



The European electronic communications model, regulatory framework revision and radio spectrum management

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Spectrum management and competition

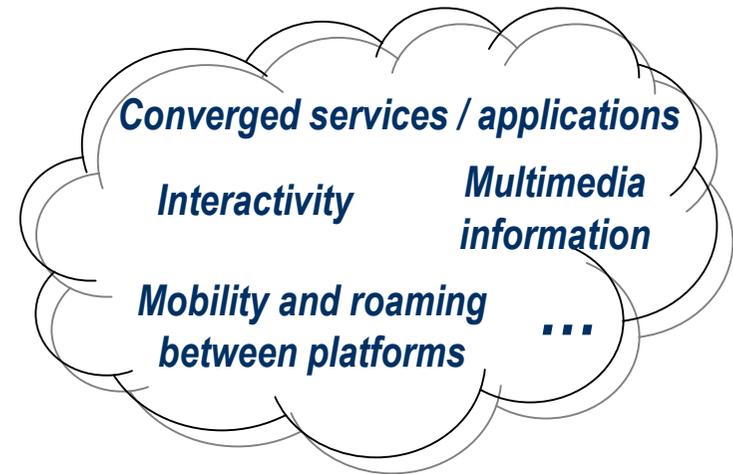
Promotion of the efficiency in the use of spectrum. Secondary trading and change of use

Conclusions

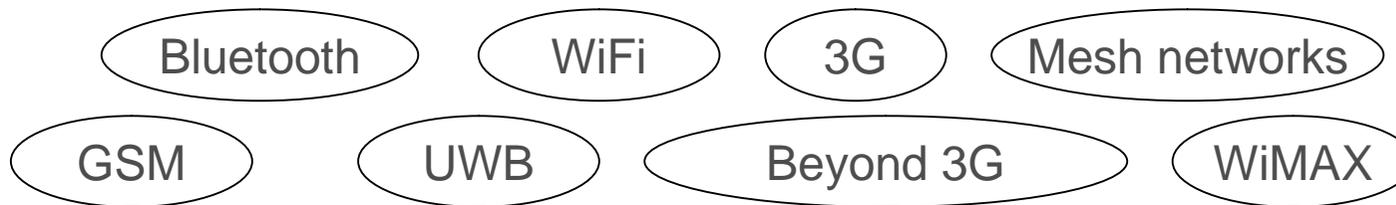
Introduction. The role of spectrum in the process of convergence

✓ Technological convergence

- Content **digitalisation** process
- Development and increase of **broadband accesses**
- Development of **IP-based technologies**
- From intra-platform mobility towards **mobility between platforms**



✓ The deployment of wireless technologies constitutes an essential factor



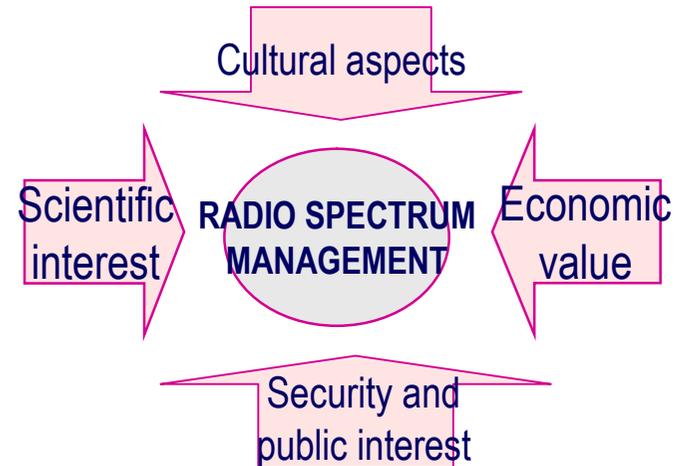
A rational assignment and an efficient use of radio spectrum become sine qua non conditions for the sector development

In addition, the policies on radio spectrum management play a fundamental role in the competition model

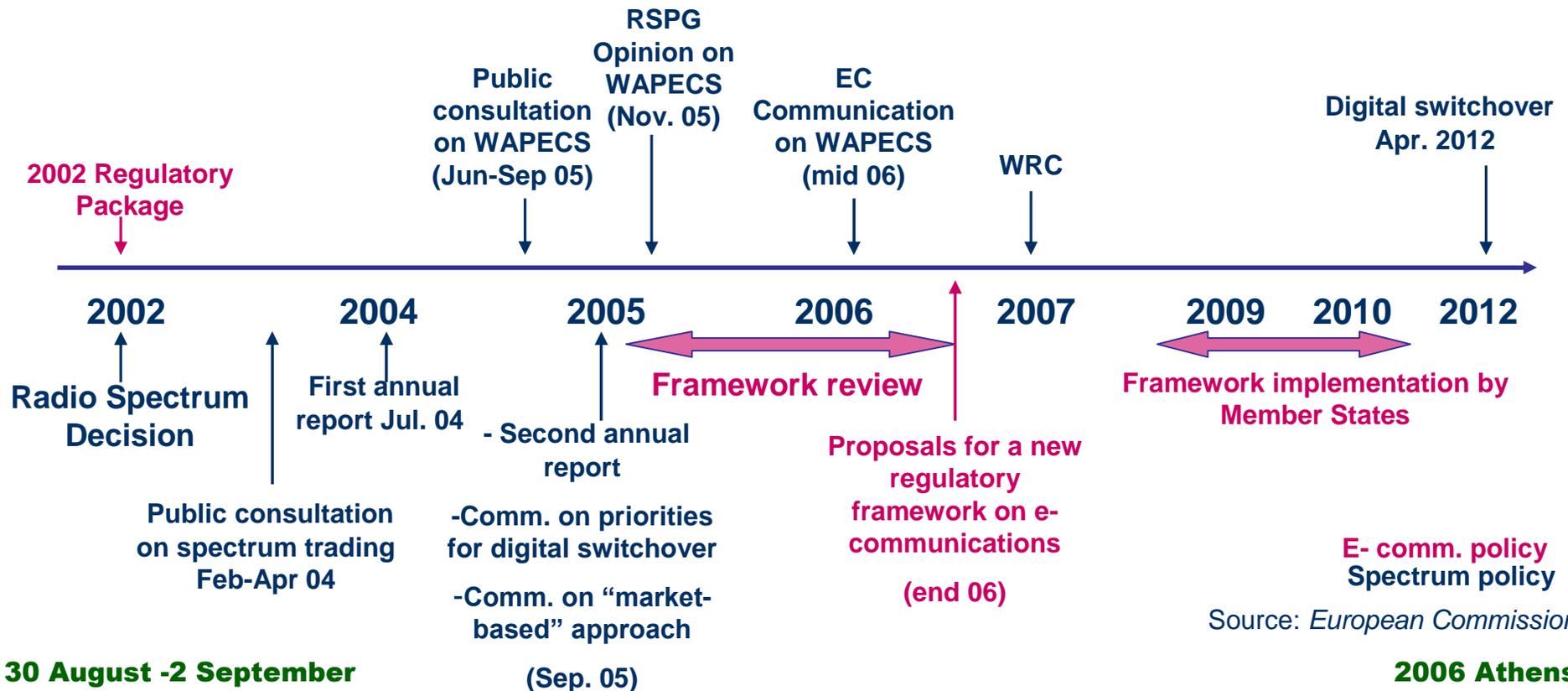


Introduction. The role of spectrum in the process of convergence

✓ Objectives of radio spectrum management :



✓ Main actions :





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:: The present competition model

- ✓ The 2002 package intended to adapt the regulation to the new converging scenario
 - Represents a step from sector-specific regulation towards general Competition Law
 - Based on the definition and analysis of “relevant markets”
- ✓ The idea of the *ladder of investment*
 - First, incumbent operators should provide access to their existing infrastructures (copper wire, **spectrum...**), so that alternative operators could enter the market and get a critical mass of users
 - In a second step, these new operators would deploy alternative infrastructures, reaching end users in the mid-long term and developing a sustainable competition model
- ✓ But...
 - Existing infrastructures have the capability of providing services of a greater interest than expected
 - A great deal of alternative operators seems to be comfortable in a service-based competition model
 - The regulation, thought to be provisional, tends to perpetuate itself...



:: The present competition model. Competition and investments

- ✓ A glance at the **mobile communications market** and the arrival of MVNO
 - On the one hand, MVNO use *en ex ante* regulation to guarantee the access to the incumbent's networks. This measure results from the lack of effective competition.
 - This is not in line with the objective of the 2002 framework of applying the *ex post* approach neither with the objective of eliminating in the mid term the regulatory intervention
 - How to know whether the industry and operators with the capability of developing mobile (and wireless) communications have reached the necessary maturity to efficiently transfer innovations and benefit the users with no intervention?

- ✓ Similar measures in fixed communications showed disparate results

Direct access from alternative providers was only used by 7.7% of EU15 subscribers

European Commission, 2006.

11th report



:: The present competition model. Competition and investments

→ Next Generation Networks

✓ *It will allow users to access the same contents and services from one provider over a variety of access technologies ...*

xDSL	New development
	Incumbent, loop owner
	Complete unbundled loop
FTTC - VDSL	New development
	Incumbent, loop owner
	Complete unbundled loop
FTTH	New development
Beyond 3G	New development
	MVNO
	B3G from 3G network
Wimax	New development
Wireless mesh network	New development

- Require a significant level of **new investments**
- Key role of **wireless technologies** and **effective use of radio spectrum**



:: The present competition model. Competition and investments

→ Facilities-based competition Vs Service-based competition

- ✓ *Service-based competition* may be useful as an initial phase for the fast introduction of competence in the market over the existing infrastructures ... but, later ... does exist a “ladder of investment”? only competition in prices? investments for NGNs?
- ✓ *Facilities-based competition* scenario in Europe? fixed / cable? fixed / mobile? ...
- ✓ Compatibility of these two models?:
 - Sustainability
 - Lacks of margins for investments
 - Asymmetries fixed/mobile ... different models with different results
 - Perpetuation of regulation
 - Integration of operators?
 - Convergent services: VoIP, IPTV, ...



:: The present competition model

- ✓ An appropriate spectrum management mechanism configures the real possibilities of an effective and sustainable competition scenario

- ✓ A revision process of the policy on radio spectrum management is needed
 - The results of said revision should have a critical influence in the evolution of the **competition model**
 - It should **make spectrum accessible** by any player committed with an effective deployment of solutions of interests for users

Beyond good intentions, a model that really favours the deployment of infrastructures, specifically including spectrum, represents an opportunity for European players and a long needed step towards an effective and sustainable competition



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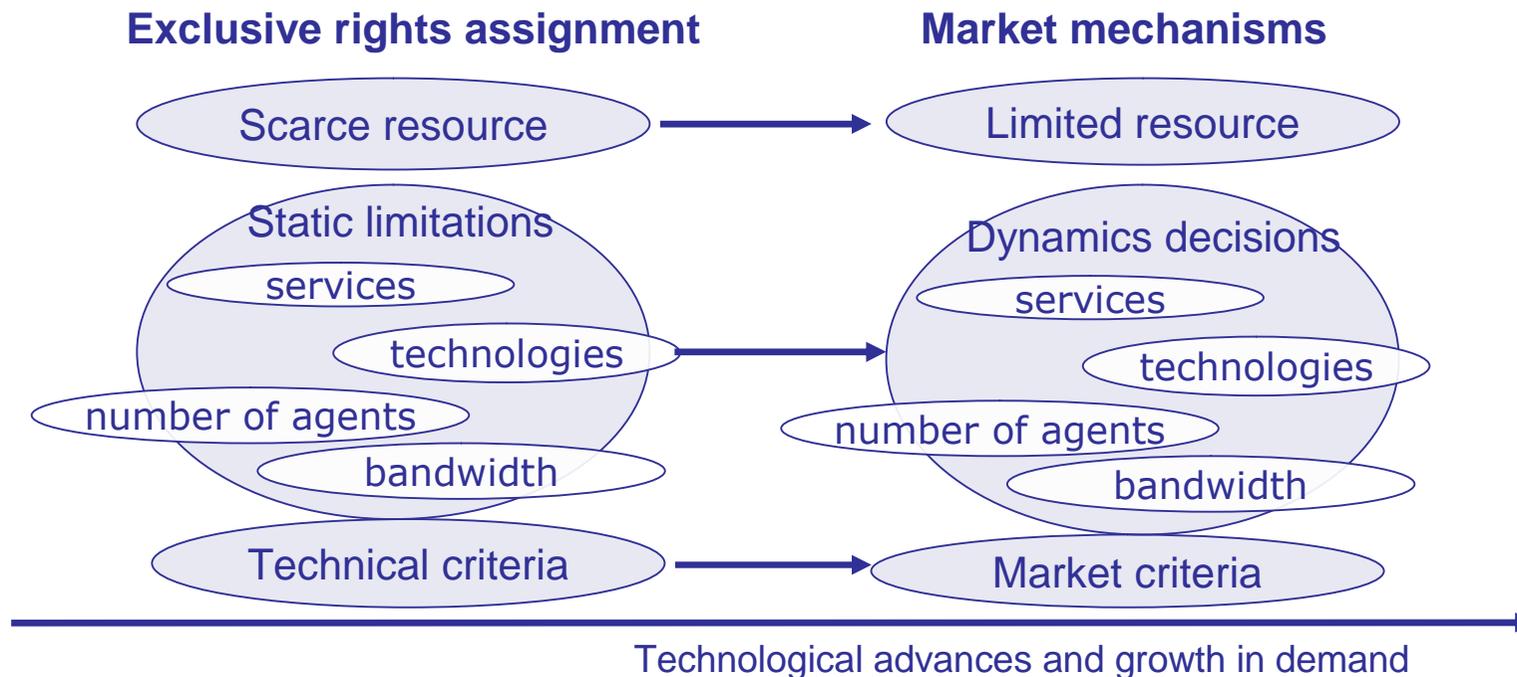
:: Spectrum management and competition. Traditional approach

- ✓ **Efficiency** in the use of spectrum is the main objective of any spectrum management mechanism
- ✓ The traditional approach achieved this efficiency...
 - Avoids harmful interference by means on careful *ex ante* planning
 - The **service**, the **technology** and the **number of agents** operating are defined in each band
 - **International coordination** assures that the same devices can be used in any country, what contributes to the creation of **scale economies** and **global services**
 - **Social efficiency** is reached through the payment of taxes by license holders
- ✓ ... but the technological innovations require more flexibility
 - An excess of bureaucracy in the allocation mechanisms may delay the introduction of innovative technologies
 - The improvements that technology introduces in the use of spectrum must be taken into account
 - The bands that are still allocated to obsolete services or technologies should be effectively reallocated

FTCE :: Spectrum management and competition. A new approach

✓ A new market-oriented approach represents a promising alternative

- Based on the introduction of **market mechanisms**, as well as on the principles of **technological neutrality** and **service neutrality**



*These market-oriented mechanisms offer greater **flexibility and openness**, both in the use and allocation of spectrum. In addition, they also provide a **greater speed of response to technological innovation**, making easier their entry to the markets*



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:: Promotion of the efficiency in the use of spectrum

- ✓ Two possible new tools to promote efficiency in the use of spectrum:
 - **Spectrum trading** refers to the creation of a market in where agents can buy or sell their rights of usage of the radio spectrum
 - **Spectrum liberalisation** refers to the possibility of modifying the conditions of use in an specific band

	Approximation led by the regulator (<i>ex ante</i>)	Market-oriented approximation (<i>ex post</i>)
Use of spectrum	Harmonisation	Liberalisation License-exemption
Spectrum allocation	First come, first served Beauty contest	Auction Spectrum trading



:: Promotion of the efficiency in the use of spectrum

- ✓ The objective: increase the spectrum usage efficiency
 - A **cost of opportunity** is introduced for established agents to maintain idle spectrum
 - Incentive to avoid bands allocated to obsolete technologies or to operators lacking capability to exploit them
 - It brings closer the social cost of maintaining idle spectrum and the private cost of doing so
 - The spectrum is **assigned to the agent that values it the most**
 - The one with the best business model
 - The one with the most efficient technology
 - Major **incentive for innovation**
 - A free exchange system allows innovations to access the market more dynamically
 - Either current license holders introduce innovations or new entrants with better technology enter the market

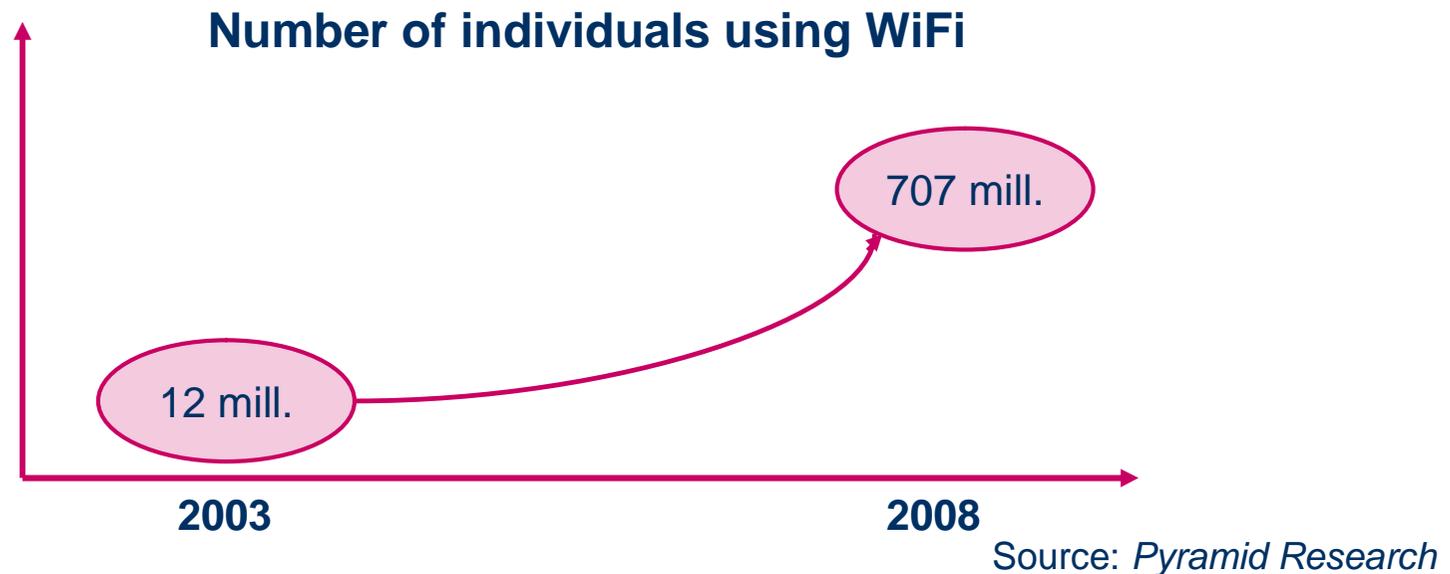
All these objectives are guaranteed continuously, without the need to wait for licenses to be awarded and the bureaucratic burden it entails



:: Promotion of the efficiency in the use of spectrum

✓ An example of success: license-exemption bands

- Lately, precisely bands with license-exemption have been an important source of successful innovations, such as Bluetooth or WiFi
- It proves how a greater flexibility in spectrum management mechanisms contributes to innovation



In any case, the relaxation of the ex ante regulation will require an increase of the ex post regulation, thus guaranteeing the adequate operation of the resource



::: Promotion of the efficiency in the use of spectrum

→ The introduction of spectrum trading and liberalisation (I)

✓ Secondary trading and liberalisation are treated differently in the current European regulation

- The Framework directive allows secondary market...
- ...but it specifically forbids usage liberalisation

✓ They can be used separately or combined

- Both tools should be assessed separately, given their different implications
- However, the first without the second seems only a modest first step

✓ The enormous influence of the method for primary allocation should be noted

*It is impossible to establish a secondary market without **clearly defining the conditions** of every license, thus an exquisitely clear definition of the rights of usage of each band/service becomes essential*



:: Promotion of the efficiency in the use of spectrum

→ The introduction of spectrum trading and liberalisation (II)

✓ A change in traditional management mechanisms also entails **risks** that must be considered

→ Increase of **harmful interference**

- Liberalisation of spectrum use may reduce the level of coordination among agents
- However, technological innovations contribute to minimise harmful interference and improve spectrum sharing mechanisms

→ Guaranteeing the **scale economies** and international harmonisation of **global services**

- GSM as a paradigmatic example of European success
- The new model should not be incompatible with guaranteeing certain level of harmonisation and consistency

Given the numerous singularities, the introduction of new mechanisms should be considered on a case by case basis, considering the particularities of each band and service.



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::: Conclusions

✓ The current competition model in e-communications faces serious structural issues

- Need to solve the clash of approaches (service-based competition Vs facilities-based competition) and avoid ex ante regulation perpetuating itself
- The requirement of mayor investments call for a model of facilities-based competition

Long term objective: to develop an effective and sustainable competition, maintaining the minimum level of intervention

✓ Spectrum plays a crucial role in the design of a new competition model, as it represents the main access technology

- Greater affordability and high value of mobility
- Importance even bigger in Europe, where there is no common alternative infrastructure (such as cable)

This involves that all players should have the opportunity to access spectrum



:: Conclusions

✓ To reach these goals, there is a need to change the spectrum management mechanisms ...

- Optimising efficiency of the spectrum usage
- Providing flexibility and transparency in the allocation process
- Promoting innovation

✓ ... And, as acknowledged by the Commission, the ongoing revision of the regulatory framework for e-communications represents a valuable opportunity to introduce these changes

*“There are important challenges in front of us [...] to reduce existing constraints and empower spectrum users to make their own choices. **The current review of the regulatory framework will provide for a valuable window of opportunity** for discussing how we can ensure that this new environment becomes a reality”*

Viviane Reding.

European Commissioner of Information Society and Media



:: Conclusions

✓ In this sense, the introduction of a new market-based approach seems to be a useful tool...

- Spectrum trading promotes efficiency in the use and in the assignment to agents
- Spectrum liberalisation or flexibilisation facilitates the introduction of innovation

This new model would represent, a step towards ex post regulation, allowing the market to act and assign spectrum to those agents making the most efficient use of it at any time, thus encouraging investments and innovations, and guaranteeing that all actors in the market have the chance of accessing this resource

✓ ...Provided that some conditions are fulfilled

- Strengthening of the ex post regulation
- Maintaining international coordination up to a certain degree
- Clarifying the conditions in the primary allocation

Although there might be a difficult transitional period, the benefits of flexibility, efficiency and innovation will surpass the problems, and the benefits obtained through the improvement of the efficiency would finally have an effect on all society



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