Regional Seminar/Workshop on CMA and SAST

September 2011

ICAO Electronic Safety Tools

Module 7

Contents

7.1 Introduction

7.2 ICAO online safety framework

7.3 Training plan

7.4 Safety Tools User Group (STUG)

7.5 Demonstration and hands-on exercise

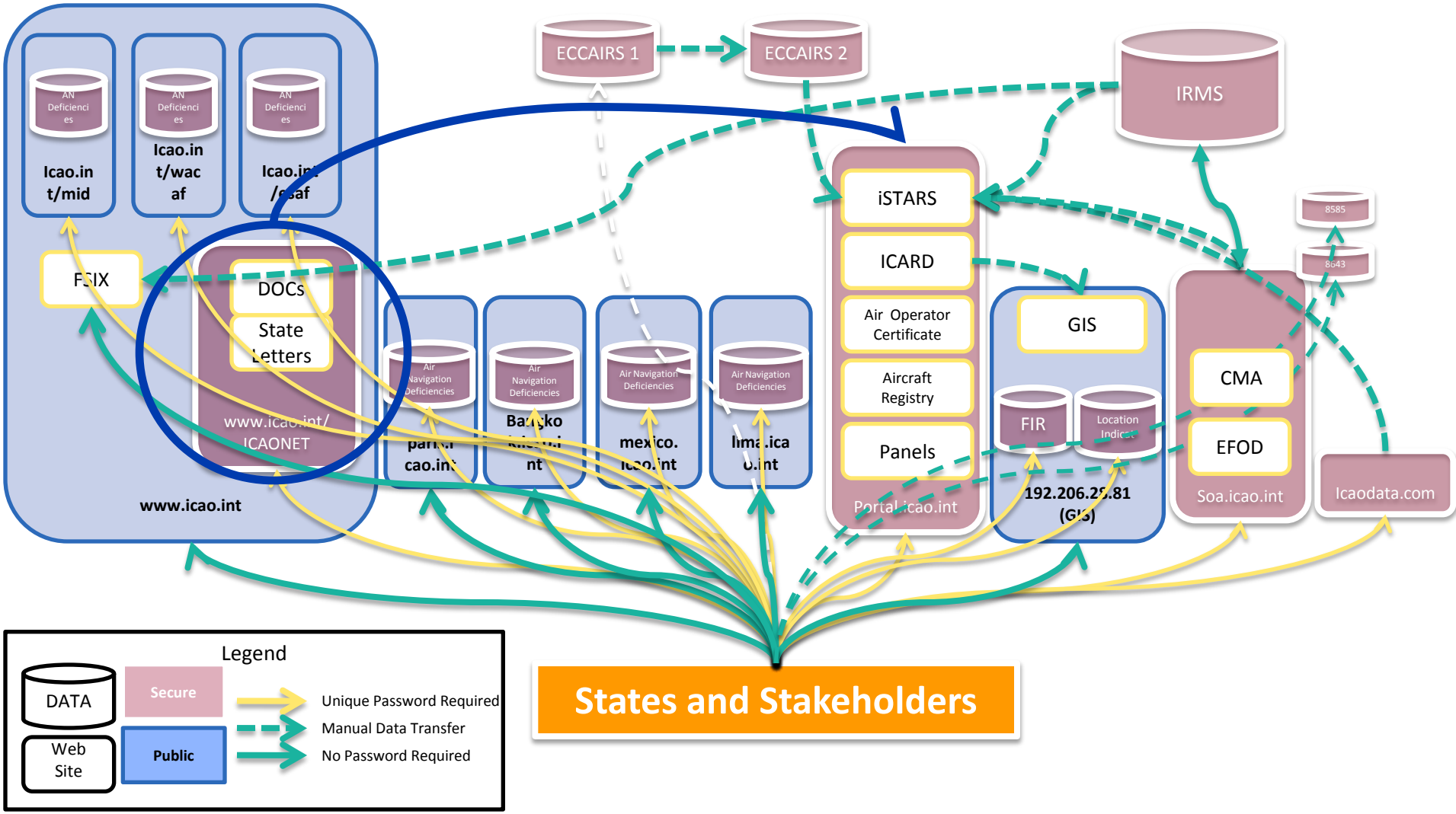
7.1 Introduction

- ✓ Background
- ✓ Safety and air navigation data
- ✓ Challenges and issues

Background

- The improvement of aviation safety continues to become **a more data-driven/focused effort**
- ICAO has reviewed and revised the processes and tools to provide the safety information **more efficiently through a collaborative framework that enables improved data collection and dissemination on sector-wide basis.**

Safety and Air Navigation Data



Challenges & Issues

How data is updated

- Complex Work Flows, not much on QA
- Duplicated efforts to update same data for different purposes

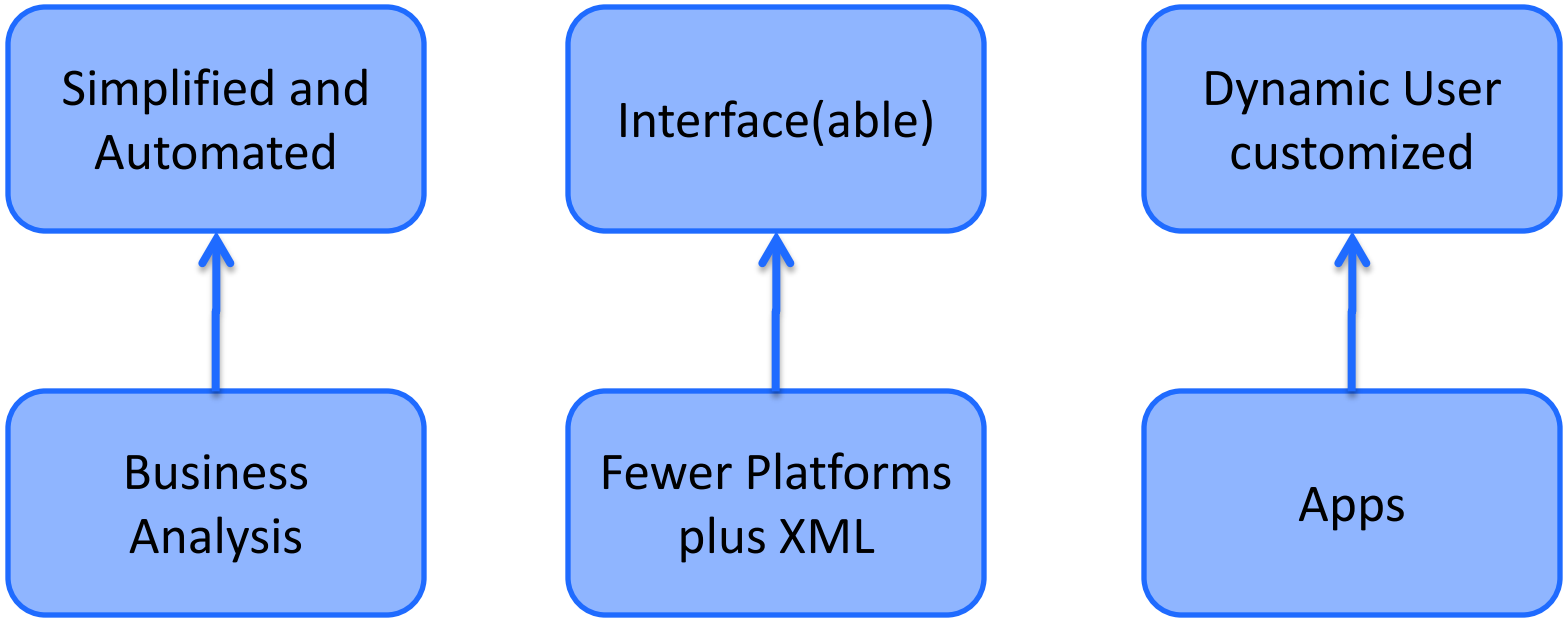
How data is kept

- Fragmented in different format and platform
- Not transferable Some are only on paper

How data is delivered

- By ICAO homeroom (mostly web based)
- Multiple User ID/Passwords

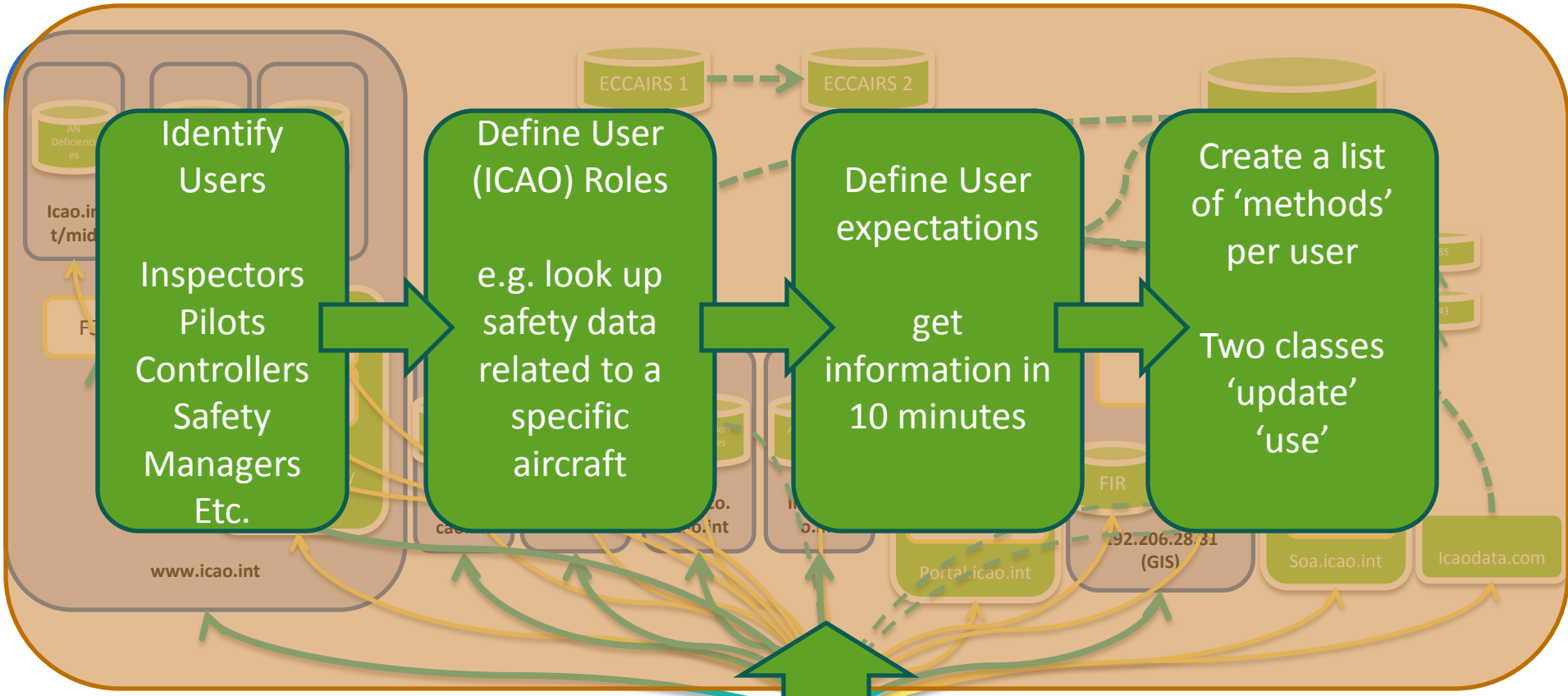
Possible ways to resolve issues



7.2 Online Safety Framework

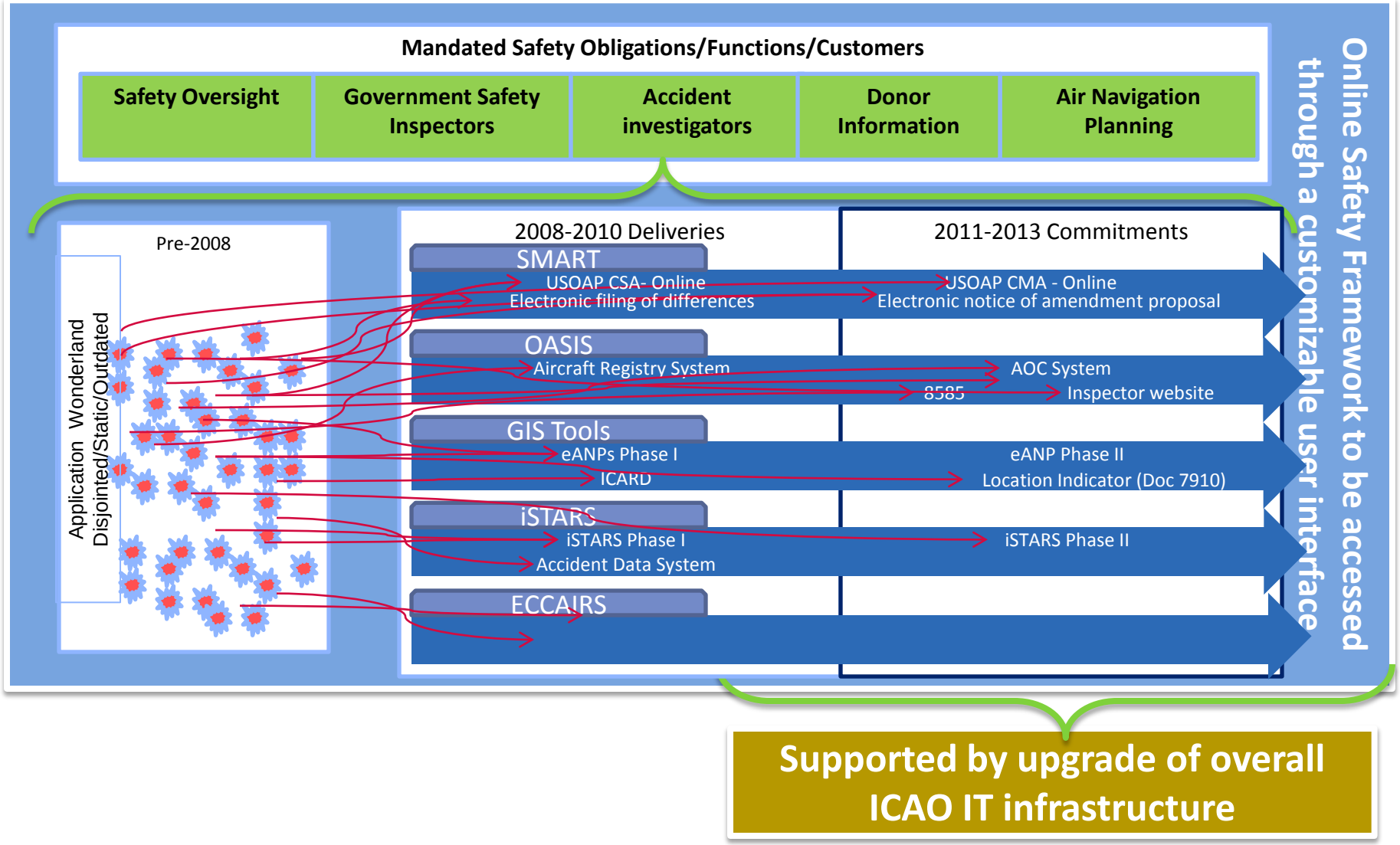
- ✓Overview
- ✓SMART
- ✓OASIS
- ✓GIS-tools
- ✓ECCAIRS
- ✓iSTARS

Overview

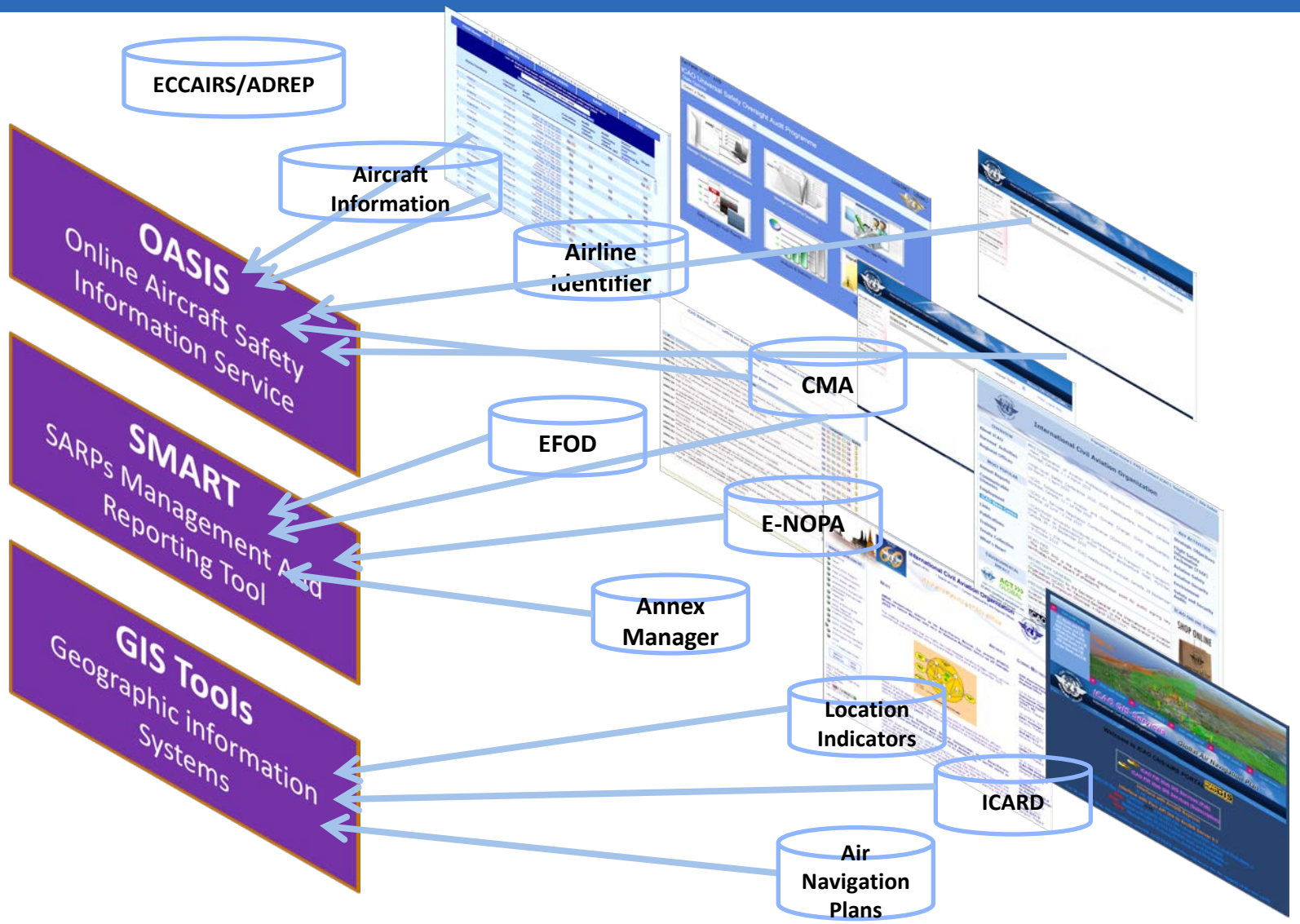


States and Stakeholders

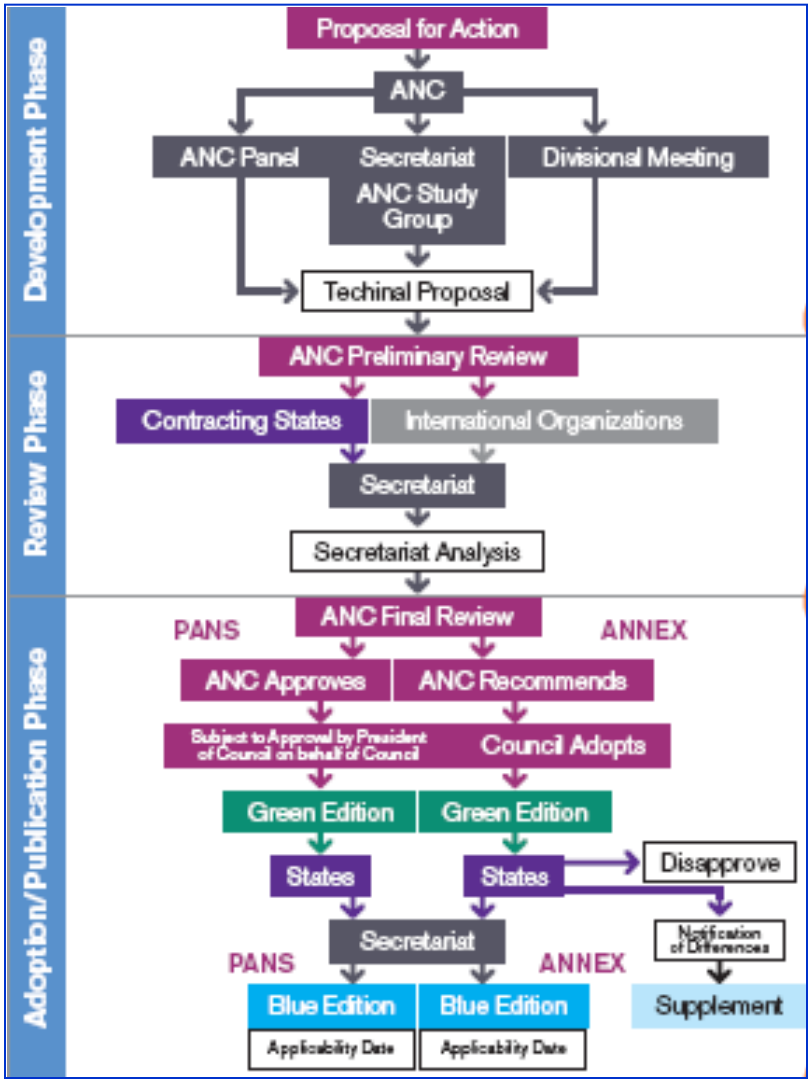
Overview


Mandated Safety Obligations/Functions/Customers
Safety Oversight
Government Safety Inspectors
Accident investigators
Donor Information
Air Navigation Planning
Online Safety Framework to be accessed through a customizable user interface
Pre-2008
Application Wonderland
Disjointed/Static/Outdated
2008-2010 Deliveries
2011-2013 Commitments
SMART
USOAP CSA- Online
Electronic filing of differences
USOAP CMA - Online
Electronic notice of amendment proposal
OASIS
Aircraft Registry System
AOC System
8585
Inspector website
GIS Tools
eANPs Phase I
ICARD
eANP Phase II
Location Indicator (Doc 7910)
iSTARS
iSTARS Phase I
Accident Data System
iSTARS Phase II
ECCAIRS
Supported by upgrade of overall ICAO IT infrastructure

Overview


ECCAIRS/ADREP
Aircraft Information
OASIS
Online Aircraft Safety Information Service
Airline Identifier
CMA
EFOD
SMART
SARPs Management And Reporting Tool
E-NOPA
Annex Manager
GIS Tools
Geographic information Systems
Location Indicators
ICARD
Air Navigation Plans

SMART
SARPs Management And Reporting Tools

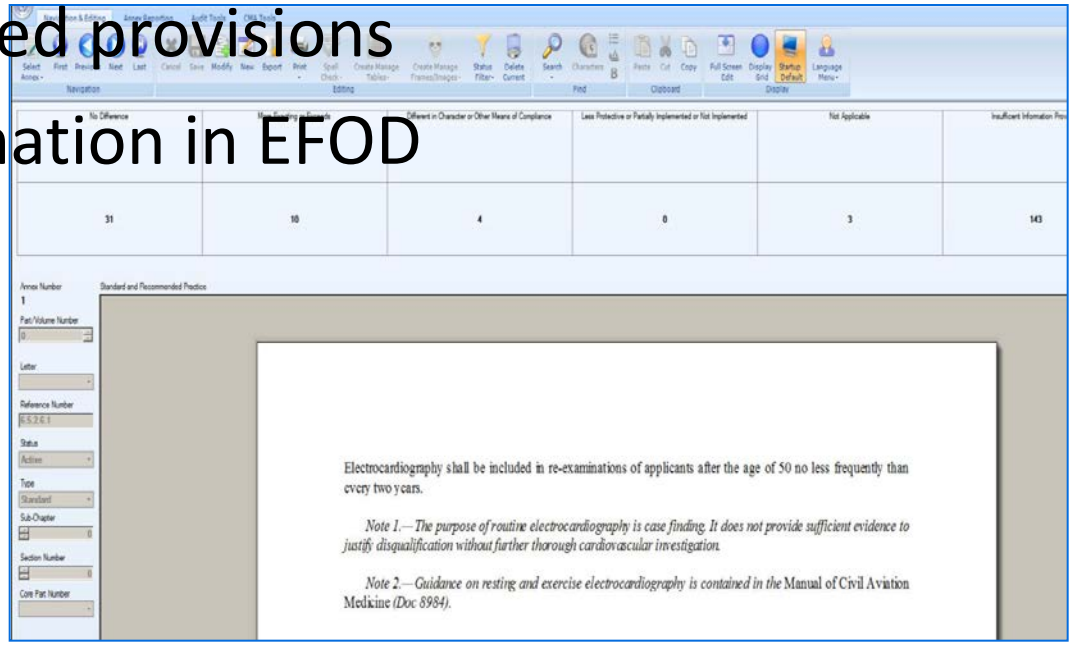


- A set of tools that will manage and facilitate following processes:
  - ✓ Management of Annexes (SARPs)
  - ✓ State letter consultation
  - ✓ Filing of differences
  - ✓ Continuous monitoring on level of States' compliance

SMART- Annex Manager

❑ ICAO to:

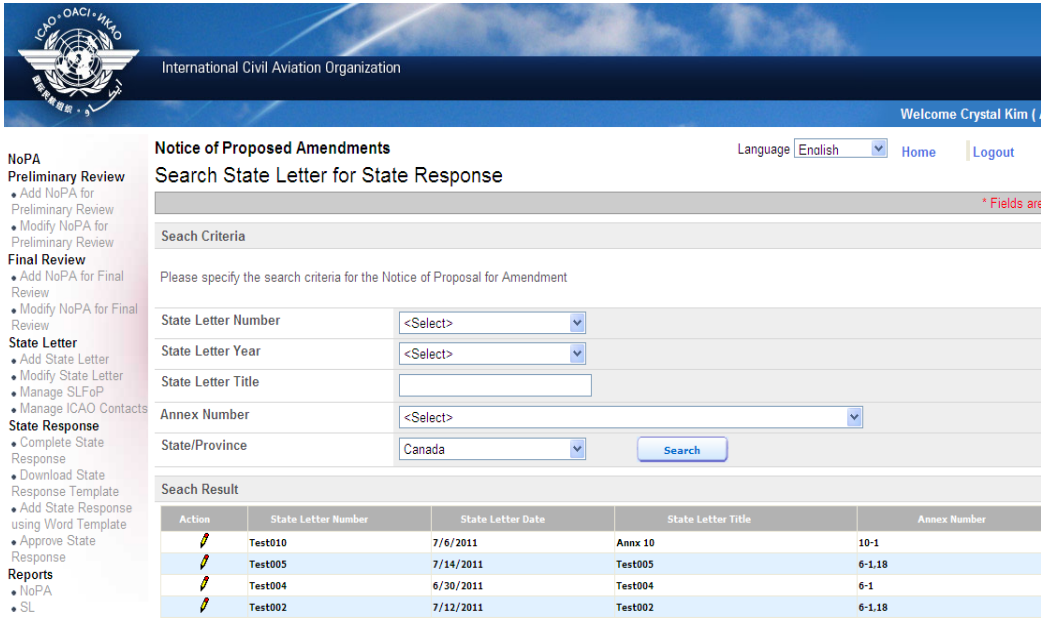
- ✓Replace paper-based management of SARPs
- ✓View global level of implementation
- ✓Trace history of amendments
- ✓Search for inter-related provisions
- ✓Update SARPs information in EFOD



SMART – ENOPA

Electronic Notice of Proposed Amendment

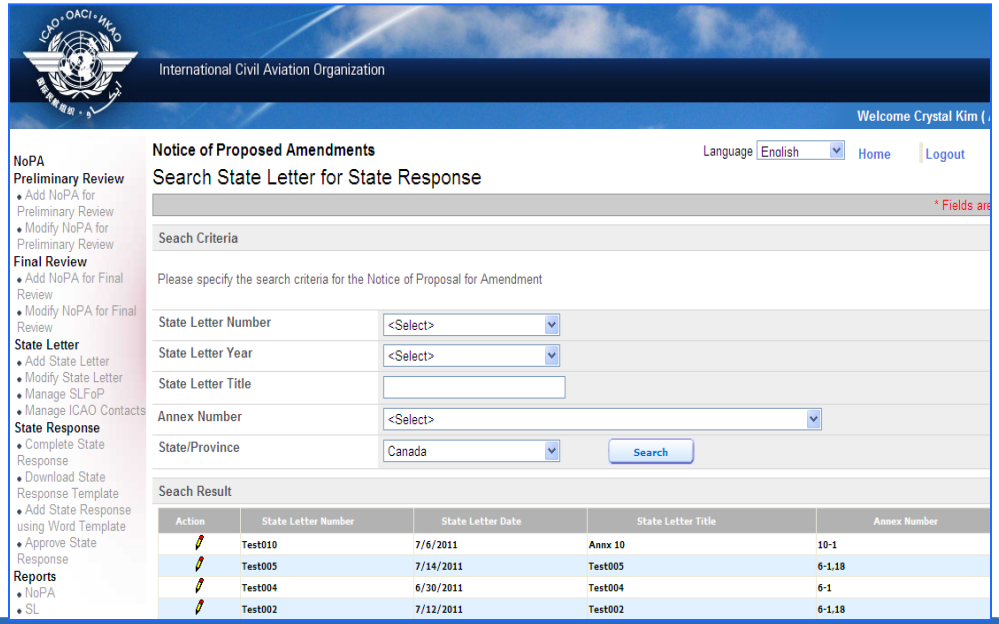
- **ICAO to:**
  - ✓Replace paper-based State letter processing
  - ✓Produce related working paper and State letter
  - ✓Generate various reports related to responses to ENOPA State letters



SMART – ENOPA

Electronic Notice of Proposed Amendment

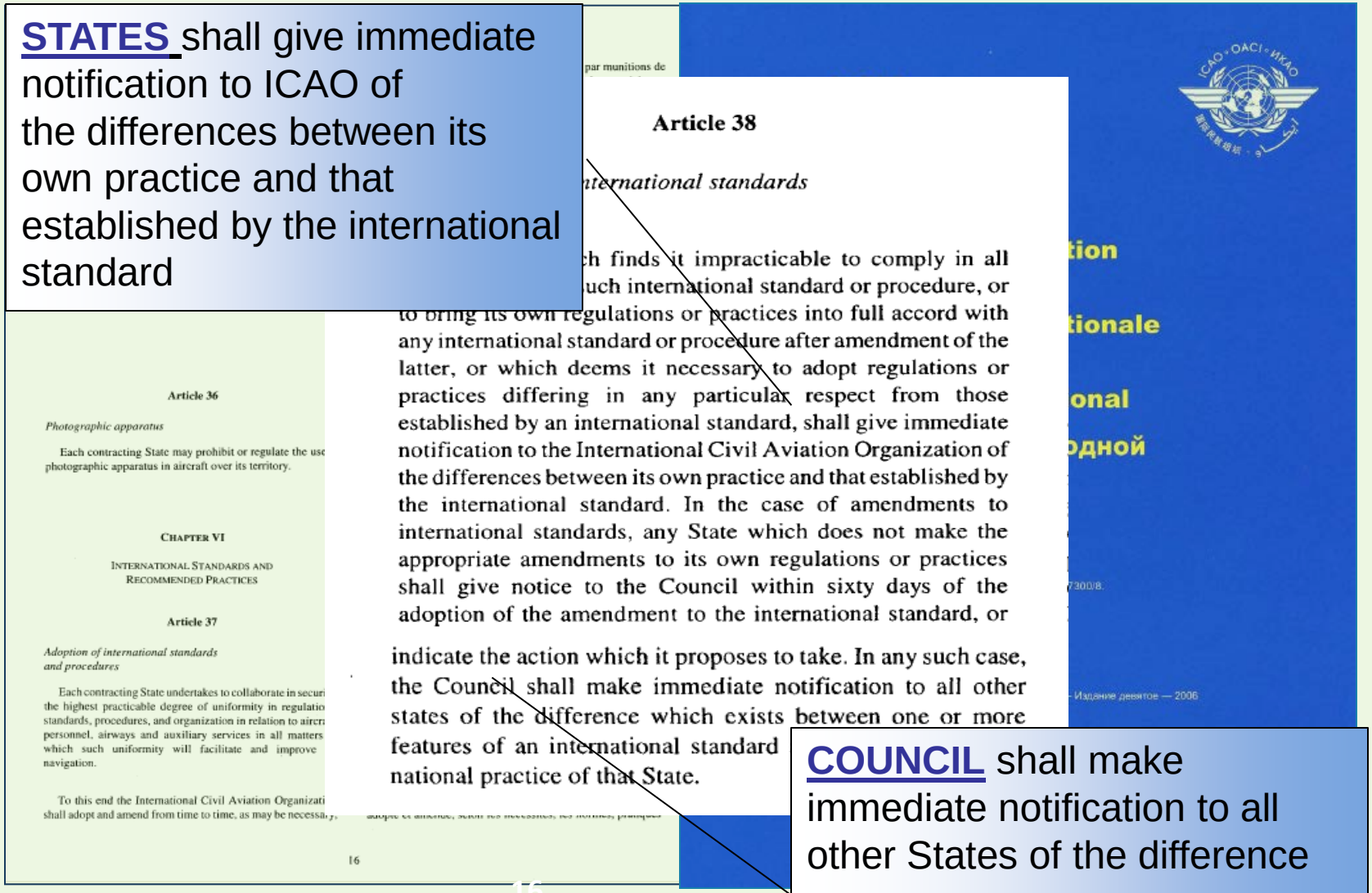
- **States to:**
  - ✓View amendments in progress
  - ✓Provide comments to State letter
  - ✓View history of State responses to amendments
  - ✓View other States' comments



SMART – EFOD

Electronic Filing of Differences

STATES shall give immediate notification to ICAO of the differences between its own practice and that established by the international standard



par munitions de

Article 38

...ternational standards

...ch finds it impracticable to comply in all ...uch 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 ... national practice of that State.

Article 36

Photographic apparatus

Each contracting State may prohibit or regulate the use ... photographic apparatus in aircraft over its territory.

CHAPTER VI

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

Article 37

Adoption of international standards and procedures

Each contracting State undertakes to collaborate in securi... the highest practicable degree of uniformity in regulatio... standards, procedures, and organization in relation to aircr... personnel, airways and auxiliary services in all matters ... which such uniformity will facilitate and improve ... navigation.

To this end the International Civil Aviation Organizati... shall adopt and amend from time to time, as may be necessa...

16

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...300/8.

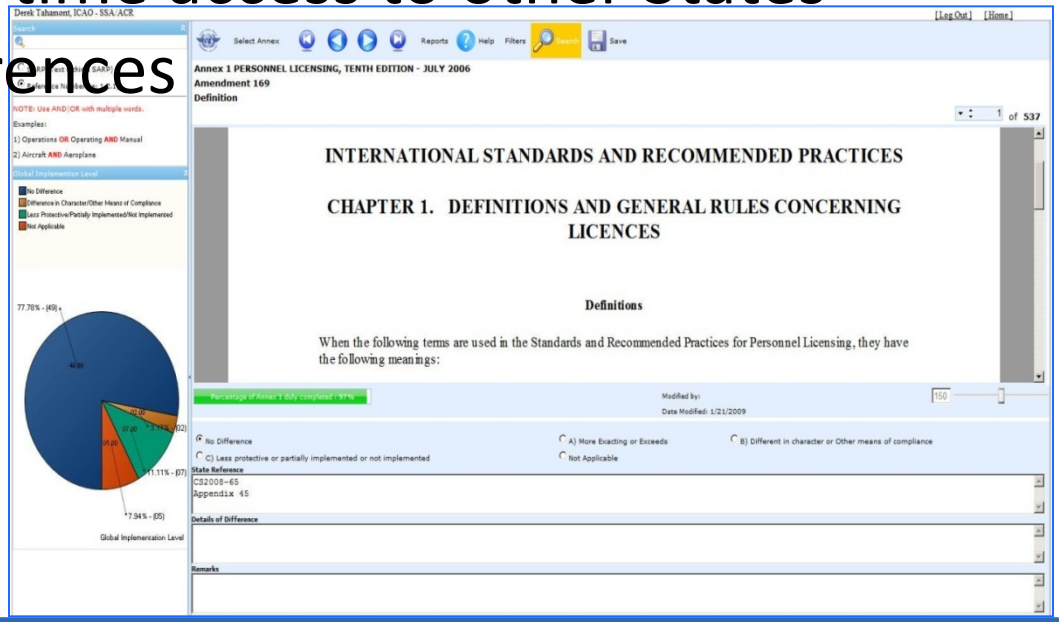
...Издание девятое — 2006

COUNCIL shall make immediate notification to all other States of the difference

SMART – EFOD

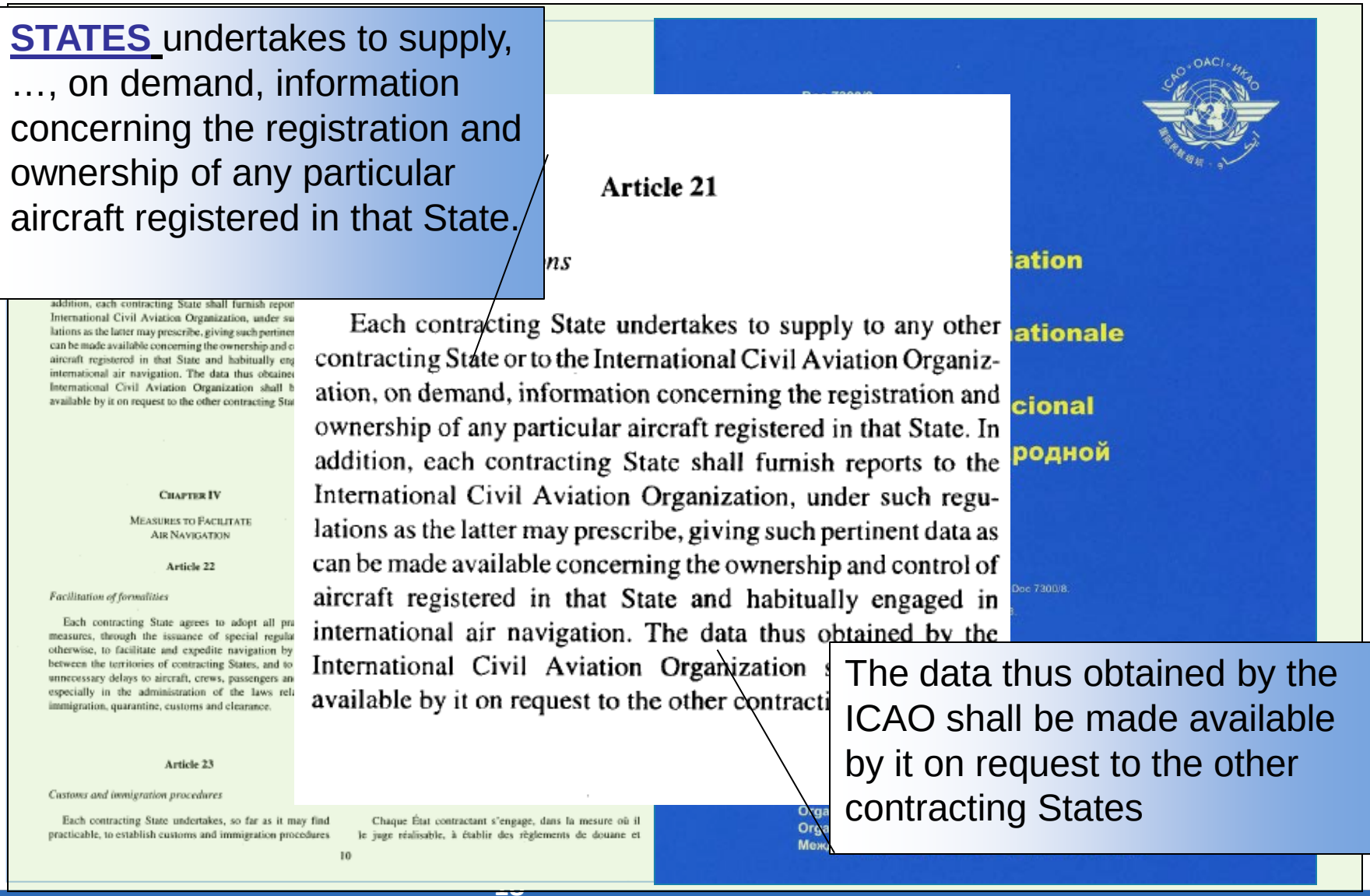
Electronic Filing of Differences

- **States and ICAO to:**
  - ✓Replace paper-based filing of differences
  - ✓ Generate various reports related to States' compliance and difference information
  - ✓ On-demand and real-time access to other States' compliance and differences



OASIS
Online Aircraft Safety Information System

STATES undertakes to supply, …, on demand, information concerning the registration and ownership of any particular aircraft registered in that State.



Article 21

Each contracting State undertakes to supply to any other contracting State or to the International Civil Aviation Organization, on demand, information concerning the registration and ownership of any particular aircraft registered in that State. In addition, each contracting State shall furnish reports to the International Civil Aviation Organization, under such regulations as the latter may prescribe, giving such pertinent data as can be made available concerning the ownership and control of aircraft registered in that State and habitually engaged in international air navigation. The data thus obtained by the International Civil Aviation Organization s available by it on request to the other contracti

CHAPTER IV

MEASURES TO FACILITATE AIR NAVIGATION

Article 22

Facilitation of formalities

Each contracting State agrees to adopt all pra measures, through the issuance of special regula otherwise, to facilitate and expedite navigation by between the territories of contracting States, and to unnecessary delays to aircraft, crews, passengers an especially in the administration of the laws rel immigration, quarantine, customs and clearance.

Article 23

Customs and immigration procedures

Each contracting State undertakes, so far as it may find practicable, to establish customs and immigration procedures

Chaque État contractant s'engage, dans la mesure où il le juge réalisable, à établir des règlements de douane et

10

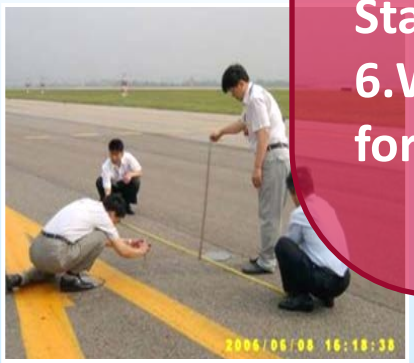
The data thus obtained by the ICAO shall be made available by it on request to the other contracting States

OASIS
Online Aircraft Safety Information System

- ❑Civil Aviation Authorities
  - ✓Inspectors
- ❑Air Operators
- ❑Regional safety oversight organizations (RSOOs)

Expectation : be informed of the safety related information by Aircraft

1.Look up Aircraft history
2.Who Registered a/c
3.Who issued AOC
4.What is the A/C capabilities
5.What are the difference filed by the State of Registry and Operators
6.What are the relevant audit results for the State of Registry and Operators



OASIS
Online Aircraft Safety Information System

- ✓ Look up Aircraft history
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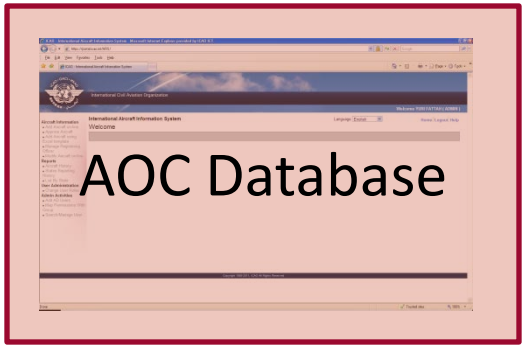
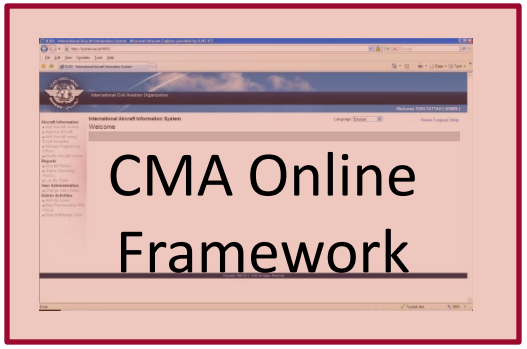




GIS (Geographic Information System) Tools

❑Primary Objectives

- ✓Enable electronic Air Navigation Planning
- ✓Provide safety information through correlation of data by common geographic reference

❑Secondary

- ✓Present non-safety related reference information on a map

GIS (Geographic Information System) Tools

- **Electronic ANP** : www.gis.icao.int/eanp
  - ✓Still under development but can be used to find latest ANPs
- **GIS Safety Tools**
  - ✓Partly embedded on iSTARS
  - ✓Language proficiency
- **Others**

ECCAIRS European Co-ordination Centre for Aviation Incident Reporting Systems

CHAPTER 8. ACCIDENT PREVENTION MEASURES

Note.— The objective of these specifications is to promote accident prevention by collection and analysis of safety data and by a prompt exchange of safety information, as part of the State safety programme.

Incident reporting systems

8.1 A State shall establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies.

8.2 A State shall establish a voluntary incident reporting system to facilitate collection of information on actual or potential safety deficiencies that may not be captured by the mandatory incident reporting system.

Note.— States are encouraged to establish other safety data collection and processing systems to collect safety information that may not be captured by the incident reporting systems mentioned in 8.1 and 8.2 above.

8.3 A voluntary incident reporting system shall be non-punitive and afford protection to the sources of the information.

Note 1.— A non-punitive environment is fundamental to voluntary reporting.

Note 2.— States are encouraged to facilitate and promote the voluntary reporting of events that could affect aviation safety by adjusting their applicable laws, regulations and policies, as necessary.

Note 3.— Guidance related to both mandatory and voluntary incident reporting systems is contained in the Safety Management Manual (SMM) *(Doc 9859).*

Note 4.— Attachment E contains legal guidance for the protection of information from safety data collection and processing systems.

Database systems and analysis — Preventive actions

8.4 A State shall establish and maintain an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies obtained, including that from its incident reporting systems, and to determine any preventive actions required.

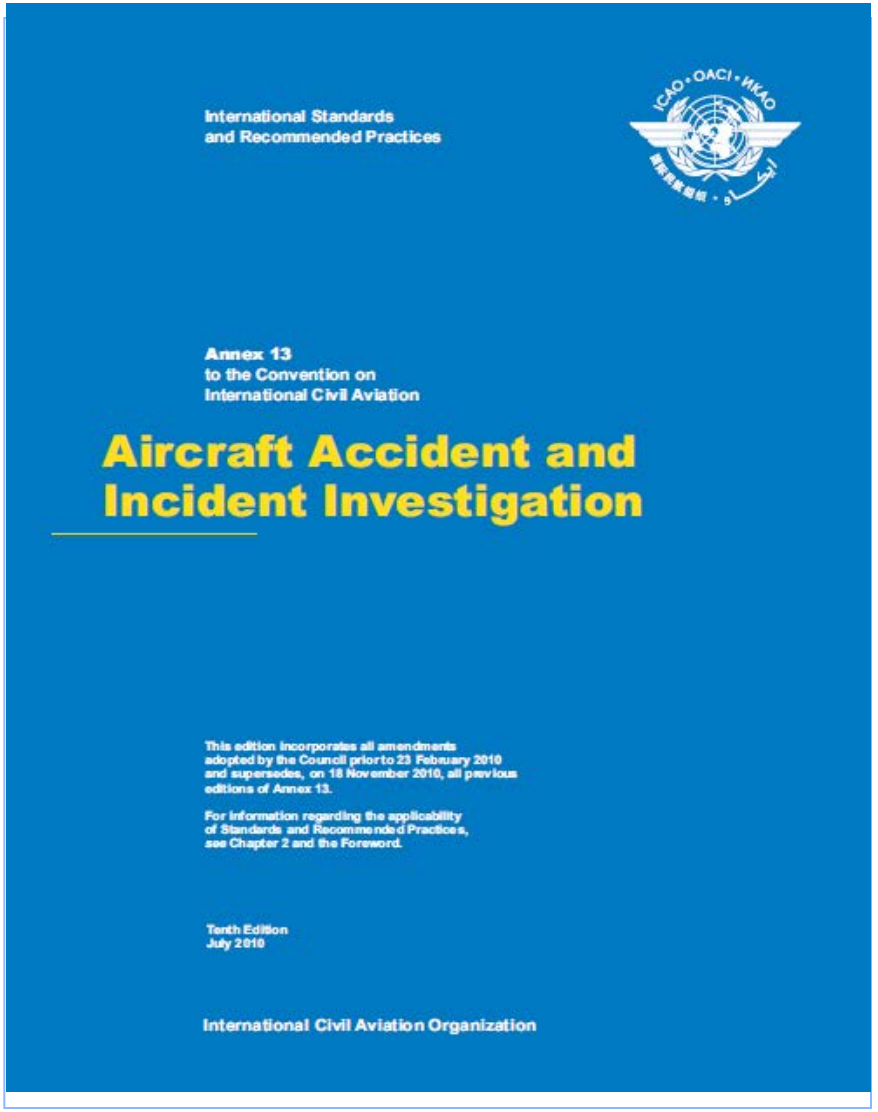
8.5 **Recommendation.—** *The database systems should use standardized formats to facilitate data exchange.*

Note 1.— Guidance material related to the specification for such databases will be provided by ICAO upon request from States.

Note 2.— States are encouraged to foster regional arrangements, as appropriate, when implementing 8.4.

Note 3.— Additional information on which to base preventive actions may be contained in the Final Reports on investigated accidents and incidents.

Note 4.— States are encouraged to use an ADREP-compatible system for accident/incident reporting as well as for collecting, storing, and disseminating relevant safety information.

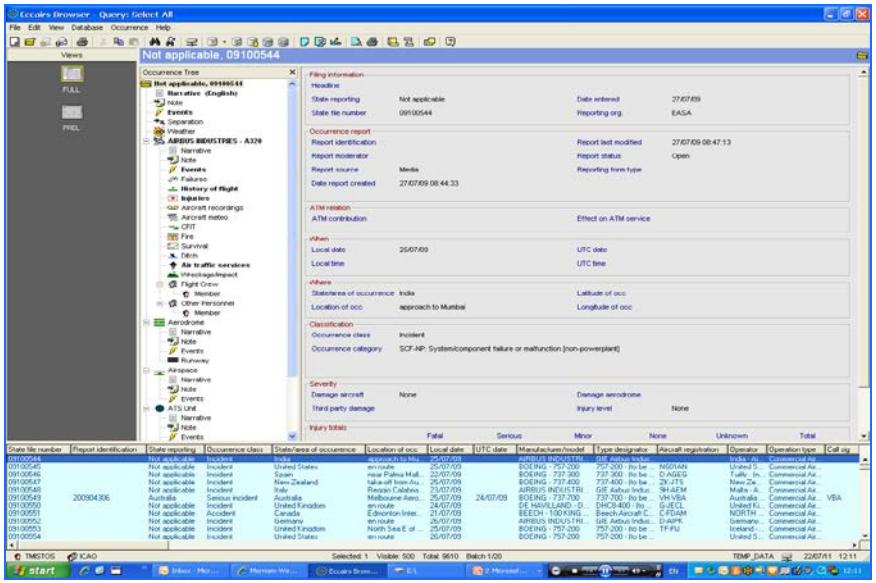


ICAO State Safety Programme (SSP) Framework

1. **State safety policy and objectives**
   - **1.1 State safety legislative framework**
   - 1.2 State safety responsibilities and accountabilities
   - 1.3 Accident and incident investigation
   - 1.4 Enforcement policy
2. **State safety risk management**
   - 2.1 Safety requirements for service providers SMS
   - 2.2 Agreement on service providers safety performance
3. **State safety assurance**
   - 3.1 Safety oversight
   - 3.2 Safety data collection, analysis and exchange
   - 3.3 Safety data driven targeting of oversight on areas of greater concern or need
4. **State safety promotion**
   - 4.1 Internal training, communication and dissemination of safety information
   - 4.2 External training, communication and dissemination of safety information

ECCAIRS European Co-ordination Centre for Aviation Incident Reporting Systems

- Implements fully the ADREP taxonomy
- Contains full suite of tools to collect, analyze, and exchange safety data
- Currently being used/evaluated by 53 States and 16 International Organizations representing all regions
- **FREE for:**
  - States
  - Int'l Organizations
  - Civil aviation related entities



- **Fully scalable**
  - ✓Could be run from a stand-alone PC or networked Application Server-DB Server-Client configuration

- Choice of back end databases eliminates need for new software investments, uses installed enterprise DBs
  - ✓Could run on Oracle, MS-SQL (any version) and/or stand-alone products like MSDE, SQL Express

ECCAIRS European Co-ordination Centre for Aviation Incident Reporting Systems

- Suite of products providing:
  - ✓Data entry and retrieval
  - ✓Analysis
  - ✓Utilities
  - ✓System tools
  - ✓Data integration
  - ✓Data dissemination

iSTARS (integrated Safety Trend Analysis and Reporting System)

- ICAO's initiative to strengthen **predictive safety analysis capabilities** to concentrate efforts on areas of greatest concern
  - ✓ Initially, focused on relationship between accident rates, traffic volume and USOAP results
  - ✓ In a longer term, multi-dimensional safety analyses using diverse data sources

iSTARS (integrated Safety Trend Analysis and Reporting System)

❑ Concept of operation

- ✓ create interoperable tools & analysis methods
- ✓ Integrate multiple data sources
- ✓ Leverage existing data & software applications

❑ Level of access

- ✓ Secretariat Site : Development/test site
- ✓ Secure Portal : Full access to restricted information
- ✓ Public : No access to restricted information and data

ICAO INTEGRATED SAFETY Stars TREND ANALYSIS AND REPORTING SYSTEM

iSTARS (integrated Safety Trend Analysis and Reporting System)

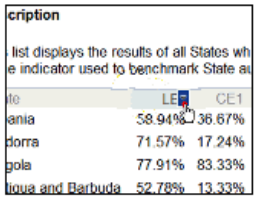
iSTARS

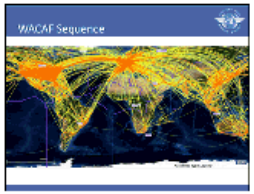
Secretariat > ANB > ISM > iSTARS

ICAO INTEGRATED SAFETY Stars TREND ANALYSIS AND REPORTING SYSTEM

Version: alpha
Released: September 28, 2010

Top Features





iSTARS

integrated Safety Trend Analysis and Reporting System

Contribute

Provide comments, maps, charts, documentation. Update accident data.

Query

View USOAP audit results, accident data and many more

Explore

View maps, reports, researchand analysis results as well as charts.

iSTARS
Query – All Recent Events

Category: ADREP
Last updated: 24 September, 2010
Datafields: 25
2.2 MB

EXPORT THIS VIEW

More views of ADREP

Icon	Name
	All Recent Events
	Runway Safety Events
	Occurrence Categories Causal Relationships

View charts using this data

Icon	Name
	Global Accident Rate
	Accident rates versus LEI by ICAO Region

ADREP

Accidents and Incidents by Year

Description

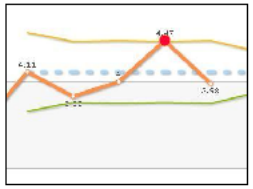
ADREP contains all official accident and incidents which were officially notified to ICAO by the States as per ICAO Annex 13 since 1st of January 2005. The records are grouped by year of occu

The list also contains unofficial reports, collected by ICAO through other sources. These unofficial reports (field called "Validity") still need to be validated by the State of occurrence.

Local Date	Headline	Aircraft Type	Aircraft Registration	Operator	Total Fatalities	Location of Occurence	State of Occurence	Occurence Class	Local Yea
Count = 7157					**Sum = 6,947**				
22/09/2010	Al Atheer Aviation Incident on 22/09/10 in near Jeddah, Saudi Arabia	AIRBUS INDUSTRIES >> A310	HZ-NSA	Al Atheer Aviation		near Jeddah	Saudi Arabia	Incident	2,010
15/09/2010	Landing gear collapse after hard landing	DE HAVILLAND >> DHC8	LN-WIF	Wideroe's Flyveselskap A/S		Stokka	Norway	Accident	2,010
13/09/2010	CONVIASA Accident on 13/09/10 in 7nm from VOR GNA, Venezuela	AVIONS DE TRANSPORT REGIONAL >> ATR 42-300	YV1010	CONVIASA	17	7nm from VOR GNA	Venezuela	Accident	2,010
12/09/2010	Left wing struck vegetation next to the road on landing.	CESSNA >> 402	ZS-LXB	Private		Public road R64 Dealsville	South Africa	Serious incident	2,010
10/09/2010	Airprox SWR75PE/A939	SAAB >> 2000	HB-IZJ	DARWIN AIRLINE SA		Lugano CTR	Switzerland	Serious incident	2,010
10/09/2010	Airprox SWR75PE/A939	PILATUS >> PC-7	A939	Swiss Air Force		Lugano CTR	Switzerland	Serious incident	2,010
09/09/2010	Rejected takeoff due to engine nr.4 stall with engine nr.2 stall during thrust reverse action.	ANTONOV >> AN-124	RA82079	Volga-Dnepr		LIMF	Italy	Serious incident	2,010

Done | Trusted sites | 100%

iSTARS
Explore – Global Accident Rate



Category: Charts
Created: April 2010
Published: HLSC, April 2010
Author: Marco Merens

View more charts

Icon	Name
	LEI by State
	LEI by State (dynamic)
	Accident rates versus LEI by ICAO Region
	LEI vs Traffic
	Occurence Category Relationship

View data used in this chart

Icon	Name
	All Recent Events

CHARTS

Back to Explore >

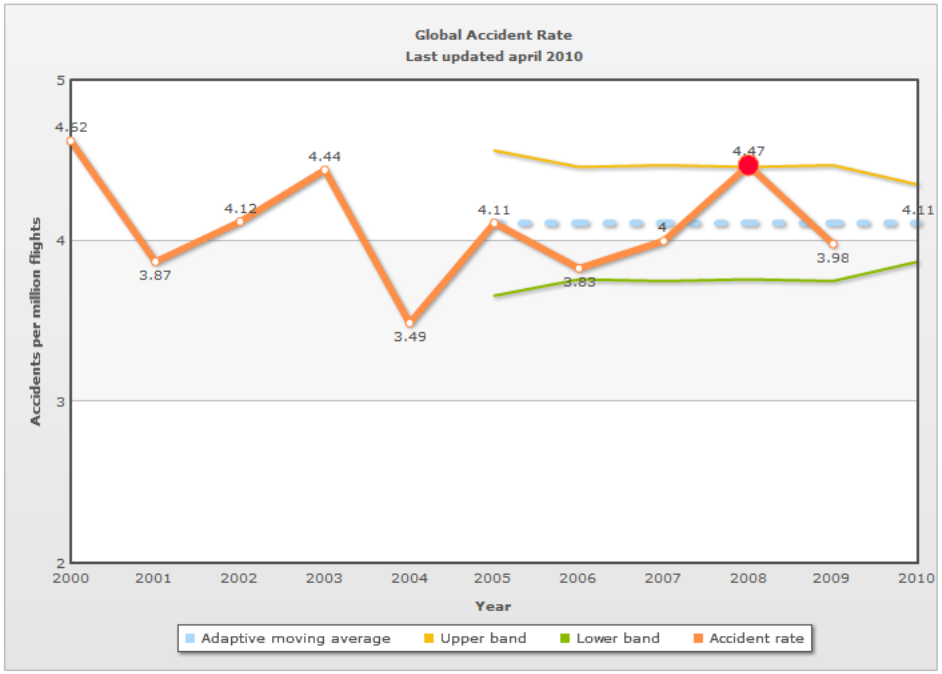
Report a problem >

Global Accident Rate

Description

This linechart shows the trend of the global accident rate. Only commercial scheduled flights were taken into account, including passenger and cargo flights. Accidents are as defined by Annex 13, including fatal and non fatal accidents.

The chart is dynamic and can only be captured through the built-in print screen function (screenshot) or any other screen capture utility you may have installed.



Done
Trusted sites
100%

7.3 Training Plan

Training Plan

- **Online training** (2011~2012)
  - ✓ Help files, tutorial video, CBT training
- **On-site training**
  - ✓ upon request by State(s) and on a cost-recovery basis

Tools	Duration	Note
ECCAIRS (Technical)	3 days	Available now
ECCAIRS (End User)	5 days	Available now
ICARD	3 days	Available now
SMART + CMA online Framework + iSTARS	5 days	To be available in 2nd half of 2012
OASIS	2 days	
EANP	5 days	

7.4 Safety Tools User Group

Safety Tools User Group

❑ Scope

- ✓ Provide valuable input for new and/or enhanced changes for the electronic safety tools
- ✓ Participate in the development of user requirements and testing of B-versions

❑ Membership

- ✓ Nominated representatives from States and international organizations

❑ Reference

- ✓(State letter AN2/28-11/58)

7.5 Demonstration & Hands on exercise

- ✓ ICAO Portal
- ✓ CC/EFOD
- ✓ ARS
- ✓ iSTARS

ICAO portal

- After the exercise, participants will be able to:
  - ✓Request for an account to access ICAO portal
  - ✓Request for an access to various Groups of information system available on ICAO portal

CC/EFOD

- After the exercise, participants will be able to:
  - ✓Log-in to application
  - ✓Navigate the user interface
  - ✓ Search a specific SARP by reference number/text
  - ✓ Search SARPs affected by the latest amendments
  - ✓Generate and download different types of reports

ARS

- After the exercise, participants will be able to:
  - ✓Log-in to application
  - ✓Navigate user interface
  - ✓Search aircraft information
  - ✓Produce reports

iSTARS

- After the exercise, participants will be able to:
  - ✓Log-in to application
  - ✓Navigate user interface
  - ✓Understand types of information in iSTARS (Accident, USOAP, Statistics, etc)
  - ✓Search/filter specific information by subject

ICAO

Uniting Aviation on

Safety | Security | Environment