Air Traffic Management

THALES Air Systems

ATS Inter-facility Data Communications

Frédéric Cuq

12 May 2015

Purpose of Presentation

- Thales Overview
- AIDC concept
- AIDC experience
- An operational example
- Lessons learned
- Summary

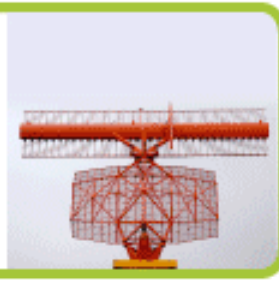
Thales en-route centres

- 82 FIRs out of 300 approx., + 60 countries or 27% worldwide market share

Thales Air Systems is trusted by 180 countries

TopSky
ATM Solutions
Over **390** ATM solutions

Over **700** radars in operation



7,000 *navaids*

160 *Air Traffic Control Systems*

2 out of every 3 planes
take-off and land safely thanks to Thales

Over 20 *ADS-C equipped ATC Centres*

Over **3,000** Controller Positions

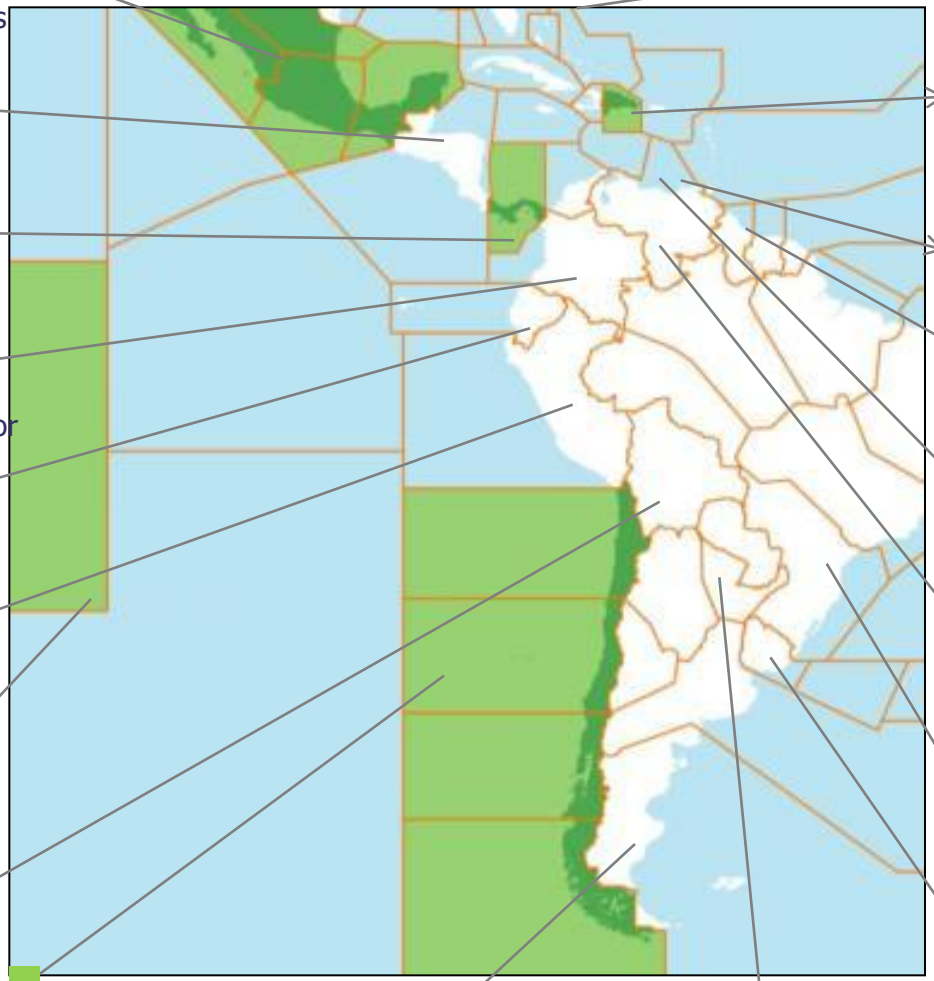
Over 50 *Tower Systems in operation*

20 Aeronautical Information Mgt Systems

1,800 ADS-B & Multilateration Equipment

THALES

Presence in Latin America and the Caribbean



Mexico
ATC, AIM, AMHS, Simulation, ADS-B, Radar, Tower, Navaids

Cocesna
Navaids

Panama
ATC, AIM, AMHS, Navaids

Colombia
ATC, Radar, Navaids, Simulador

Ecuador
AMHS, AIM, Radar, Navaids

Peru
Navaids

Tahiti
ATC, Radar, Navaids

Bolivia
AMHS, Navaids

Chile
ATC, AIM, AMHS, Radar, Navaids

En route presence

Argentina
Radar, Navaids

Paraguay
Navaids

Bahamas
Navaids

Dominican Republic
ATC, Radar, Navaids

Barbados
Navaids

Guyana
Navaids

Aruba
ATC, Navaids

Venezuela
Navaids

Brazil
Radar, Navaids

Uruguay
Radar, Navaids

THALES

History

- **Initially in response to a need for Oceanic area information exchange**
  - Needed a common language
- **Designed to eliminate verbal coordination, initially between OCEANIC and ACC, then ACC/APP and TWR**
- **Designed to work within the AFTN/AMHS**
- **1994 the initial ICD for AIDC was adopted for planning purposes by the APAC Air Nav Planning and Implementation Regional Group (APANPIRG)**
- **Regional NAM and CARSAM ICDs**

AIDC Concept

- **By Definition**
  - **“The AIDC application supports information exchanges between ATC application processes within automated ATS systems located at different ATSUs”, (ICAO 2007)**
- **Not designed to replace ICAO messaging, only provide new facilities.**
- **Requires bilateral agreements between neighbours**
- **Computer to Computer messaging – Some messages are “automated”**
- **Concept – 3 phases**

Thales' systems : Which ANSPs with AIDC experience ?

- Australia (Ops)
- Singapore
- Tahiti
- South Africa
- Maritius
- Vietnam
- China (Ops)
- Taiwan (Ops)
- Abu Dhabi
- Bahrein
- Saudi Arabia
- Egypt
- Sudan
- ASECNA
- Panama
- Chile
- Colombia
- Mexico
- Dominican Republic

THALES

Australian Example

- **Two FIRs – Melbourne and Brisbane. Separate FDPs**
- **Multiple remote TMAs**
- **Sydney - Approx 315,000 movements in 2012 = average 863 per day**
- **Many transit Sydney TMA to/from Brisbane ACC**
  - Sydney Departures
  - Sydney Arrivals
- **MIL ATC coordination**

Lessons learned

- **Voice coordination only used in non-standard cases**
- **Different standards between systems**
- **Accuracy of flight data must maintained at all times**
- **Human factors: Controllers must be aware of the lack of prompting**
- **Overall reduced coordination errors and workload**
- **General feed-back is very positive**
  - from integrators and operational people
  - from customers (organizations and controllers), Implementation of AIDC has been very beneficial
- **But only two significant issues**
  - Dynamic standard
  - ICD definition with customer

Summary

- **AIDC messaging supports ATM automation principles**
  - Assigns repetitive tasks to the computer – reduction in controller workload
  - Reduces coordination errors
  - HMI should clearly indicate when the system is degraded
  - Allows to revert to manual coordination if required
- **Requires close cooperation between Air Traffic Service Units**
  - Letter of Agreement (LOA) essential
  - Exact message set needs to be agreed
  - Common degraded mode procedures
- **Transfer between APP/ACC should be as seamless as transfer between Sectors**

Keep in mind

- **Standards and ATC Systems' Vendor version**
  - per-ICAO-region basis NAM (North America), CARSAM (Central America and South America) and APAC (Asia Pacific)
  - Different versions, e.g. APAC V1, 2, and 3. Systems support one or the other …
- **Start with simple Messages**
  - Standards define many messages
  - Notification messages and move on to negotiation
  - Save training and get confidence
  - Ease the multi region/version testing (e.g use of NAM and CARSAM)
- **And involve Vendors for testing**
  - Supporting system configuration

Muchas Gracias