



Towards AIXM & Electronic Chart Implementation

Challenges and Best
Practices

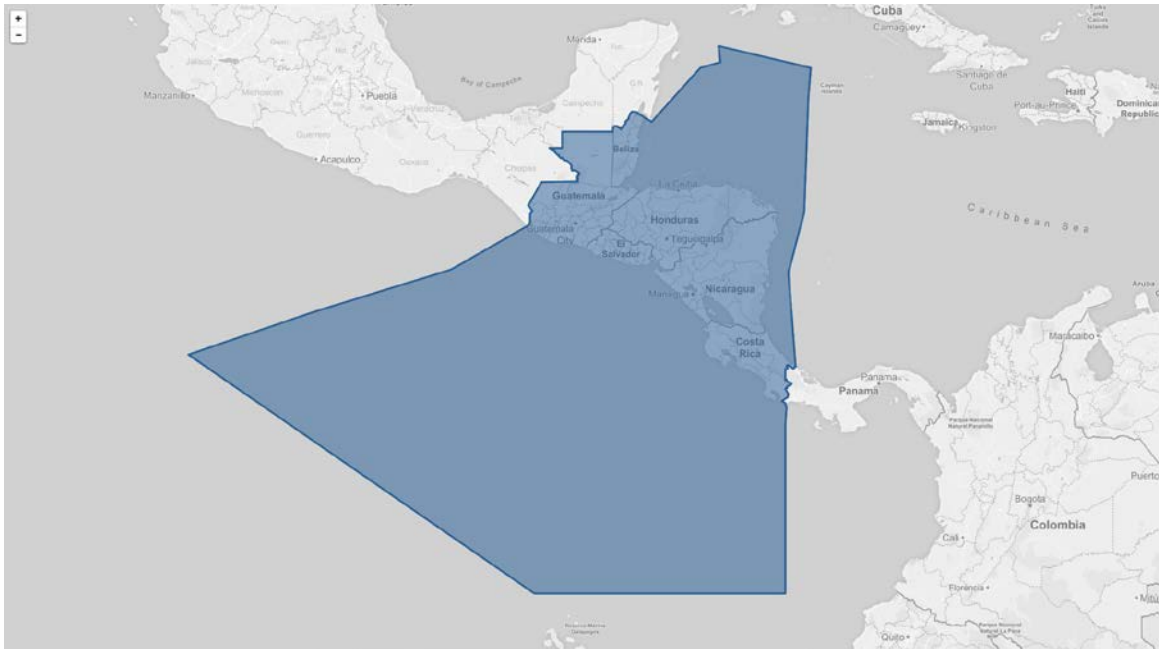




About COCESNA

COCESNA is an International
Organisation for Regional
Integration in Central America

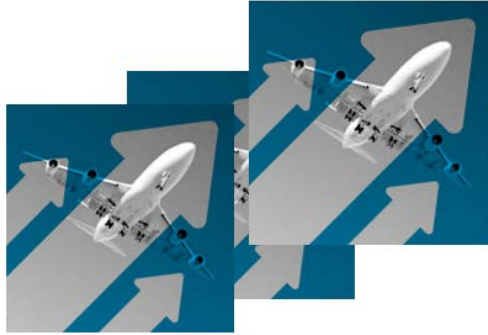
COCESNA is the ANSP for Upper
Airspace over Belize, Costa Rica,
Guatemala, El Salvador,
Honduras and Nicaragua



About COCESNA

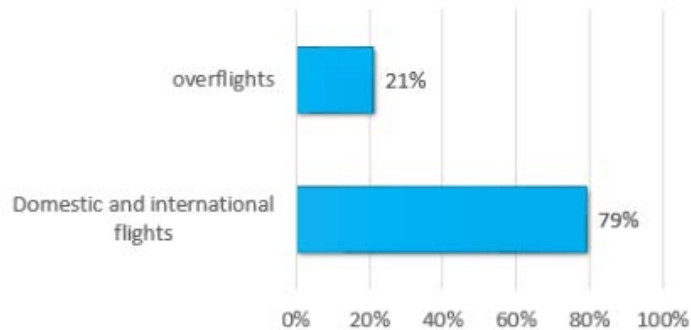
About 2,934,357 km² of Airspace

Seamless Sky since 26 February 1960
(Upper Airspace CENAMER)

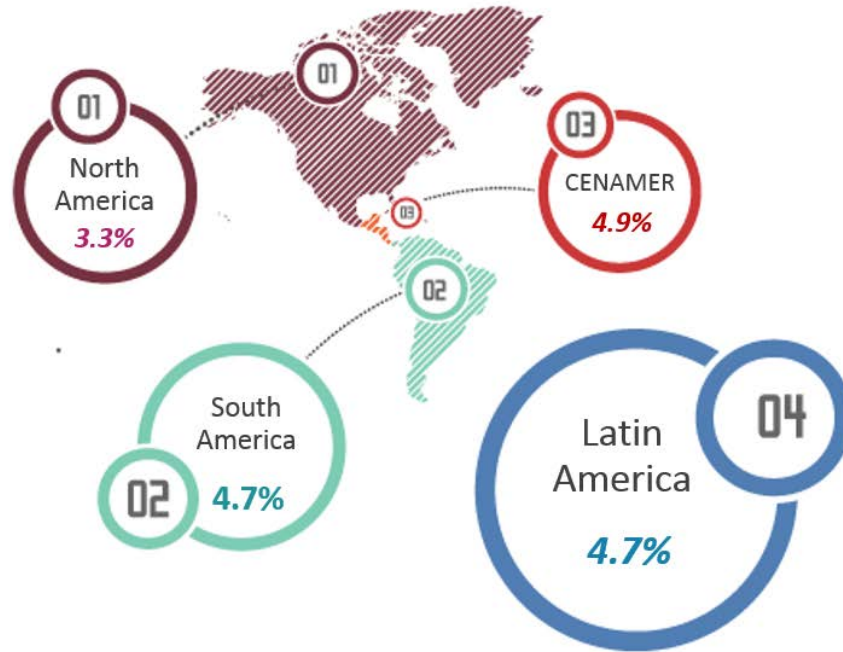


15,000 aircraft movements per month

Air Traffic Distribution



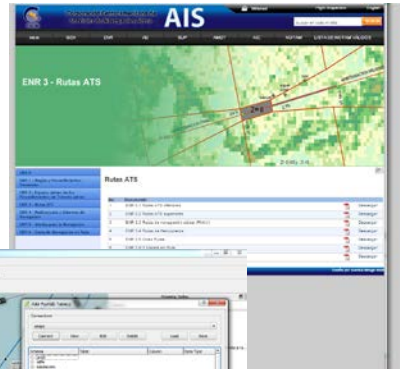
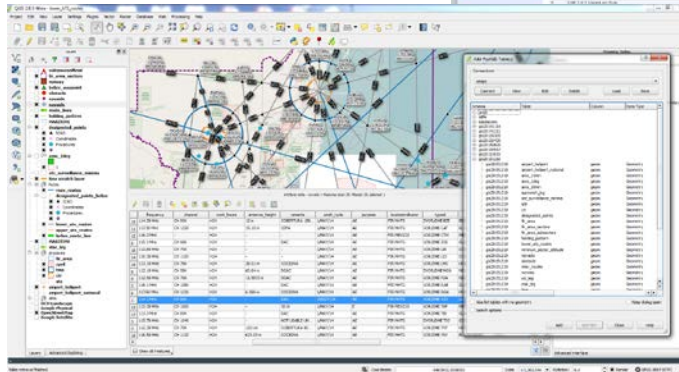
Regional Growth Highlights



Aeronautical Information Management at COCESNA

AIM
COCESNA

NOTAM International Office (NOF)
AIP Publication
Cartography
GIS
PANS-OPS

A screenshot of an AIP (Aeronautical Information Publication) table. The table is titled 'AIP CONTINUUM' and 'ENR 3.1.4'. It contains a grid of data with columns for 'AIP Item', 'AIP Item Description', 'AIP Item Status', 'AIP Item Type', 'AIP Item Category', and 'AIP Item Sub-category'. The table lists various AIP items and their corresponding details.



By agreement of the Member States: Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, from November 5th 1998 at 0001UTC it was delegated the authority to provide the Aeronautical Information Service (AIS) of the International NOTAM office (NOF) for the Central America Flight Information Region (FIR) to the Corporación Centroamericana de Servicios de Navegación Aérea (COCESNA).

AIM
COCESNA

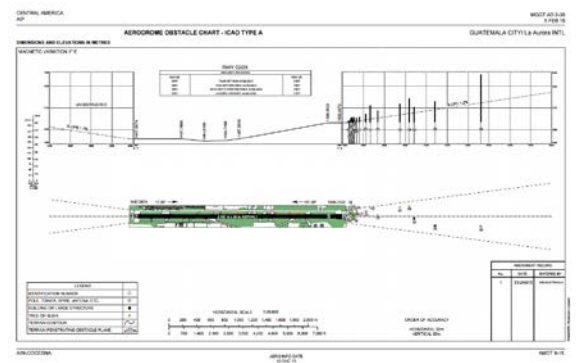
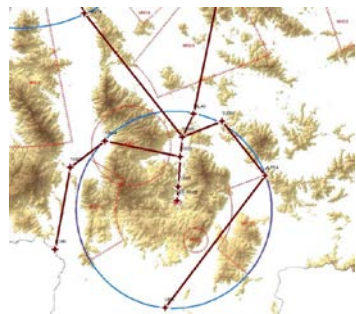
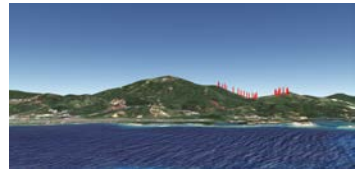
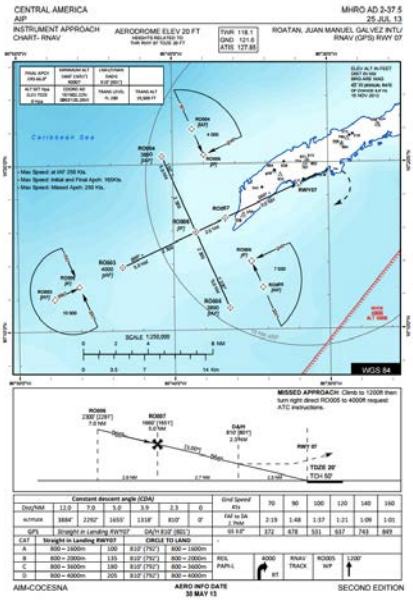


AIM CENTRAL AMERICA

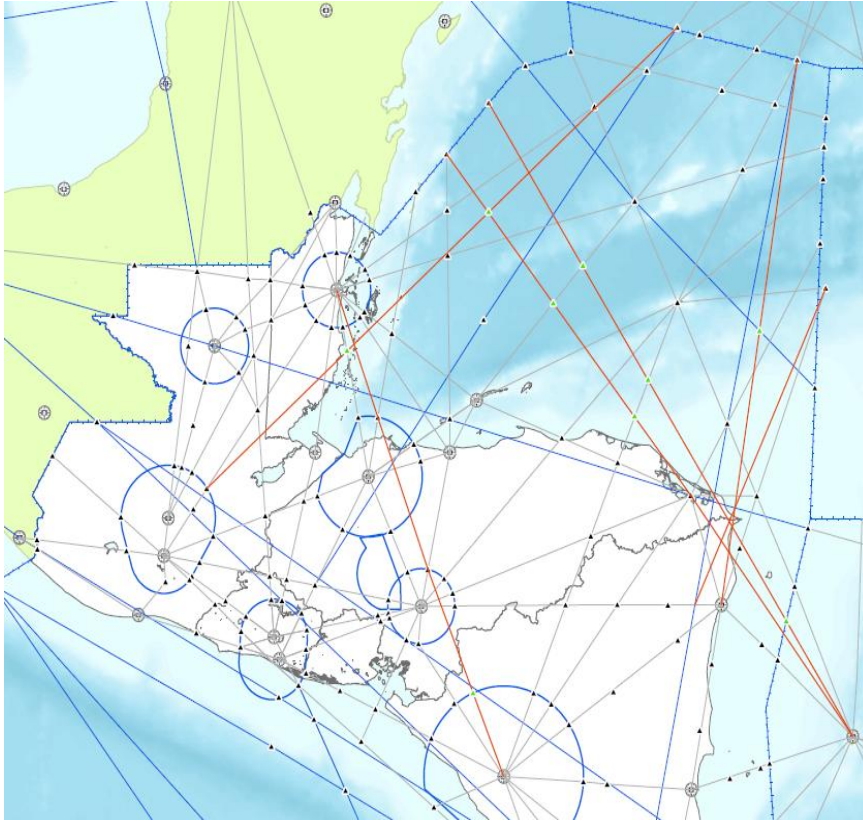
Each COCESNA member State
has their own production
system

Mainly traditional paper based

Different tools for Cartography

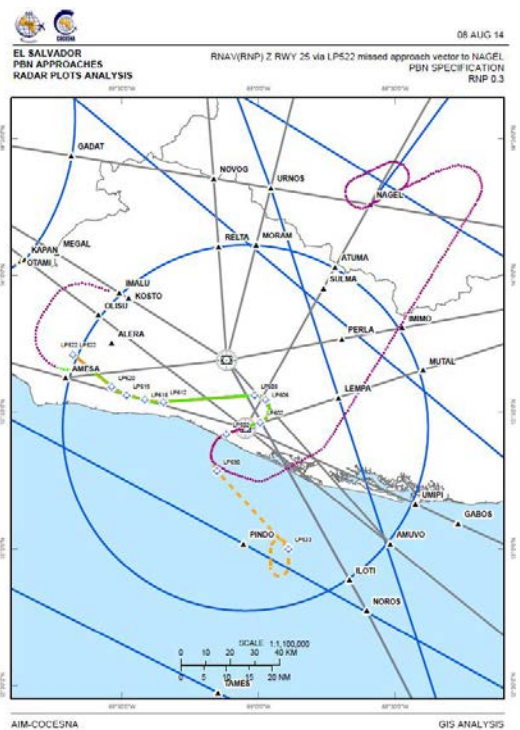
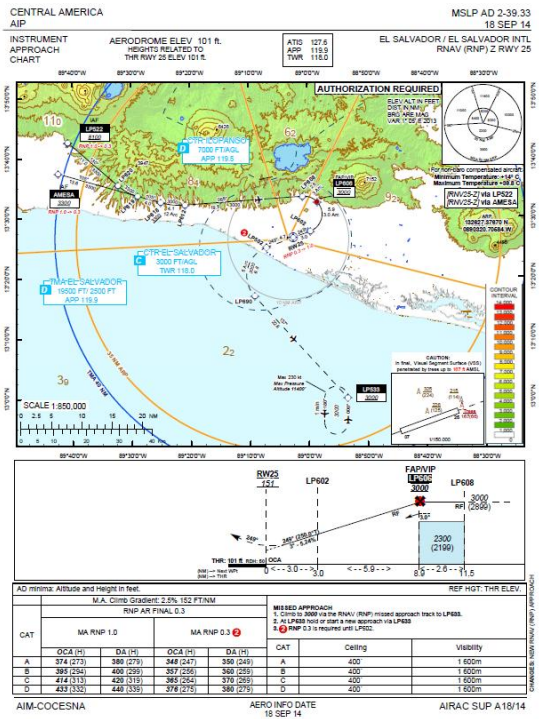


Current AIP of Member State



**AIM
CENTRAL
AMERICA**

Current COGESNA Cartography



AIM CENTRAL AMERICA

Current COCESNA Cartography



Elaboracion de Notam Nuevo

Prioridad: GG Fecha Actual: 111518

Destinatarios:
Para:
Cc:

Originador: MHTGZPZX Datos Originador:

Serie: Numero: 16 Año: Tipo NOTAM: NUEVO

Linea de Calificativos: Transito K Inferior 125 N 0946
Objetivo K W 09004
Codigo K K KK Alcance K Superior 450 RD 855

Lugar/Aerodromo: MHTG FIR Perodo Desde: 1604111518 Perodo Hasta: EST/PERM

Horario: Texto del NOTAM
CHKLST FIR CHKLST

Limite Inferior: 12500 FT Limite Superior: 45000 FT AMSL

AIM
CENTRAL
AMERICA

Current FPL and NOTAM system



Disconnected DB
Currently each system has its own DB
and don't speak to each other, no
standard format to Exchange
between each other

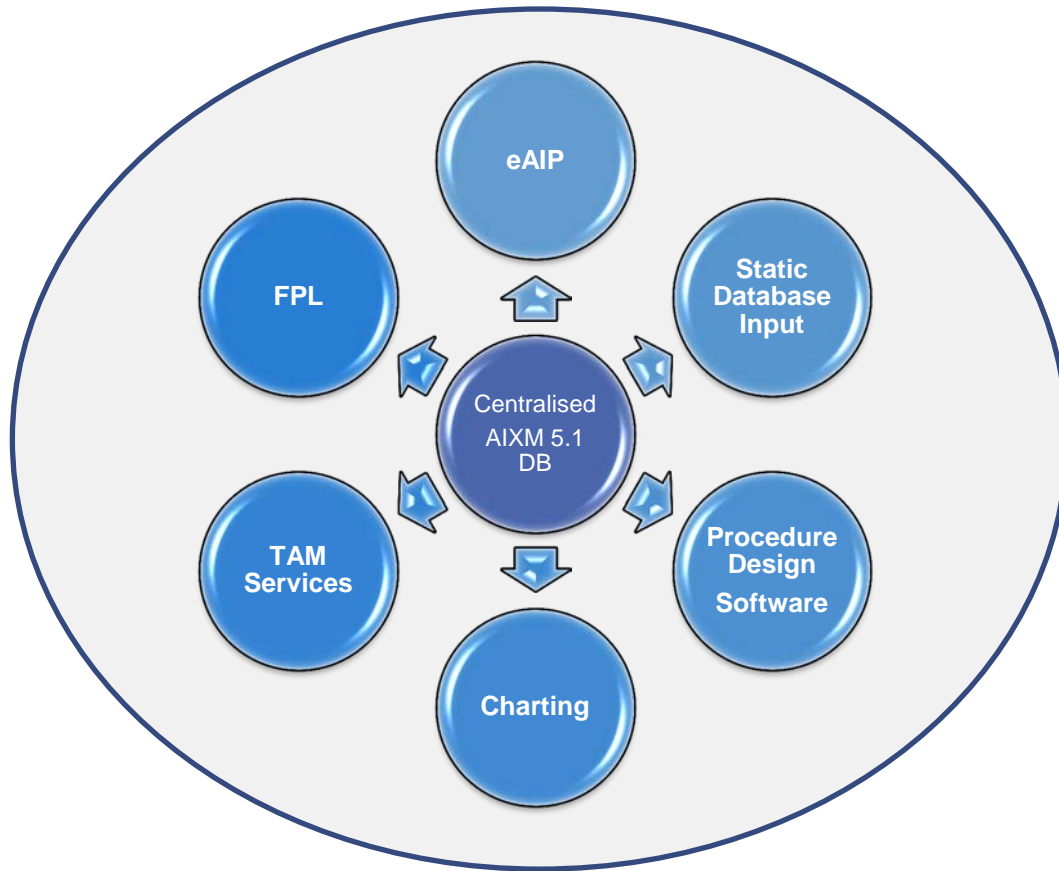


Procurement for a new AIXM 5.1 based system started on 20 15

Transitioning to new technologies during 20 16

Investment in new technologies, training and workflows

**Evolution
to AIXM**



Evolution to AIXM

My Airbase

Manage Task: Amendment task (Diffusion phase)
Amendment task (Diffusion phase)

Publication date: 2015-03-05
Effective date: 2015-04-16
Type: AIRAC (Number:1505 Days:42)
State: MEXICO
Revision: 1505_AIP

Take Ownership
End
Back

FIRST AIP

QUIET working → NOTICE → GENERATION → VALIDATION → APPROVAL → PUBLISH → DIFFUSION

Owner: _____

Resources
Resources found:

Editor: Information => The change Tracking is activated

File Edit Find Project Perspective Options Tools eAIP Document Window Help

Grey cells Add List

Attributes

Attribute Value

Page-break	None
PageNumber	
Remarks	
Updated	No
Updated-ref	
Updated-remark	
Visibility	None
abbr	
align	
allow	
char	
charoff	
class	
collaps	16
headers	
id	
name	z
scope	

Attributes Model

Elementa

id

- e:Abbreviation
- e:Address
- e:Date-time
- e:Deleted
- e:Figure
- e:Graphic-file
- e:Itemized
- e:Location
- e:Title
- e:xa
- e:abr
- e:width
- e:width
- e:xsm
- e:xol
- e:xip
- e:xtapan
- e:xtabing
- e:xtabing

Caret Before After

CO Elements Entites

REGLAS Y PROCEDIMIENTOS GENERALES

I. Protección de personas y propiedades

1.1 En ningún caso el piloto conducirá la aeronave en forma negligente o temeraria de manera que ponga en peligro la vida o propiedad ajenas.

1.2 Altura mínima de seguridad

1.2.1 Excepto cuando sea necesario para aterrizar o despegar, o cuando se tenga permiso de la autoridad aeronáutica, las aeronaves no volarán en ciudades, pueblos o lugares habitados, o sobre una reunión de personas al aire libre, a menos que lo hagan a una altura suficiente que le efectuar un aterrizaje sin peligro para las personas o la propiedad de terceros en la superficie.

1.2.2 La altura mínima de seguridad a la cual no han de tenerse una perturbación de ruido ni riesgos innecesarios para las personas y los bienes ni (1000 pies) por encima del obstáculo más elevado dentro de un radio de 600 m (2000 pies) sobre ciudades, áreas densamente pobladas partes será de por lo menos 150 m (500 pies) sobre el terreno o agua.

1.2.3 No se volará por debajo de puentes o construcciones semejantes ni por debajo de líneas de alta tensión y antenas, a menos que se cuente con autorización aeronáutica.

1.2.4 Las aeronaves en vuelo de crucero se ajustarán a las alturas y niveles señalados en las Reglas de Vuelo Visual (VFR) y Reglas de Vuelo Instrumental (IFR).

1.3 Excepto cuando se obtenga permiso previo de la autoridad aeronáutica y se cumplan las condiciones y requisitos prescritos, ninguna aeronave efectuará vuelos acrobáticos:

- Vuelos acrobáticos;
- Vuelos de salto en paracaídas;
- Vuelos de aerofurgación;
- Vuelos en condiciones simuladas por instrumentos;
- Vuelos en formación;
- Vuelos en globos libres tripulados o no;
- Lanzamiento de objetos;
- Vuelos de remolque a otras aeronaves u objetos.

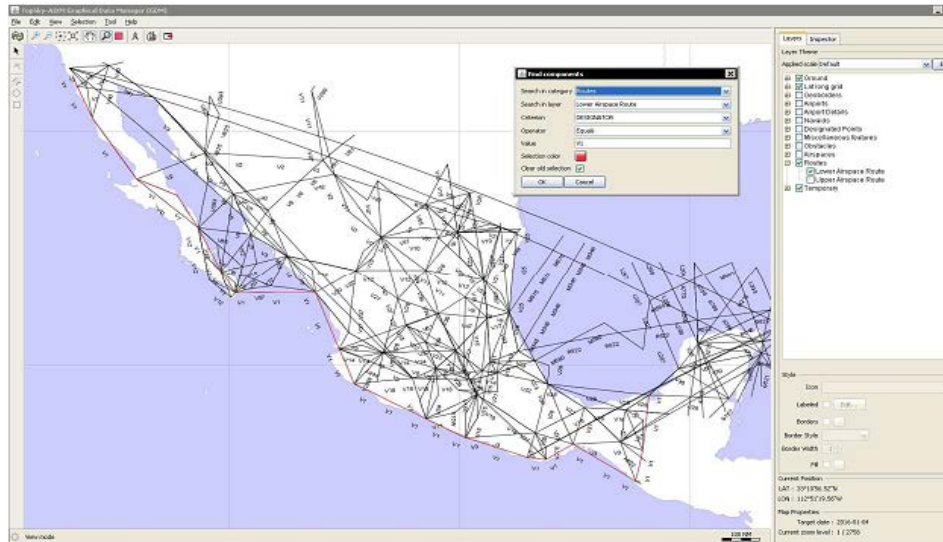
1.4 Vuelos acrobáticos.

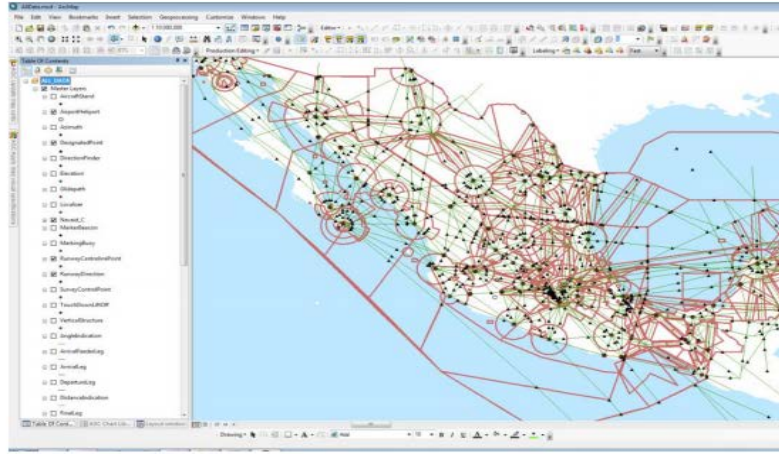
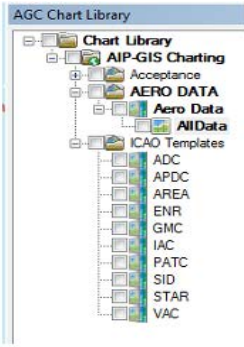
1.4.1 Excepto cuando se tenga un permiso expreso de la autoridad aeronáutica, no se realizarán vuelos acrobáticos:

- Sobre ciudades, pueblos, lugares habitados, o sobre reuniones de personas al aire libre;
- Dentro de aerovías o rutas publicadas, espacios aéreos controlados o aeródromos civiles controlados;
- A una altura mayor de 915 m (3000 pies), sobre la superficie de tierra o agua;
- En condiciones meteorológicas de vuelo por instrumentos (IMC) y/o entre la puesta y salida del sol;
- Sin un instructor autorizado, para el caso de vuelo de adiestramiento, y con controles de doble mando;
- Los vuelos acrobáticos deberán cumplir con cualquier otra indicación que para la seguridad de la operación determine la autoridad aeronáutica.



AIXM Centralised DB Static Data Input





Charting solution

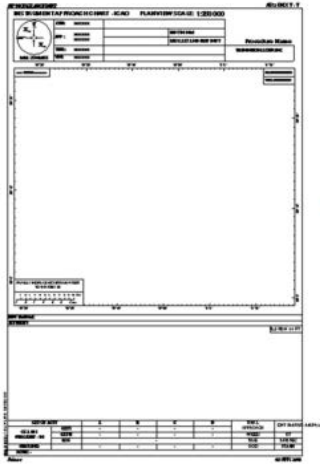
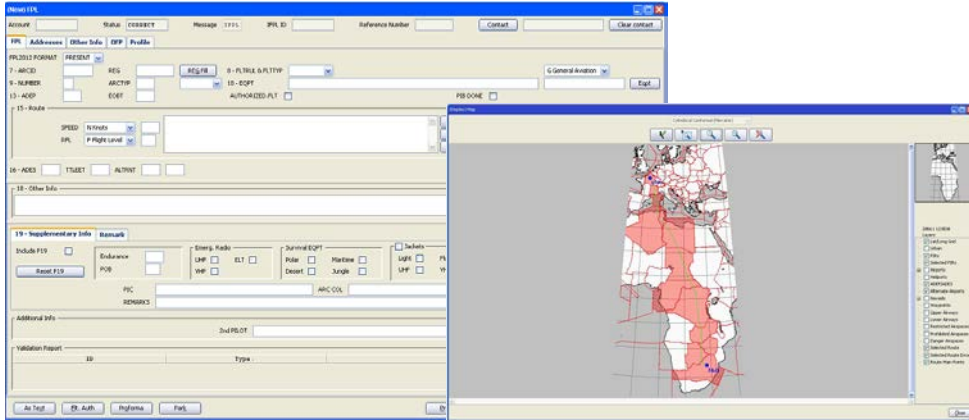


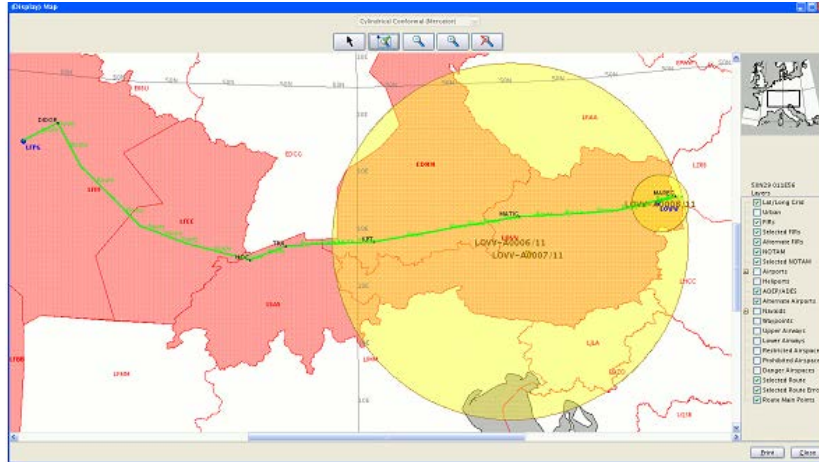
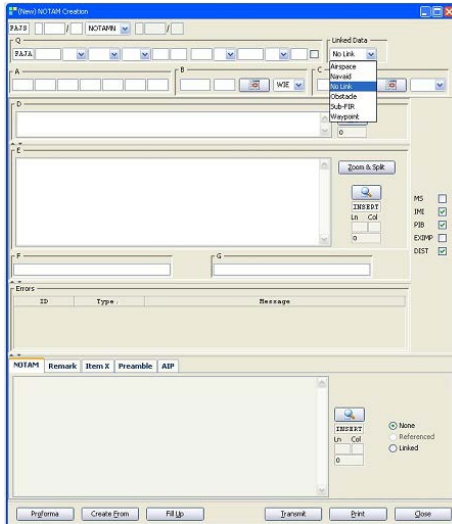
Chart production





AIS operations

- TAM
- FPL
- MET

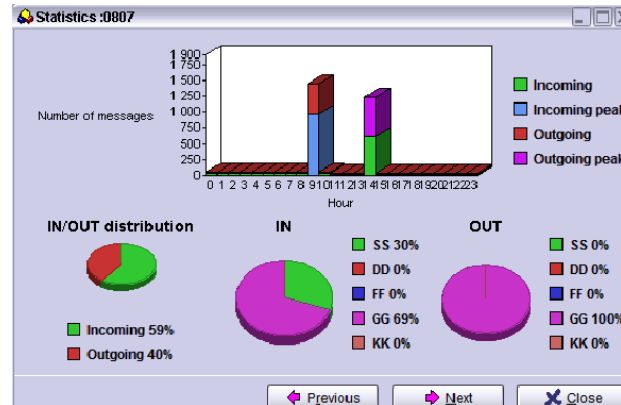




AMHS solution

The screenshot displays an AMHS email client interface. On the left is a navigation pane with options like 'Address book', 'Deleted', 'AMHS Message', 'AMHS Templates', 'Contacts', 'LOOKAMBA', 'Follow', 'Send', 'Trash', and 'Saved'. The main area shows a list of messages with columns for 'Priority', 'From', 'Subject', and 'Date'. The selected message is from 'LOOKAMBA' with subject 'L1: acs@lookops@globalnews.net'. Below the list is a detailed view of the selected message, including headers like 'From: L1: acs@lookops@globalnews.net', 'To: j@lookops@globalnews.net', and 'Date: 2011-11-20 16:17:08'. The body of the message contains Arabic text and a base64-encoded attachment. On the right, there are buttons for 'Details' and 'Actions'.

The screenshot shows the 'Global Monitoring' interface. It features a 'Users' section with buttons for 'National' (PVC, SVC, LAN, FIP, ASY, FAX, TLR) and 'International' (PVC, SVC, LAN, FIP, ASY, FAX, TLR). There are also sections for 'CIDIN' and 'AMHS'. A map of the United Arab Emirates is displayed, with various locations marked. A 'Locations Available' list on the right includes 'Ajman', 'Dubai', 'Ras Al Khaimah', 'Ajman', 'Ajman', 'Ajman', 'Ajman', and 'Null Location'. At the bottom, there is a table with columns for 'Network', 'Category', 'Type', 'Location', 'Identity', and 'Parameters'.





Training is an important and often overlooked item in any new system, having a State of the Art software doesn't matter if your staff can't use it



Implement and put into operation the centralized AIM Regional Operation Center (AIMOC) with the purpose of providing information and aeronautical data of the highest quality in real time to all those users interested in making decisions on reliable information allowing to improve the safety and efficiency of air operation such as management of safer routes and flight planning.

Evolution



Centralised database concept

Evolution

Non standard
information/ uniformity

Several disconnected databases

Different production systems



Challenges



Challenges

Lack of software for charting

Lack of resources

Lack of staff/ skilled staff



Staff training



Cost sharing schema



Standard procedures through
same systems

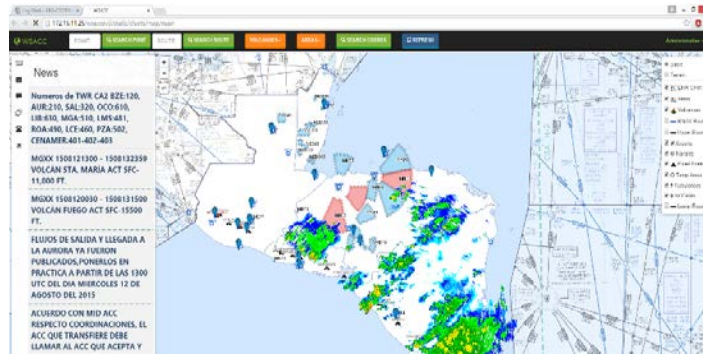
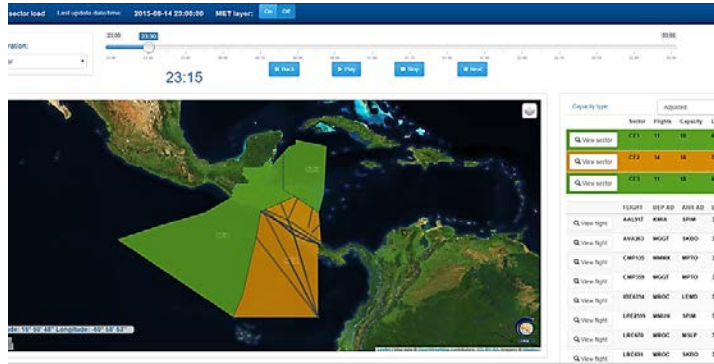
**Best
Practices**



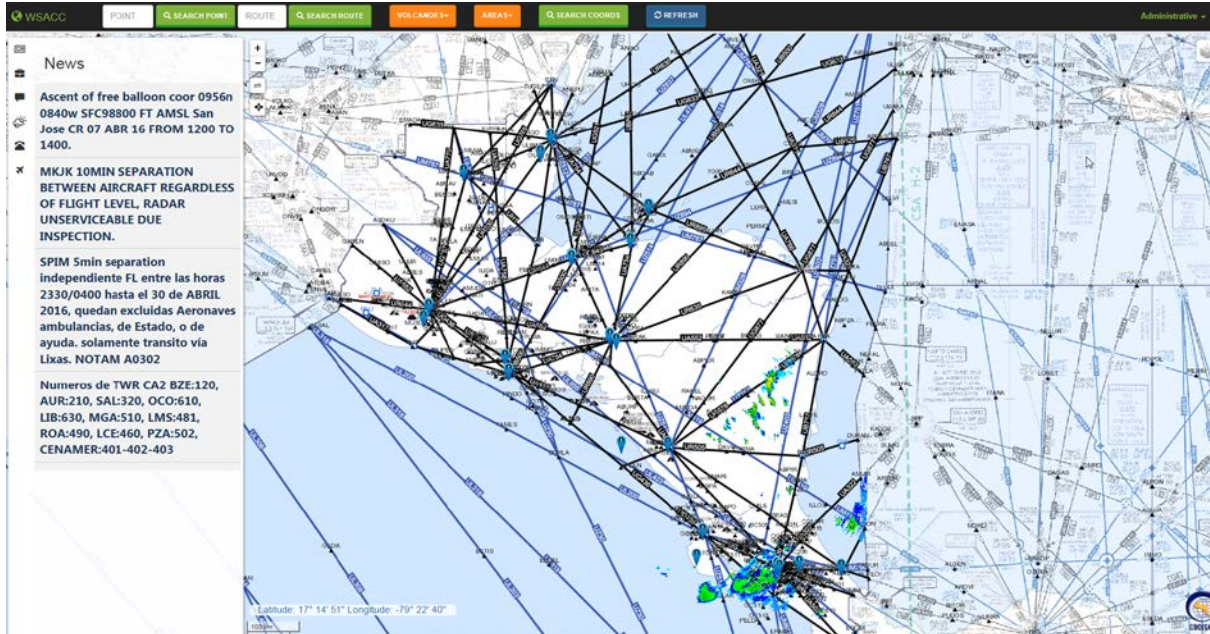
Best Practices

Centralised database for a single authoritative datasource

Enterprise solution, used by all your organization not just one unit



Internal developments based on the centralised database used for ATC/ ATFM operations

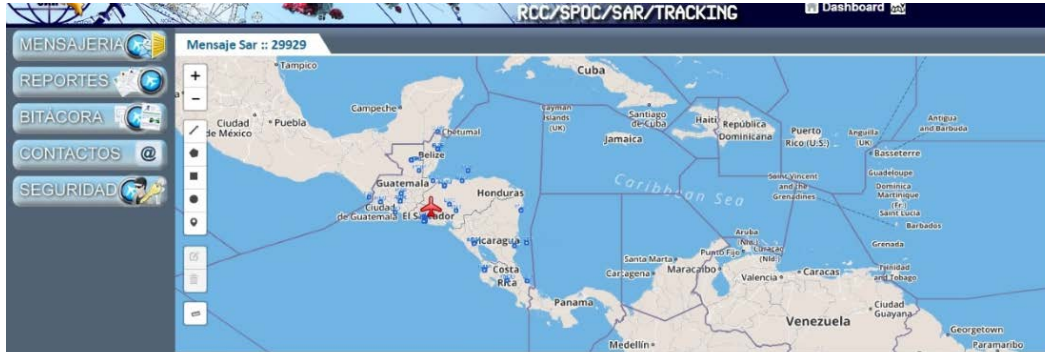


WSACC electronic charts

RCC/SPOC/SAR/TRACKING Dashboard

MENSAJERIA
REPORTES
BITACORA
CONTACTOS
SEGURIDAD

Mensaje Sar :: 29929



General Bitacora Status Report [ST-166]

Information SAR Message

MSG REF		DETECTED AT	
No.	29929	Fecha Recibido	22/08/15 13:16
Ref.	35335	Sar Satellite	SARSAT No 10
DETECTION FREQUENCY		Detectado	
Frecuencia	406.0368 MHz	22 AUG 15	Hora 1312
USER CLASS		COUNTRY OF BEACON REGISTRATION	
Tipo	ELT	Country ID	332
Descripcion	SERIAL	Country	GUATEMALA
ID	3397	EMERGENCY CODE	
POSITIONS		Emergency Code	
Resolved Lat		NONE	
1456.6N	Long	HEX ID	
08920.4W	Prob	BEACON ID	
Doppler A Lat		A9BC40351400315	
2641.0N	Long	OTHER ENCODED INFORMATION	
14320.8W	Prob	Manufacture	
Doppler B Lat		CSTA#197	
1428.4N	Long	Model	
08923.9W	Prob	UNKNOWN	
Encoder Lat		OPERATIONAL INFORMATION	
NIL	Long	Email	
NIL	Prob	Aftn	

Search and Rescue Tracking System

AIM NOTAM DOG: 8400 Search Radius Calculation

Insert filter:

SEARCH BY ABBREVIATION: SEARCH BY DECODE:

Abbreviation	Decode
A	Amber
A/A	Air-to-air
A/G	Air-to-Ground
AAA	(or AAB, AAC...etc, in sequence) Amended meteorological message (message type designator)
AAD	Assigned altitude deviation
AAIM	Aircraft Autonomous Integrity Monitoring
AAL	Above Aerodrome Level
ABI	Advance boundary information
ABM	Abeam
ABN	Aerodrome Beacon
ABT	About
ABV	Above
AC	Altocumulus
ACARS	Aircraft Communications Addressing And Reporting System
ACAS	Airborne Collision Avoidance Systems
ACC	Area Control Centre OR Area Control
ACCID	Notification of an Aircraft Accident
ACFT	Aircraft
ACK	Acknowledge


AIM NOTAM DOG: 8400 Search Radius Calculation

Polygon

Latitude: Longitude:

	Latitude	Longitude
<input type="button" value="X"/>	171400N	0883000W
<input type="button" value="X"/>	171500N	0883300W
<input type="button" value="X"/>	171800N	0882800W
<input type="button" value="X"/>	171800N	0882700W
<input type="button" value="X"/>	171200N	0882700W

1715N08829W004 Centroid 1715N08829W Calculated radius 4 NM



AIM internal development tools
(helpers to increase efficiency)



Moving towards standardisation
in Central America for eAIP,
Charting, Static Database Input

Aeronautical Charting based on
leading GIS software, internal
tools based on proven open
source technology stack

**Best
Practices**

Let's build a community around
AIXM, strive for the right
information at the right time



THANK YOU



Ing. Antonio Locandro
GIS Specialist @ AIM COCESNA
www.cocesna.org
antonio.locandro@cocesna.org