Scope

- **AIS to AIM Transition**
  - Need for migration to a more robust system to support data-centric and digital aeronautical information
  - Phases and steps for transition

- **Integration of AIM with Instrument Flight Procedures**
  - Critical role that digital data sets play to support integration
  - Integration not only from system perspective but processes to be put in place to ensure data integrity

AIS – AIM Transition

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- Migration of current legacy and product-centred Aeronautical Information Services (AIS) to data-centric and digital Aeronautical Information Management (AIM) environment

- Envisaged States to complete the transition in three phases and 21 steps by implementing a fully automated digital aeronautical data chain

Phase 1 – Consolidation (4 steps)

- Implement the current Standards and Recommended Practices (SARPs)
- ➢ enhance quality of existing AIS products
- ➢ adhere to the Aeronautical Information Regulation and Control (AIRAC) System
- ➢ publish geographical coordinates referenced to WGS-84 geodetic datum

    - P-03 – AIRAC adherence monitoring
    - P-04 – Monitoring of States' differences to ICAO Annex 4 (Aeronautical Charts) and ICAO Annex 15 (Aeronautical Information Services)
    - P-05 – The World Geodetic System – 1984 (WGS-84) implementation
    - P-17 - Quality

Phase 2 – Going Digital (9 steps)

- Create national or regional database to produce and provide existing products and services with better quality and availability, such as the delivery of electronic AIP (eAIP) and electronic terrain and obstacle data (eTOD).

    - P-01 – Data quality monitoring
    - P-02 – Data integrity monitoring
    - P-06 – Integrated aeronautical information databases
    - P-07 – Unique identifiers
    - P-08 – Aeronautical Information Conceptual Model (AICM)
    - P-11 – Electronic Aeronautical Information Publication (eAIP)
    - P-13 – Terrain
    - P-14 – Obstacles
    - P-15 – Aerodrome mapping

Phase 3 – Information Management (8 steps)

- System Wide Information Management (SWIM). Keywords are integration, collaboration and self-regulation. For all of the information domains, a range of supporting information applications will be made available to all authorised users on the SWIM network

    - P-09 – Aeronautical data exchange
    - P-10 – Communication networks
    - P-12 – Aeronautical information briefing
    - P-16 – Training
    - P-18 – Arrangements with data originators
    - P-19 – Interoperability with meteorological products
    - P-20 – Electronic aeronautical charts
    - P-21 – Digital Notice to Airmen (NOTAM)

Integration with IFP in Singapore

Instrument Flight Procedure (IFP)

- A published procedure used by aircraft flying in accordance with the instrument flight rules
  - designed to achieve and maintain an acceptable level of safety in operations
  - included an instrument approach procedure, a standard instrument departure, a planned departure route and a standard instrument arrival
  - required an aeronautical database and aeronautical data which was current, traceable and met the required level of verifiable accuracy for the design
- With the advent of Performance Based Navigation (PBN), IFPs are more data-centric
  - critical for data integrity to be assurance for navigational performance
- Electronic IFP charts provided based on digital databases and geographic information systems (GIS)
  - data used in digital format by service providers, ATC and IFR/VFR airspace users

Digital Data Sets

- AIP dataset
  - contained the digital representation of core en-route data (points, navaids, routes, airspace) and also airport and runway data essential to air navigation

- Obstacle dataset
  - contained data about obstacles located at or in the vicinity of the aerodromes (Area 2) or within the State territory (Area 1)

- Instrument Flight Procedures dataset
  - contained the digital representation of instrument flight procedures (IFR departure, arrival and approach procedures) for aerodromes regularly used by international civil aviation

- Airport Mapping dataset
  - contained the digital encoding of the aerodrome layout

COMSOFT Aeronautical Data Access System (CADAS)

- CADAS-Electronic Publishing System (EPS), a collaborative document management system, is used for the automatic creation of Singapore's eAIP, including amendments, supplements and circulars
    - is based on a content-management system
    - processes AIXM 5.1 information and uses the CADAS-AIMDB web service for data exchange
- CADAS-Aeronautical Information Managemnt Database (AIMDB) is used to store draft data, performs quality checks and analysis before committing it as operational data
    - facilitates data reviews of modified data
    - allows automated consistency checks of data under review
    - serves as a base for integrating AIM applications and components such as eAIP, charting and procedure design
    - provides interfaces for SWIM

Instrument Flight Procedure Design

- Flight Procedure Design and Airspace Management Software (FPDAM)
  - design, check and maintain instrument and visual approach and departure flight procedures
  - design and manage airspaces and airways
  - manage aeronautical and terrain data
- AIP DeskTop Publishing System
  - use ArcGIS, a geographic information system (GIS), for creating and using maps, compiling geographic data, analyzing mapped information, sharing geographic information and managing geographic information in a database
  - provide an infrastructure for making maps and geographic information available on the Web

Integrating AIM and IFP (1)

- AIM is the dynamic, integrated management of aeronautical information through the provision and exchange of the right digital aeronautical data (quality assured), at the right place (through digital exchange), and at the right time (timeliness) in collaboration with all parties

- Integration with IFP is necessary to support Air Traffic Management (ATM) operations
    - monitor and control the quality of the shared information and data
    - provide information-sharing mechanisms that support the ATM community

Integrating AIM and IFP (2)

- Data sets are amended or reissued at such regular intervals as may be necessary to keep them up to date

- Permanent changes and temporary changes of long duration (three months or longer) made available as digital data are issued in the form of a complete data set or a sub-set that includes only the differences from the previously issued complete data set

- Differences from the previously issued complete data set are indicated

- Updates to AIP and the digital data sets are synchronized

Summary

- Transition from AIS to AIM is necessary to prepare for data-centric environment and digital aeronautical information

- With the advent of Performance Based Navigation (PBN), IFPs are more data-centric

- Integration of AIM and IFP is important to ensure air navigation safety

- Other than system integration, processes should be in place between the FPD Office and AIS to ensure data quality assurance

Thank you