ITU-D Regional Development Forums 2010 for the Africa region on
"Modern spectrum Management and Transition from Analogue to Digital Broadcasting – Trends and Technologies"
Banjul (Gambia), 14 - 16 July 2010

Session 1: Spectrum management: theory and practice; automation and engineering tools

Policies and Strategies to Optimise the Use of the RF Spectrum

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14 July 2010

Items which need to be regulated

1. RF allocations to radio services; follow ITU RR Region 1
2. Assignment of licence and RF to Tx Stations
3. Fee collection: RF License & annual fees
4. Type approval of equipment (?!); not in CE countries
5. Coordination with neighbour countries (no borders to the ElectroMagnetic waves)
6. Notifying ITU to the Master International Frequency Register (MIFR)
7. External relations: toward ITU, International and African commissions: ATU, CTO, CAPTEF, ECOWAS, FRATEL, TRASA; see my PhD thesis http://eprints.mdx.ac.uk/133/2/MazarAug08.pdf p. 179

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Roles of the National Spectrum Management

1. Avoid and solve interference
2. Design long and short range RF spectrum
3. Support Engineering: Propagation, DTM
4. Coordinate with Military Wireless Services
5. Advance new wireless technologies (such as digital audio and video)
6. Coordinate with other Administrations
7. Advance new technologies and efficient import of equipment

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Theories and Policies

1. So begins Leo Tolstoy's Anna Karenina : ‘All happy families are alike; each unhappy family is unhappy in its own way’
2. Between 2 points in planar geometry there is only one simple line, but indefinite curves
3. 'Great minds think alike' (Michaelian)
4. ‘Stand on the shoulders of giants‘ (also I. Newton)
5. 'Okham’s Razor': ‘if you have to choose between competing theories, choose the simplest theory- it is most likely to be true’

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How to manage the RF Spectrum

1. Follow Regional Allocations and Assignments; try to ease circulation of equipment
2. Coordinate (bi-lateral and multi-lateral) with your neighbours
3. Don't invent specific allocations; with whom do you want to be identified? Follow its rules and standards
4. Transparency; Light Touch (?); central-based or market-oriented?
5. Try **not** to allocate to fixed transmitters and receivers (e.g. TV from air), if there is an alternative (cable or satellite)
6. Allocate RF spectrum with a vision towards implementing in many cases markets
7. Ensure the effective (reuse) and efficient (bits/hertz) use of the RF Spectrum
8. Decrease Interference by assigning: min power, min bandwidth, max RF

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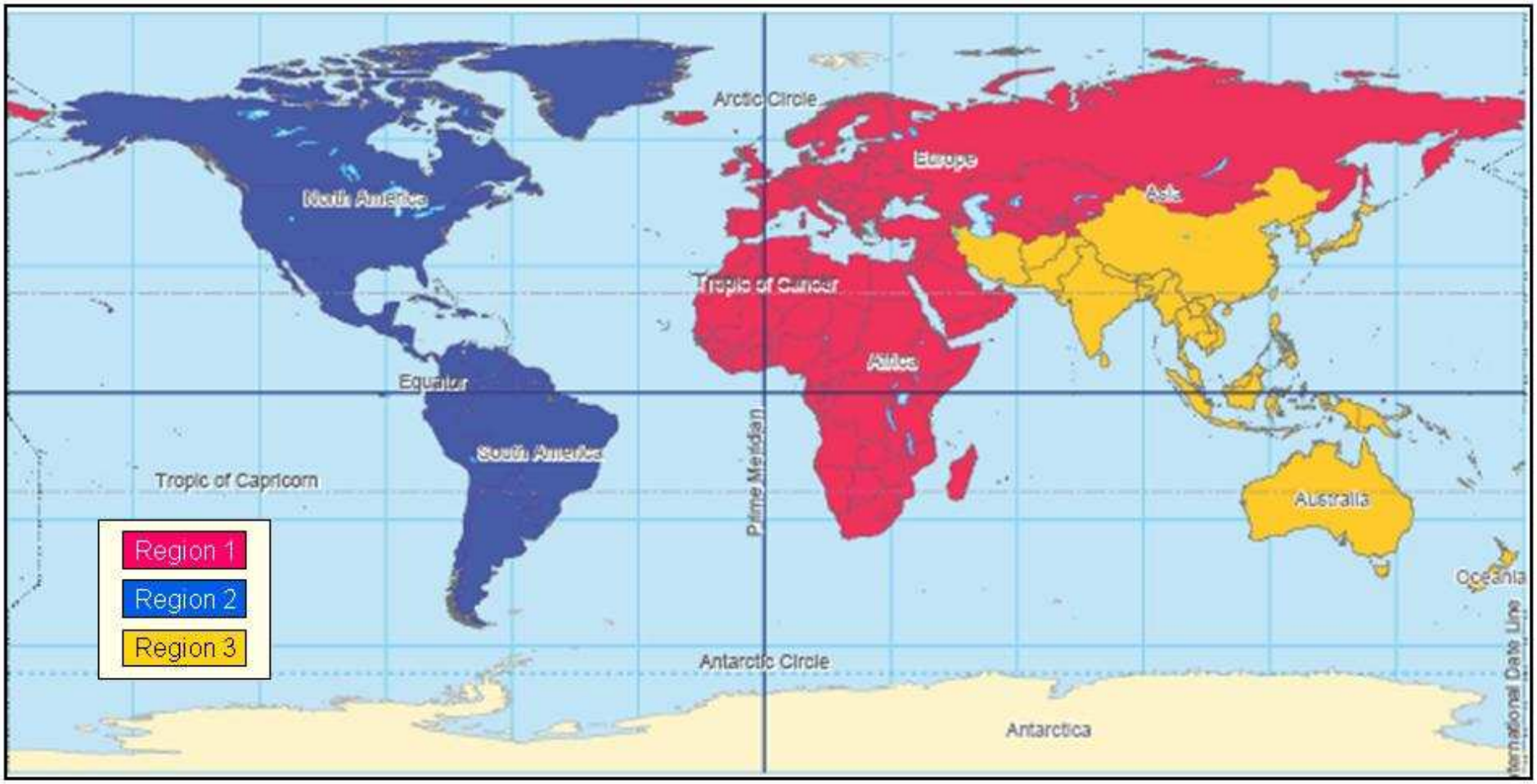
ITU Regions



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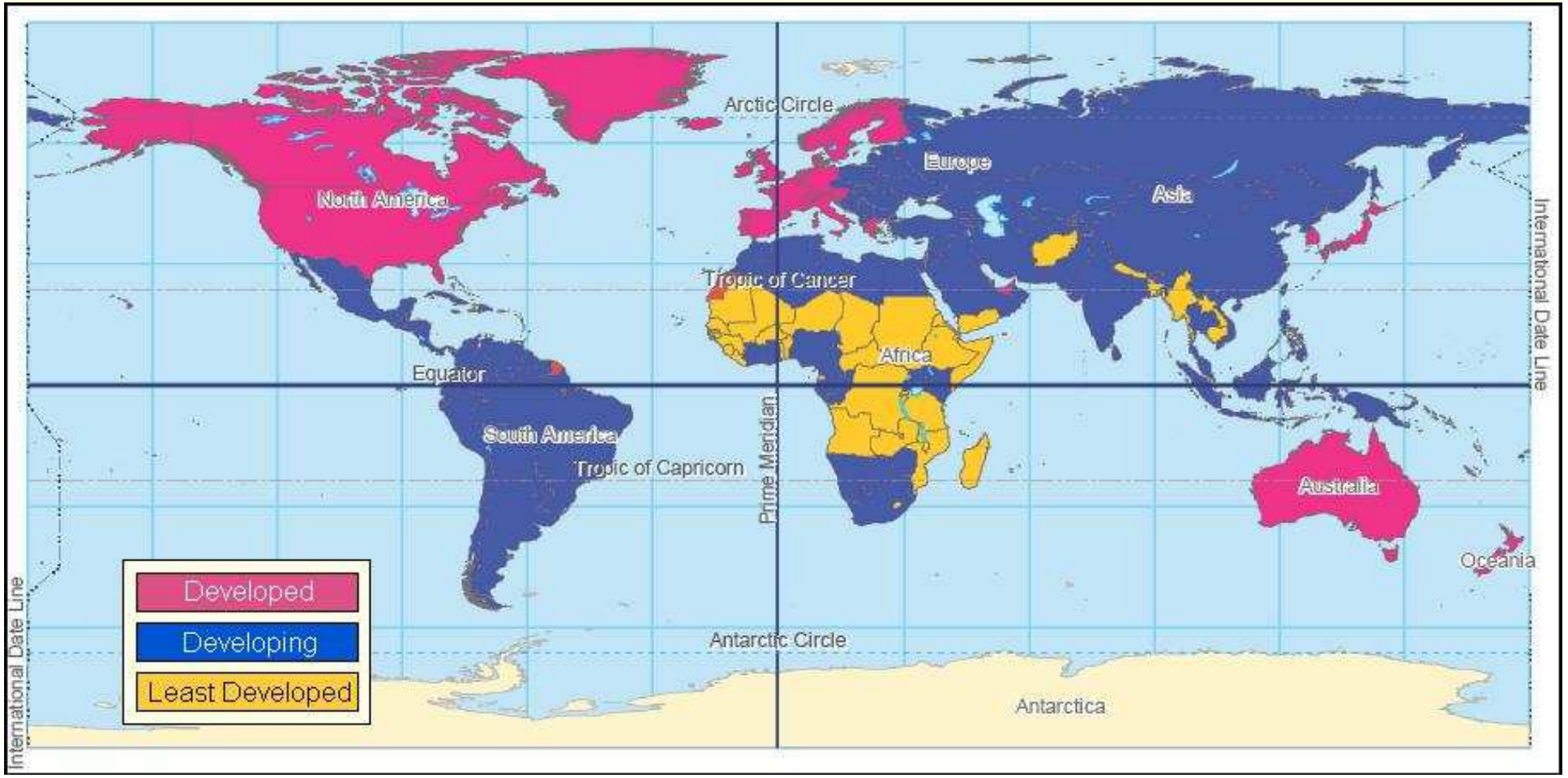
Developed, Developing and LDCs



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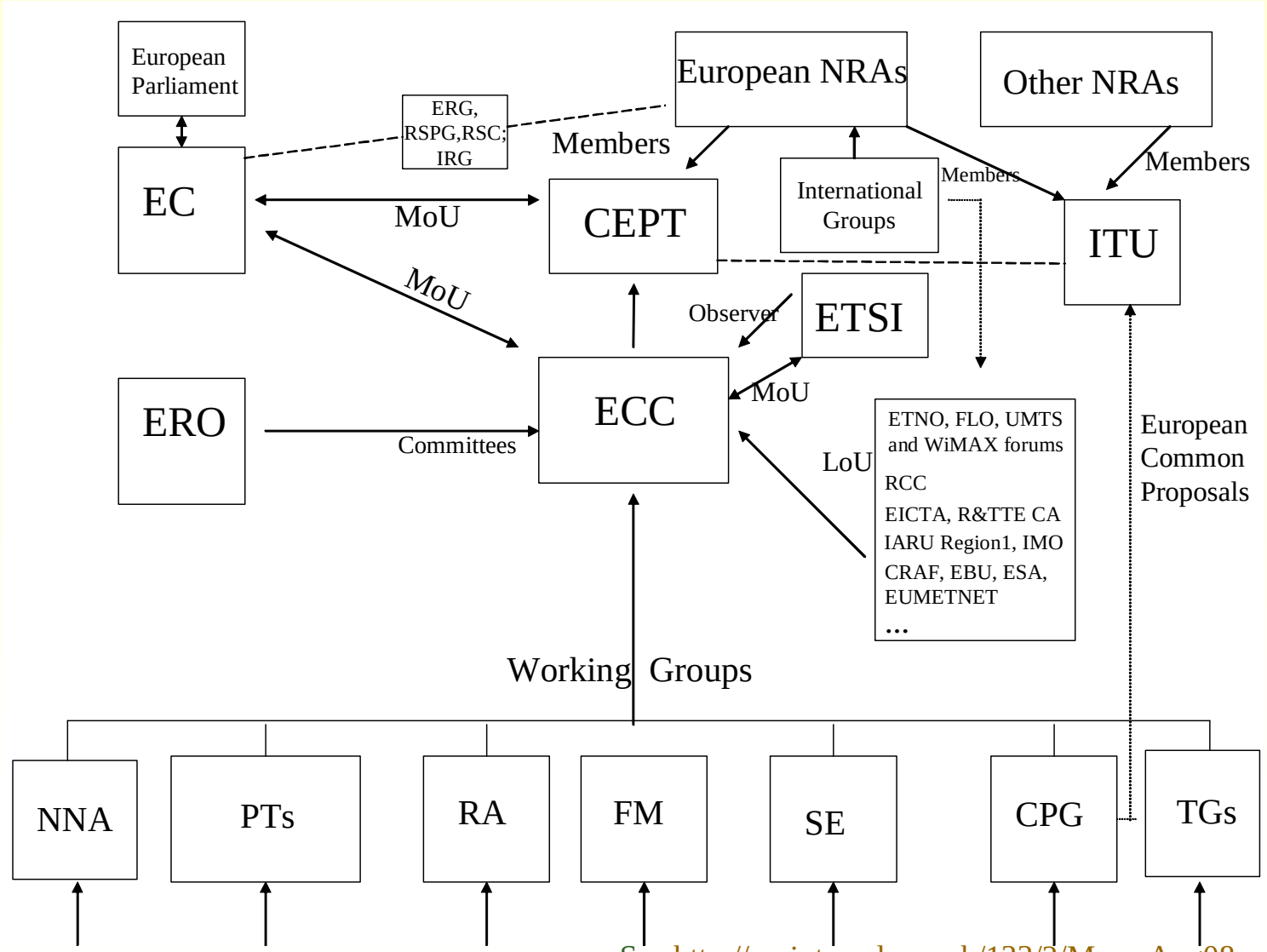
The Main Players in European RF regulation



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Key of Abbreviations

CPG: Conference Preparatory Group (preparations for ITU Conferences); CRAF: Committee on Radio Astronomy Frequencies; EBU: European Broadcasting Union; EC: European Commission; ECC: Electronic Communications Committee (formerly European Radiocommunications Committee ERC); EICTA: European Information and Communications Technology Industry Association; ERG: European Regulators Group (EC body); ERO: European Radiocommunications Office; ESA: European Space Agency; ESOA: European Satellite Operators Association; ETNO: European Telecommunications Network Operators; EUMETNET: European National Meteorological Services; FLO Forward Link Only; FM: Frequency Management; IARU: International Amateur Radio Union; IMO International Maritime Organisation; IRG: Independent Regulators Group (pan-European body); NRA: National Regulatory Authority; NNA: Numbering, Naming and Addressing (non RF); Project Teams PT PT_1: IMT2000, PT_2: TRIS Technical Regulation and Interconnection Standards, PT_9: Maritime issues; Task Groups TG: UWB (TG3) and Digital Dividend (TG4). RA: Radio Affairs (Radio and e-Communications); RRC: Regional Commonwealth in Communications; R&TTE CA: The Radio and Telecommunications Terminal Equipment Compliance Association; RSPG: Radio Spectrum Policy Group (EC body); RSC: Radio Spectrum Committee (EC body); SE: Spectrum Engineering. Industry Stakeholders, namely companies, consultants, industry groups and international agencies, contribute to the ECC Working Groups.

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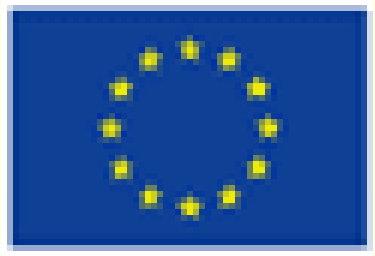
European tables that can assist the optimisation of RF spectrum in Africa



- **THE EUROPEAN TABLE OF FREQUENCY ALLOCATIONS AND UTILISATIONS IN THE FREQUENCY RANGE 9 kHz to 3000 GHz**

- **ERC RECOMMENDATION 70-03 RELATING TO THE USE OF SHORT RANGE DEVICES (SRD)**

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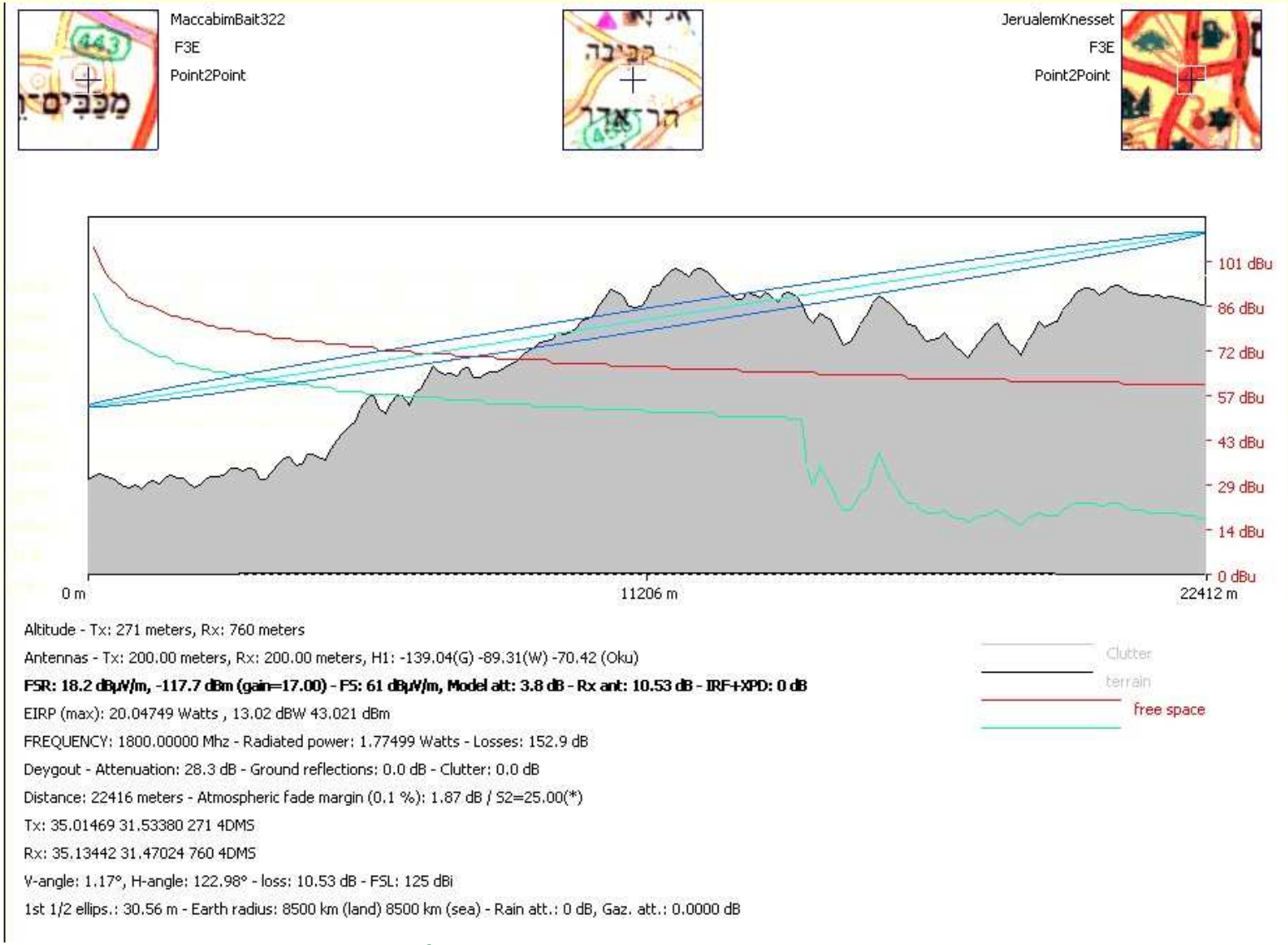
Regulatory Frameworks, France vs UK- Overall Comparison

	France	UK
Joined ITU	1865	1871
Regulatory body	ARCEP, ANFR and CSA	Ofcom
Policy maker	Ministry of Economy and Industry	BERR
Assignment & allocation of civilian & military RF spectrum	ARCEP (telecom) and CSA (broadcasting) assigns the civil RF. ANFR manages the overall spectrum. Ministry of Defence assigns military RF.	Ofcom manages non-military RF. The Spectrum Strategy Committee allocates Military use
Convergence: wired versus wireless, content versus transport	Only broadcasting is converged: CSA regulates content and transport; ARCEP licences wired and wireless. Telecom and Broadcasting remain separated	Ofcom regulates wire and radio, broadcasting and telecoms
Weighting factor	Technical/ Engineering	Economic
Type Approval (TA)	R&TTE Directive: simple and effective	
Ending analog TV	End November 2011	2012
RF control and monitor	Systematic and centralised; 57 fixed monitoring stations; full database of RF stations	Sporadically;1monito- ring station in Baldock and up to 70 vehicles
Language	French	English
Main wireless geopolitical Influence	Francophone countries, formerly colonies and colonies (eg *Françafrique*) USSR; *civil law* countries	British Commonwealth and old colonies
TV An. standards	SECAM	PAL
Broadcasting	**Audio**: AM: 526.5 - 1606.5 kHz; AM 9 KHz separation; Radio FM 87.5-108 MHz 100 KHz separation	
	Video: VHF: 47-68 MHz, 174-230 MHZ _ in Europe, except UK; UHF: 470-862 MHz Ch. separation TV: 7 MHZ in the VHF, 8 MHz in the UHF. Digital standard : **DVB-T**	

See http://eprints.mdx.ac.uk/133/2/MazarAug08.pdf pp 139-140

Engineering tool optimises RF usage; propagation model with DTM uses topographic obstacles to re-use assignments- Profile Maccabim-Jerusalem



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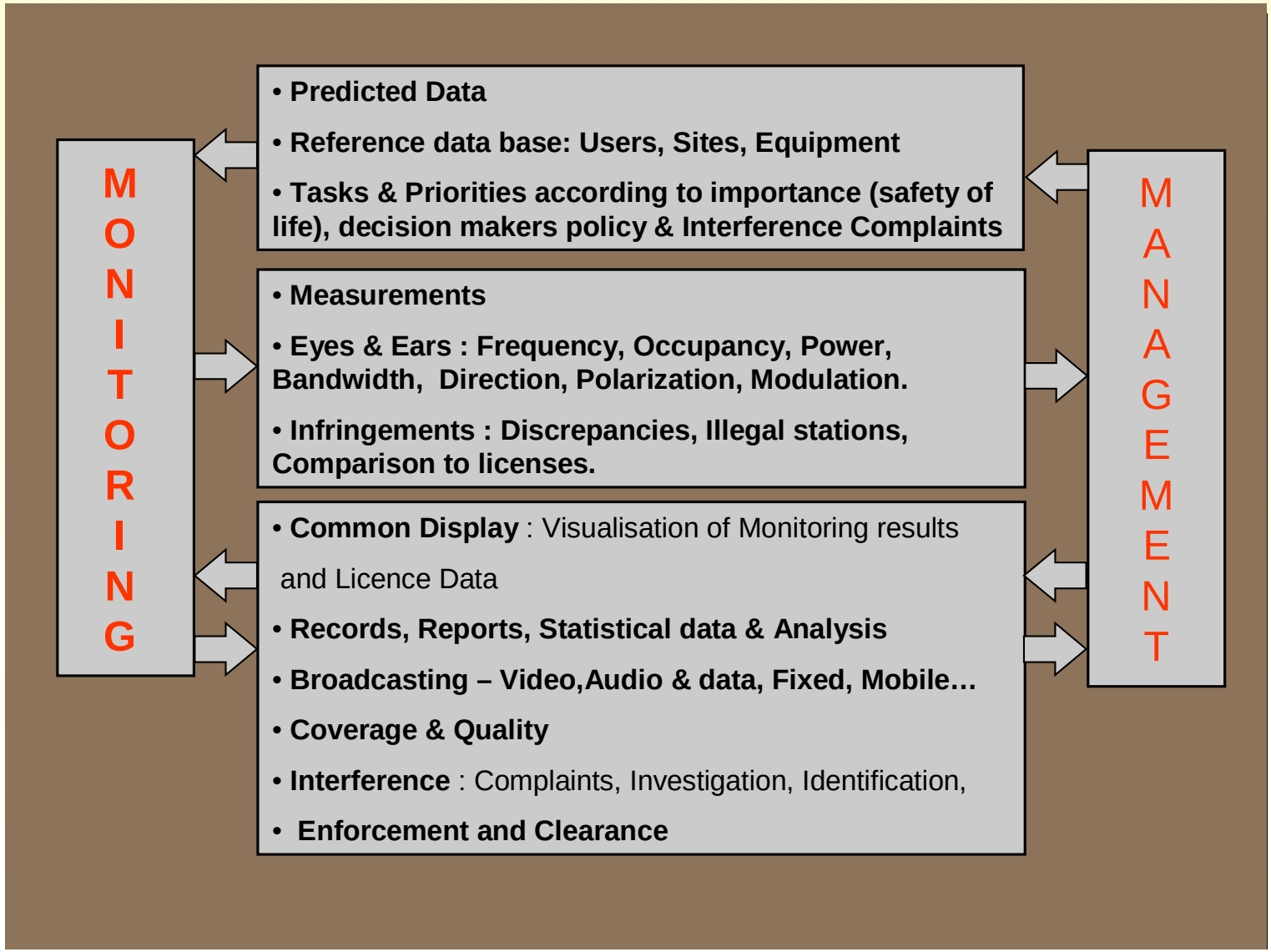
Spectrum Control (Mgmt and Monitoring)



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Any additional Qs?

Many Thanks for your kind attention

You are welcome to visit at my website

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