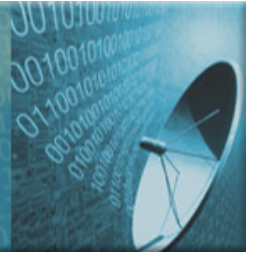




International
Telecommunication
Union

Workshop on Market Mechanisms for Spectrum Management



ITU Headquarters, Geneva – 22 to 23 January 2007

Workshop Information Document

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Advance Programme

<i>Monday, 22 January 2007</i>	
8:30 – 9:00	<u>Event Registration</u>
9:00 – 9:20	<p><u>Session 1</u></p> <p><i>Opening Plenary</i></p> <ul style="list-style-type: none"> • Welcome and Opening Addresses – Valery Timofeev, Director, Radiocommunication Bureau, ITU • Welcoming Address – Guido Salerno, General Manager, Ugo Bordoni Foundation (FUB) • Chairman’s Remarks – Dr. William Lehr, Research Associate in the Center for Technology, Policy and Industrial Development (CTPID) at Massachusetts Institute of Technology (MIT)
9:20 – 10:00	<p><u>Session 2</u></p> <p><i>What is the spectrum debate all about?</i></p> <p>In response to the difficulty government administrations have in coping with increasing demands on spectrum, a growing number of countries are shifting towards alternative models. There are two major trends, one driven by the market, the other by technological innovation. Practical solutions are now emerging that combine some of the features of both.</p> <p>Although individual countries will approach this debate with unique requirements and varying resources, many of the basic questions will be mutually applicable. Can we rely solely on ‘the invisible hand’ to allocate a nations spectrum through secondary trading? Is regulation constraining technological development and efficiency? How should issues such as spectrum pricing, military allocation and interference measurement be managed? And most importantly, which of these variables will best serve end users, both financially and in terms of quality of service?</p> <ul style="list-style-type: none"> • “Seeking the Right Blend of Spectrum Management Approaches” - Tim Kelly, Head of the Strategy and Policy Unit, International Telecommunication Union (ITU) • “Global Challenges to Spectrum Access: Relationship between Civil and Military Uses”, Mike Goddard, Director for Spectrum and International Policy at Ofcom (UK) and Vice-Chairman of the Radio Spectrum Policy Group.
10.00 – 11:30	<p><u>Session 3</u></p> <p><i>How will spectrum markets improve efficiency?</i></p> <p>Modern society’s dependence on electronic communications is increasing the market requirement for a broad range of radio frequencies. From mobile</p>

	<p>telephony to wireless internet access to TV broadcasting, technologies need to harmoniously co-exist within our radiocommunications spectrum. The traditional approach to solving competing demands for frequencies has been based upon planning who has the right to use the spectrum. With the sharp acceleration in demand in recent years, change in the marketplace is outpacing the ability of these national and international regulatory regimes to respond.</p> <p>This section will examine some of the regulatory models currently in use and the extent to which these countries operate- or intend operate – flexible systems, particularly analyzing how they will permit a more efficient use of spectrum.</p> <ul style="list-style-type: none"> • Presentation of Background Paper on “Market Mechanisms for Spectrum Management” – Coleman Bazelon, Vice President of the Analysis Group and Thomas Hazlett , Prof. of Law & Economics, George Mason University • Francois Rancy, Vice-chairman RSPG and Director General, Agence Nationale des Fréquences (ANFR), France • Presentation of Background Paper on “Space-Centric Management: A General Solution for Equitable Access to Radio Spectrum Space under Conditions of Flexible Use” - Michael Whittaker, Director, FuturePace Solutions, Australia • Ingrid Poni, Counsellor for Communications. South African Embassy in Paris, South Africa
<p>11:30 – 11:45</p>	<p>Coffee Break</p>
<p>11:45 – 13:00</p>	<p><u>Session 4</u></p> <p><i>Panel discussion</i></p> <p>This, the first of two panel discussions, will provide the opportunity to debate the spectrum policies being implemented globally with international industry and policy leaders. There will be the chance for questions to be raised and for policies to be compared openly.</p> <p>Through lively discussion it is hoped that participants will be able to challenge current practices, with a combination of first hand experience and academic research. This will endow the workshop with a dynamic edge, facilitating the active development of spectrum management theory, whilst the broad experience of the panel will ensure a comprehensive debate.</p> <ul style="list-style-type: none"> • Moderator and Keynote speech: Arturas Medeisis, Deputy Director of European Radiocommunications Office (ERO) • William Luther, Consultant, Office of Spectrum Management, United States of America • Roberto Ercole, Spectrum Projects Manager GSM Association • Phil Laven, Director – Technical Department, European Broadcasting Union (EBU) • Ewan Sutherland, Consultant
<p>13:00 – 14:00</p>	<p>Lunch</p>
<p>14:00 – 16:00</p>	<p><u>Session 5</u></p>

	<p><i>New Technology, Markets and Changing Spectrum Requirements</i></p> <p>Developments in technology over the last century have opened up the range of previously unusable radio spectrum, so enabling ever-greater access to new allocations and assignments. There is however an increasing tension between services offered in license exempt spectrum (e.g., wi-fi) and those operating in bands where high prices have been obtained at auction (e.g., IMT-2000/3G).</p> <p>This session will look at the future needs for spectrum at a time of rapid technological change and convergence, providing an overview of the policy implications of technological developments, and how these technologies can accommodate an increased level of market competition. Will evolutionary change be sufficient or is a revolution required in centralized command and control-type spectrum management?</p> <ul style="list-style-type: none"> • Presentation of Background Paper ‘Regulatory and Policy Implications of Emerging Technologies to Spectrum Management’ – Frédéric Pujol, Main Analyst, IDATE • Giovanni Santella, Senior Engineer, Italian Communications Authority • “Impact of New Technologies for Future Spectrum Management” Philippe Laine - Network Strategy Manager, CTO Alcatel • Ron Resnick, Chairman of WiMAX Forum and Director of Marketing, Broadband Wireless Division, Intel Corporation • Richard Feasey – Public Policy Director Vodafone Group • Chris Doyle, Senior Research Fellow, Centre for Management Under Regulation, Warwick Business School, University of Warwick, United Kingdom
<p>16:00 – 16.15</p>	<p>Coffee Break</p>
<p>16:15 – 17:15</p>	<p><u>Session 6</u></p> <p><i>Panel discussion</i></p> <p>In this second and final panel discussion, guests will be encouraged to offer their assessment of the effects of new technology on the mechanics of spectrum allocation. For instance, opponents of allocating exclusive property rights in spectrum have recently highlighted "spectrum commons" as a realistic alternative. Proposing views classing spectrum as a physical asset denominated by frequencies, artificially constrain transmission mechanisms, producing inefficient outcomes. Commons proponents claim that emerging technologies call into question the basic rationale for exclusive control of wireless frequencies. However, does this approach rely too heavily on as yet unproven technologies? Will such a ‘technical’ solution prove unilaterally viable?</p> <p>The panellists represent a wealth of experience from both technical and political outlooks on spectrum management. This session will therefore provide a unique opportunity to put individual interpretations on the development of spectrum management under the scrutiny of a panel of experts.</p> <ul style="list-style-type: none"> • Moderator and Keynote Speech: Guido Salerno, General Manager, Ugo

	<p>Bordoni Foundation (FUB)</p> <ul style="list-style-type: none"> • FUB • Wolfgang Kopf, Executive Vice President Public & Regulatory Affairs, T-Mobile International AG & Co. KG, Germany • John Peha, Associate Director of the Center for Wireless and Broadband Networking, Full Professor, in the Department of Electrical and Computer Engineering, and the Department of Engineering and Public Policy
17:15 – 18.00	Panel discussion among the above-mentioned speakers moderated by Session Chair as well as questions from the floor.

<i>Tuesday, 23 January 2007</i>	
9:00 – 11:00	<p><u>Session 7</u></p> <p><u>To be defined</u></p> <p><i>Opening Plenary</i></p> <ul style="list-style-type: none"> • Welcome and Summary - Dr. William Lehr, Research Associate in the Center for Technology, Policy and Industrial Development (CTPID) at Massachusetts Institute of Technology (MIT)
11:00 – 11.15	Coffee Break
11.15 – 12:15	<p><u>Session 8</u></p> <p><i>New Approaches to Spectrum Management Worldwide: Country Experiences</i></p> <p>The session will provide an invaluable opportunity to hear international speakers present their analysis of strategy implementation in several countries. Not only will this enable guests to observe the complications involved with deploying avant-garde policies on a national scale, but also provide important information about the differing issues experienced by countries at varying stages of technological and economic development.</p> <p>This collection of case studies will offer an outline of several policies geared toward the liberalization of spectrum markets, providing a definitive indication as to the true value of governmental deregulation.</p> <ul style="list-style-type: none"> • Francesco Troisi - Frequency Management and Planning General Director, Ministry of Communications, Italy • Sudhir Gupta, Advisor, Telecom Regulatory Authority of India • "Spectrum Management at the Edge of Europe"- Samuel Ritchie, Spectrum Management and Technologies Manager, Comreg, Ireland
12:15 – 12:45	<p><i>Open discussion</i></p> <p>This session will provide an opportunity for questions and comments from the workshop participants.</p>

12.45 – 14.00	Lunch
14:00 – 16:00	<p><u>Session 9</u></p> <p><i>Mapping the Future of Convergence and Spectrum Management</i></p> <p>Today's converging markets have seen an unprecedented level of demand for integrated services through different communication technologies, and have driven developments in radio technology toward more efficient methods of sharing spectrum amongst a wider range of users. Rapid innovation has created a need for speedier access to spectrum both for individuals and service providers, than is possible under traditional methods. At the same time, networks and services convergence is changing the approach to spectrum allocation and management, procedures originally intended for distinct, separated services are now being applied to services that will share access and transport infrastructures</p> <p>All these developments point to the need for greater flexibility in the management of spectrum resources (eg for wireless electronic communications), while maintaining harmonisation where necessary. This session will present a series of new initiatives designed to meet the needs of a convergent environment.</p> <ul style="list-style-type: none"> • Presentation of Background Paper "Mapping the Future of Convergence and Spectrum Management" – Cristina Bueti, Project Officer and Marco Obiso, Programme Manager, Strategy and Policy Unit, International Telecommunication Union (ITU) • "Wapecs Initiative" – Frank Greco, Deputy Head of Unit for "Radio Spectrum Policy", Information Society and Media, European Commission • Mario Frullone, Research Director, Ugo Bordoni Foundation • "Surveying the Continuum of Spectrum Access Rights", Robert Horvitz, Director of Open Spectrum Foundation • "Movement of Spectrum Management for the Future"- Sung Kon OH, Director, Ministry of information and Communication, Republic of Korea and Radiocommunication Officer of APT • To be decided (Arab States representative)
16:00 – 16:15	<i>Coffee Break</i>
16:15- 17:00	<p><i>Closing Plenary and Wrap-up</i></p> <p>This session will give an overview of the workshop. It will draw the main conclusions and messages from the previous sessions and in particular identify key issues to be followed-up.</p>

Call for Papers

ITU Member States, meeting participants and other interested parties are encouraged to send in their spectrum related contributions to the meeting. All contributions will be posted on this website. Contributions can be submitted to spectrum@itu.int or using the [online application form](#).

Suggested topics

- Some areas of interest include the following: liberalisation of spectrum usage, transfer and trading of spectrum usage rights, competition issues, interference prevention, specific spectrum management issues, mobile communication specific spectrum policy, broadband wireless access, country experiences.
- Possible keywords include: tradability, technology neutrality, service neutrality, spectrum rights, transparency, and spectrum trading.

Key Dates

- Paper submission deadline: December 31, 2006
- Notification of acceptance: January 10, 2007
- Final camera-ready version of papers: January 12, 2007
- Workshop: January 22 and 23, 2007

Requirements

- All submissions must be in English.
- Papers may be of one of two types: short papers (two pages plus bibliography) or full papers (fifteen pages plus bibliography)

Accepted Papers

Accepted papers will be made freely available on the web, and will be considered for publication in the published proceedings after the workshop. Authors will retain copyright of their work.

Practical Information for Participants

Forum venue

The workshop on Market Mechanisms for Spectrum Management will be held in **Room C, ITU Headquarters**, Place des Nations, 1211 Geneva, Switzerland.

Registration of participants

Registration will begin at 8.45 am on Tuesday 22 January 2007, Montbrillant Building, 2 rue de Varembé, Geneva. Late arrivals are welcome to collect documentation at the entrance and join the workshop.

Documentation

Three background papers have been commissioned, and will be posted on the website: <http://www.itu.int/spectrum>, along with other voluntary contribution papers. A background resources website containing a wealth of resources on the topic has been created and is accessible at <http://www.itu.int/osg/spu/stn/spectrum/resources.html>. The Chairman's report will be posted on the website after the workshop.

Seating arrangements

Seating is informal; participants are free to sit where they choose.

Languages

All presentations and discussions will be in English.

Working hours

The hours of the workshop will be as set out in the programme.

Hotel accommodation

A list of hotels in Geneva and the surrounding area that accord special rates to participants of ITU meetings is available at <http://www.itu.int/travel/>.

Bookings should be made directly with the hotels themselves. Booking forms are available at: <http://www.itu.int/travel/BookingForm.html>

Bank

A UBS bank at which currency can be exchanged is situated across from the ITU Tower building (17bis rue Louis Dunant) and is open continuously from 0830 to 1630 hours on weekdays.

Electrical appliances

The electric voltage in Switzerland is 220 V/50 Hz.

Post Office

A Post Office is situated about 200m to the right as you exit the ITU Varembe building, and then left around a bend. It is open on weekdays from 0730 to 1200 and 1345 to 1800 hours.

Restaurants

The ITU Montbrillant cafeteria (level 1), ITU Tower cafeteria (level 15) as well as the ITU Tower basement café (level -2) will be open during the day. There are many restaurants within walking distance of the ITU.

Swiss entry visas

Participants requiring a visa in order to enter Switzerland are reminded that they must obtain the visa before travelling to Switzerland. Delegates from countries in which Switzerland is not represented (by an Embassy or Consulate) must obtain their visas in a third country.

The Swiss authorities have introduced new measures concerning visas. Visas are no longer issued at the airport. The ITU is unable to intervene to assist with requests to have entry visas to Switzerland issued at the airport.

Transportation to the ITU Tower building

To call a taxi, please dial 022 33 141 33. Bus routes 5 (direction "Palexpo") and 8 (direction "OMS") run from the city centre (bus 5 from Place Bel Air, bus 8 from Rive) and the square in front of the railway station (Place Cornavin, buses 5 and 8). Passengers should get off at the stop named Vermont (for route 5) or at UIT (for route 8). A standard ticket for the Geneva city area costs 2.20 Swiss francs and can be purchased from the orange machines situated at each bus stop. It is necessary to have the correct money when using these machines. The above-mentioned ticket is valid on the entire network for duration of one hour. No special ticket is required in order to transfer from one bus to another within that time period.

Parking restrictions are in force in the streets adjacent to the ITU. To avoid fines, participants are advised to respect these restrictions, particularly in the area adjacent to the ITU Varembe Building main entrance.

Travel Agency

The Carlson Wagonlit Travel Agency (office T.1108 on the 11th floor of the ITU Tower Building, telephone extensions 5168, 5169 and 5170) is at the disposal of delegates for booking excursions, making hotel reservations, confirming flights, etc.

Wireless Internet Access at the ITU

Wireless LAN

ITU has installed IEEE 802.11 wireless networks in its headquarters' conference rooms. Mostly it is a IEEE 802.11b based wireless network, with some limited coverage of 802.11a wireless also available in some places. The client card must be Wi-Fi compliant, which assures interoperability between vendors. For client configuration, setting the SSID to "ITUdelg" (or selecting it) should be sufficient for majority of cases. There are no other special requirements for connecting to the ITU wireless facility on the ITU External network. The SSID of the ITU wireless LAN is "ITUdelg" with no encryption or identification requirement. The external LAN, which includes the wireless LAN at ITU, is not meant to be a secured environment, so the users should take their own measures to protect his or her data.

ITU has installed a 802.11b based wireless network, providing shared 11 Mbps access to the ITU External LAN from the following locations:

- **Tower:** Salle A, B, C, D and Salle des Pas Perdue (practically the whole area of SS2) and Salle T101, T103
- **Montbrillant:** Cybercafe area on the 2nd floor; 1st floor (covering all the rooms H1, H2, K1, K2, M1, M2, L1 and L2)
- **CICG:** Almost all areas are covered. The service is provided by FIPOI (CICG). The procedure to access the facility is the same as described above
- **Varembe:** TIES helpdesk area, V45, V49 and Salle E.

ITU has also installed 802.11a based wireless network, providing shared 54 Mbps access to the ITU External LAN with limited coverage in the following locations:

- **Tower:** Salle A, B, C and Salle des Pas Perdue
- **Montbrillant:** Cybercafe area on the 2nd floor; 1st floor (covering the rooms H1, H2, K1, K2, M1, M2, L1 and L2).

When buying a new card, be sure to mention that you need "Wi-Fi compatible 802.11b wireless card with 128-bit encryption" (although encryption is not used at the moment in ITU, it may become mandatory in future and most cards come with it anyway). Please check that your card's exact model number is mentioned at <http://www.wi-fi.com> Certified Products List before you buy the card.

The installation and use of non-ITU Wireless access points without prior authorisation from the IS Department is prohibited.

Buying Wireless Cards

Delegates are required to use their own cards. Please ensure that the card is compatible with "Wi-Fi compatible 802.11b wireless card with 128-bit encryption" (encryption is optional at the moment in ITU, but it is likely to become mandatory in future and can minimise problems and facilitate troubleshooting). The ITU's bookshop has a limited quantity of wireless cards for sale.

Configuration Parameters for the ITU's Wireless LAN

Please follow the installation instructions delivered with the card. You may need to login with administrator privileges depending on your PC's operating system and the card purchased.

The following parameters should be set in order to connect to the ITU wireless network:

- Set the case-sensitive SSID as **ITUdelg**.
- Set WEP Encryption to Off. WEP encryption is not used at the moment.
- Set Operation mode to Infrastructure (not Ad-Hoc).
- Enable DHCP so that your laptop will obtain the IP address and other network parameters automatically.

Most cards are able to search for the radio channel automatically. If your card does not support this function, try channel 1, 6 or 11. You may have to change to another channel if you move to another part of the building.

A Few Useful Reminders

If you are concerned about security, please use personal firewall software.

Ensure that your Internet browser's proxy is either removed or set to `www-proxy.itu.int:3128`

Set up `smtp.itu.int` as your Outgoing (SMTP) server

Please note that wireless network connections are good for web browsing but fair for FTP downloads or for TELNET applications. Some ITU meeting rooms are equipped with fixed network Ethernet access points that allow delegates to overcome potential problems. Before taking out your wireless card (or any other PC Card from its slot), you should first properly stop it, or risk re-installation of OS.

Wireless cards do drain power from your laptop (sometimes quite significantly) – so recharge your laptop's battery more frequently.

Support

Delegates can obtain support from the ITU Service Desk on Ext. 6666 (Office V.29). ITU Staff should remember to disable the wireless connection when they are connected to the ITU LAN. For more information, please contact the Service Desk on 6666.

Annex: Workshop Concept Document

Abstract

The information and communication technologies (ICT) sector has recently been experiencing renewed growth. Notwithstanding the highly volatile market conditions of the past decade, long-term technology drivers suggest that tomorrow's telecom market demand will not be measured only in terms of increased bandwidth and quality of service, but will also offer truly pervasiveness access: "anytime, anywhere, by anyone and anything". Tomorrow's networks will have to provide the necessary flexibility, coverage and transparency to immerse users in a total connectivity universe. The deployment of such infrastructures can only be feasible by capitalizing on spectrum-based resources in new and innovative ways.

This new environment presents technical, commercial and policy challenges, none more so than in the field of spectrum management and trading. Traditional "command and control" spectrum management techniques are slowly being replaced by market mechanisms; and services operating in unplanned spectrum bands are becoming just as economically significant as those in planned bands. This raises the question of how centralized spectrum management agencies will need to adapt and whether techniques for rationing spectrum (e.g., licences, auctions) can coexist alongside unlicensed uses.

Workshop proposal and scope

While the need for change in traditional spectrum management is clear, there is nevertheless no single approach that is universally applicable. Some economies are experimenting with secondary spectrum trading, while others are using generic, technology-neutral licensing as a way of embracing change. But how can the goals of spectrum efficiency and equitable allocation be reconciled? Can spectrum be regarded as property, to be bought and sold, or as a public resource that can only be leased for particular purposes? Is it possible to have different spectrum management approaches among neighbouring countries and still maintain a harmonized approach at the regional and international levels?

In line with the stated objectives of the WSIS *Tunis Agenda for the Information Society* (November 2005), that "... *ITU and other regional organisations should take steps to ensure rational, efficient and economic use of, and equitable access to, the radio-frequency spectrum by all countries*", ITU and Italy will jointly organize a workshop to identify global trends and good practice in radio spectrum management and trading.

The workshop will examine, *inter alia*, the use of market mechanisms for both primary allocation of spectrum (e.g., auctions) and for secondary trading. It will look at recent trends in ITU Member States, the increasing demand for spectrum and will examine future challenges in developing policies for access to radio spectrum.