policies, standards, and procedures. • Applies and explains standards and regulations, policies, standards, and procedures under close oversight.
Level 1 Awareness	• Applies the competency in the simplest situations. • Requires close and extensive guidance.	(Individuals who do not meet the definitions or examples at the Basic level demonstrate the characteristics of the Awareness proficiency level.)

Challenges

- Impact of Covid – Group has not met face to face
- Level of participation concern –
  - Does this WG provide value for your participation?
  - Should the WG shift direction?

FY 22 Proposed focus areas

- **Populate basic competencies matrix**
  - Agree on foundational competencies and link training to them
- **Common credential system**
  - Agree on basic aviation safety engineer/certification and common credential
- **Safety Management System**
  - FAA is putting in place mandatory training for all AIR personnel
  - FAA share that training and work on what makes sense for other APAC members as common foundational SMS training
- **Next meeting of working group – October 2021**

Points of Contact

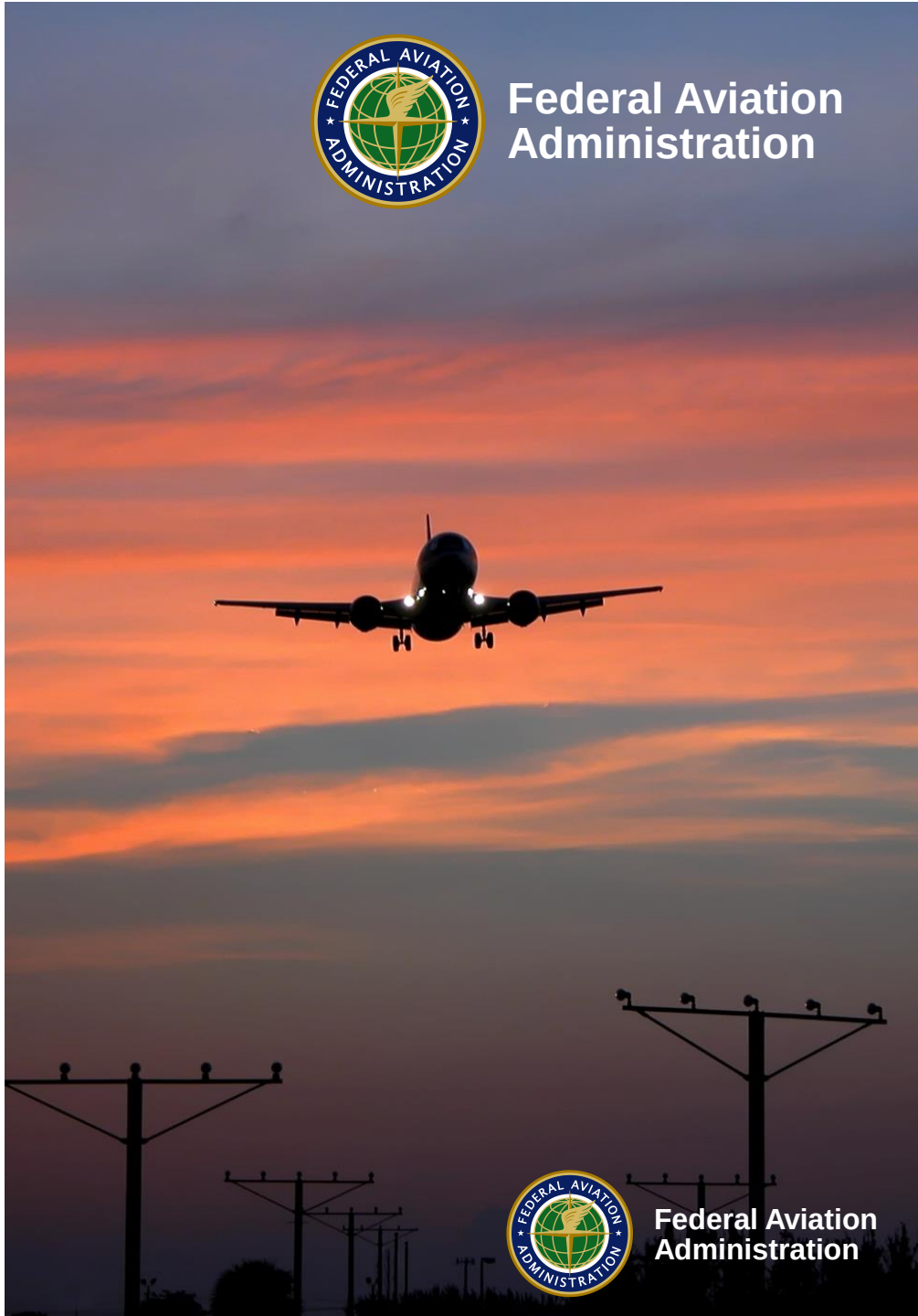
- **Luis Ramirez (FAA)**
  - Luis.a.ramirez@faa.gov
  - 1 202 302 8092
- **Nick Leow (CAAS)**
  - Nick_LEOW@caas.gov.sg
  - 65 6541 3046

FAA - Asia-Pacific (APAC) COS Forum

Presented to: FAA- APAC EC

By: Chris Spinney

Date: September 2021



Overview

- **COS Forum Background**
  - Origin, Participants, and Example Topics
- **Accomplishments of the COS Forum**
  - Information Flow and Lessons Learned
- **COS Forum Going Forward**
  - Future Opportunities and Leadership

COS Forum Origin

- **Initiated in 2019 by FAA-Asia Pacific Bilateral Partners Executive Committee**
  - Its purpose is to enhance sharing of safety information between the CAAs for the States of Design (SoD) and States of Registry (SoR).
  - Promote understanding of COS systems and processes
  - Promote sharing of COS information
  - Provide early notification of potential MCAI with significant impact to worldwide operations

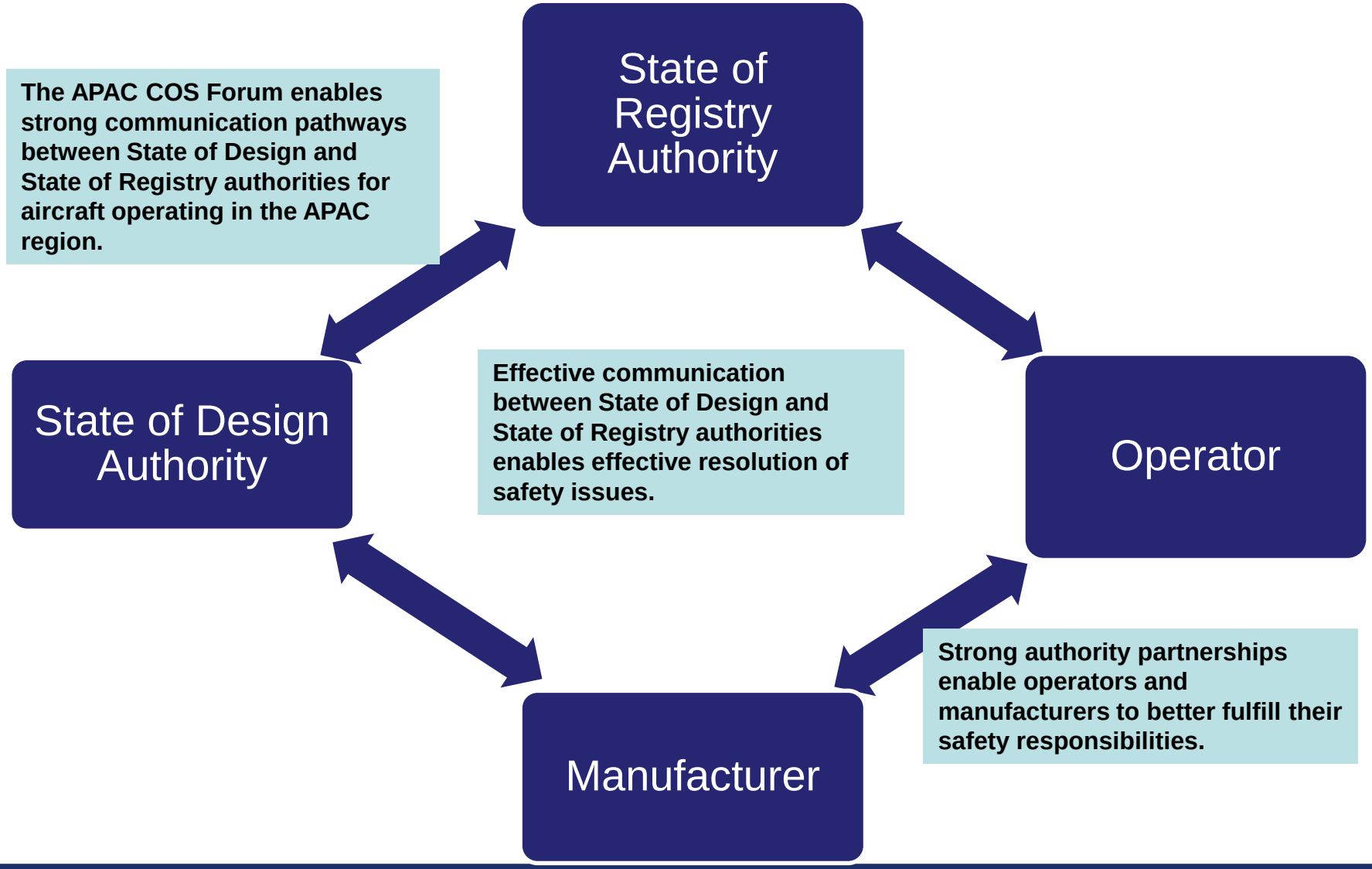
COS Forum Participants

- **The APAC COS Forum is held about every 3 months.**
  - First held in July, 2019
  - Ten full sessions to date
  - One ad hoc session for an urgent safety topic.
- **The participants include:**
  - United States (FAA)
  - Australia (CASA)
  - China (CAAC)
  - Chinese Taipei (CAA)
  - Fiji (CAAF)
  - Hong Kong (CAD)
  - India (DGCA)
  - Indonesia (DGCA)
  - -- Japan (JCAB)
  - -- Korea (KOCA)
  - -- Malaysia (CAAM)
  - -- New Zealand (CAA-NZ)
  - -- Pacific Island Nations (PASO)
  - -- Singapore (CAAS)
  - -- Thailand (CAAT)
  - -- Vietnam (CAAV)

Examples of Topics Covered

- **Impact of COVID-19 on aviation safety**
  - Includes sharing best practices
- **High profile COS issues**
  - 737NG “Pickle Fork” issue (AD 2019-22-10)
  - Kathon biocide
  - PW4000 fan blade and turbine blade events
  - Lycoming engine durability in Robinson helicopters (presentation from CASA-Australia)
- **Emerging COS concerns**
  - 5G telecommunications interference with radar altimeters
- **Opportunities for COS System Enhancements**
  - Safety Data Analytics and COS Data Sharing

Enabling COS Information Flow



APAC Forum Lessons Learned

- **Feedback has been positive**
- **Relationships developed through the Forum have enabled resolution of specific bilateral and multilateral issues outside the Forum**
  - Vietnam unilateral actions for PW1100G
  - JCAB parts departing the airplane policy, GE questions.
  - PW4000 fan blade and turbine blade issues
- **Virtual meeting environment (Zoom) paired with shared information repository (Huddle) has been effective supporting Forum collaboration**

Going Forward

- **Would Like COS Topics of Interest to ALL**
  - Work on more CAA participation - Growing familiarity and trust
  - More meeting planning
  - Early Call for Topics (meeting date minus one month)
- **Future Topics:**
  - Products with significant regional presence.
  - IARs issued since last meeting affecting region
  - Emerging issues expected to require action
  - Known contributors to high profile APAC events
  - Concerns raised by any participant that need further information
  - COS Processes and Risk Assessment Overviews
  - Opportunities for enhanced COS collaboration and safety enhancements

COS Forum Points of Contact

- **AIR Forum Focals:**
  - Chris Spinney, ECO Branch
    - christopher.spinney@faa.gov, 1-617-512-0302
  - Melanie Violette, Seattle ACO Branch
    - melanie.violette@faa.gov, 1-206-231-3506
- **Meeting Moderator:**
  - Herman Mak, ECO Branch
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APAC Part 21 Working Group

Federal Aviation Administration

Presented to: FAA-APAC Executive Committee

By: Aircraft Certification Service

Date: September 2021

Strategic Outcome – *Modernizing Part 21*

- Part 21 is the foundation upon which authorities recognize each other's systems as compatible, leading to eventual bilateral agreements
- The foundation of the FAA's Part 21 was established decades ago and may not reflect the ideal approach for addressing current and future challenges, particularly in terms of globalization

This gap highlights the need for authorities to work closely together in modernizing Part 21

Working Group Purpose

- Ensure common understanding of each authority's current Part 21 framework
- Inform each other of priorities and pending changes within their respective systems (regulation and policy), and leverage the experiences and considerations of the partner authorities
- Identify common priorities and initiatives, and present them to the Executive Committee for discussion and determination of next steps
- Work toward common outcomes to enhance bilateral relationships

Working Group Progress

- Multiple virtual meetings covering authority part 21 frameworks and priorities
- Enthusiastic participation and discussion
- Presenters:
  - CAAC
  - FAA
  - DGAC India
  - CAAS
  - CAA-NZ
- Additional authorities plan to present at upcoming sessions

Working Group Progress (cont.)

- Areas that have emerged as common interests and opportunities
  - UAS and new technologies
  - Level of Involvement
  - Safety Management Systems
  - Changed Product Rule

Plans for 2022

- Establish and maintain regular meeting cadence
- Engage additional authorities to provide part 21 presentations
  - Continue providing awareness of major changes to part 21 systems
- Develop and refine shared priorities
  - Recognition of approaches to certify special class aircraft
  - Continued coordination on Changed Product Rule
- Enhance Coordination with other groups

U.S. Papers for ICAO High-Level Conference on COVID (HLCC)

Federal Aviation Administration

Presented To: Asia Pacific Civil Aviation Authorities

By: Dave Higginbotham, Senior Representative, FAA

Date: September 2021

Papers Associated with Aircraft Certification

- Working Paper — Analyzing the Impact of Increasing the Maximum Take-Off Mass (MTOM) for the new International Civil Aviation Organization (ICAO) Annex 8, Part VB.
- Information Paper — Recent United States (U.S.) developments toward strengthening communications, navigation, and surveillance (CNS), safety, and air traffic control systems (ATC) resilience.
- Information Paper — Development of Federal Aviation Administration (FAA) capability to remotely accomplish certain certification activities and regulatory oversight obligations using commonly available technology.

Working Paper — Increasing Maximum Take-Off Mass

- The FAA and the European Union Aviation Safety Agency (EASA) have revised weight limits for small airplanes, and introduced risk-based certification elements.
- The U.S. working paper considers adding a new Annex 8, Part VB (“five-B”) to increase the maximum take-off mass and introduce a risk-based approach to the certification of small airplanes.
- The U.S. working paper also requests ICAO conduct a study on the impact of revising these weight limits in other policy.
- Revising the weights could have broad impacts on functions such as, single pilot instrument flight rules, cockpit voice recorders, flight data recorders, airborne collision avoidance systems, security, and accident investigation and reports.

Information Paper — Strengthening CNS, Safety, and ATC Systems Resilience

- Describes GPS susceptibility to interference.
- Presents information about measures taken by the U.S. to improve system resilience.
- Collaboration is essential to protect Positioning, Navigation and Timing (PNT).
- Describes U.S. actions to elevate awareness of this critical issue, policies and recent actions.
- The FAA is developing authentication requirements GPS.
- The FAA is pursuing PNT resilience using new technologies.

Information Paper — Remote Certification Activities and Regulatory Oversight

- The FAA continues to use remote technology for maintenance and manufacturing facility oversight, airworthiness certification, and corrective action verification.
- The FAA has expanded its use of remote activities during the pandemic.
- This methodology differs from shared surveillance with a bilateral partner.
- This paper describes the FAA's experiences, lessons learned, and ongoing challenges.
- The FAA has conducted over 500 remote oversight events in 50 countries.
- Cannot replace all in-person activities.

Support of U.S. Papers

- The FAA requests support from the APAC for the the U.S. MTOM working paper during the HLCC.
- States are encouraged to review the U.S. Information Papers once they are published on the HLCC site.
- HLCC Documents can be found here:
  https://www.icao.int/Meetings/HLCC2021/Documents/Forms/AllItems.aspx
- U.S. MTOM Working Paper:
  https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/SAF/wp_074_en.pdf