The Free Route Airspace Implementation Workshop / 2

Bangkok, Thailand

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This event is jointly organised with

EU - Asia   Aviation Partnership Projects (APP)

FRA - Bringing the World Together

ICAO APAC FRA Implementation Workshop 2024

Takeaways and Conclusion

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Outline – 8 Presentations

Definition and CNS for FRA

Strategies for Airspace Design Under FRA

Tools and Simulations Used in FRA Design

Coordination Between Different ATC Centers and Cross-Border Issues

FRA/UPR Implementation in Indonesia: Steps and Phases

Integration with Existing Air Traffic Management Systems & Step-by-Step Guide to FRA Implementation

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Talking 1 : **Definition and CNS for FRA**

- ➢ Definition and Significance of FRA
- ➢ ICAO's Initiative and ASBU Framework
- ➢ Comparison with Other Concepts
  - • TBO and FRA in Aviation

Talking 2 : **Airline Involvement in Regional FRA Initiatives**

- ➢ Need for Operational Efficiency
  - ▪ With industry growth and net-zero goals, improving efficiency is crucial
- ➢ Value of Constrained Trials
  - ▪ Small-scale trials help test ideas, gather feedback, and build support.
- ➢ Regional Examples
  - ▪ Current projects in the region offer good examples for other States to follow.

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Talking 3 : Strategies for Airspace Design Under FRA

➢ Guidelines for FRA Design
  ▪ Principles for Free Route Airspace (FRA) design
    ✓ Harmonized definitions and implementations
    ✓ Vertical and lateral boundaries of FRA
    ✓ Criteria for significant points, ATS route network presence
    ✓ Vertical connectivity and sectorisation

Talking 4 : Tools and Simulations Used in FRA Design

➢ FRA Design Tools & Simulations
  ▪ Evaluation and refinement of FRA airspace
    ✓ Traffic flow analysis tools and airspace optimization
    ✓ Real-time simulations for air traffic controller training

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Talking 5 : Coordination Between Different ATC Centers and Cross-Border Issues

➢ Cross-Border Coordination in FRA
- MUAC's Role in Cross-Border ANSP Operations
  - ✓ Evolution from restricted airspace to Free Route Airspace
  - ✓ MUAC's implementation of FRA with the "gate concept"
  - ✓ Enhancing cross-border flight paths with Karlsruhe UAC

Talking 6 : Free Route Airspace Training for ATC

➢ ATC Training for Free Route Operation (FRTO)
- Essential training focus areas for managing FRTO
  - ✓ Handling dynamic traffic and conflict detection
  - ✓ Strengthening situational awareness
  - ✓ Integrating PBN and TBO in FRTO training

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Talking 7 : FRA/UPR Implementation in Indonesia: Steps and Phases

➢ User Preferred Route (UPR) Initiative in Indonesia
Evolution and benefits of FRA in Indonesia

- ✓ Trial launch during the pandemic, full implementation by 2023
- ✓ Regulatory updates, airspace reorganization, and training
- ✓ Enhanced efficiency and carbon emission reduction

Talking 8 : Integration with Existing Air Traffic Management Systems & Step-by-Step Guide to FRA Implementation

➢ Implementing FRA in ATS Route-Based Systems

- • Step-by-step guide to FRA integration

- ✓ Practical insights from FRA implementation experiences

- ✓ Actionable "do's and don'ts" for FRA management

- ✓ Effective approaches for seamless FRA integration

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Talking 9 : **Oceanic vs High density airspace FRA implementation**

- ➢ Goal and Purpose of FRA
- ➢ Key ATM Elements for FRA Implementation
  - Flow Organization
  - ATC Capabilities and Sector Capacity
- ➢ Flexibility Levels and Complexity
- ➢ Differences in Oceanic vs. High-Density Airspace
- ➢ Impact on Airspace Design and Planning Needs

Closing remarks

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