Mini Global II
Demonstration and Lessons Learned / Observations

Presented to: ATIEC
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Aviation Information World – Forecasting the Future
Mini Global Demonstrations

The Mini Global Demonstrations seek to advance collaborative flight information exchanges utilizing SWIM and established standards amongst operators and ANSPs worldwide

- Supports ultimate goal of seamless interoperability and harmonization
- Provides mechanism for ANSPs and operators to support the validation of systems and processes, to enhance efficiencies in their ATM systems
High Level Objectives

- **Demonstrate the exchange and applicability of global exchange models to a broader international community**
  - Utilize FIXM, AIXM, and iWXXM standards

- **Evaluate how these standards used in the ICAO SWIM Manual (Doc 10039) will address multiple disparate international systems**
  - Different levels of maturity
  - Different levels of data model fidelity
  - Recommend updates to FIXM and AIXM Standards

- **Identify and convey potential benefits that can be achieved with the global harmonization of data exchange**

- **Support validation of ICAO Flight and Flow-Information for a Collaborative Environment (FF-ICE)**
Mini Global Demonstration Phases

• **Mini Global I Demonstration (September 2014)**
  - Aimed to reduce the use of antiquated and proprietary data exchange methods
  - Evaluated the effectiveness of the emerging global exchange models amongst international ATM systems
  - Technical demonstration with enhanced capabilities to showcase the technology and readiness for regional and inter-regional SWIM implementations

• **Mini Global II Demonstration (April 2016)**
  - Focus on operational value to stakeholders by executing real world, complex operational scenarios
  - Showcase an implementation solution that aligns with ICAO SWIM Manual (Doc 10039)
  - Address observations/lessons learned from Mini Global I
Mini Global II - International Partners

DECEA
NAV CANADA
CAAS
NAV
SESAR
GENERAL CIVIL AVIATION AUTHORITY
United Arab Emirates
TTCAA Safer Skies
AITEC
Aviation Information World - Forecasting the Future
Mini Global II - Industry Partners

Global Enterprise Messaging Service (GEMS) Providers
Mini Global II Demonstration Focus

- **Global EMS (GEMS) Interoperability**
  - Integrate regionally diverse EMS service providers

- **Standards/Governance/Business Rules**
  - GEMS WG chartered to address interoperability between EMS providers

- **Extending International Partnerships**
  - Continue to foster new international partnerships

- **Developing and Executing Complex Use Cases**
  - Implement FIXM 3.0.1, AIXM 5.1, and iWXXM 1.0

- **Developing New Applications**
  - Promote development of applications to benefit global aviation

- **Providing Recommendations on Global Exchange Standards**
## Mini Global II Scenarios Overview

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>ANSP</th>
<th>Scenario(s)</th>
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<tbody>
<tr>
<td>Africa/Middle East</td>
<td>United Arab Emirates</td>
<td>GCAA</td>
<td>ATFM Across FIRS&lt;br&gt;Indian Ocean Transit</td>
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<tr>
<td>Asia</td>
<td>Japan</td>
<td>JCAB</td>
<td>Trans-Pacific Operations&lt;br&gt;Hazardous Weather</td>
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<td>Singapore</td>
<td>CAAS</td>
<td>Trans-Pacific Operations&lt;br&gt;Controlled Data Distribution&lt;br&gt;Traffic Management Across FIRS&lt;br&gt;ATFM Across FIRS&lt;br&gt;Indian Ocean Transit&lt;br&gt;Data Confidentiality with IWXXM</td>
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<td>Thailand</td>
<td>AEROTHAI</td>
<td>Controlled Data Distribution&lt;br&gt;Traffic Management Across FIRS&lt;br&gt;Data Confidentiality with IWXXM</td>
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<td>Trinidad and Tobago</td>
<td>TTCAA</td>
<td>Improved Re-Route Capability</td>
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<td>Europe</td>
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<td>SESAR</td>
<td>Interoperability Mitigates Constraints</td>
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<td>Portugal</td>
<td>NAV Portugal</td>
<td>Trans-Atlantic Operations</td>
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<td>North America</td>
<td>United States</td>
<td>FAA</td>
<td>Improved Re-Route Capability&lt;br&gt;Interoperability Mitigates Constraints&lt;br&gt;Trans-Pacific Operations&lt;br&gt;Trans-Atlantic Operations&lt;br&gt;Flight Planning &amp; Filing Service&lt;br&gt;MGII Applications</td>
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<td>Canada</td>
<td>NAVCANADA</td>
<td>Improved Point Outs</td>
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<td>South America</td>
<td>Brazil</td>
<td>DECEA</td>
<td>Improved Re-Route Capability</td>
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Demonstration Data used in Scenarios

• **FIXM Data**
  - Flight Plan
  - Flight Plan Amendment / Change
  - Departure
  - Arrival
  - Advanced Boundary Information (ABI)
  - Current Plan (CPL)
  - Coordination (CDN)
  - Accept (ACP)
  - Airborne Track data
  - Surface Track data
  - Trajectory Data
  - Metering Data
  - Dangerous Goods

• **AIXM Data**
  - NOTAM for Military Use Airspace
  - Special Activity Airspace

• **IWXXM Data**
  - METAR
  - SPECI
  - Terminal Area Forecast (TAF)
  - SIGMET for Volcanic Ash
Mini Global II Demonstration
Outcomes / Lessons Learned

• Global need for SWIM is a fact. Interest in collaboration on SWIM has been tremendous.
  o Multiple demonstrations across the globe – North America, South East Asia and Europe

• Globally seamless information exchange is critical in meeting predicted air transportation growth

• Mini Global II demonstrates the use of GEMS model as one implementation of the ICAO SWIM Manual (Doc 10039)
  o Diverse SWIM implementations working together to enhance operations

• “Loosely coupled” infrastructure allows stakeholders to evolve at different rates – while maintaining interoperability

• Discussions on technological improvements without operational context will continue to be challenging
Observations / Lessons Learned on Global Integration

- As a global community we need to discuss several topics at a global level as it impacts all stakeholders
  - Messaging standardization
  - Connectivity
  - Metadata definitions and enforcement
- Business rules should be agreed upon globally and easily accessible to the community
- The use of extensions by ANSPs may create challenges in international data exchange
- Utilization of widely used, mature, open source messaging protocols eases global adaption and communication
- Enhancements to registries are needed to facilitate service discovery and international data exchange
Next Phase (2016 -2018)

• With the Mini Global II demonstration:
  o Illustrated operational viability of a globally connected environment
  o Showed value of global collaboration on technical and operational processes, procedures, and standards

• The next phase:
  o Build upon results and lessons learned from Mini Global II
  o Utilize the global SWIM environment to validate future operations in ASBU Block 1
  o Critical component of the Block 1 timeframe is the flight information exchange evolution as described in FF-ICE
Questions
Contact Information

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