APAC FPP Extending Into Phase VI

Ying Liu

Coordinator

ICAO Asia-Pacific Flight Procedure Programme



ICAO

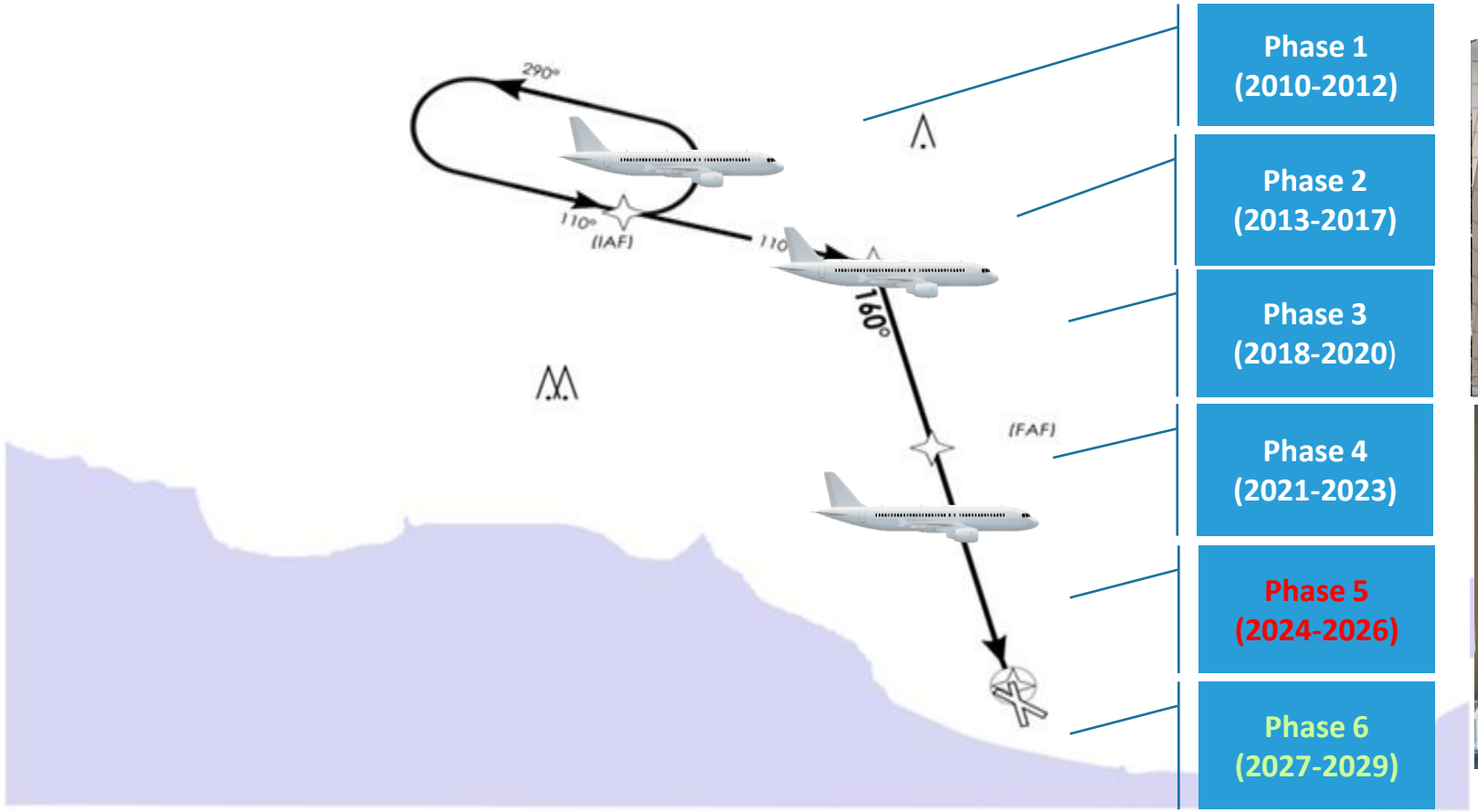
Flight Procedure Programme (FPP) History

- To support ICAO Assembly Resolution A36-23 and then A37-11 on PBN implementation, ICAO Asia-Pacific PBN Task Force recommended ICAO APANPIRG to establish the FPP.
- In September 2009, APANPIRG/20 meeting endorsed the concept.
- With supports from 10 Active Participating members, the FPP office was established in October 2009 and located in Beijing, China hosted by the Civil Aviation Administration of China (CAAC).
- In June 2013, co-located with APAC RSO.



History

FPP Phases



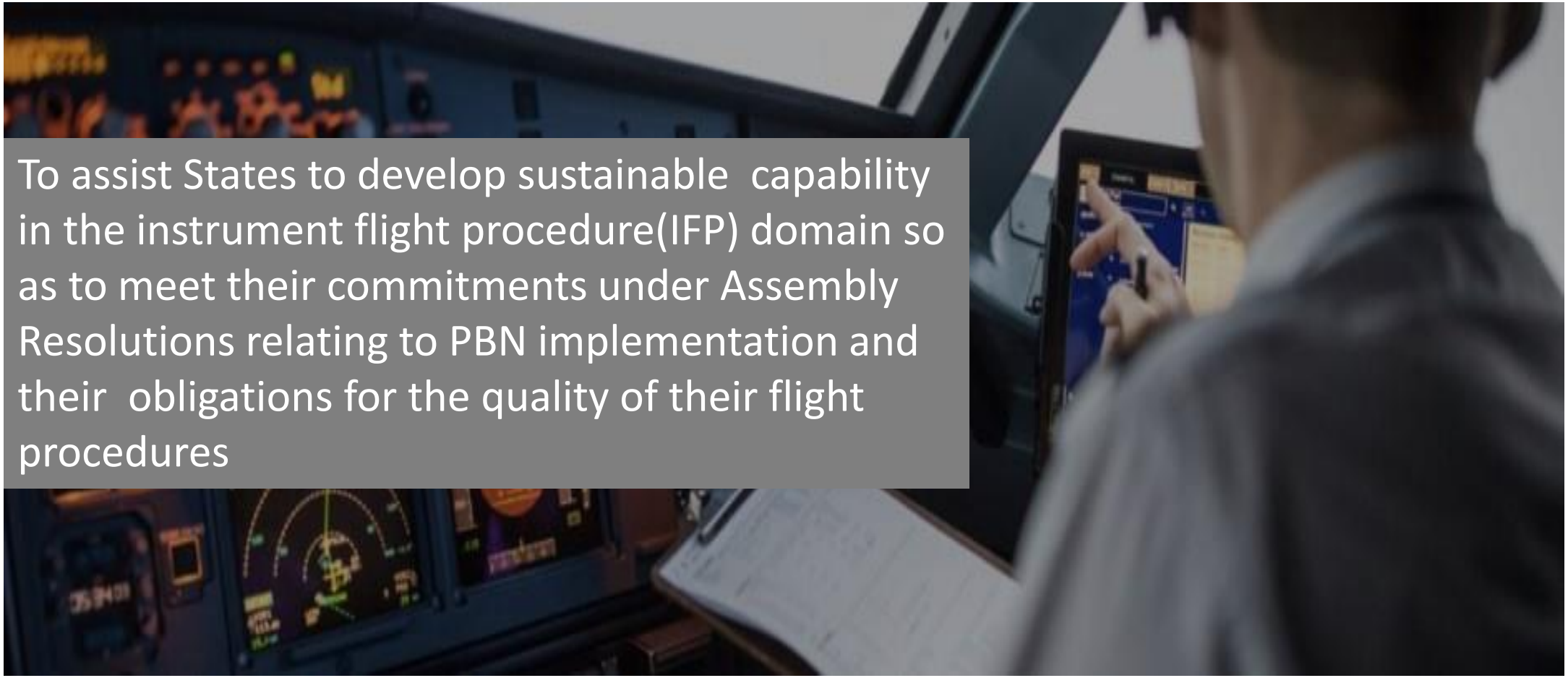
- Phase 1 (2010-2012)
- Phase 2 (2013-2017)
- Phase 3 (2018-2020)
- Phase 4 (2021-2023)
- Phase 5 (2024-2026)
- Phase 6 (2027-2029)





ICAO

FPP Objectives



To assist States to develop sustainable capability in the instrument flight procedure(IFP) domain so as to meet their commitments under Assembly Resolutions relating to PBN implementation and their obligations for the quality of their flight procedures

FPP Members

MEMBER STATES



- **8 Active** Members (**SCM** members)
- **1 Donor** Member
- 13 **User** Members

+ ACTIVE STATES

8 active participanting States/Administrations, including the Host State which participate in the Programme funding by annual contributions and is a Member of the Steering Committee.

Australia,
China,
Hong Kong SAR China,
Macao SAR China,
Philippines,
Republic of Korea,
Singapore,
Thailand

+ USER STATES

13 user States/Administrations which use the Programme and shall bear certain expenses for assistance provided to but does not participate in the Programme funding by annual contributions.

Bangladesh,
Cambodia,
Fiji
Indonesia,
Lao PDR,
Malaysia,
Maldives,
Mongolia
Nepal,
Pakistan,
Papua New Guinea,
Sri Lanka
Vietnam

+ DONOR STATES

1 donor State which supports APAC-FPP by financial contribution or contribution in-kind and is a member of the Streering Committee upon approval by the SC.

France

ICAO

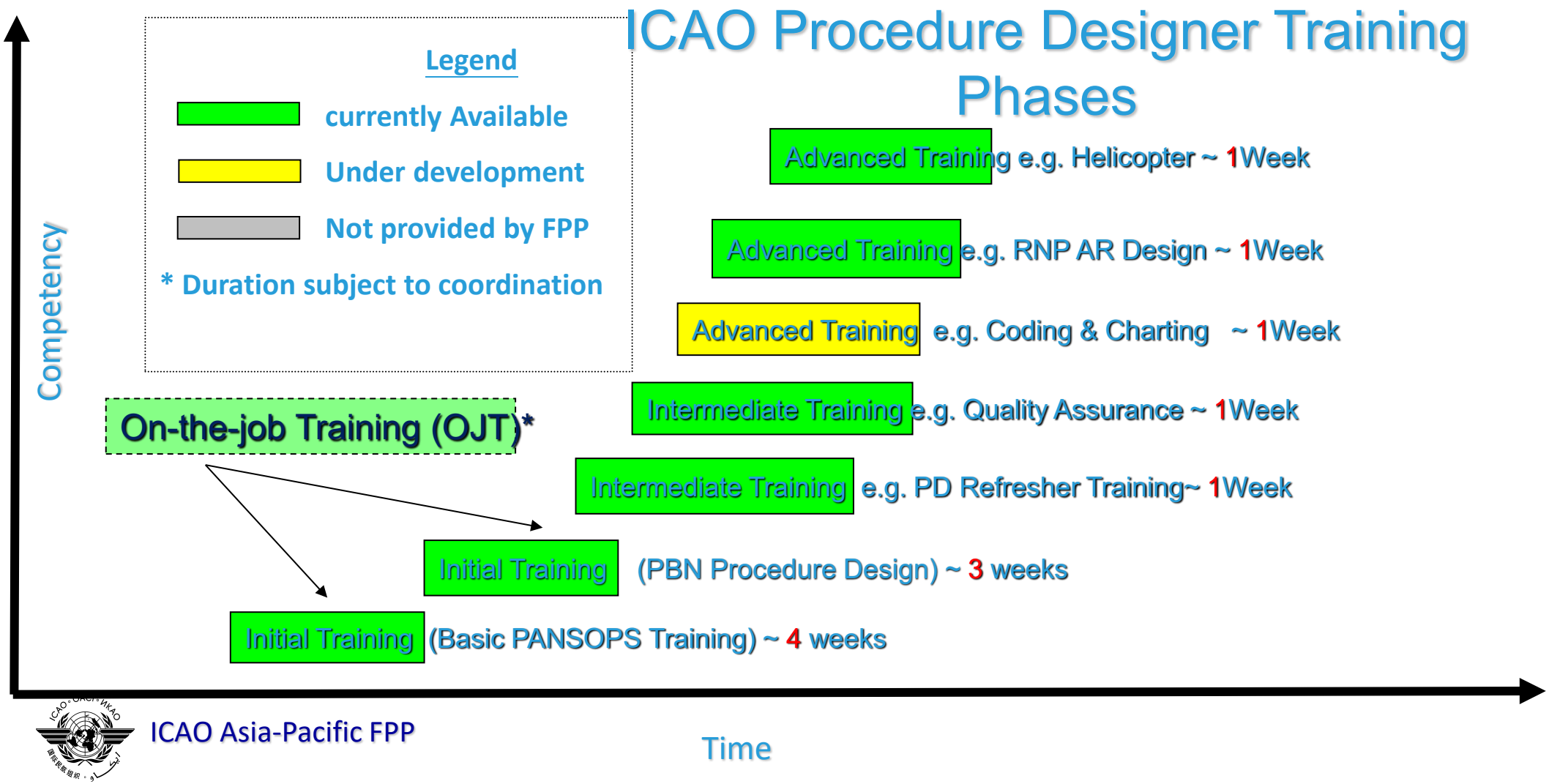
WHAT WE DO



"No country left behind" in the instrument flight procedure domain, develop APAC states' capabilities in IFP design through training, project consulting and flight procedure design service.

Making REGIONAL progress in terms of safety, efficiency and environmental improvement.

WHAT WE DO


ICAO Procedure Designer Training Phases
Legend
currently Available
Under development
Not provided by FPP
* Duration subject to coordination
Competency
On-the-job Training (OJT)*
Advanced Training e.g. Helicopter ~ 1Week
Advanced Training e.g. RNP AR Design ~ 1Week
Advanced Training e.g. Coding & Charting ~ 1Week
Intermediate Training e.g. Quality Assurance ~ 1Week
Intermediate Training e.g. PD Refresher Training~ 1Week
Initial Training (PBN Procedure Design) ~ 3 weeks
Initial Training (Basic PANSOPS Training) ~ 4 weeks
ICAO Asia-Pacific FPP
Time

WHAT WE HAVE DONE



Training

Courses and Workshops

101 Total

From **36** States/Administrations

1056 Days

3449 Total overall participants

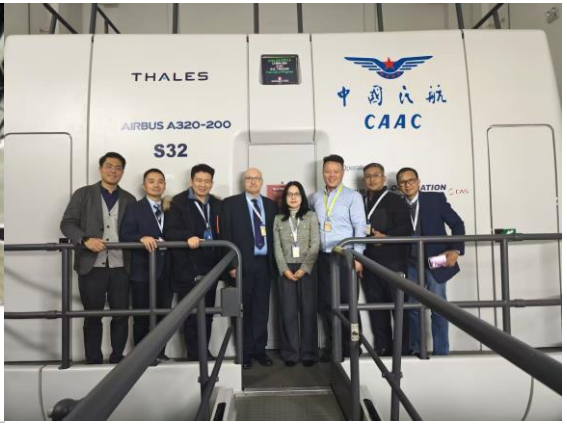
33 more students

Compare with Number of Participants in 2024









ICAO

APAC FPP Survey for 2026 & Beyond

APAC FPP Survey for 2026 and Phase 6 Results Summary

(8 Active Participating States 1 Donor State and 8 User States)

2. Would your State/Administration be interested in participating in FPP Phase 6 as a member state?

Host State 2	Active Participating State 6	User State 8	Donor State 1
China Republic of Korea	Australia Hong Kong, China Macao, China Philippines Singapore Thailand	Bangladesh Cambodia Lao PDR Mongolia Nepal Pakistan Sri Lanka Vietnam	France

If yes, how long do you prefer for the duration of the Programme in Phase 6?

3 Years 9	5 Years 8
Australia France Hong Kong, China Lao PDR Macao, China Mongolia Philippine Singapore Thailand	Bangladesh Cambodia China Mongolia Nepal Republic of Korea Sri Lanka Vietnam

ICAO

Challenges

- Significant Safety Concerns (SSCs) have been raised during the USOAP audit in one Region which are related to publications and the associated oversight/regulatory inadequacies of IFPs.
- The statistics show that regional States and/or Air Navigation Service Providers are still facing some of the following main procedure design-related issues and problems:

a) Need for enhancement of procedure design training: initial, on-the-job (OJT), and/or recurrent;

b) High turnover among procedure designers;

c) Insufficient procedure design work in some States to attain or maintain proficiency;

Challenges

d) Lack of depth in procedure design organization to perform quality assurance (QA);

e) Insufficient expertise in procedure design organization to provide adequate QA of procedures;

f) Lack of experience in both charting and navigation database coding;

g) Lack of regulatory oversight framework; and

h) Insufficient regulatory expertise to oversee the procedure design service provider

FPP Phase V (2027-2029)





APAC FPP Survey for 2026 & Beyond

APAC FPP Survey for 2026 & Beyond

(3) Would your State/Administration be interested in providing resources to support the programme during FPP Phase 6?

- **Fund:** Australia, Hongkong-China, Macao-China, Philippines, Republic of Korea, Singapore and Thailand are willing to donate fund
- **HR:** China, Republic of Korea and Singapore are willing to provide procedure designers/instructors on secondment annually as contribution in kind.

  China, Republic of Korea, Singapore and Nepal are willing to provide procedure instructors/speakers as contribution in kind on short term basis of training/ workshop.
- **Activities** (training /events/seminar/workshop/SCM meeting):

  1. Hosting activities : Cambodia, China, Republic of Korea, Singapore and Sri Lanka are willing to host activities of the FPP. Australia: is able to contribute to activities ad-hoc.
  2. Training for the FPP Instructors :China, France and Republic of Korea are willing to offer the training for the FPP instructors.
  3. Materials/Courseware: Bangladesh, Cambodia, China, France and Republic of Korea are willing to develop training materials and courseware.
  4. Tools: China, France and Republic of Korea are willing to provide support on flight procedure design automation software and desktop/ground validation software.

APAC FPP Survey for 2026 & Beyond

(4) Does your State/Administration require the following services provided by FPP in 2026, as well as in FPP Phase 6?

- Priority of service need for Phase 6 is as follows:
  1. Assist with Flight Operational Review of Flight Procedure Design
  2. Provide Procedure Quality Assurance (QA) support and Assist with Independent Procedure Design Review
  3. Assist with Flight Validation
  4. Develop procedures for States that have no procedure design capability

(5) Would your State/Administration be interested in attending the training/workshop in 2025/2026, as well as in FPP Phase 6?

- According to the results of the survey, for most active participating members and user members, the training/workshops listed are still required and in demand. Listed courses/workshops covers the scope of activities in Pro Doc of Phase 5.

APAC FPP Survey for 2026 & Beyond

(6) Would your State/Administration like FPP to provide other Procedure Design related training /services in 2026 or Phase 6? If yes, please specify the details.

Cambodia: Approval process for IFPD as a regulator
Pakistan: GBAS/SBAS Flight Procedure Design training
Singapore:

- Provide courses on understanding and designing GBAS/SBAS.
- Provide a training/workshop on ICARD 5LNC and 5AANC data management by getting in touch with ICARD manager

Hong Kong, China: key changes to the latest edition of PBN manual; RNP(VPT)
Philippines:

- Charting/Coding of IFPs
- RNAV/RNP xLS including coding
- RF Turns
- Conventional/PBN Enroute (these are in the PANS-OPS Manual but never discussed)
- Airspace Planning & Design for Procedure Designers

APAC FPP Survey for 2026 & Beyond

Bangladesh:

- Advanced PBN procedure design training.
- Procedure design refresher course.
- Airspace design course.
- Share documentation process, ground validation documentation of other state as template and conduct the workshop on IFP quality assurance.

Lao PDR:

- Charting

Thailand:

- Training on RNP VPT since we believe RNP VPT would be a solution for most of the runway with terrain/obstacle limitation
- Training on IFPD safety oversight for regulators since USOAP audit now focuses more on IFPD area.

Vietnam:

- the training materials could include 3D models of flight procedures and obstacles to help new trainees visualize more easily.
- It would also be helpful to supplement the materials with visual content in video format.
- Additionally, the curriculum could include guidance on how to use relevant tools and design software

APAC FPP Survey for 2026 & Beyond

(7) What else can FPP do to better achieve the objectives specified in the Programme Document?

Pakistan:
- GBAS/SBAS Flight Procedure Design training
- Airspace Design and Management course

Singapore:
- Solicit feedback on a more frequent basis from member states that may require assistance in implementing PBN frameworks and procedures.

Hong Kong, China:
- Conduct regular surveys and share results in collaboration with IATA on equipage of RNP AR APCH, GLS, GBAS, A-RNP. Ect

Philippines:
- Considering that the FPP is now in Phase5, the recurrent courses may be reviewed and accessed in terms of importance and applicability to the latest development in the realm of procedure design

Bangladesh:
- Develop region specific PBN toolkit

APAC FPP Survey for 2026 & Beyond

(8) Other Comments / Suggestions / Remarks

Pakistan:

- The APAC FPP may prioritize training on RNP AR approaches and GBAS/SBAS procedures to provide APAC States with opportunities to develop qualified personnel in these areas, as such training is currently not covered in the existing APAC FPP document. Including this training would help address capability gaps and support the implementation of advanced navigation procedures in the region.

HK, China: We are interested in the best practice and/or experience-sharing seminars on the following topics:

- implementation of Established on RNP AR APCH;
- implementation guidelines for developing RNP 1 reversion procedures based on DME/DME to address increasing threats of GNSS RFI;
- implementation of A-RNP;
- implementation of GBAS / SBAS;
- the new Annex 14 Obstacle Limitation Surfaces and its implications on flight procedure design.

Philippines：

- Advanced training and QA courses should be limited to attendees with procedure design experience only.

Bangladesh:

- Create centralized IFP database for states.
- Establish FPP feedback portal.
- Host annual FPP webinars on PANS-OPS update.

APAC FPP Post-Training Effectiveness Assessment Survey

APAC FPP Post-Training Effectiveness Assessment Survey Results Summary

1. Overview

The survey was distributed on March 13, 2026 to all participants who had previously attended the training courses of PANS-OPS, PBN, RNP AR, PinS and Modules 1–3. A total of 586 emails were sent out, among which 483 were valid email addresses. As of April 30, **47 responses** had been received.

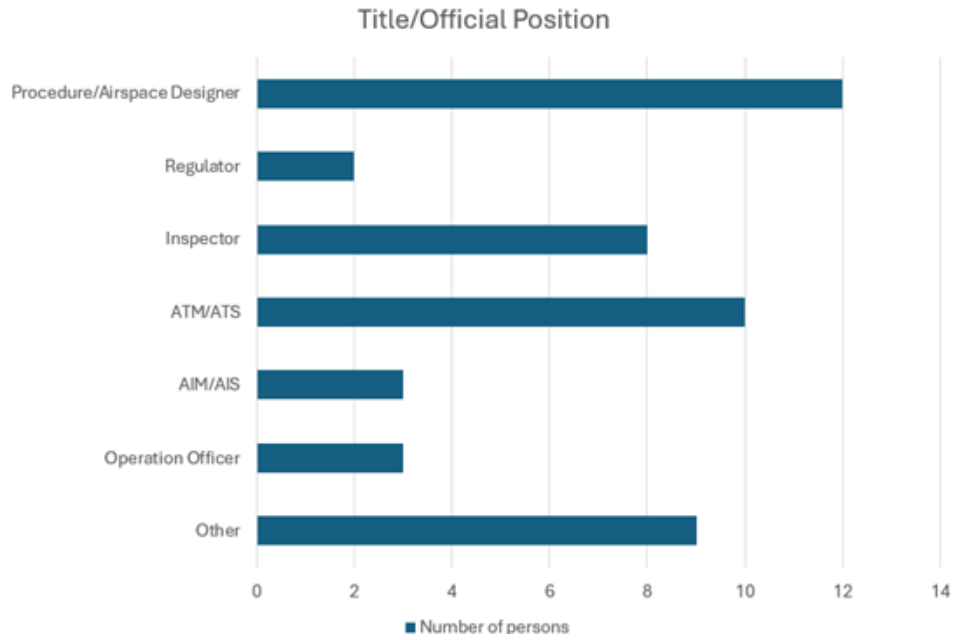
2. General Information (Trainee)

- Gender:

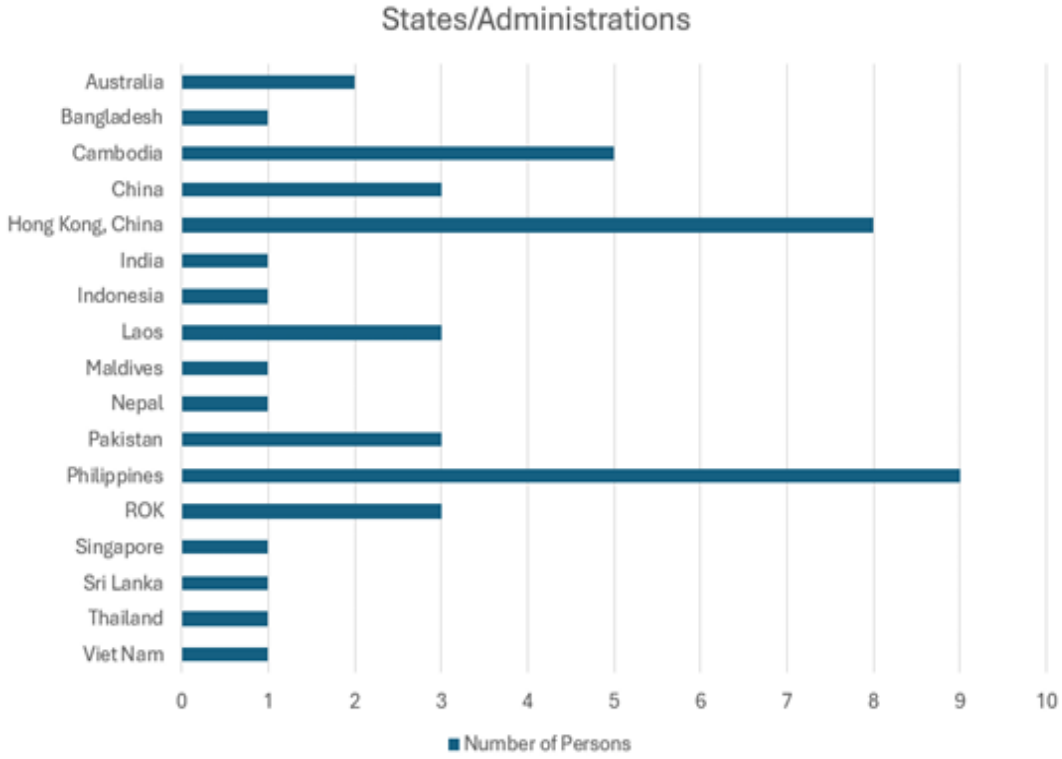
46 respondents

Male		78.26%	36 Votes
Female		21.74%	10 Votes

- Title/Official Position: (47 respondents)



- State/Organization: (45 respondents)

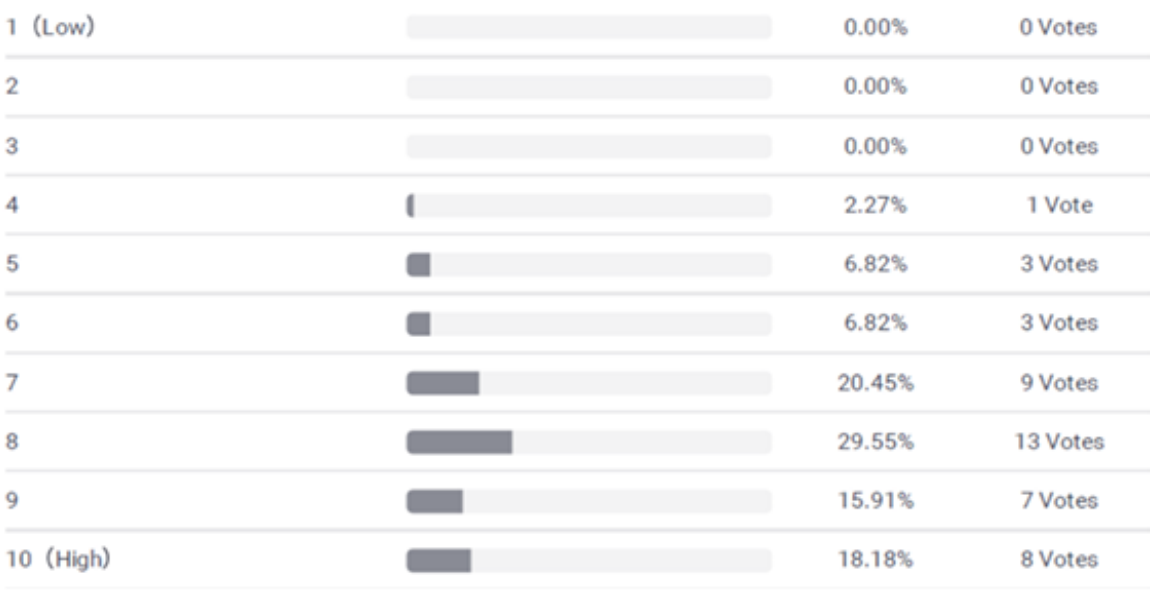


- Have you attended the following APAC FPP training courses?

	PANS-OPS PD Initial Course	PBN PD Course	RNP AR Workshop	Pins PD Course	Module 1/2/3
Yes	34	32	21	5	9
No	16	15	25	40	38
Total Votes	50	47	46	45	47

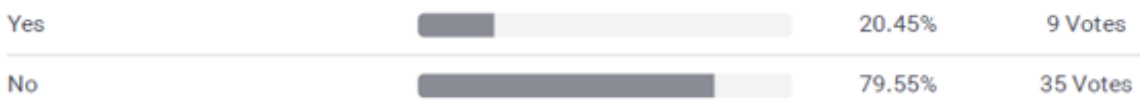
➢ On a scale of 1 to 10, how would you rate your experience with FPP?

44 respondents



➢ After participating in FPP training, did you find any content not covered by the training? If yes, please specify

44 respondents



- Examples of special approvals for instrument flight procedures mentioned in ICAO Doc 8168 Vol II (e.g., OAS assessment for VSS penetration obstacles, approval method when missed approach climb gradient exceeds 5%, etc.)
- Practical cases relevant to the state airports
- Safety Assessment
- Designing of Minimum vectoring altitudes, VFR routes etc.
- Conventional/PBN enroute criteria, RNAV based on DME/DME, Charting/Coding (RNAV/RNPxLS), Missed approach final phase after Baro-VNAV or ILS segments (obstacle penetration in turn area), RNP VPT
- Some deviation that are based on country conventions and standards
- I would like to clarify whether charting is included in the scope of work of the FPP? Because FPP did not organize the charting course.
- I would like more detailed content on the criteria for the 5-year periodic review. Specifically, clear guidelines on when Ground Validation is enough and when a Flight Check is mandatory for renewing a procedure.

- Have you attended any On-Job-Training (OJT) after the training?

44 respondents



- If yes, please specify where you received your OJT.

90% of respondents received OJT in their home country, while 10% completed their OJT under the guidance of FPP instructors.

- We plan to organize a seminar on IFP next year. What are your interesting subjects or topics?

- Would you like to share some challenges or best practices in the seminar? If yes, please specify

43 respondents



What is your current role?

- ☐ Procedure Designer: Please complete Section A of this survey.
- ☐ Regulator/Inspector: Please skip to Section B of this survey.
- ☐ Other: Please skip to Section C of this survey.

44 respondents



3. SECTION A

1. After participating in FPP training, how many flight procedures have you designed? Please specify the names of the airports and types of procedures (VOR, ILS, LNAV, LNAV/VNAV…).

Out of 43 respondents, 21 skipped this question. Among the remaining 22 valid responses, 5 respondents did not list any flight procedures they had designed. Other responses are shown in the table below.

2. If applicable, please list the flight procedures that have been designed by you and published in the Aeronautical Information Publication (AIP).

Out of 42 respondents, 28 skipped this question. Among the remaining 14 valid responses, 2 respondents did not list any self-designed flight procedures published in the AIP. Other responses are shown in the table below.

3. Do you have a regulatory framework for approving flight procedures in your State?

42 respondents (20 of 42 skipped)

Yes	86.36%	19 Votes
No	13.64%	3 Votes

4. Did you have any difficulties publishing flight procedures? If yes, please specify

42 respondents (19 of 42 skipped)

Yes	18.18%	4 Votes
No	81.82%	18 Votes

- Due to the local policy of the Aeronautical Information Service
- Review and approval of the regulators for the flight procedure design take a long time and AIS always asking our decision what to indicate and shown on the chart.
- N/A
- It is unclear if a Flight Check is always required for the 5-year renewal. I need clearer rules on when Ground Val idation is enough to prove the procedure is safe without needing a flight check.

4. SECTION B

1. After participating in FPP training, are you able to approve flight procedures?

42 respondents (26 of 42 skipped)

Yes	62.50%	10 Votes
No	37.50%	6 Votes

2. Did you encounter any difficulties in approving flight procedures? If yes, please specify

42 respondents (25 of 42 skipped)

Yes	50.00%	8 Votes
No	50.00%	8 Votes

- Some of the verification/validation is not submitted
- Not updated data used by fpd service providers
- The manual PD is quite time consuming however the results are quite and very different when the same is take n on the automation software.
- Validation of surveyed obstacle data is big challenge.
- Lack of tools for the Inspection Process.
- It is not easy to verify the quality control of flight procedure design data.
- After the course, I got the basic knowledge of the flight procedure, including the phases of the procedure and how to develop them. However, I still encounter difficulties in safety assessment. For example, ICAO states th at MOC may increase upto 200% for mountainous areas, but what criteria exactly are to decide 150% or 200% will be enough? We need more insight into safety assessment, how safety criteria were built, and how we can r eplicate to make our own standard.
- I am a procedure designer, not a procedure inspector.
- Lack of experience

5. SECTION C

1. What was your purpose for participating in FPP training?

- To gain knowledge and skills to apply on my current function
- I attended to acquire basic knowledge for designing instrument flight procedures.
- FPP training has enhanced my knowledge and skill.
- to enhance my skills in oversight activities and to be updated about latest ICAO amendments and its implicati ons.
- The PBN course is a technical training requirement for IFP inspectors in Australia
- To learn about RNP AR flight procedure design
- To gain knowledge about Flight Procedure Design
- My purpose for participating in the FPP training is to enhance my understanding of flight procedure design pri nciples and their operational impact. As an Operations Department Head at Garuda Indonesia, I aim to streng then the integration between flight operations and procedure design to improve safety, efficiency, and regulat ory compliance. Additionally, I seek to gain insights into current developments such as PBN implementation, s o I can support better decision-making and contribute to the continuous improvement of our operational perf ormance

2. How was the knowledge gained from the training helped you in your work?

- Helps a lot. It enables me to check the criteria used in the design and check if it is in accordance with the ICAO specifications
- The knowledge acquired through this training course was helpful in designing instrument flight procedures. H owever, extensive on-the-job training was required to design flight procedures without errors.
- My current role is giving airspace clearance. I can better understand the utilization of airspace through the trai ning. I will be starting my OJT in the coming months and become a flight procedure designer.
- FPP training is the basic foundation for Designing work. this training focuses on the criteria which I have to le arn to complete my designing skill.
- update on latest amendment helped to perform my oversight duty more efficiently.
- To fully understand the technical requirements behind the designing of PBN instrument flight procedures.
- I am very satisfied that I can apply this to practical flight procedures.
- The training was extremely helpful because I was given the opportunity to design various flight procedures of different airports in the Philippines.

- Based on the knowledge gained from the training, I am able to apply it to real IFP design and oversee IFP imple mentation processes.
- The knowledge I gained from the training has helped me perform my work more accurately. It improved my un derstanding, enabling me to interpret charts correctly and handle FPL data with fewer errors.
- In-depth awareness of IFPs
- The training gave me the confidence and technical skills to lead our design team. It helped us successfully desi gn procedures for new airports like Techo (VDTI) and ensures our work always follows ICAO safety standards.
- It helped maintain my competency, especially for design of new procedures for new airports in Cambodia. It al so helped fulfill the regulatory requirement as designer.
- As a designer of the Approach Path Monitor, Departure Path Monitor & Minimum Safe Altitude Warning Syste ms, the knowledge gained from the training helped in the design process & the various parameters finally chos en for the systems.
- Quite useful.
- After the participating the FPD courses conduduting by FPP i got authorisation and working as Flight Procedu re Designer.

Training

1. Procedure Design Criteria & Special Approval	• Conventional and PBN enroute criteria, RNAV based on DME/DME, Missed approach final phase after Baro-VNAV or ILS segments (obstacle penetration in turn area). • Missed approach final phase design after Baro-VNAV/ILS segments, including obstacle penetration control in turn areas. • PANS-OPS amendments
2. Advanced PBN & RNP Procedure	• EoR and VPT, related to RNP AR • RNAV Visual procedures. • Point Merge System
3. ICAO Standard Charting & Coding Specifications	• Charting and coding (RNAV/RNP xLS) • Charting resolution based on ICAO Doc 10066 data catalog.
4. Operational Optimization, Environment & Document Management	• Environmental considerations in flight procedure design and updated CDO courseware.
5 Quality Assurance	• Doc 9906 latest updates （Flight Validation requirements and provide an insight）

Seminar

1. Flight Procedure Design	• Minimum vectoring altitude & VFR route design • Instrument procedures established on non-instrument runways • PBN, RNAV, RNP procedure development and implementation • PBN and PBN-driven instrument approaches SBAS/GBAS approaches • Altimeter setting in Baro-VNAV • RNP (EoR) GBAS curved final approach technical feasibility • Point Merge System cases • Practical cases relevant to the state airports

2. IFP Safety Assessment & Risk Management	• Process, including roles and responsibilities of safety assessor and designer • Safety risk mitigation for Baro-VNAV
3. Procedure Design Quality Assurance	• Quality assessment process in IFPD • Share on the recommended practice of tracking and documenting IFP documentation.
4. Inspection, Oversight & CAA Supervision	• Flight Procedure Safety Oversight for CAA Inspectors • Oversight activities for instrument flight procedure design (IFPD) • IFP approval, the oversight and how the Procedure designer maintains the quality assurance • Proposal for dedicated FPP inspector seminar
5. Validation & Periodic Review Management	• IFP validation process: ground validation and flight validation • Clear criteria for 5-year periodic review • Clear guideline: when ground validation is sufficient and flight check is mandatory for renewing a procedure

6. Regulation & IFP Approval	• State regulatory framework for IFP design approval • Sharing the Doc 8168 revision technical reasons • National deviations based on local state conventions and standards • Matters concerning non-standard flight procedures of each country • Special approval cases for instrument flight procedures from ICAO Doc 8168 Vol II, including OAS assessment for VSS obstacle penetration and approval for missed approach climb gradient exceeding 5%.
7. Operational Implementation	• SID & STAR implementation under mixed mode operations • Implementation challenges of IFP in complex airspace
8. New Navigation Technology & Future Flight Procedures	• GNSS integration and emerging navigation technology application • eVTOL and air taxi flight procedures developed by leading states

Summary

- **APAC FPP Phase VI Launch**: The Programme is extended to Phase VI (1 Jan 2027 – 31 Dec 2029, 3-year duration). All non-participating Asia-Pacific States are encouraged to join by signing the Programme Document.
- **2027 Procedure Design Seminar**: A dedicated Procedure Design Seminar will take place in November 2027 in Hong Kong, China, as a core technical exchange platform for instrument flight procedure (IFP) knowledge-sharing and experience exchange.

✎ *Call for contributions: Participants are invited to nominate potential guest speakers and propose relevant resource inputs for this upcoming seminar.*

- **FPP Surveys:** Active responses to FPP surveys are critical to continuously refine training activities, enhance service quality and address regional capability gaps.

Work Plan

	Date	Activities	Location*	Participants	Strategic Objectives	Organizer
1	16-20 Nov 2026	Procedure Design Refresher Course (including Charting-Coding for Procedure Designers)	Bangkok, Thailand	FPP and APAC	Expand Value Creation	FPP
2	19-20-Jan 2027	Charting & Coding Workshop	Online	FPP and APAC	Expand Value Creation	FPP
3	15 Mar-9 Apr 2027	Pans-Ops Procedure Design Initial Course	Beijing, China	FPP and APAC	Expand Value Creation	FPP
4	24 May-11 Jun 2027	PBN Procedure Design Course	Beijing, China	FPP and APAC	Expand Value Creation	FPP
5	6-10 Sep 2027	Procedure Design Refresher Course	Bangkok, Thailand	FPP and APAC	Expand Value Creation	FPP
6	2-4 Nov 2027	19th Steering Committee Meeting	Hongkong, China	FPP and ICAO	Expand Value Creation	FPP/Host State
7	5-6 Nov 2027	Procedure Design Seminar	Hongkong, China	FPP and APAC	Technical Exchange Platform	FPP



Thank You!

ICAO