WRC-11 Agenda Item 1.19 and WP5A/SG5
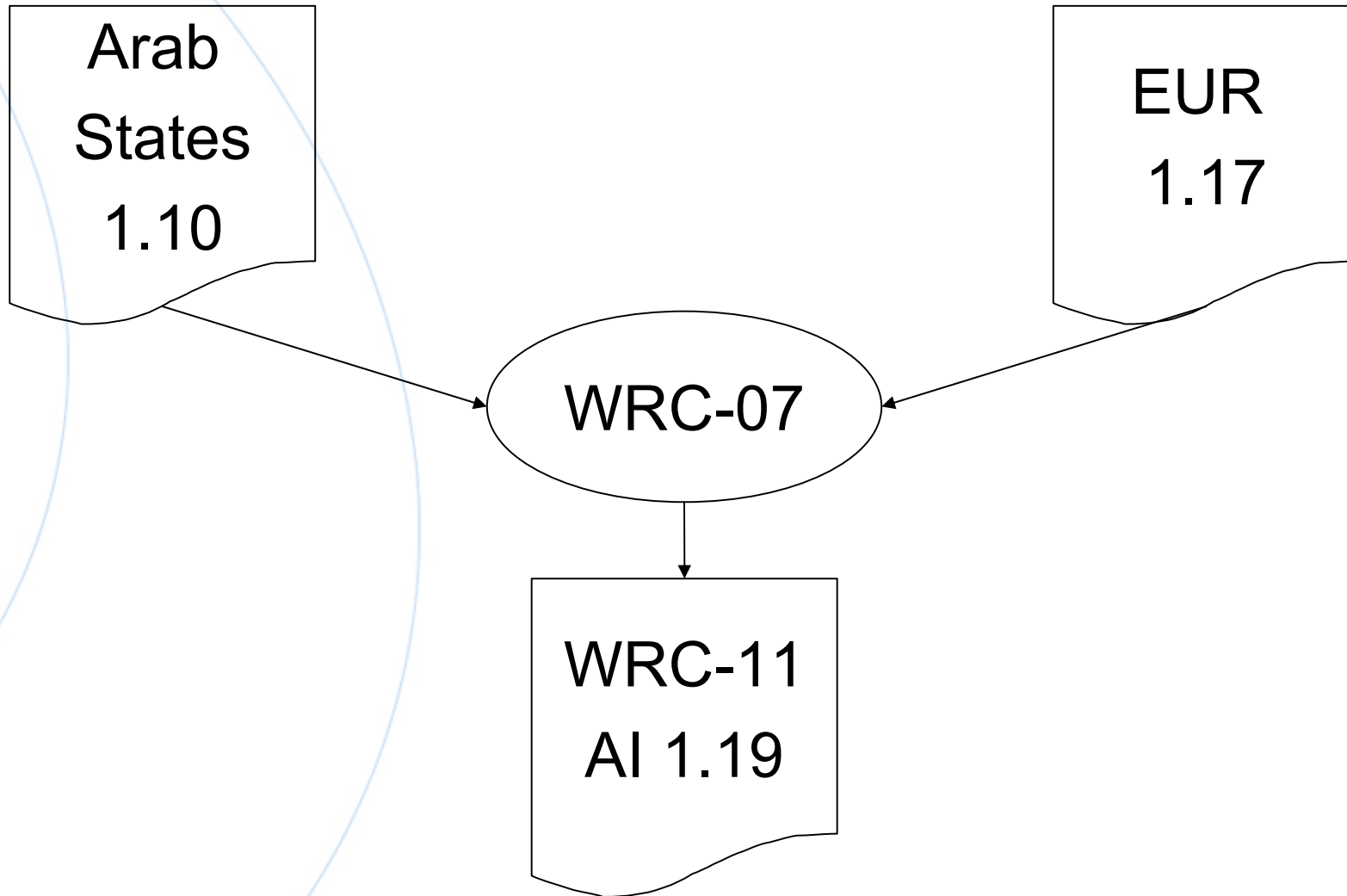
Dr. Gabrielle Owen

4 February 2008, Genève

WRC-11 agenda item 1.19

- its creation
- the agenda item
- the responsibilities
- the related work already done
- suggestions for future work to be done

WRC-07 – agenda item 7.2

WRC-07 – agenda item 7.2

Arab States 1.10

to consider spectrum requirements and global allocation to support cognitive radio systems *and/or radio software systems* based on results of ITU-R studies

EUR 1.17

to consider spectrum requirements and a global allocation to support cognitive radio systems *in the context of heterogeneous radio networks environment,* based on the results of ITU-R studies, *in accordance with Resolution [EUR/10A25/12]*
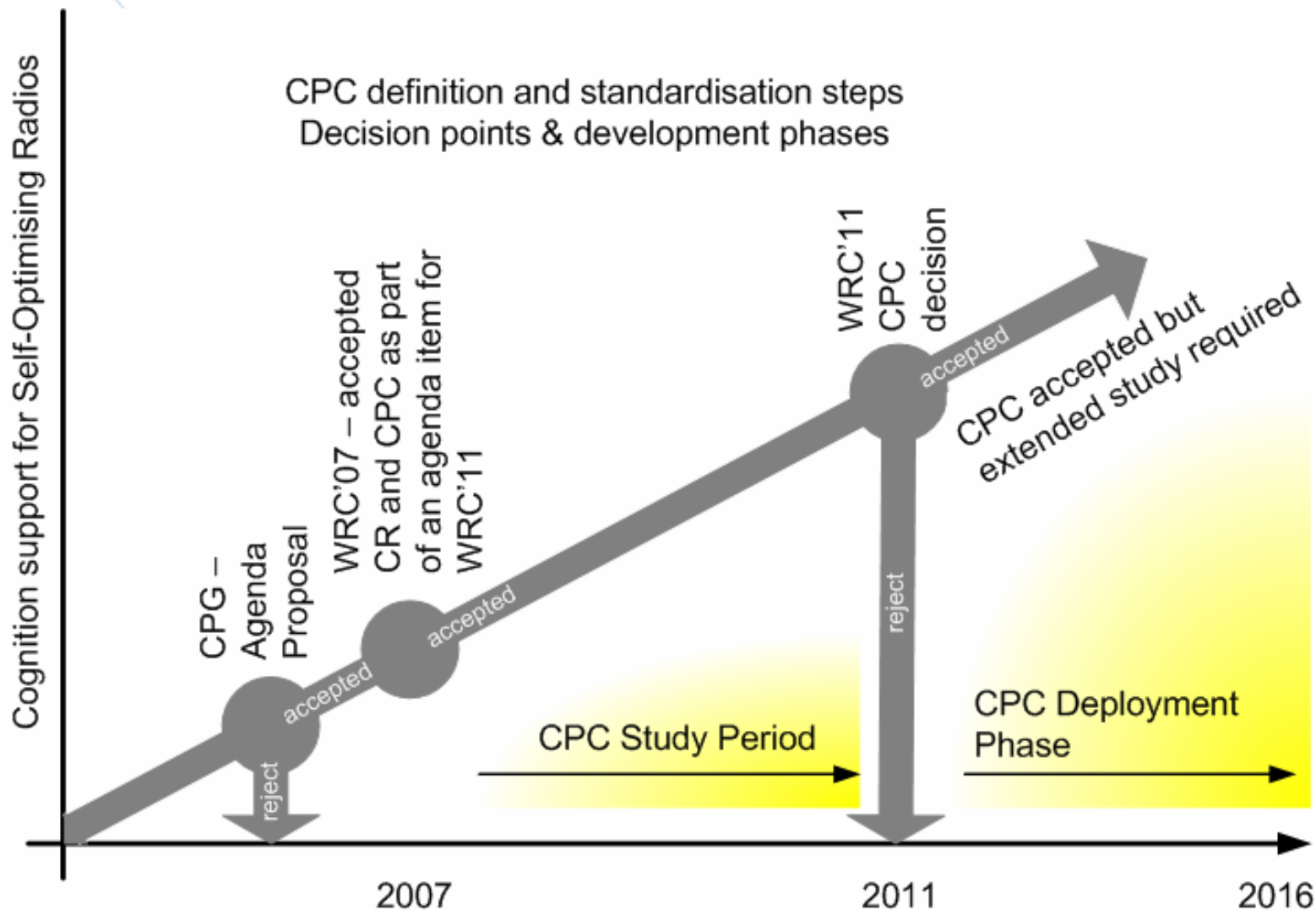
Motivation EUR:
Cognition supporting Pilot Channel

Broadcast data allowing a terminal to select a network in an environment where several technologies, possibly provided by several operators, are available
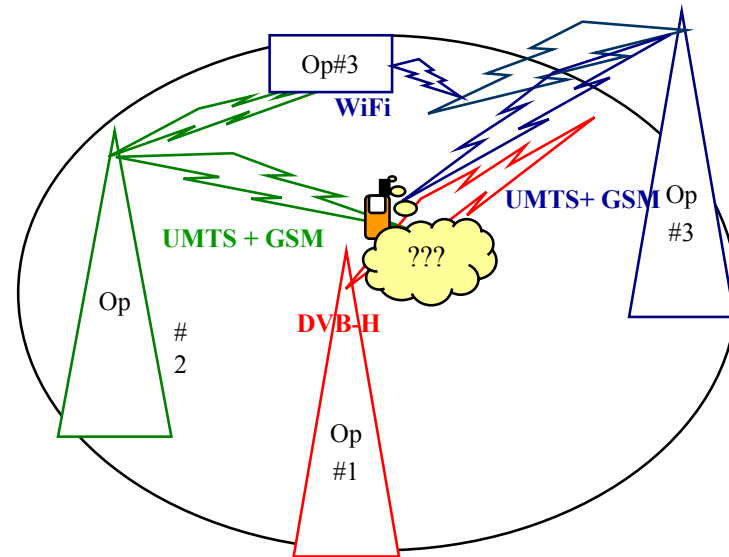
For more info: See Attachment 2 of Annex 6 to Document 8A/555-E

Motivation EUR: timeline CPC

WRC-11 – agenda item 1.19

WRC-11
AI 1.19

to consider regulatory measures and their relevance, in order to enable the introduction of software-defined radio and cognitive radio systems, based on the results of ITU-R studies, in accordance with
Resolution **956 [COM6/18] (WRC-07)**

Other implementations cognitive radio related to Resolution 956 [COM6/18] (WRC-07)

- **Database** – download information into mobile via a wired or wireless connection

- **White space** use via cognitive radio

- **Dedicated frequency band** for cognitive radio

Resolution 956 [COM6/18] (WRC-07): considering

considering

a) that cognitive radio and self-configuring networks are expected to provide additional flexibility and improved efficiency to the overall spectrum use;

b) that ITU-R is already studying such advanced radio technologies, their functionalities, the key technical characteristics, requirements, performance and benefits (Question ITU-R 241/8);

c) that studies have shown that software defined radio using cognitive control mechanisms is an approach for achieving better spectrum utilization, dynamic spectrum management, and flexible spectrum use (Report ITU-R M.2064);

Resolution 956 [COM6/18] (WRC-07): considering

d) that considerable research and development is being carried out on cognitive radio systems and related network configurations such as self-configuring networks;

e) that cognitive radio systems may cover a number of radio access techniques (RATs);

f) that cognitive radio systems include self-configuring networks of different network topologies that will be able to set their spectrum usage based on the locally available spectrum;

g) that without any information about the location and characteristics of other RATs within the covered frequency range reachable from the mobile terminal, it will be necessary to scan the whole tuning range in order to discover the local spectrum usage, which will result in a huge power and time consumption;

h) that without additional means, it may not be possible to discover receive-only usage;

i) that some studies indicate usefulness to have means to assist in the determination of the local spectrum usage, such as wireless or wired access to a database or to other networks;

Resolution 956 [COM6/18] (WRC-07): considering

j)   that some studies indicate a possible need for a worldwide harmonized cognitive supporting pilot channel with a bandwidth less than 50 kHz, whilst other studies indicate that the availability of a database could support access and connectivity, and therefore support the use of these systems,

# Resolves of Resolution 956 [COM6/18] (WRC-07)

resolves to invite ITU-R

1 to study whether there is a need for regulatory measures related to the application of cognitive radio system technologies;

2 to study whether there is a need for regulatory measures related to the application of software-defined radio,

resolves further

that WRC-11 consider the results of these studies and take the appropriate actions.

WRC-11 – agenda item 1.19: responsibilities

Spectrum management methodologies and economic strategies

WP1B

Responsible group

SG3   SG4   SG5   SG6   SG7

Concerned groups
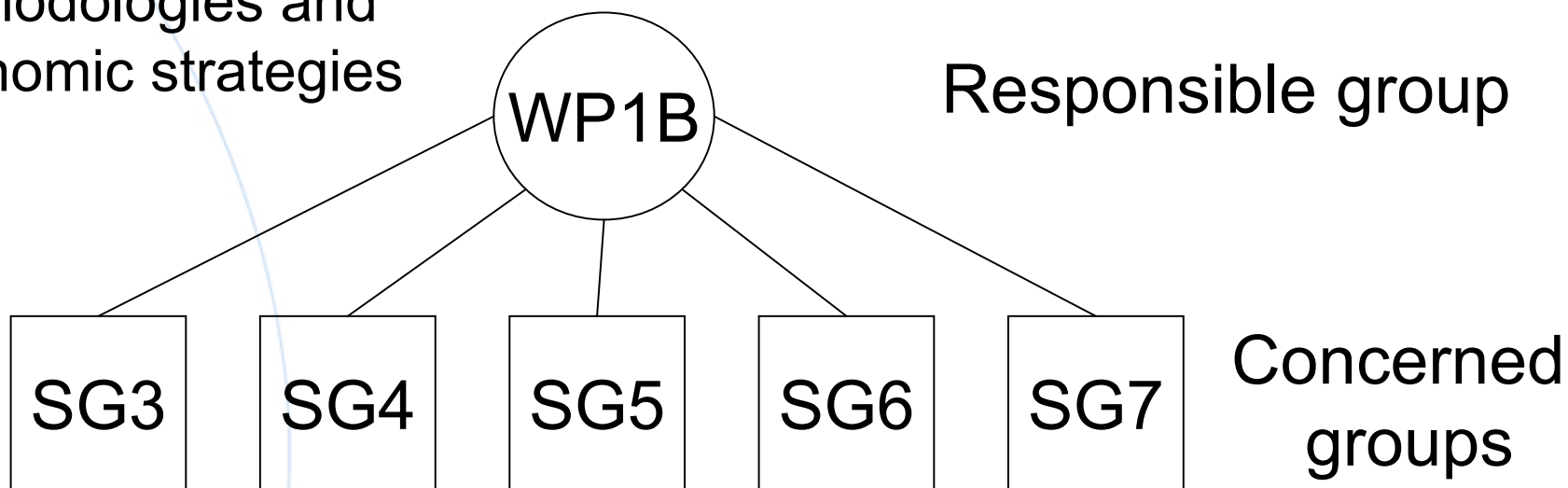
Radiowave propagation   Satellite services   Terrestrial services   Broadcasting service   Science services

Work done/in progress: Cognitive radio systems

- Question ITU-R 241/8 "Cognitive radio systems in the mobile service"

  - Annex 6 to doc. 8A/555-E Working document towards a Preliminary Draft New Report "Cognitive radio systems in the land mobile service"

Work done/in progress: SDR

- Question ITU-R 230-1/8 "Software defined radio"

  - Report ITU-R M. 2117 (to be published in Feb. 2008) "Software defined radio in the land mobile, amateur and amateur satellite services" – replaces Reports ITU-R M. 2063 and 2064

Potential regulatory implications of SDR

- **Interference** considerations
  - e.g. concerns regarding SDRs that are remotely programmable and have the hardware capability to transmit in critical frequency bands in which they are not authorized

- Changes to **spectrum management**
  - e.g. using portions of spectrum that are unused when considered on a time and geographical basis

Source: Report ITU-R M. 2117

Potential regulatory implications of SDR

- Implications for **certification and conformity**
  - What to do when devices can change their operating parameters ex post of certification or declaration of conformity?

- Implications for **circulation**
  - Different approaches might be taken by different administrations to achieve the desired effect

Source: Report ITU-R M. 2117

Suggestions for action

- Consider whether there is a need for **regulatory measures** related to the **potential regulatory implications** of cognitive radio system technologies and of SDRs
    - For cognitive radio systems, see working document towards PDN Report "Cognitive radio systems in the land mobile service"
    - For SDRs, start with those listed in section 8 of Report ITU-R M. 2117

Suggestions for action

- Consider potential need for a worldwide harmonized cognitive supporting pilot channel
    - If it is needed, which frequencies would be candidates and what would be the spectrum requirements (estimate 50 kHz)?
- Consider if regulatory measures are needed for non-CPC models (e.g. database model, white space, etc.)

Thank you for your attention.