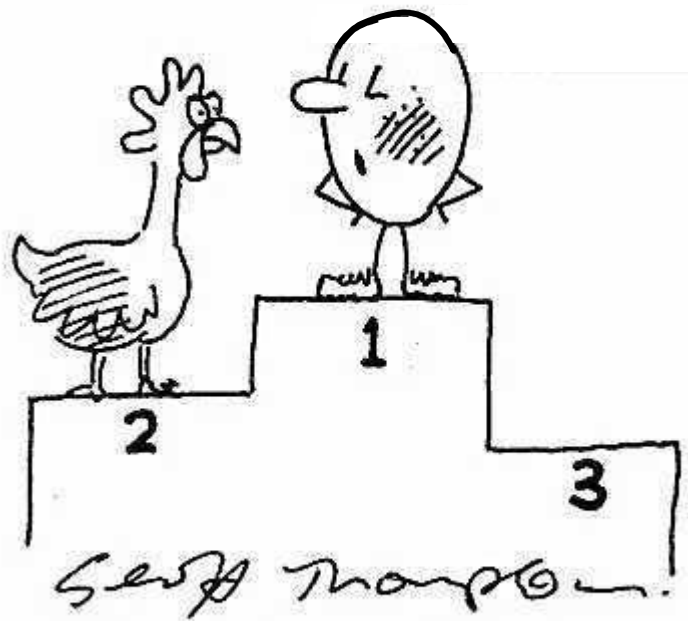
CEPT technical and operational rules for White Space Devices

Dr. Alexandre Kholod, Chairman ECC/SE43
Federal Office of Communications, Switzerland

ECC/COST TERRA Workshop on Cognitive Radio and Software Defined Radio: Policy and Regulations
2-3 May 2012, Mainz (Germany)

How we started and where we are heading to

2009: Chicken-and-egg problem of WSD



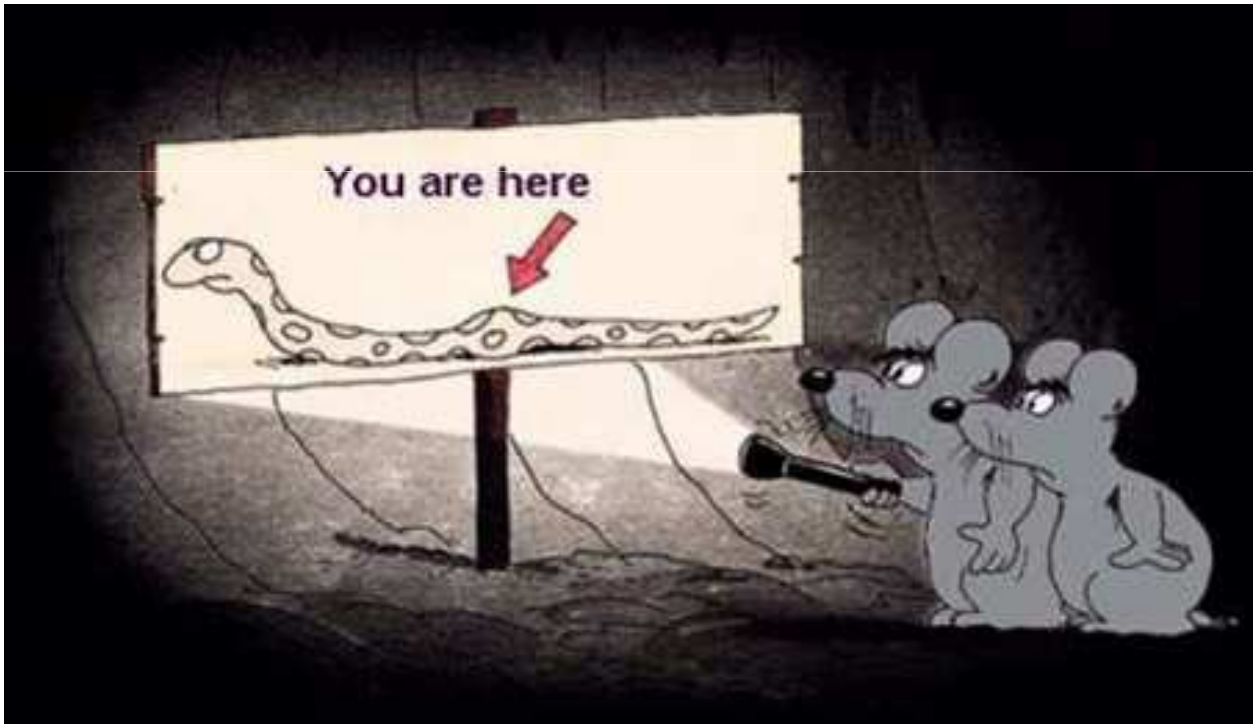
"I hope we're not going to have the same old argument"

➡ **Assumptions on WSD characteristics**

How we started and where we are heading to

2009: Chicken-and-egg problem of WSD

2011: Approval of ECC Report 159*



→ **Further studies were identified**

*** The report has been downloaded 180'000+ times in one year**

How we started and where we are heading to

2009: Chicken-and-egg problem of WSD

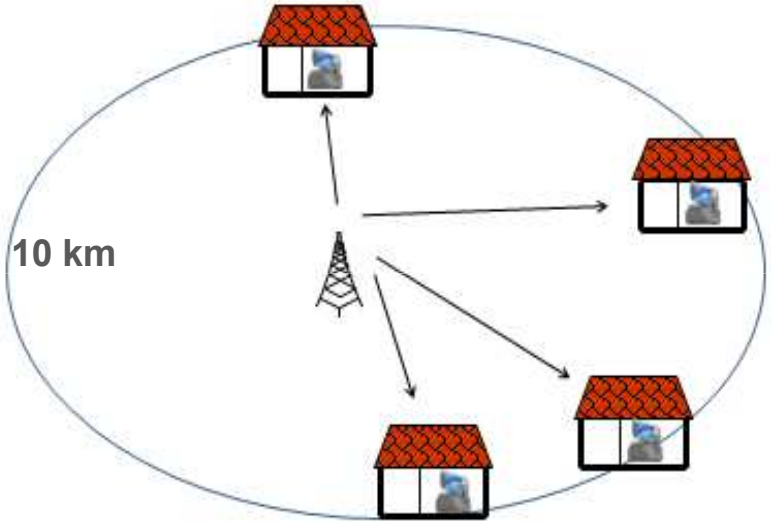
2011: Approval of ECC Report 159*

2012: Getting it right

→ **Studies are on-going in WGSE & WGFM**

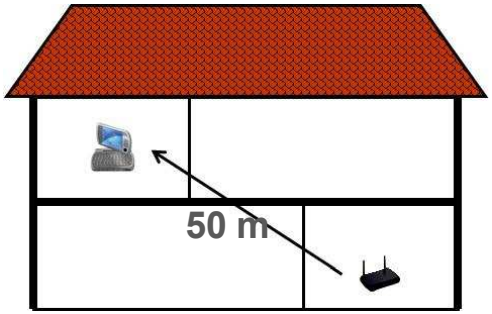
CEPT classification of White Space Devices

Outdoor Internet access



Max eirp: 36 dBm (BS)

Indoor Internet access

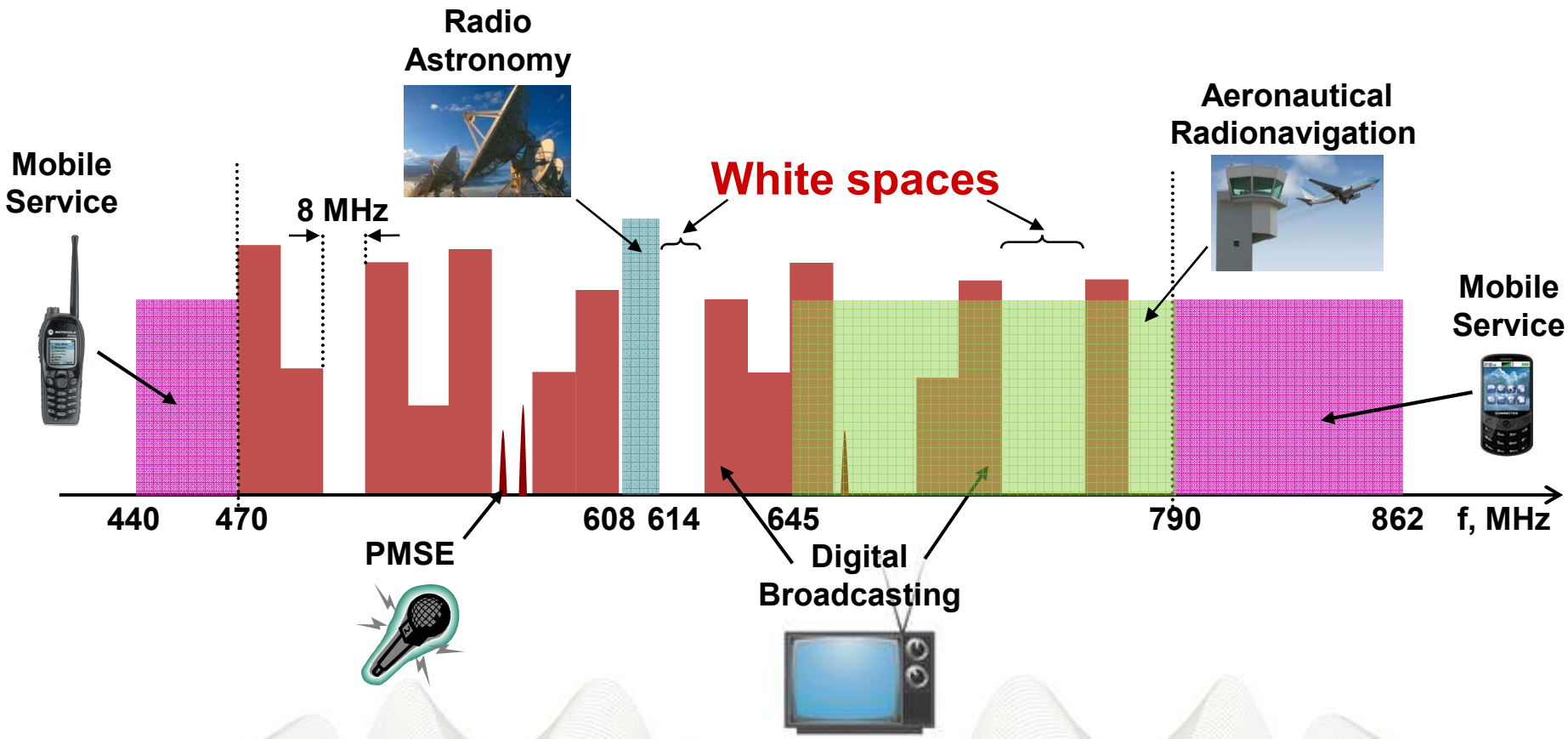


Max eirp: 18 dBm (AP)

Machine-to-machine communication

Max eirp: 15 dBm (long range)
-10 dBm (short range)

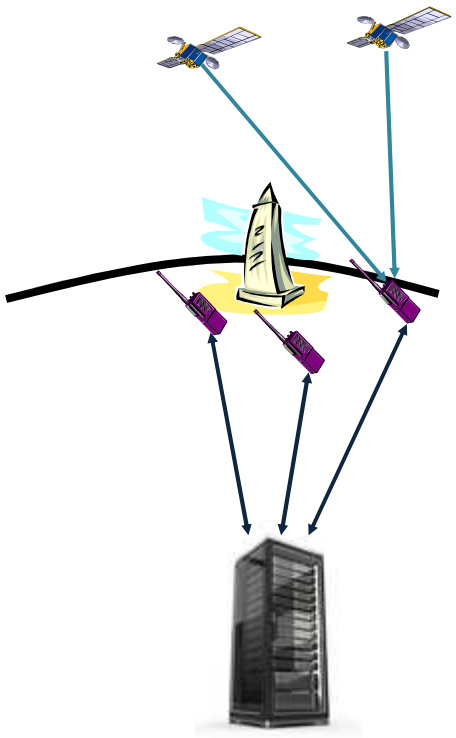
Incumbent services in the band 470-790 MHz



Very low sensing thresholds are required:

→ down to -155 dBm for DVB-T and down to -167 dBm for PMSE

Geo-location database



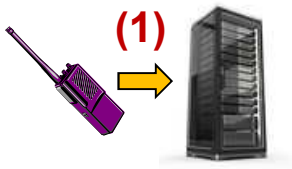
CEPT view: the geo-location is the most feasible approach to ensure the protection of incumbent services in the band 470-790 MHz

→ WSD determines its location and makes use of a database to get information on available frequencies at its current location

→ Can be combined with spectrum sensing to improve the protection of services

➡ **Essential (no-go requirement):**
WSD may only transmit in the territory of a country if it has successfully discovered a geo-location database approved by the NRA

Requirements to White Space Devices



WSD shall first communicate to the database:

- ✓ Geographical location, location accuracy, device class/model, technology ID, & other optional information

WSD shall receive from the database:

- ✓ Available frequencies, maximum transmit power, validity period of the information provided, if sensing is required

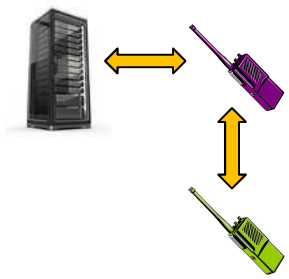
WSD shall then communicate to the database:

- ✓ Selected frequency, actual transmit power

WSD shall stop transmitting immediately if

- ✓ it can not re-consult the database
- ✓ it fails to monitor its location
- ✓ it moves outside the determined area

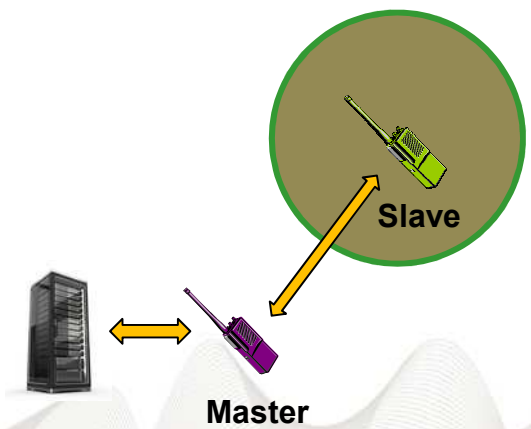
Master/slave concept



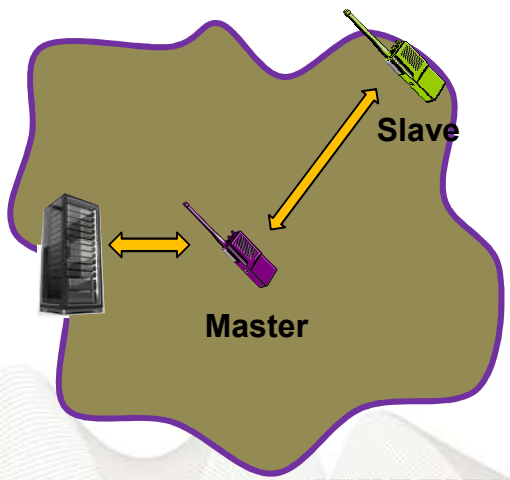
Master WSD directly communicates with the database to obtain operating parameters specific to its geographic area

Slave WSD does not directly communicate with the database and obtains operating parameters from its serving master

Geo-located slaves



Non geo-located slaves



The master/slave concept does not require any special regulatory requirement for the geo-location database

Some open technical and operational issues

Fixed maximum power for WSDs

Set at the hardware level by WSD manufactures ?

OR

Stored in the database ?

Database management of the translation process

Advanced discussions in the UK between the regulator and relevant stakeholders

BUT

No harmonised (CEPT) approach has been developed yet

Protection of PMSE

How to register PMSE in the database and who is responsible for this ?

AND

Would 'safe harbour' approach and beacon transmitters help ?

Conclusion

- There is an increased interest to the subject among CEPT administrations
- CEPT has been thoroughly defining technical and operational rules for WSDs
- CEPT considers the geo-location as the most reliable technique for WSDs in 470-790 MHz band
- Some issues related to the WSD operation under the geo-location are yet to be resolved
- There exists uncertainty regarding WSD technical characteristics

Will they come?

Thank you

"Harris, when I said 'any questions' I was using only a figure of speech."

Alexandre Kholod
E-mail: alexandre.kholod@bakom.admin.ch