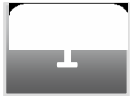


SPECTRUM MANAGEMENT

Regional Workshop for Europe and CIS on SM and DTT

Budapest, 5-7 May 2015

AGENDA



RADIOFREQUENCY SPECTRUM



SPECTRUM FEES



SPECTRUM MANAGEMENT TOOLS



MONITORING

AGENDA

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MONITORING

Radiofrequency Spectrum

HAKOM

 *Responsible for radiofrequency spectrum:*

 *Coordination*

 *Allocation & assignment*

 *Granting licenses*

 *Technical inspection*

AEM (Agency for electronic media)

 *Responsible for audio and audiovisual media content*

 *Granting consessions and permissions for audio and audiovisual content*

Radiofrequency Spectrum


Legal acts on radiofrequency spectrum

 *Electronic Communications Act*

 *Ordinance on radio frequency spectrum allocation*

 ***Radiofrequency allocation table***

(RF bands, services, technologies, use, manner of granting licenses...)

 *Ordinance on the conditions of assignment and use of the radio frequency spectrum*

 ***Radiofrequency assignment plans***

(teritorial/RF band division, channeling & spaceing, technical connditions...)

 ***Radiofrequency spectrum database***



 *Licenses technology neutral*

(data on available/occupied frequencies)



Radiofrequency Spectrum

Radiofrequency spectrum database (available frequencies)

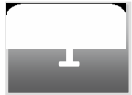
Conditions to be met to include the frequency

-  *Internationally coordinated*
-  *Coordinated usage within the Croatia*
-  *Usable and available*

International coordination

-  *Lasts from 3 to 24 months*
-  *According to international agreements*

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Spectrum Fees

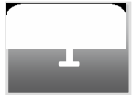
State budget

-  Economical value of radiofrequencies
-  Radiofrequency allocation table determines the procedure (public call, tender, auction) for each frequency band
-  Auction format and parameters defined by HAKOM for each case separately

Administrative fee

-  For HAKOM's operations – issuing license, procedure, monitoring, equipment, software etc.

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SPECTRUM MANAGEMENT TOOLS



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Spectrum management tools

License database

 Individually tailored, integrated within ERP system


Planning tools

 LS CHIRplus – broadcasting and mobile

 HNIT Baltic Celular Expert – microwave links

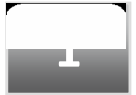
Presentation tools

 Interactive GIS portal - <http://bbzone.hakom.hr/> - BB availability

 GIS based application for presentation of different stations – now only internal application; plans on going public;

 Frequency Table of Allocations - <http://tablice.hakom.hr:8280/vis?lang=hr>

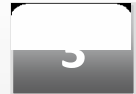
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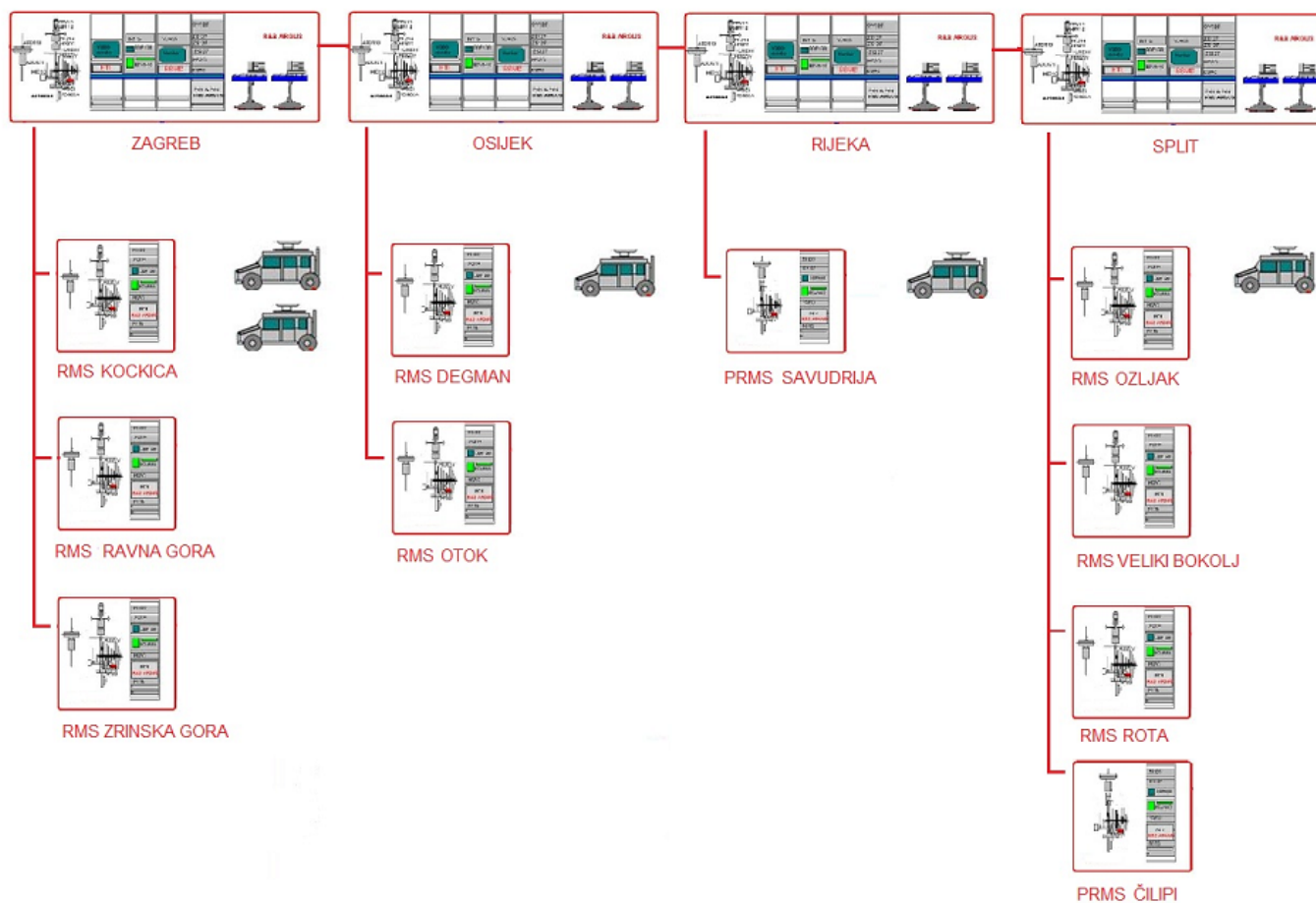
Frequency Monitoring Radiolocation System

- *FMRS is in operation since 1999, delivered by Rohde & Schwarz*
- *FMRS is a nation-wide system that includes four types of monitoring stations:*
 - *4 Manned Monitoring Stations (MMS)- Zagreb, Rijeka, Split, Osijek*
 - *8 Remote Monitoring Stations (RMS)*
 - *2 Portable Remote Monitoring Stations (PRMS)*
 - *5 Mobile Monitoring Stations (MS)= measurement vehicles*
- *Software solution for radio monitoring and radiolocation system in operation is ARGUS 5.4.2, SW by R&S*
- *Monitoring and direction finding frequency range from 9 kHz to 3 GHz*
- *Additional instruments and antennas, frequency range up to 40 GHz*
- *MMS and RMS are connected via HAKOM's microwave links and all MMS are connected with headquarter via leased telecommunication lines*

MMS, RMS, PRMS locations



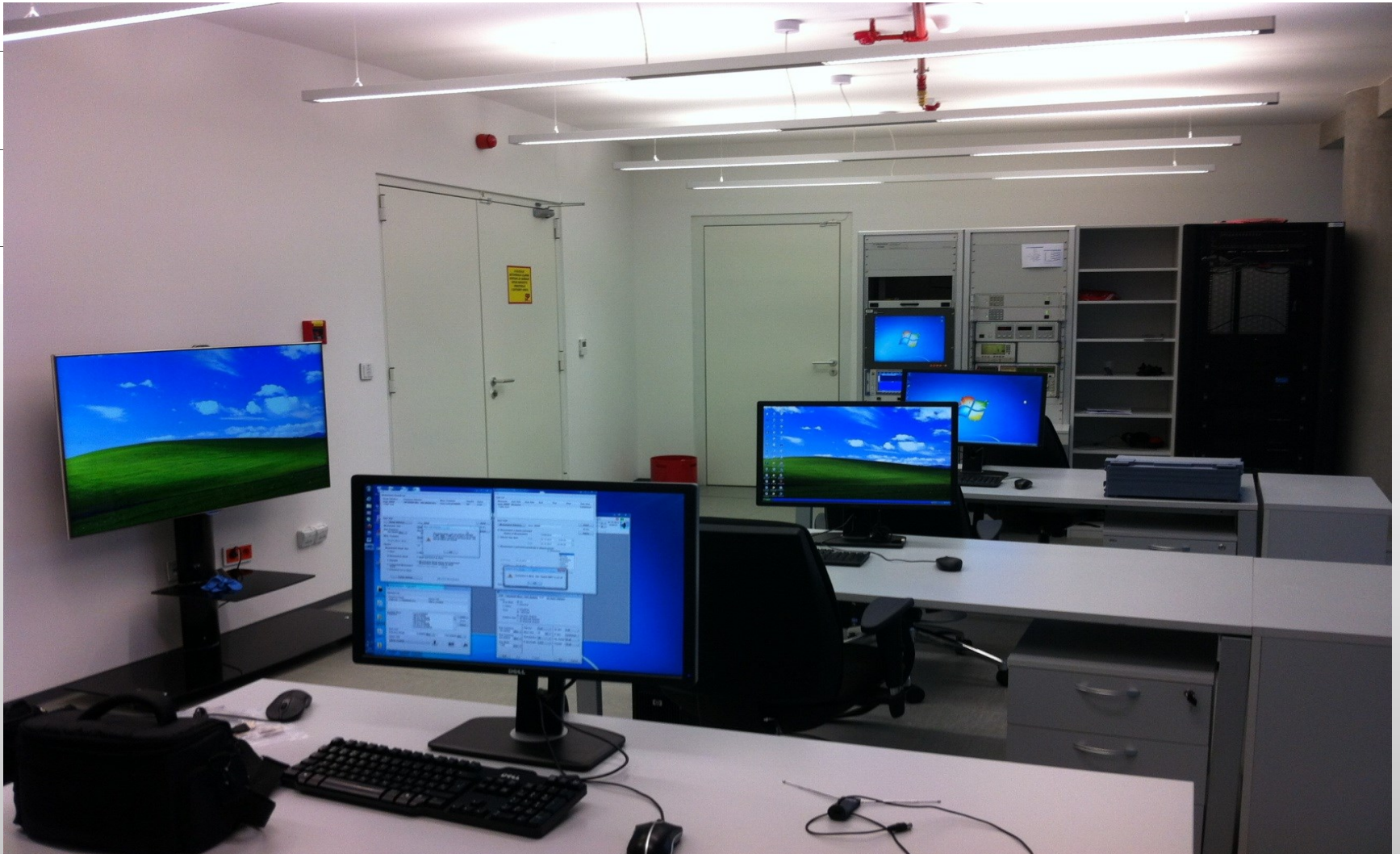
MMS, RMS, PRMS, MS locations



MMS SKY Office



MMS SKY Office



PRMS - Savudrija



Mercedes G350 – measurement equipment



Mercedes Sprinter – measurement equipment



05/05/2015