

Transition from AIS to AIM

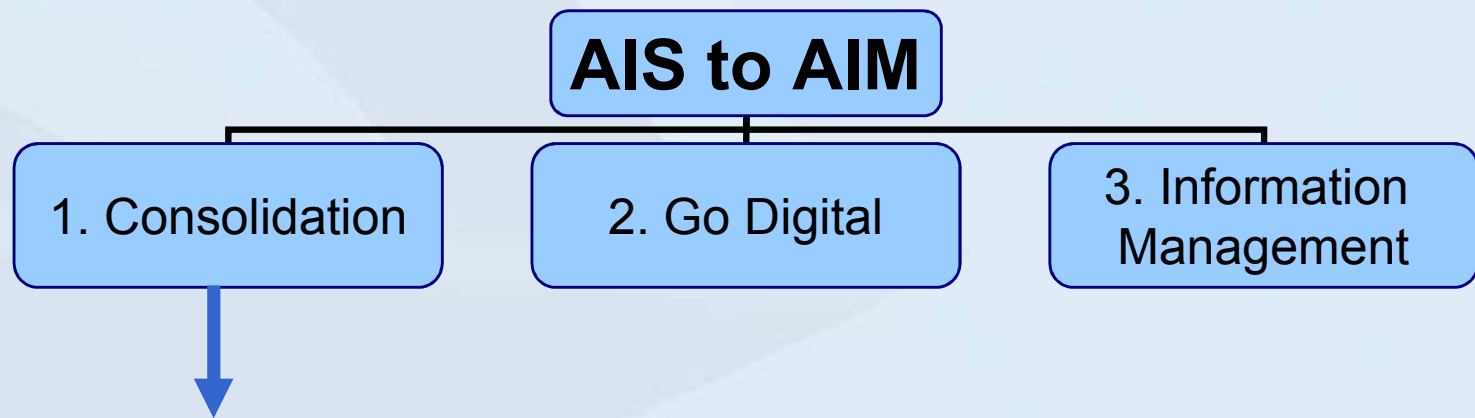
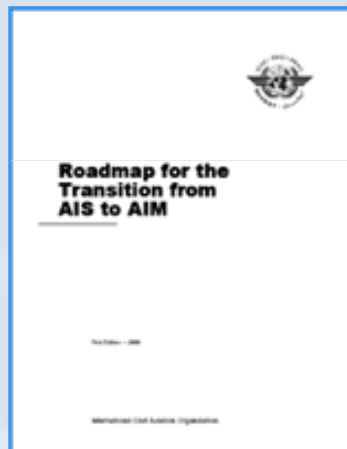
Roadmap Phase 1 – Consolidation

AIRAC adherence, SARPS, WGS84, QMS

Alexandre Petrovsky
Technical Assistant
EUROCONTROL

Roadmap for Transition from AIS to AIM

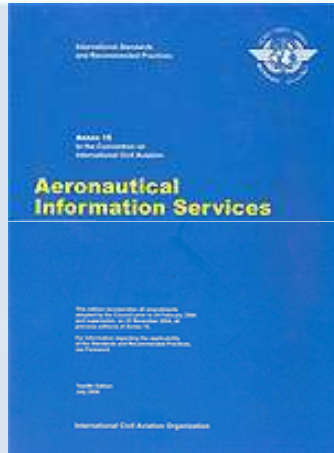
Phase 1



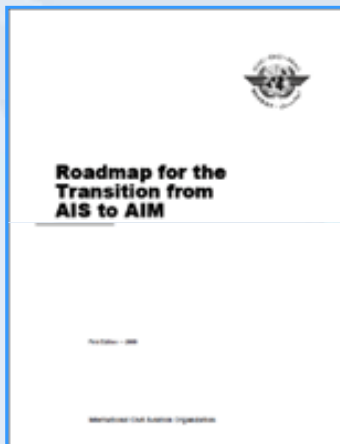
1. Consolidation

- P-03 AIRAC Adherence monitoring
- P-04 Monitoring Annexes 4,15 differences
- P-05 WGS84 Implementation
- P-17 Quality Management System

P-03 AIRAC Adherence monitoring



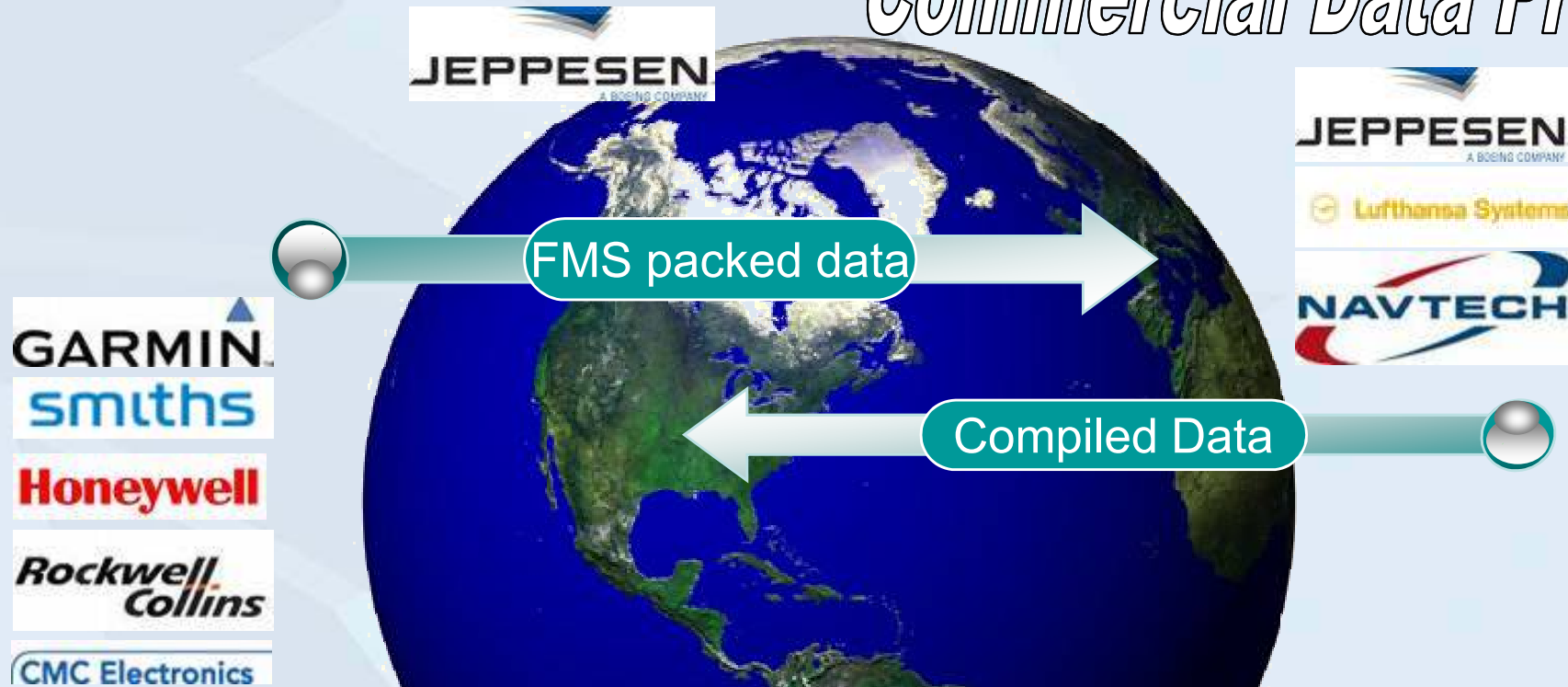
3.1.1.2 Each Contracting State shall take all necessary measures to ensure that the aeronautical information/data it provides ..., is adequate, of required quality and **timely**...



The standard regulation and control mechanisms for the distribution of aeronautical information is **an essential element** ensuring that **each person involved makes decisions based on the same information.**

Aeronautical Data Exchange

Commercial Data Providers

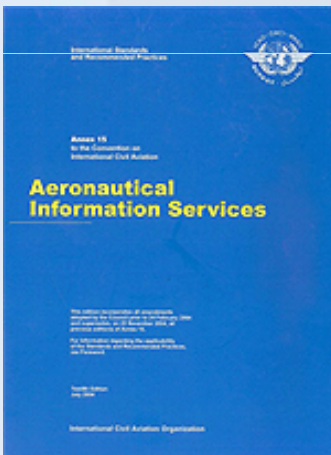
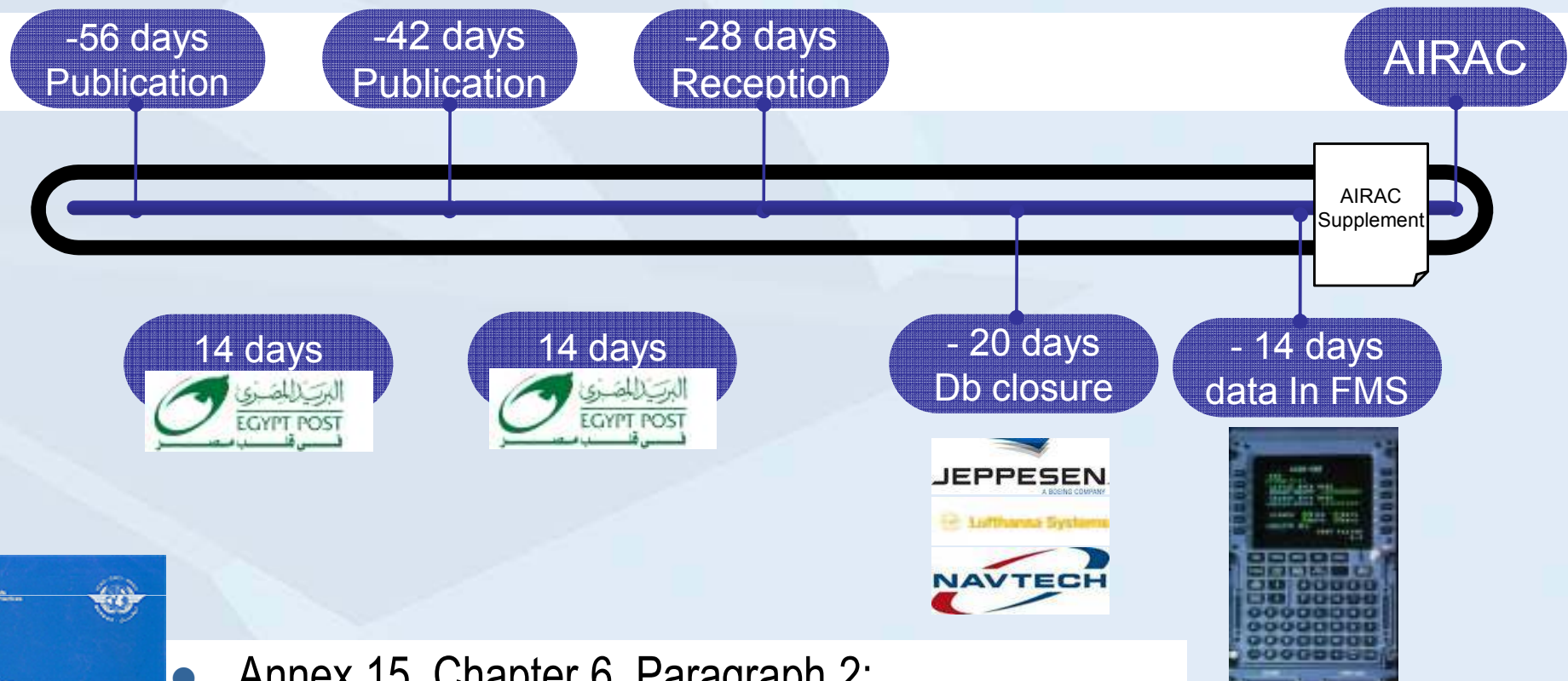


Data Packers

Why are we interested in timeliness?



AIRAC Cycle: Timeliness



- Annex 15, Chapter 6, Paragraph 2:
 - Information published on paper and distributed 42 days in advance of the effective date
 - Major changes minimum 56 days

Why 28 Days?

To update a heterogeneous set of systems !

Commercial Data Providers

Airline operators

Charts

Flight Management Systems

Aircraft Performance DB

Flight Planning

Simulators

ATC Centres

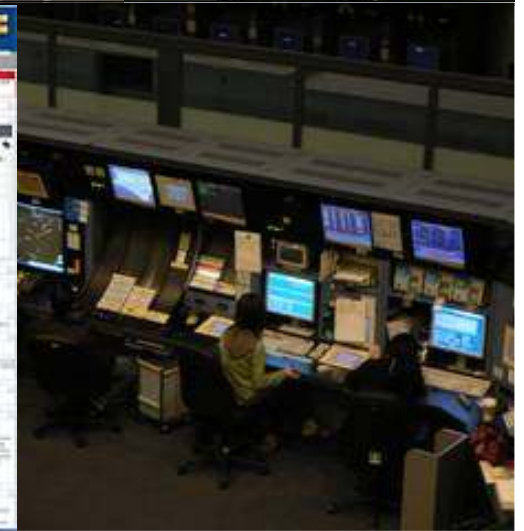
Flight planning

Simulators

ATC screens

Flow Management Centres

Simulators / Flight Planning



AIRAC FAQ



- What is AIRAC?
- What is AIRAC cycle?
- Why is it needed?
- 28 days? Why?
- ...
- Now also on ICAO AIM website

AIRAC Adherence

Aviation "environment" data is constantly changing: airspace structures and routes are revised, navigation aids change, SIDs and STARs are amended, runway and taxiway information changes.

It is essential, for both efficiency and safety, that Pilots, Air Traffic Controllers, Air Traffic Flow Managers, Flight Management Systems and Aviation Charts all have the same data set.

But how can this be achieved? The answer is AIRAC.

What is AIRAC?

AIRAC stands for Aeronautical Information Regulation And Control and steps from the ICAO Annex 15 - Aeronautical Information Services (AIS) document and defines a series of common dates and an associated standard aeronautical information publication procedure for States.



AIS AGORA

Objective

Improve dissemination of aeronautical information through enhanced communication and co-ordination among all aeronautical information stakeholders



www.eurocontrol.int/aisagora
ais.agora@eurocontrol.int

AIS AGORA

Aeronautical Information Forum



ICAO DOC 8126, 2.6.17

“If, due to postal (or other) delays, AIRAC AIP Amendments or Supplements are not received at least 28 days in advance of the AIRAC effective date, the recipient will report this to the originating AIS. It is the duty of the originating AIS to investigate the reason for the delay and take remedial action as required.”



Customer Satisfaction

*8.2.1 As one of the measurements of the performance of the quality management system, **the organisation shall monitor information relating to customer perception as to whether the organization has met customer requirements.** The methods for obtaining and using this information shall be determined.*

pTracker

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AIP AMDT

Publication No

1

Effective Date

Button for pop-up calendar

Dispatch Date

Comments

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| AIRAC AMDT | 82 | 14/04/2005 | 22/02/2005 | | Recipients |
| AIRAC AMDT | 81 | 17/02/2005 | 20/12/2004 | | Recipients |
| AIRAC AMDT | 80 | 25/11/2004 | 04/10/2004 | | Recipients |
| AIRAC AMDT | 79 | 13/06/2004 | 26/04/2004 | | Recipients |
| AIRAC AMDT | 78 | 13/05/2004 | 29/03/2004 | | Recipients |
| AIRAC AMDT | 77 | 15/04/2004 | 01/03/2004 | | Recipients |
| AIRAC AMDT | 76 | 18/03/2004 | 30/01/2004 | | Recipients |
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| AIRAC AMDT | 73 | 25/12/2003 | 05/11/2003 | | Recipients |
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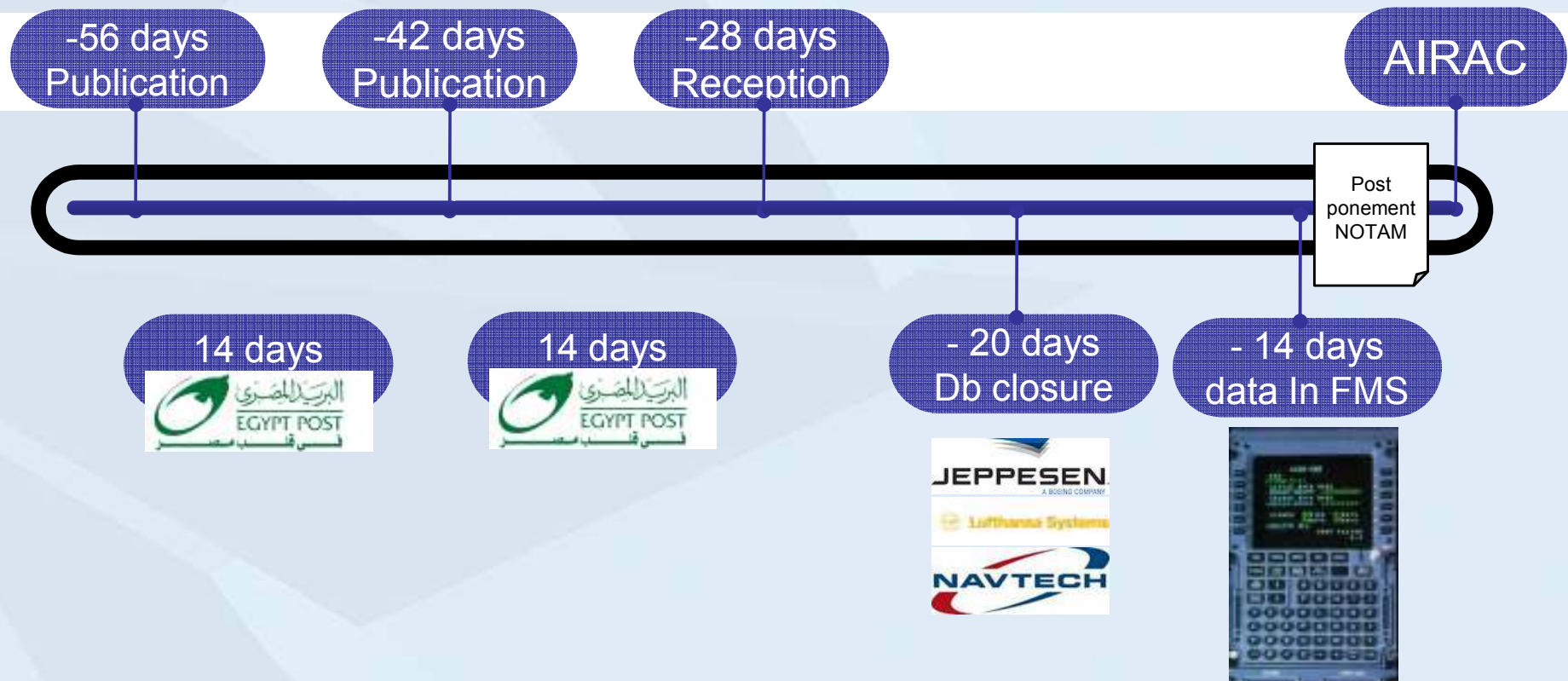
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|------------------|-----------------|----------------|---------------|----------|
| AIRAC AMDT | 83 | 12/05/2005 | 29/03/2005 | |

List Recipients of the Selected Publication

| Recipient of Publication | Reception Date | Means |
|--------------------------|----------------|-------|
| Italy | 18-08-2006 | POST |
| Spain | 16-08-2006 | POST |
| Athens | 15-08-2006 | POST |
| NGA-Germany | 14-08-2006 | POST |
| Norway | 15-08-2006 | POST |
| Serbia and Montenegro | 07-06-2006 | POST |
| Eurocontrol | 31-05-2006 | POST |
| Croatia | 05-06-2006 | POST |
| Air Canada | 03-06-2006 | POST |
| EAG UK | 14-08-2006 | POST |

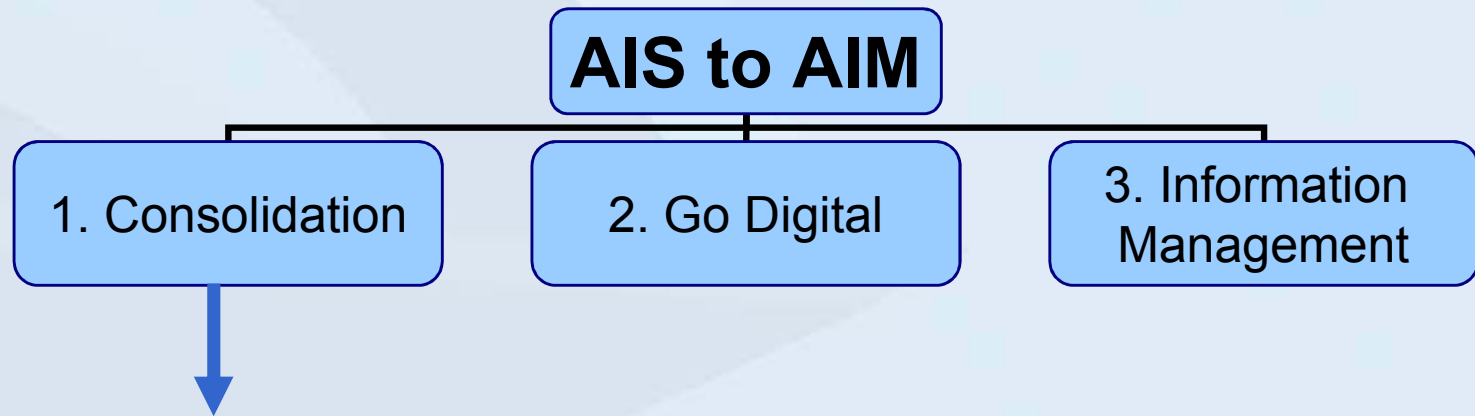
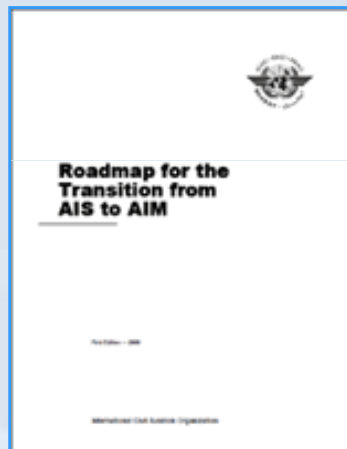
| Publication Type | Publication Number | Effective Date | Dispatch Date | Recipient of Publication | Reception Date | Means | Delta | Distribution Time |
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| AIRAC AMDT VOL2 | 5 | 28-09-2006 | 10-08-2006 | NGA-USA | 16-08-2006 | POST | 43 | 6 |
| AIRAC AMDT VOL2 | 5 | 28-09-2006 | 10-08-2006 | Norway | 15-08-2006 | POST | 44 | 5 |
| AIRAC AMDT VOL2 | 5 | 28-09-2006 | 10-08-2006 | Russia | 15-08-2006 | POST | 44 | 5 |
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| AIRAC AMDT VOL2 | 5 | 28-09-2006 | 10-08-2006 | EAG UK | 14-08-2006 | POST | 45 | 4 |
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| AIRAC AMDT VOL1 | 4 | 28-09-2006 | 10-08-2006 | Spain | 16-08-2006 | POST | 43 | 6 |
| AIRAC AMDT VOL1 | 4 | 28-09-2006 | 10-08-2006 | Russia | 15-08-2006 | POST | 44 | 5 |
| AIRAC AMDT VOL1 | 4 | 28-09-2006 | 10-08-2006 | NGA-Germany | 14-08-2006 | POST | 45 | 4 |
| AIRAC AMDT VOL1 | 4 | 28-09-2006 | 10-08-2006 | EAG UK | 14-08-2006 | POST | 45 | 4 |
| AIRAC AMDT VOL2 | 3 | 06-07-2006 | 31-05-2006 | Serbia and Montenegro | 07-06-2006 | POST | 29 | 7 |
| AIRAC AMDT VOL2 | 3 | 06-07-2006 | 31-05-2006 | Slovakia | 05-06-2006 | POST | 31 | 5 |
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| AIRAC AMDT VOL2 | 3 | 06-07-2006 | 31-05-2006 | NGA-Germany | 02-06-2006 | POST | 34 | 2 |
| AIRAC AMDT VOL2 | 3 | 06-07-2006 | 31-05-2006 | Eurocontrol | 31-05-2006 | WEB | 36 | 0 |
| AIRAC AMDT VOL1 | 3 | 11-05-2006 | 03-04-2006 | Spain | 11-04-2006 | POST | 30 | 6 |
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| AIRAC AMDT VOL2 | 3 | 11-05-2006 | 03-04-2006 | EAG UK | 05-04-2006 | POST | 36 | 2 |
| AIRAC AMDT VOL2 | 3 | 11-05-2006 | 03-04-2006 | NGA-Germany | 05-04-2006 | POST | 36 | 2 |

AIRAC Cycle: Late postponement



Roadmap for Transition from AIS to AIM

Phase 1



1. Consolidation

- P-03 AIRAC Adherence monitoring
- P-04 Monitoring Annexes 4,15 differences**
- P-05 WGS84 Implementation
- P-17 Quality Management System

P-04 Monitoring Annexes 4,15 differences

Chicago Convention



Differences to Annexes 4 & 15 published in:

- National AIP GEN 1.7
- ICAO Supplements to Annexes 4 & 15

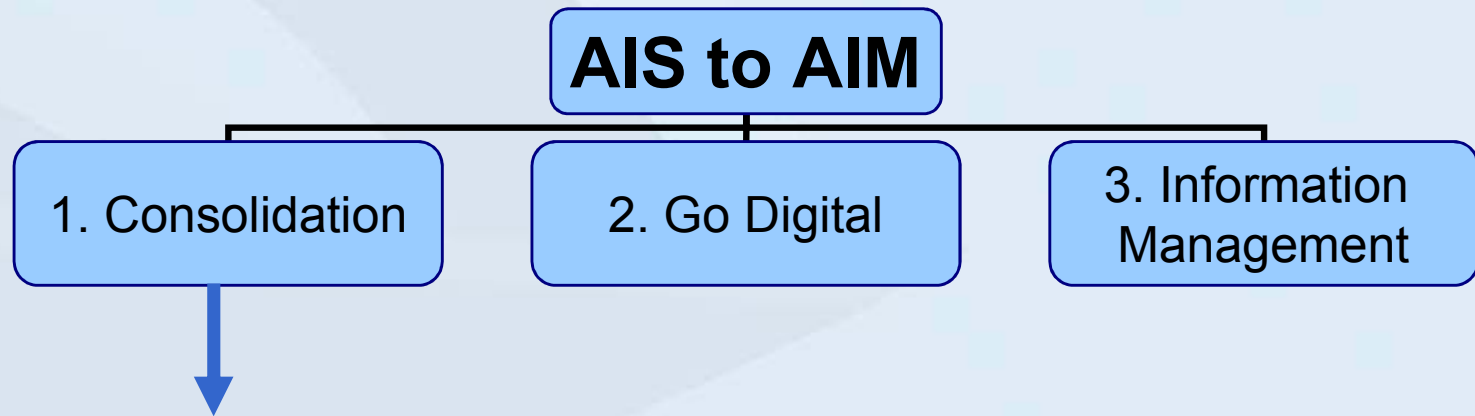
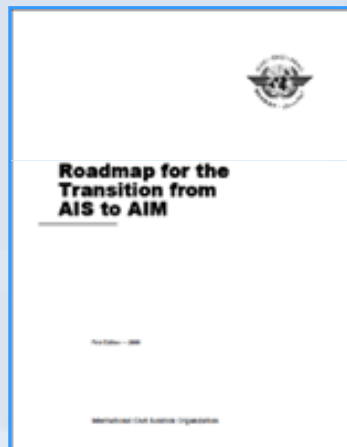
Article 38

Departures from international standards and procedures

Any State which finds it impracticable to comply in all respects with any such international standard or procedure, or to bring its own regulations or practices into full accord with any international standard or procedure after amendment of the latter, or which deems it necessary to adopt regulations or practices differing in any particular respect from those established by an international standard, shall give immediate notification to the International Civil Aviation Organization of the differences between its own practice and that established by the international standard. In the case of amendments to international standards, any State which does not make the appropriate amendments to its own regulations or practices shall give notice to the Council within sixty days of the adoption of the amendment to the international standard, or indicate the action which it proposes to take. In any such case, the Council shall make immediate notification to all other states of the difference which exists between one or more features of an international standard and the corresponding national practice of that State.

Roadmap for Transition from AIS to AIM

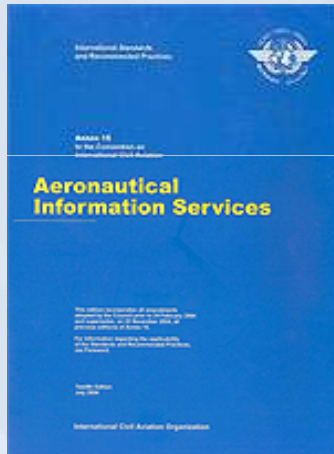
Phase 1



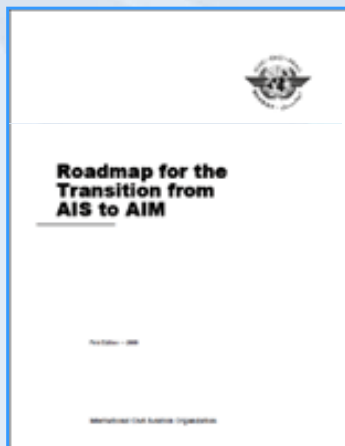
1. Consolidation

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- P-05 WGS84 Implementation**
- P-17 Quality Management System

P-05 WGS84 Implementation

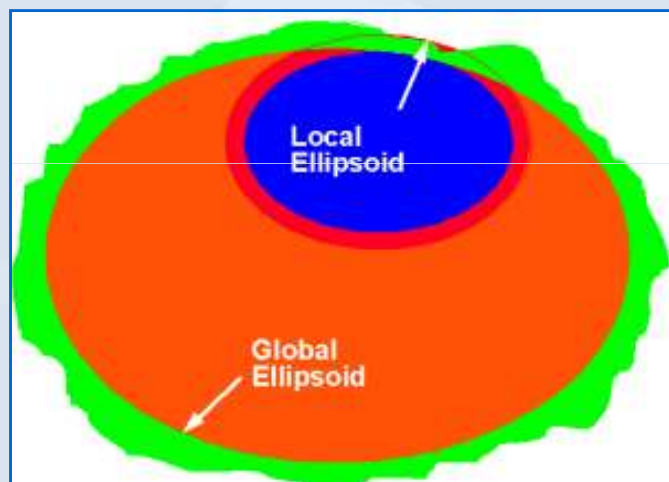


3.7.1.1 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

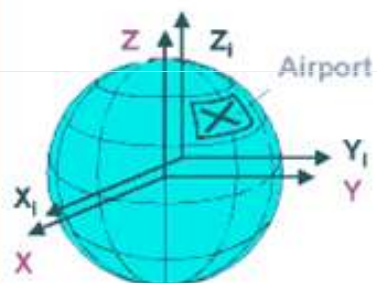


The target of expressing 100 per cent of coordinates in the WGS-84 reference system is achievable. This is one of the first steps to achieve in the transition to AIM.

Statement of the problem

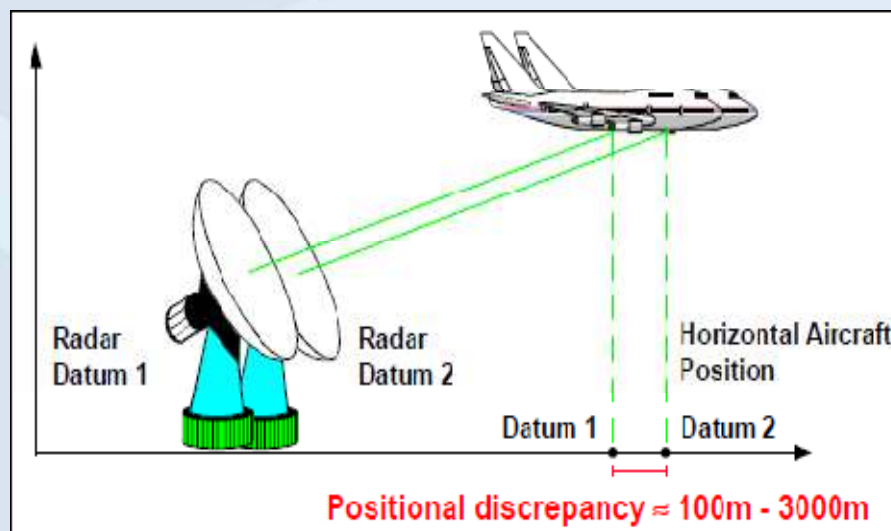


STATEMENT OF THE PROBLEM



X_1, Y_1, Z_1 Local reference frame
 X, Y, Z Global reference frame

- Given: Airport coordinates in a **LOCAL** (national) reference frame
- Find: Airport coordinates in a **GLOBAL** (common) reference frame (WGS 84)



WGS-84 pre-requisite to AIM



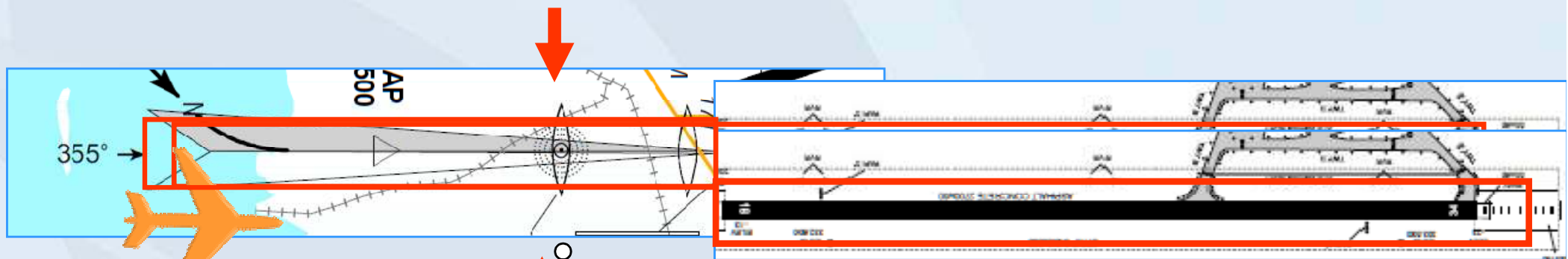
- FMS database contains navigational data from AIP in WGS84 / not WGS84 from commercial data providers/FMS producers
- AMDB from commercial data providers in WGS84
- eTOD from commercial data providers/TOWS producers in WGS84

PBN is WGS-84

Different coordinate systems

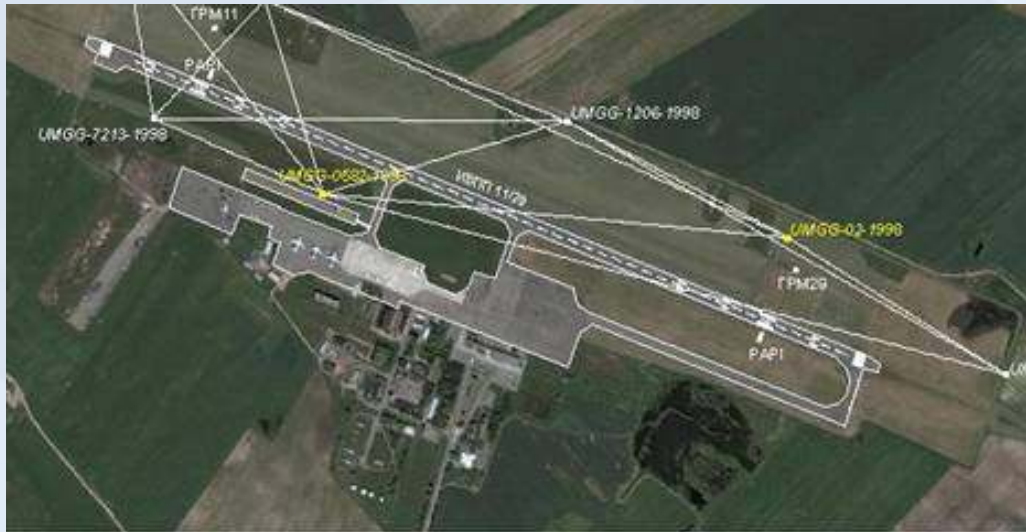
Is there an error in FMS Database?

2 issues: wrong coordinates or different coordinate systems



*On ILS approach
the indicated
position in FMS
is not correct*

ECAC implementation



- WGS-84 is mandatory since 1 January 1998 (11 years)
- All support to implementation is available in the public domain
- In ECAC region only 2 States do not fully use WGS-84 (planned 2010)
- Main issues reported:
 - Legal limitations in publication accuracy
 - Obsolete national regulations
 - Lack of understanding of importance of WGS-84
 - Poor financial policy

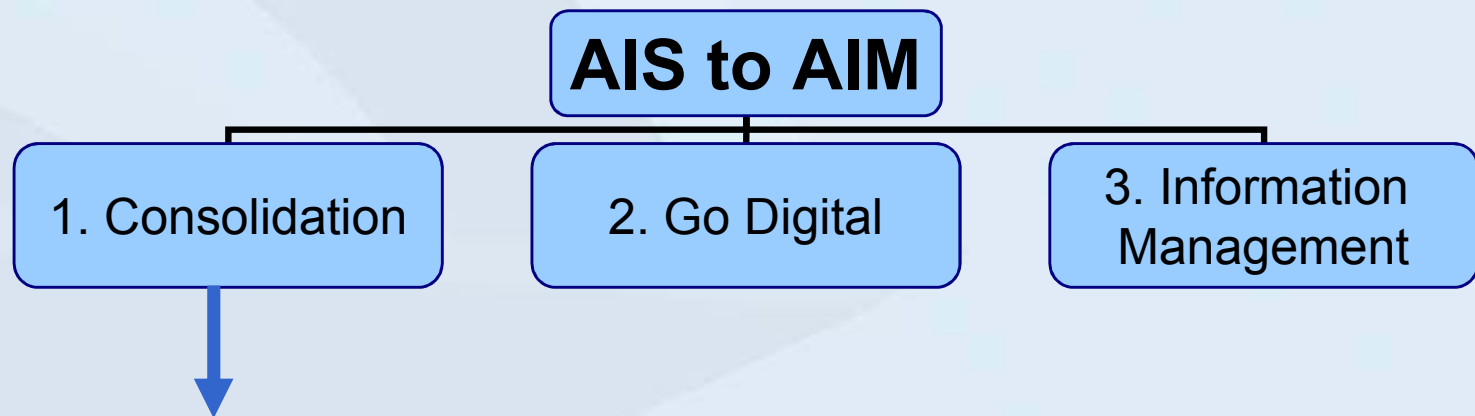
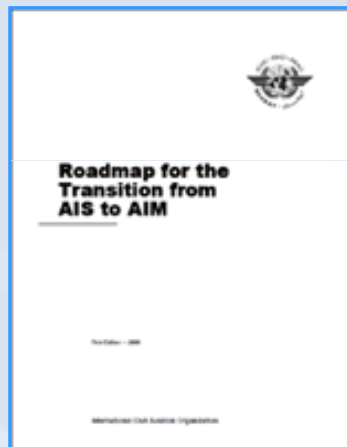
STATUS OF IMPLEMENTATION OF WGS-84 IN THE MID REGION

| | FIR | ENR | TMA/CTA/CTZ | APP | RWY | AD/HEL | GUND | QUALITY SYSTEM | AIP | REMARKS |
|----------------------|-----|-----|-------------|-----|-----|--------|------|----------------|-----|-----------------------------------|
| AFGHANISTAN | N | N | N | N | N | N | N | N | N | |
| BAHRAIN | F | F | F | F | F | F | F | F | F | |
| EGYPT | F | F | F | F | F | F | F | F | F | |
| IRAN | F | F | F | N | F | F | F | F | F | |
| IRAQ | P | P | P | P | P | P | N | N | P | |
| ISRAEL | F | F | F | F | P | F | F | N | F | |
| JORDAN | F | F | F | F | F | F | F | F | F | |
| KUWAIT | F | F | F | F | F | F | F | F | F | |
| LEBANON | F | F | F | F | F | F | N | N | F | |
| OMAN | F | F | F | F | F | F | F | F | F | |
| QATAR | F | F | F | F | F | F | N | N | F | |
| SAUDI ARABIA | F | F | F | F | F | F | N | F | F | GUND implementation under process |
| SYRIA | F | F | F | F | F | F | N | N | F | |
| UNITED ARAB EMIRATES | F | F | F | F | F | F | F | F | F | |
| YEMEN | F | F | F | F | F | F | F | N | F | |

Legend: F: Fully implemented P: Partly implemented N: Not implemented

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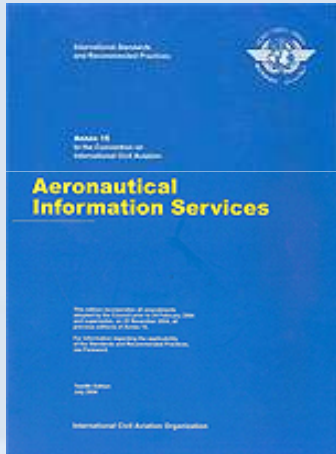
Phase 1



1. Consolidation

- P-03 AIRAC Adherence monitoring
- P-04 Monitoring Annexes 4,15 differences
- P-05 WGS84 Implementation
- P-17 Quality Management System**

P-17 Quality Management System



3.2.1 Each Contracting State shall take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to **implement quality management** at each function stage (receive and/or originate, collate or assemble, edit, format, publish/store and distribute aeronautical information/data) and take remedial action as required.



3.2.2 Recommendation.— *The quality system established in accordance with 3.2.1 should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards, and certified by an approved organization.*

**AMDT 36 to ICAO Annex 15 – ISO9001 becomes a standard
ICAO – QMS Implementation Manual**

What is Quality?

Example of Quality?

Quality: Degree of Excellence



Quality = 'Fit for purpose' or 'satisfies the customer'



ISO 9000 model for Customer Satisfaction



7 Quality Management Principles

- 1 GET ORGANISED
 - define roles, responsibilities, interfaces
- 2 PROVIDE RESOURCES
 - human resources, facilities, work environment
- 3 DOCUMENT YOUR MANAGEMENT SYSTEM
 - establish processes/procedures, control documents
- 4 CONTROL PROCESSES
 - identify and plan processes, control operations
- 5 KEEP RECORDS OF ACTIVITIES
 - evidence of effective operation
- 6 MONITOR AND MEASURE PERFORMANCE
 - customer satisfaction, process/product, audits
- 7 IMPROVE THE MANAGEMENT SYSTEM
 - identify problems, analyse data, correct and prevent

ISO9001 !

QMS pre-requisite to AIM

An overview of ISO 9000:2000



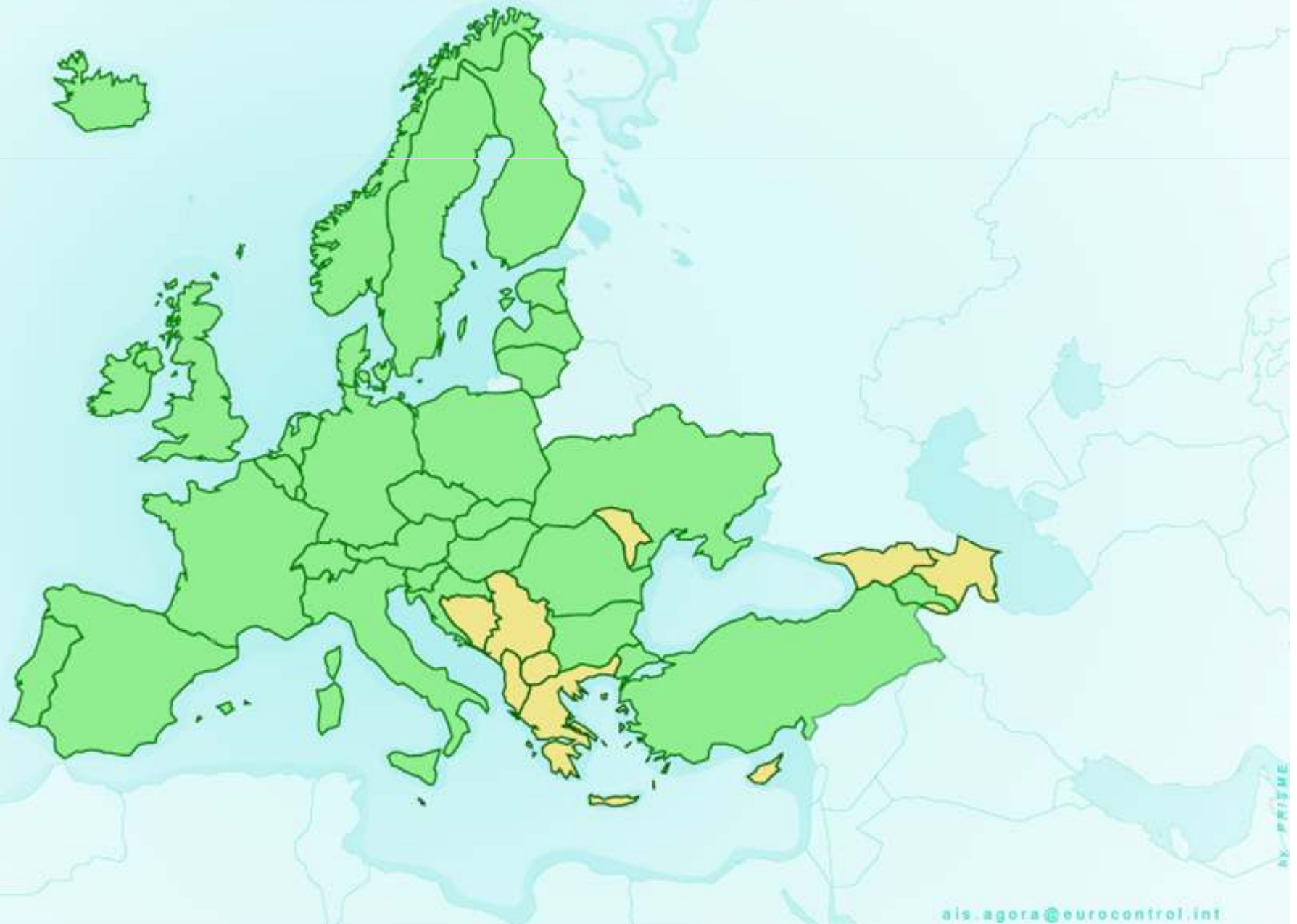
Typical ISO 9001 Action Plan

| ACTIVITY | 1999 | | | | | | | | | | | 2000 | | | | |
|--|------|---|---|---|---|---|---|---|---|---|---|------|---|---|---|--|
| | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | |
| Initial ISO 9001 Briefing | ■ | | | | | | | | | | | | | | | |
| Assessment of current systems | | ■ | ■ | | | | | | | | | | | | | |
| Formulate Action Plans | | | | ■ | | | | | | | | | | | | |
| Appoint Project/ Quality Coordinator | | | | ■ | | | | | | | | | | | | |
| ISO 9001 training for coordinator | | | | ■ | | | | | | | | | | | | |
| Write procedures/ implement systems | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | |
| Internal Quality Auditor training | | | | | | | | ■ | | | | | | | | |
| Management review of ISO 9001 systems | | | | | | ■ | | ■ | | ■ | | | | | | |
| Contact ISO 9001 Assessment Bodies | | | | | | | | | ■ | | | | | | | |
| Quality Awareness Training (all staff) | | | | | | | | | ■ | ■ | | | | | | |
| Implement systems/ Internal Audits | | | | | | | | | | | | ■ | ■ | ■ | | |
| Formal ISO 9001 Assessment | | | | | | | | | | | | | | | ■ | |

European AIS certified based on ISO9001

ISO9001-2000 Implementation in ECAC AIS

- Albania
- Armenia
- Austria
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- FYROM
- Finland
- France
- Georgia
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Monaco
- Netherlands
- Norway
- Poland
- Portugal
- Republic of Azerbaijan
- Republic of Moldova
- Romania
- Serbia and Montenegro
- Slovak Republic
- Slovenia
- Spain
- Sweden
- Switzerland
- Turkey
- Ukraine
- United Kingdom



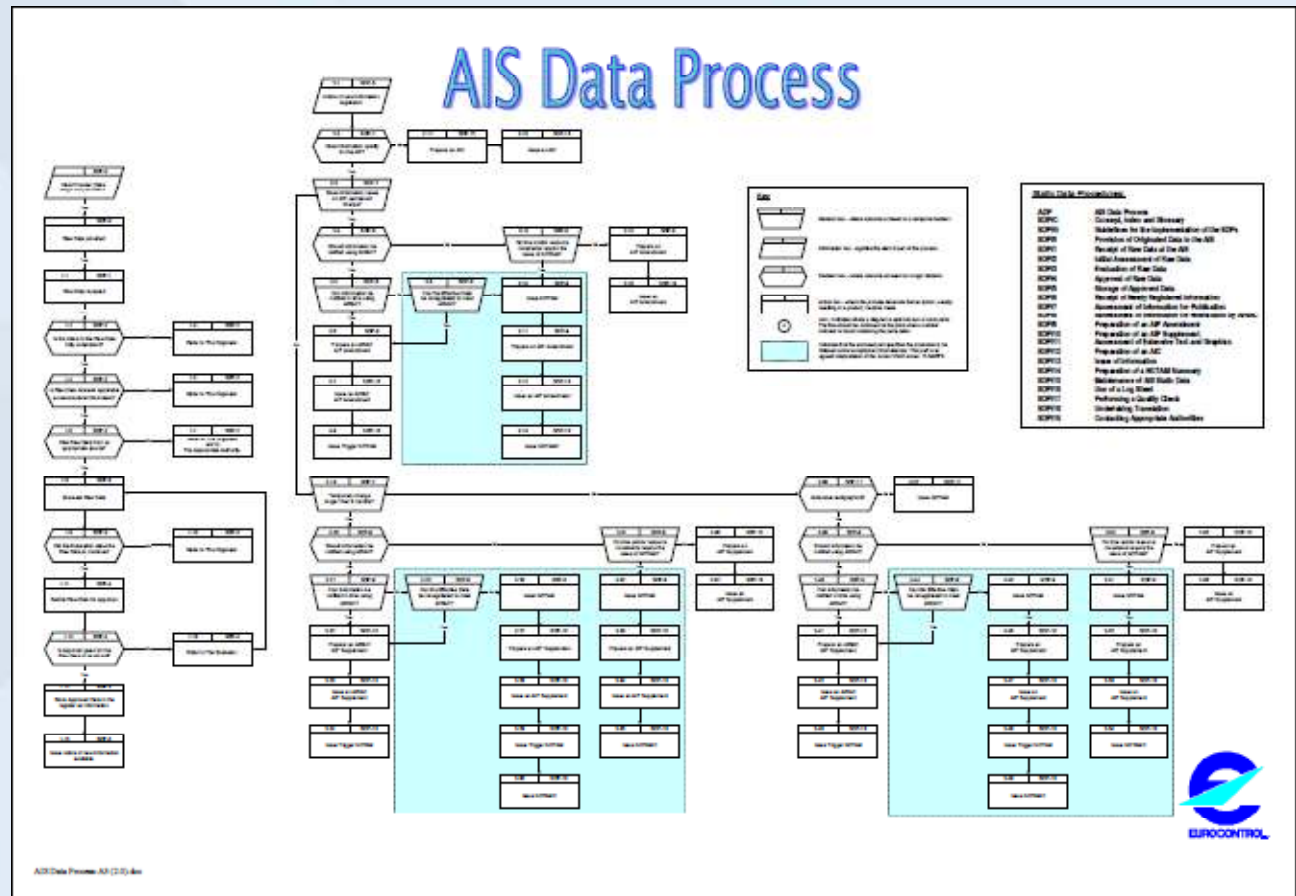
Lessons learned

- High level mandates are a must
- Misconception: ISO9000=Paper
- Management System (not a quality control system)
- Do it yourself
- Costs (rules of thumb)
 - 10% of working force
 - External fees on consultancy/training + Auditor
 - 18 months
- All would do it again !



Business Process Map

- AIS Data Process (ADP) and Static Data Procedures (SDP) represent "best" AIS practices for receipt, storage and publications of AIS Static Data.
- Provide State AIS with a baseline to which they can refer when developing their Quality Assurance processes.
- AIS Top12 KPI has been developed



- AIRAC, QMS, WGS84 and Annex 4,15 inventory – pre-requisites for transition from AIS to AIM
-
- AIRAC Adherence – an essential element ensuring that each person involved makes decisions based on the same information
 - Monitoring tool – pTracker, AIS AGORA, Awareness
 - SARPS compliance – users should now if anything is different
 - Annex 4,15 inventory – publication of differences
 - WGS84 – No PBN without WGS-84
 - QMS - customers can have confidence in a product in terms of its performance and safety
 - Documented processes, key performance indicators

Conclusions



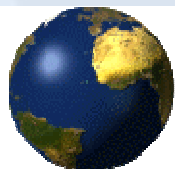
AIRAC Adherence
www.eurocontrol.int/aim/public/standard_page/qm_airacadh_intro.html



pTracker
AIS Publication postal delivery time tracking tool
www.eurocontrol.int/aim/public/standard_page/ptracker.html



Quality Assurance - ISO 9001
www.eurocontrol.int/aim/public/standard_page/qm_qa.html
AIS Data Process
www.eurocontrol.int/aim/public/standard_page/qm_sdp.html



WGS 84

WGS-84 Implementation
www.dqts.net/wgs84.htm



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