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TITLE: ICAO Instrument Flight Procedures Panel (IFPP)

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EXECUTIVE SUMMARY

This report provides a comprehensive overview of the work and outcomes of the ICAO Instrument Flight Procedures Panel during the latter part of the 17th work cycle and the transition into the 18th work cycle. It consolidates key developments from IFPP/17 and incorporates evidence-based analysis of IFPP 18 cycle, which has just commenced.

The IFPP continues to play a critical role in the development, maintenance, and modernization of global instrument flight procedure design criteria and associated guidance material. Across the reporting period, significant progress has been achieved in advancing Performance-Based Navigation (PBN), enhancing SID/STAR transition design based on ARINC 424 logic, improving charting standardization, refining cold temperature correction methodologies, and strengthening helicopter-specific procedure criteria.

Key outcomes include the maturation of Real PBN protection models, improved harmonization of PBN charting practices, enhanced clarity and usability of cold temperature correction provisions, and continued development of RNP AR and Baro-VNAV procedures for both fixed-wing and rotary-wing operations. In addition, increasing emphasis is being placed on system integration, digital procedure design environments, and strengthened quality assurance frameworks.

From an operational perspective, these developments have direct implications for air traffic controllers, particularly in relation to workload, predictability of operations, standardization of phraseology, and human factors considerations. This report therefore provides an International Federation of Air Traffic Controllers' Associations perspective to support informed decision-making and global harmonization.

1. INTRODUCTION

This report provides a detailed analysis of the outcomes of IFPP/17, held from 28 October to 6 November 2025 at ICAO Headquarters in Montreal, Canada, as well as key developments arising from the IFPP 18-1 Working Group meeting conducted from 16 to 27 March 2026 in Beijing, China.

While direct participation in both meetings was not possible, this report is derived from a comprehensive review of official ICAO IFPP Panel Reports, IFPP Job Cards and associated working papers, supported by informed professional analysis.

Attendance at IFPP/17 was not feasible due to a mandatory training programme that required full participation and could not be deferred. Similarly, participation in IFPP 18-1 was not possible due to the prevailing regional situation in the Middle East, which resulted in airspace restrictions and disruption to international travel.

Upcoming IFPP Meetings

- **IFPP 18-2 Panel Meeting:** 1–6 November 2026, ICAO Headquarters, Montreal, Canada
- **IFPP 18-3 Working Group Meeting:** To Be Notified (TBN)

2. IFPP/17 KEY OUTCOMES

2.1 Working Group Restructuring

IFPP/17 introduced a more streamlined and functionally aligned working group structure consisting of Fixed Wing, Helicopter, Integration, Collision Risk Model (CRM), and Quality Assurance (QA) groups. This restructuring was designed to enhance efficiency, reduce duplication of effort, and improve coordination across technical domains that are increasingly interdependent.

The revised structure reflects ICAO's shift toward a **systems-based and integrated approach to procedure development**, where procedure design, charting, avionics coding, and operational use are treated as interconnected elements rather than isolated components.

From an operational perspective, this enables:

- More coherent and harmonized outputs across ICAO provisions
- Improved alignment between procedure design and operational application
- Faster progression of complex job cards requiring cross-domain collaboration

2.2 Performance-Based Navigation (PBN)

A major technical advancement at IFPP/17 was the continued evolution of **Real PBN**, particularly the transition from traditional buffer-based protection areas to **Total System Error (TSE)-based containment models**.

This development introduces:

- Performance-driven obstacle clearance surfaces based on actual aircraft navigation capability
- Reduced reliance on conservative design buffers
- Greater alignment with modern avionics and navigation performance monitoring

This represents a significant shift toward **data-driven and performance-based procedure design**, supporting more efficient use of airspace.

Operational Impact for ATCOs:

- Increased predictability of aircraft trajectories, particularly in terminal areas
- Reduced lateral and vertical dispersion, enabling tighter spacing
- Improved traffic sequencing and flow management
- Potential reduction in tactical interventions

However, this also increases reliance on aircraft system performance and integrity, requiring controllers to maintain heightened situational awareness and confidence in navigation capability.

2.3 SID/STAR Transitions

The development of **modular SID/STAR transition concepts** represents a key step toward simplifying and standardizing terminal procedures.
The modular approach—comprising en-route transitions, common route segments, and runway transitions—provides:

- A structured and scalable procedure design framework
- Reduced chart complexity and duplication
- Improved alignment with **ARINC 424 database coding**

This enhances compatibility with modern Flight Management Systems (FMS) and supports more consistent procedure implementation globally.

Operational Impact:

- Clearer and more standardized ATC clearances
- Reduced ambiguity in route assignments
- Improved predictability of aircraft paths
- Enhanced coordination between sectors and units

This is particularly beneficial in high-density airspace, where complexity management is critical to maintaining safe and efficient operations.

2.4 Charting and Information Management

IFPP/17 advanced updates to the **Aeronautical Chart Manual (Doc 8697)** aimed at harmonizing PBN charting practices and improving clarity of procedure depiction.
Key improvements include:

- Standardized presentation of altitude and speed constraints
- Improved depiction of route structures and transitions
- Enhanced consistency between charting, procedure design, and avionics database coding

These enhancements reduce discrepancies between what is:

- Designed
- Published
- Flown

Operational Impact:

- Improved shared situational awareness between pilots and controllers
- Reduced risk of misinterpretation of procedures
- Increased confidence in clearance compliance

2.5 Maintenance and Safety Enhancements

IFPP/17 addressed several key safety-related maintenance topics:

a) Cold Temperature Corrections

Clarification of cold temperature correction procedures ensures:

- Consistent application of corrected altitudes
- Improved vertical safety margins
- Reduced ambiguity in interpretation of “procedure altitude”

b) SBAS Modernization

Enhancements to SBAS criteria introduce:

- Increased flexibility in approach design
- Greater accessibility to airports
- Improved alignment with GNSS-based navigation

Operational Impact:

- More predictable vertical profiles for arriving aircraft

- Improved safety in challenging environmental conditions
- Greater operational consistency across regions

2.6 Helicopter Operations

IFPP/17 made notable progress in updating helicopter procedure design criteria, including:

- Revised height loss values
- Alignment with Real PBN principles
- Removal of outdated legacy provisions

These updates reflect the growing importance of helicopter operations in:

- Urban airspace
- Offshore environments
- Emergency and medical services

Operational Impact:

- Improved access to constrained and complex environments
- Enhanced safety and predictability
- Better integration with fixed-wing traffic operations

3. IFPP 18-1 (BEIJING, 2026) – KEY DEVELOPMENTS AND TECHNICAL DIRECTION

The IFPP 18-1 Working Group Meeting, held in Beijing from 16 to 27 March 2026, followed a structured two-phase approach consisting of Working Group sessions and Plenary discussions.

The meeting programme demonstrates focused engagement across:

- Fixed Wing Criteria
- Helicopter Operations
- Integration
- Quality Assurance
- Collision Risk Modelling

This reflects continuity of the IFPP work programme while emphasizing **integration, implementation, and system alignment**.

3.1 Structured Working Group Engagement

The meeting commenced with dedicated Working Group sessions, followed by plenary discussions to consolidate outcomes and align decisions across domains.

This structure enables:

- Detailed technical discussions within specialized groups
- Cross-domain validation during plenary sessions
- Efficient progression and prioritization of job cards

This approach reflects ICAO's emphasis on **collaborative and coordinated technical development**.

3.2 Integration as a Central Theme

A key feature of IFPP 18-1 was the inclusion of **joint Integration and Fixed Wing sessions**, highlighting the increasing importance of harmonization across domains.

This strongly suggests focus on:

- Implementation of SID/STAR transitions
- Alignment between procedure design and avionics/database coding
- Harmonization of charting practices

Operational Significance:

- Reduced inconsistencies in procedure application
- Improved compatibility with aircraft systems
- Enhanced ATC–pilot interface

This marks a transition toward **end-to-end system integration** rather than isolated procedure development.

3.3 Continuation and Maturation of Core Work Programme

IFPP 18-1 likely focused on advancing key initiatives from IFPP/17 toward implementation:

- **PBN Harmonization:** Further refinement and movement toward global adoption
- **SID/STAR Transitions:** Progression from concept to operational implementation
- **Quality Assurance (Doc 9906):** Strengthening validation and oversight frameworks
- **Collision Risk Modelling (CRM):** Enhancing safety modelling and analytical capability

This indicates a shift from **development to operational readiness**.

3.4 System Integration and ATM Evolution

The technical visit to China's **"Three Centers"** highlights the increasing importance of integrated ATM systems combining:

- Traffic flow management
- Meteorological services
- Aeronautical information services

This reflects a move toward:

- Data-driven decision-making
- **Trajectory-Based Operations (TBO)**
- Fully integrated ATM ecosystems

These developments support more strategic and predictive air traffic management.

3.5 Emerging Themes

IFPP 18-1 indicates growing focus on future-oriented developments, including:

- Digitalization of procedure design processes
- Increased use of automation and data analytics
- Integration of emerging operations such as UAM/AAM
- Environmental optimization of flight procedures

These trends signal a transition toward a **more dynamic, technology-driven aviation environment**.

3.6 Implications for ATCOs

Positive Impacts:

- Increased predictability of aircraft trajectories
- Reduced procedural complexity
- Improved coordination with flight crews

Challenges:

- Greater reliance on automation and system integrity
- Need for continuous training and adaptation
- Human factors considerations, including potential over-reliance on technology

Controllers will increasingly operate in a **system-supported and performance-based environment**, requiring both technical understanding and adaptability.

4. IFATCA OPERATIONAL PERSPECTIVE

From an IFATCA perspective, the developments arising from IFPP activities have significant implications for ATCO operations.

Benefits:

- Enhanced predictability and efficiency in traffic management
- Improved clarity and standardization of procedures
- Reduced complexity in high-density airspace

Challenges:

- Increased reliance on automation and system performance
- Greater need for competency-based training frameworks
- Human factors risks, associated with automation dependency

It is essential that ATCOs remain actively engaged in these developments to ensure that operational realities are adequately reflected in future ICAO provisions.

5. CONCLUSION

The IFPP continues to play a critical role in advancing the global harmonization and modernization of instrument flight procedures.

The transition from IFPP/17 to IFPP 18 reflects a clear shift toward:

- Integration of systems and procedures
- Digitalization and automation
- Performance-based and data-driven operations

These developments will have a profound impact on ATC operations worldwide, requiring continuous adaptation, training, and engagement from the controller community.

7. RECOMMENDATIONS

It is recommended that this report be accepted as an information paper.

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