



International Civil Aviation Organization

WRC/12-RPM (ASECNA)

WRC 2012 Regional Preparatory Seminar

Development of a Frequency Assignment Planning Tool

Presentation, Demonstration & Case Studies

Presented by the ICAO Secretariat

(Dakar, 20— 22 April 2011)



Outline

- Introduction
- eANP and planning criteria
- FileMaker Pro Advanced Server and FMP Network
- Database and functions
- Demonstration



Introduction

- ✈ The Programme ICAO eANP frequency planning tool is providing a **Global Frequency Assignment Plan** that is based on the current ICAO Regional Plans (including COM Lists) and contains **globally harmonized technical basis** for calculating compatibility



Introduction (Continued)

- ✈ The global database developed with the programme will **improve interregional coordination.**
- ✈ Frequency planning needs to be based on **more frequency efficient techniques.**
 - This will avoid (or delay) retrofit of aircraft with equipment with reduced channel spacing.

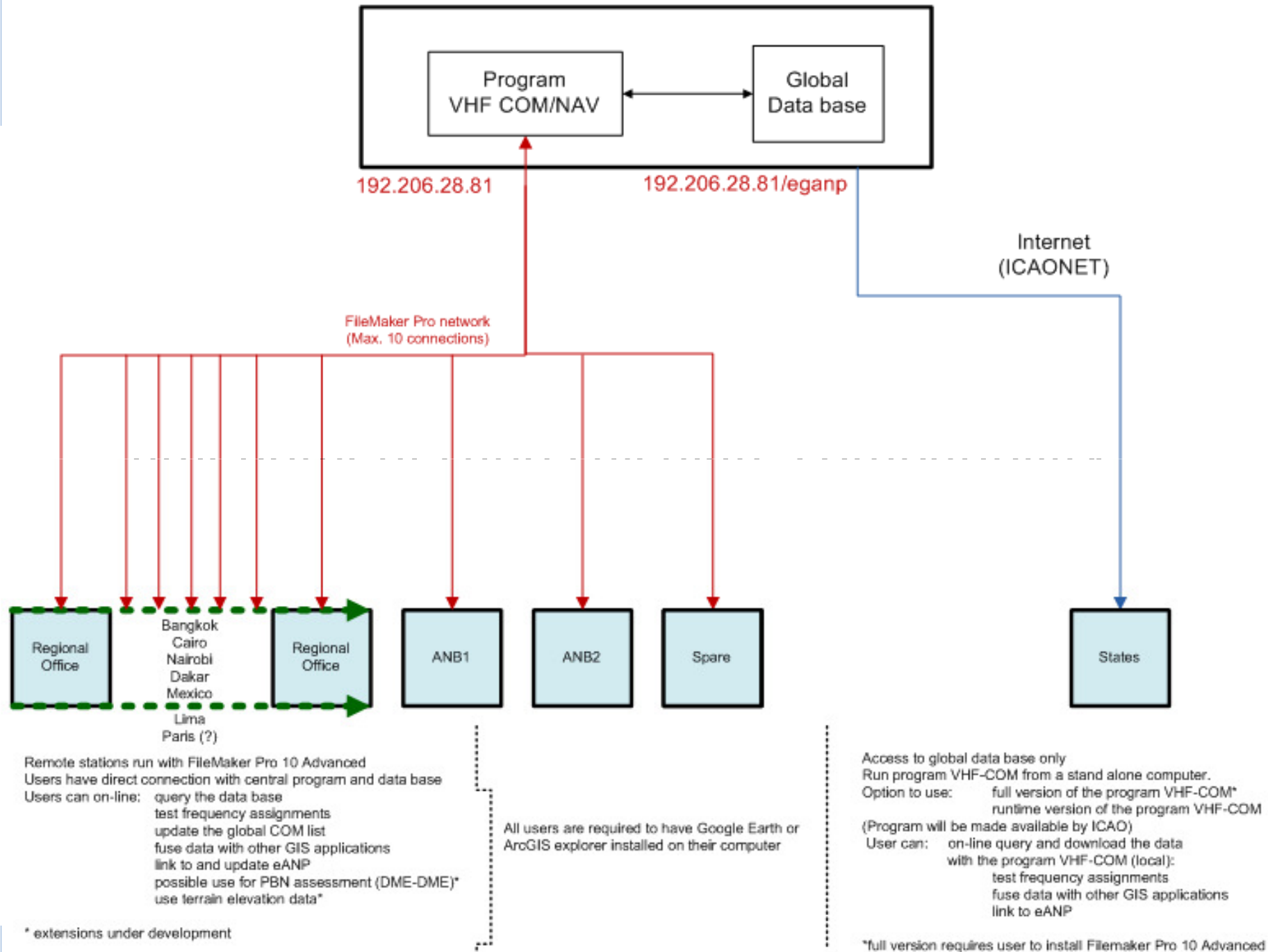


Introduction (Continued)

✈ The software

- **calculates separation distances**, in particular for new (or amended) frequency assignments taking into account the actual Designated Operational Coverage (Range and Height).
 - This greatly enhances efficient frequency planning.
- **facilitates frequency coordination** of the ever increasing number of frequency assignments, through automation.

FileMaker Pro 11 Advanced Server





Software operation

- The programme requires FileMaker Pro Software
 - A runtime version with limited functionality is available
- The programme will:
 - be **available through the ICAO Website**
 - facilitate frequency coordination/updating of COM Lists through Regional Office
 - **generate regional databases** (COM Lists) can be generated from this global list. Other lists (e.g. national frequency lists) can also be generated.
 - **allow the user to plot on a map the operational coverage and the interference contours** (if any) for frequency assignments.



Frequency Planning Criteria

- ICAO is harmonizing frequency planning criteria based on Annex 10 through ACP
- Comprehensive guidance on frequency planning will be included in the Handbook on radio frequency spectrum requirements for civil aviation (Doc. 9718)
- Improve efficient frequency planning
- Where necessary Regional differences can exist (e.g. channel spacing)

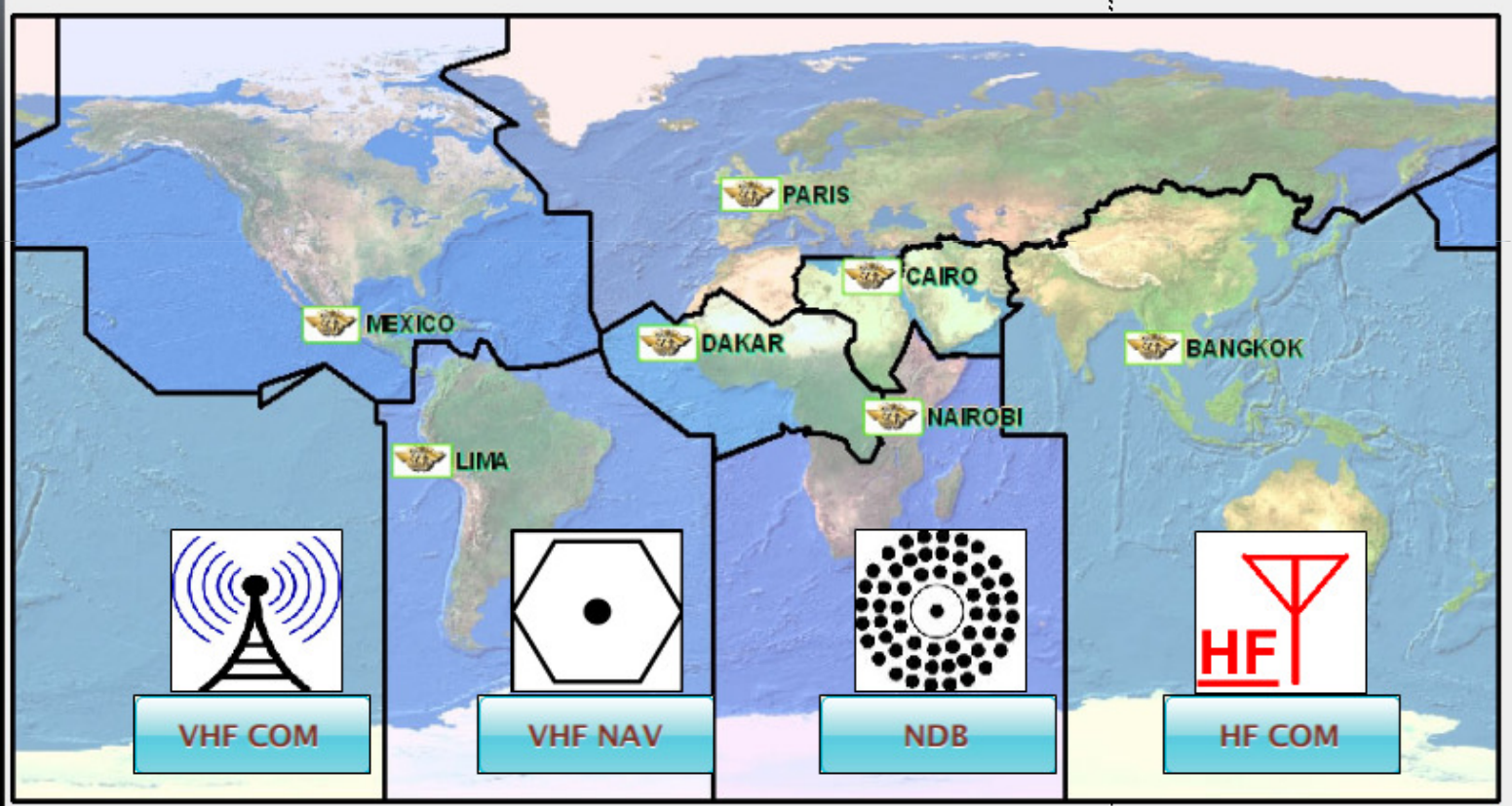
ICAO eANP Frequency assignment planning for CNS systems

Header

Body

- Version
- ICAO eANP website
- Quick User Guide
- MANUAL (to be updated)
- Detailed Descriptions
- Google Earth User Guide
- FileMaker Pro 10 User Guide
- IF-77 propagation prediction - Manual
- Aviation formula
- About

ICAO eANP and Global Frequency Planning

ICAO CNS Frequency Assignment Planning and eANP



Home



Regional COM list

ENTER CHANGES



To modify the characteristics of a current or enter the new frequency assignment only, insert the necessary data in the blue box only and press: **ENTER CHANGES**

IMPORTANT: ALWAYS fill or modify the fields in the blue box first!!!

To search for new frequencies, enter the necessary information in the red box and press "START SEARCH"

Press 'Cancel' at any time to cancel

records found 1 Key 48079 D

Cancel changes

Insert here new or modified characteristics

Insert from menu or type name

Region AFI New assignment Cat
 Country Ctry
 Location
 Latitude 12 D 30 ' 15 " N S
 Longitude 007 D 24 ' 21 " E W
 Frequency 118.500
 Service TWR
 Cond
 Stat
 FIR SECTORNAME
 Remarks

Insert non-standard DOC

TWR 25/40 MOD Service(R/H)
 25 MOD Range (NM)
 4000 MOD Height (feet)

Test characteristics changes

Channel spacing

100 kHz

50 kHz

25 kHz

8.33 kHz

System (to be added)

VHF-COM

VDL M 2

VDL M 4

Insert here parameters for finding new frequency

Set frequency range

START 118.000 MHz
END 137.000 MHz

Search range 117.999...137.001 MHz

and/or select from Regional Frequency Allotment Plan

AFI TWR
 APAC
 MID
 EUR
 SAM
 CAR

Max. # of frequencies 5

START SEARCH



Searching

Search completed

118.700

Frequency found

FF1 118.00
 FF2 118.20
 FF3 118.40
 FF4 118.60
 FF5 118.70
 FF6
 FF7
 FF8
 FF9
 FF10

FOUND frequencies 5

After interrupting a search with the "Esc" button, restart the program

scroll up and down by using the sidebar or the up / down keys

Summary

Co-frequency

Adj. Frequency

Test results of the modified record First record is tested record

Key	D	Frequency	Region	Country	Location	Service	Renage	Sectorname	Required D.	Actual D.	Margin	Result
48079	D	118.7	AFI			TWR	25		N/A	N/A	0	N/A
28686		118.7	AFI	Benin	KANDI	AFIS	25		206	274	68	Compatible
29202		118.7	AFI	Benin	PARAKOU	AFIS	25		206	340	134	Compatible
28462		118.7	AFI	Cameroon	FOUMBAN	AFIS	25		206	456	250	Compatible
28333		118.7	AFI	Benin	COTONOU_CADJEHOUN	TWR	25		206	474	268	Compatible
28195		118.7	AFI	Cameroon	BERTOUA	AFIS	25		206	606	400	Compatible
28224		118.7	AFI	Central_African_Rep.	BOUAR	AFIS	25		206	625	419	Compatible
29381		118.7	AFI	Ghana	SUNYANI	TWR	25		206	653	447	Compatible
28858		118.7	AFI	Gabon	LIBREVILLE_LEON_MBA	TWR	25		206	733	527	Compatible
09650		118.7	EUR	Algeria	ILLIZI	TWR	25		206	847	641	Compatible
28194		118.7	AFI	Somalia	BERDERE	TWR	25		206	870	664	Compatible
28545		118.7	AFI	Saudi_Arabia	HAIL	TWR	25		206	870	664	Compatible

Press After Resta reope

Frequency Assignment Planning Functions - Database



FileMaker Pro Advanced - [CNS_AIRS-COM]

File Edit View Insert Format Records Scripts Tools Window Help

Records: 812 / 1581 / 20927 Found (Sorted)

Show All New Record Delete Record Find Saved Finds Sort Print Print Setup Save as Excel Save as PDF Export Debugger Data Viewer Manage

Layout: AFIAPACLISTfinal View As: Preview

Home New/Mod Frequency Search frequency Mapping Mapping (pre-calc) VIEW AS COM LIST

records found: 1581

Press Esc to cancel running scripts

Base layers 2008 Fir world ICAO Fir sector world COM world Aero world Route AFI Route MID Route ASIA PAC Route CAR SAM Route EUR

COM LIST 3

REGION	AFI	2 Reg: 28809	LATITUDE	06D35"00"N	LONGITUDE	003D19"00" E	FIR	
COUNTRY	Nigeria		CONDITION	OP	CATEGORY	NAT	CNS	
FREQUENCY	131.900	Country code: NIG	REMARKS	KLM	Entry/Mod		DOC	AOC
NAME location	LAGOS_MURTALA_MUHAM		SERVICE	AOC	STATUS	BY	Range	1 NM
							Height	1 ft
							Radio Hor.	1 NM
REGION	AFI	2 Reg: 28810	LATITUDE	00D43"00"S	LONGITUDE	010D14"00" E	FIR	
COUNTRY	Gabon		CONDITION	OP	CATEGORY	NAT	CNS	
FREQUENCY	118.600	Country code: GAB	REMARKS		Entry/Mod		DOC	AFIS 25/40
NAME location	LAMBARENE		SERVICE	AFIS	STATUS	BY	Range	25 NM
							Height	25000 ft
							Radio Hor.	194 NM
REGION	AFI	2 Reg: 28811	LATITUDE	00D43"00"S	LONGITUDE	010D14"00" E	FIR	
COUNTRY	Gabon		CONDITION	P	CATEGORY	ICAO	CNS	
FREQUENCY	125.200	Country code: GAB	REMARKS		Entry/Mod		DOC	
NAME location	LAMBARENE		SERVICE		STATUS	BY	Range	NM
							Height	ft
							Radio Hor.	NM

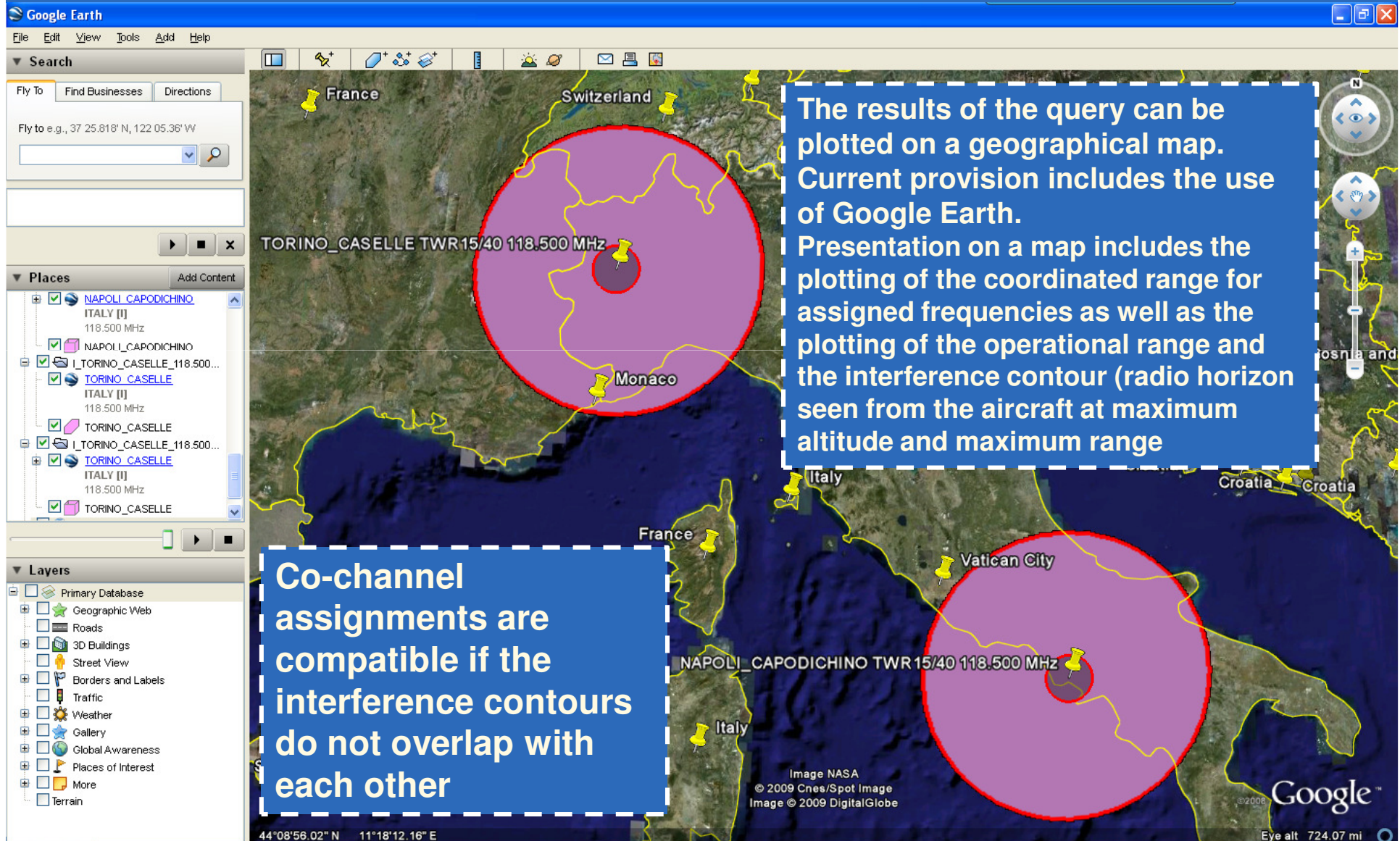
VHF-COM VHF-COM VHF-COM VHF-COM VHF-COM CNS/AIRS VHF COM Frequency Assignment Planning VHF-COM VHF-COM VHF-COM VHF-COM VHF-COM

Color coding frequencies

- Not assignable frequency (Emergency, SAR)
- Aerodrome Surface communications
- Aeronautical Operational Control
- Air/ground communications

The program will allow the user to query the data base, select assignments for individual countries, Regions, locations, services and frequencies. The results of the query can be saved and retrieved for later consideration. The results of the query can be printed, in the format of the ICAO COM list, directly from the program or exported to Microsoft Excel or Adobe PDF files.

Frequency Assignment Planning Functions – GIS Interface





Demonstration & Case Studies

..\VHFCOM\VHFCOM.exe



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Questions?



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Thank you