

A common methodology for international frequency coordination

Mario Frullone



Fondazione Ugo Bordoni

**Gestione avanzata delle politiche dello spettro
Milano, 13 Novembre 2007**



Open issues

- Technologies converge: no longer possible to associate different economic values to spectrum bands associated to different services
- Service neutrality is hardly achievable in the short period
- A balance is required between spectrum right owners and final users

- A technical approach compatible with different needs in different countries is necessary



Wider knowledge for common interference management

- ❑ Harmonisation is necessary for economies of scale and interference management.
 - ❑ A highly detailed shared overall knowledge
 - ❑ National flexibility and autonomy.
-
- ❑ To which extent is harmonisation possible between broadcast and mobile services? (see also CEPT/TG4)



A new investigation area: advanced interference management

<i>DVB-T</i>	<i>IMT</i>
Rooftop directive receiving antennas	Low height omni receiving antennas
Noise limited coverage area	Traffic limited coverage area
Low propagation coefficient (2)	High propagation coefficient (3.5)
Very high required S/I	Very low required S/I (due to strong channel coding suitable for multipath propagation)
High transmitting power	Limited transmitting power at the mobile terminal. Balanced up- and down- link budget
Planned for outdoor reception	Planned for indoor reception as well

- 1. Proper coordination may result in higher overall spectrum efficiency*
- 2. Room to relieve compatibility requirements*
- 3. Transborder frequency coordination has to be adapted to specific bi-lateral requirements*



Italian attitude in spectrum management is undergoing a deep change.

- ❑ Italian Administration has an increasing care to spectrum management issues.
 - The Italian Ministry of Communications and the National Authority started a common program to update the National Frequency Register for broadcast transmitters.
 - 150 MHz in the 3.5 GHz band have been made available by Defense to the BWA auction (48 companies applied for participation).
 - The National Authority issued a public consultation on re-farming in mobile bands, including the 900 MHz band.
 - The first public auction for frequencies in the broadcast band has been promoted and scheduled.



A major goal: the switch-off in Sardinia (I)

- ❑ A possible national framework agreement has been achieved for digital switch-off in Sardinia, exploiting the whole UHF band.
- ❑ International coordination is essential.
- ❑ The full potential of the digital dividend will not be achieved without proper coordination across different countries.
- ❑ But, this is only possible if neighbouring countries work together and if an international shared approach to spectrum planning for the digital dividend is reinforced.



A major goal: the switch-off in Sardinia (II)

- ❑ The *Sardinia Task-force*, set up by the Ministry of communications to plan and supervise the switch-off in Sardinia, asked Fondazione Ugo Bordoni to propose a detailed workplan with an operational calendar of the overall sequential procedure.
- ❑ This should be related and “synchronised” to international frequency coordination, adopting a common methodology for interference management, based on GE06 entries.



A major goal: the switch-off in Sardinia (III)

INTERNATIONAL FREQUENCY COORDINATION

- ❑ It could be effectively based on a grid of checkpoints over the territory of each country where reciprocal received power densities have to be kept below some given thresholds.
- ❑ These checkpoints provide a set of parameters which can be used for a fine tuning of interference levels, leading to higher spectrum efficiency than GE06, while preserving mutual interference.
- ❑ These threshold levels and test point positions can also introduce additional degrees of freedom as a function of specific services, in the future.