



Agenda Item 2: Air Navigation Matters
2.3.2 Aeronautical Information Management (AIM)

Follow-up to GREPECAS Conclusion 14/39 - Use of Geographic Information System (GIS)

(Presented by the Secretariat)

SUMMARY	
This paper presents some recent considerations in relation to Geographical Information System (GIS ¹) implementation as requested by GREPECAS Conclusion 14/39.	
References:	
GREPECAS/14 Meeting Report, (San Jose, Costa Rica, 16 to 20 April 2007).	
Strategic Objectives	<i>This working paper is related to Strategic Objectives A - safety and D - efficiency.</i>

1. Introduction

1.1 ICAO is promoting the implementation of automated AIM service systems in the CAR and SAM Regions with a view to develop the electronic Aeronautical Information Publication (e-AIP) (information/data and aeronautical charts), based on the need for a common platform for processing and exchange aeronautical information/data. It is important to emphasize the States' need for the GIS to produce AIM products, which would contribute to the digital processing of the information. Taking into account the AIM electronic environment requirements, the GREPECAS/14 Meeting adopted Conclusion 14/39 shown in the **Appendix** to this paper and urges States/Territories to take actions for the GIS implementation.

1.2 Improving Aeronautical Information within the CAR region will provide a coordinated service with quality assured information for all phases of flight through the **increased use of automation**. In this context, ICAO is developing new e-AIP specifications that will increase and standardize the use of digital tools in AIM, promoting GIS technology for the Integrated Aeronautical Information Package (IAIP). The e-AIP is an enabler for Aeronautical Information Management (AIM) for the automated processing and information content storage.

¹ Geographic Information System (GIS), a computer-based system for capturing, storing, updating, analyzing, manipulating and displaying geographically referenced information

2. Discussion

2.1 GIS technology has the capability to provide interactive dynamic databases, in which the user is able to select what should be displayed through the different information layers. Identification of information, extraction of data and geographic queries and analysis are other functions available in the GIS. The output of the system can be plot, store in any desirable size, GIS-specialized products, CD-ROM, and any data format, electronic files including WEB type format.

2.2 GIS Software Technologies include the following subjects:

- Airport Obstacle Extraction by Digital Aerial or Satellite Photograph Analysis
- Stereo Processing (3-D)
- Analysis Procedure (Traceability)
- Airport information
- Work flow of survey
- Selection of survey method
- Results and deliverables
- Digital Model creation and obstacle analysis
- ArcGIS (or equivalent)
- Arc GIS Aeronautical Tools (or equivalent)
- Quality Control
- Workflow Management Auditor

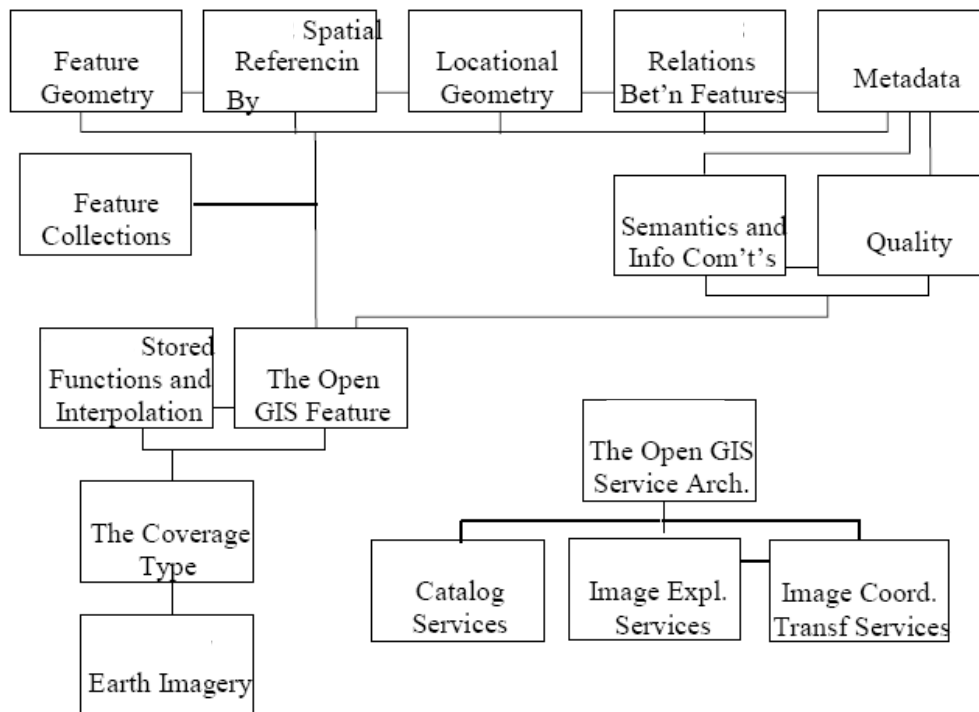
2.3 States are urged to improve safety and efficiency of the aeronautical information, using appropriated technology to solve new challenges in the electronic production and distribution of information/data. In this regard ICAO is developing new guidelines about GIS, in order to create, edit and maintenance geographic information adding spatial relationships among data. This spatial relationship aspect of the GIS is basic for the management of aeronautical information products and completion of aeronautical charts taking into account following considerations:

1. Significantly reduces production time by managing and producing complex aeronautical charts from a central database.
2. Enhances your data quality through the direct loading of digital changes and to use of automated change verification workflow management.
3. Uses specialized software tools to automate the cartographic finishing steps required in aeronautical charts production.
4. Takes advantage of a secure, accessible and scalable data set to expand your organization offerings

2.4 The worldwide use of the GIS technology requires the standardization of digital geographic information, through a structured set of standards to describe the objects or phenomena that are directly or indirectly associated with a relative location to the Earth. These standards may specify, for geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring such data in digital/electronic form between different users, systems and locations. In this regard the International Standardization Organization (ISO) proposed the Standard **ISO/TC 211** for geographic information and geomatics.

2.5 The standard ISO TC 211 represents a framework for the development of specific applications using GIS and proposes a structured model describing the relationship among the AIM main elements and entities to implement a work flow using GIS as follows:

Relationship to the work of ISO TC 211



3. Suggested actions

3.1 E/CAR States and Territories are invited to:

- a) take note of the information presented to support to GIS implementation in E/CAR States; and
- b) inform to ICAO NACC Regional Office on the GIS implementation progress no later than **31 December 2010**.

APPENDIX

**THE FOURTEENTH MEETING OF THE CAR/SAM REGIONAL PLANNING AND
IMPLEMENTATION GROUP (GREPECAS/14)**

San Jose, Costa Rica, 16 – 20 April 2007

**CONCLUSION 14/39 ACTIONS FOR THE USE OF GEOGRAPHIC INFORMATION
SYSTEMS (GIS) FOR AIM SERVICES IN THE CAR/SAM
REGIONS**

That taking into account the appropriateness of evolving towards the concept of digital aeronautical information management by electronic means in the CAR/SAM Regions, and that the use of Geographic Information Systems (GIS) could contribute directly and positively with these requirements by the end of 2008:

- a) CAR/SAM States and Territories consider the implementation of Geographical Information Systems (GIS) for AIM services as automated support for the electronic display of AIP and aeronautical chart information, and take action to permit training of AIS personnel on the practical management of GIS in order to facilitate the implementation and operation of these systems in their AIS services; and
- b) the NACC and SAM Regional Offices take the necessary action to consider, within relevant regional technical co-operation projects, the implementation requirements of Geographic Information Systems (GIS) as automated support for the activities of AIM services in the CAR/SAM Regions in direct support of CNS/ATM.

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