

8TH GLOBAL SYMPOSIUM FOR REGULATORS (GSR)

PATTAYA, THAILAND, 11-13 MARCH 2008

CHAIRMAN'S REPORT



TABLE OF CONTENTS

	<i>page</i>
Executive Summary	3
Opening Ceremony	4
Session I: Overview and basic infrastructure sharing	5
Session II: International Sharing: International gateway liberalization	8
Session III: Business Sharing: Functional/ Operational Separation and Mobile Roaming	11
Speed exchanges	14
Session IV: mobile sharing and spectrum sharing	15
Session V: Sharing Fibre Networks	17
Session VI: End-User Sharing	19
Session VII: Sharing Policy and Regulatory Approaches	22
Session VIII: Bringing it all together: Promoting universal access to ICTS	26
The Way Forward & Closing	29
Annex A : GSR08 GSR Best Practice Guidelines	32

EXECUTIVE SUMMARY

The 8th edition of the Global Symposium for Regulators (GSR), held in Pattaya, Thailand attracted 536 participants, bringing together regulators, policy makers and service providers from 97 countries. Participants explored a range of infrastructure sharing options as well as other sharing strategies and identified best practice guidelines on innovative infrastructure sharing strategies to promote affordable access to all. The GSR was organized by ITU in collaboration with the Ministry of Information and Communication Technology (MICT) and the National Telecommunications Commission (NTC) of Thailand, under the chairmanship of General Choochart Promphasid, Chairman of the NTC.

The theme of this year's meeting was "Six Degrees of Sharing: Innovative Infrastructure Sharing and Open Access Strategies to Promote Affordable Access for All". The meeting examined basic and passive infrastructure sharing, open access to international capacity, business-sharing options such as functional separation and international mobile roaming regulation, spectrum and mobile sharing, end-user sharing, policy and regulatory harmonization including regulatory issues raised by IPTV and mobile broadcasting, and universal access. The first day was open to regulators, policy makers, ITU-D Sector Members, GILF participants and other invited guests. The second and third day was reserved for regulators and policy makers.

This year's symposium consisted of eight plenary sessions and the way forward session. The GSR also included two speed exchange sessions.

As in the previous GSRs, consensus was reached on an output document, "Best Practice Guidelines for innovative infrastructure sharing and open access strategies to promote affordable broadband access". The document was widely consulted and expresses the view of the National Regulatory Authorities (NRA) participating in the GSR that infrastructure sharing can promote infrastructure deployment, in particular IP backbones and broadband access networks. An enabling regulatory regime can foster innovation, investment and affordable access and successful infrastructure sharing may be facilitated by the introduction of regulatory obligations and regulatory policies.

The final text of the Guidelines is attached to this report.

A series of GSR Discussion Papers on various sharing options were issued for the global gathering of regulators to spark a common understanding of the key regulatory issues raised by innovative sharing strategies. These are available on the TREG website (www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/papers.html) and were open for comment until 13 April 2008.

OPENING CEREMONY

Dr Hamadoun Touré, ITU Secretary-General welcomed participants and thanked the Ministry of Information and Communication Technology and the National Telecommunications Commission of Thailand for hosting this event. He explained that sharing of views, experiences and best practices among regulators is the only way to address the challenges posed by today's technological and market developments. He stressed that technological developments bring high hopes and expectations. In developing countries, wireless broadband technologies are increasingly viewed as the means of achieving universal access to ICT at the local level. He explained that the development of regional and national broadband IP backbone and backhaul networks, like high speed submarine cable networks, is critical to the success of broadband access technologies. Technology alone, however, is not enough to ensure success. The environment that enables new technologies to be used and shared by all can only be created through regulatory reform.

It is only by working together that smart policies and practices can be put into place to ensure that the target of connecting the world to ICT by 2015 can be met. He added that each of the sharing options explored during the GSR has a role to play in ensuring that countries meet their development millennium goals.

Dr Touré mentioned the major events on the ITU's calendar for 2008: the World Telecommunication and Information Society Day, 17 May; ITU Telecom Africa 2008, Cairo, Egypt, 12–15 May; ITU Telecom Asia 2008, Bangkok, Thailand, 2–5 September; and the Standardization Assembly 08 (WTSA), Johannesburg, South Africa, 21-30 October 2008.

Sami Al Basheer Al Morshid, Director, ITU Telecommunication Development Bureau (BDT) joined Dr Touré in thanking the hosts for their hospitality and for their close collaboration with ITU in organizing this event. Referring to the theme of the GSR, he pointed out that end user devices — mobile phones, laptops, multimedia gaming devices — are the ultimate sharing tools. He indicated that the number of mobile subscribers worldwide surpassed 3 billion last year and now, penetration is 50 per cent of the world's population. In addition, there are over 1.3 billion Internet users worldwide and around 300 million broadband subscribers, up from 104 million in 2003. This growth has been fueled by competition and effective regulatory frameworks. Today the world counts 149 national regulatory authorities. But some reforms remain unfinished. Many developing countries have yet to open their international gateway to competition to allow Internet traffic to grow and broadband/ICT services to be offered at affordable prices. He added that passive and active infrastructure sharing can also be used to further reduce the cost of deploying ICT networks to meet the WSIS targets.

Infrastructure sharing promises to reduce network deployment costs, making broadband rollout more affordable in areas that are not connected to any network today or which have access only to voice services. Service providers can share the cost of network deployment but compete on services. For many countries, a second wave of regulatory reforms is necessary to allow market forces to work. Innovative regulatory and policy sharing measures are central to this second wave of regulatory reform.

General Choochart Promphrasid, Chairman of NTC and Chairman of GSR-08, welcomed participants and thanked the ITU for entrusting NTC to host the GSR and the Ministry for its strong collaboration in organizing this event. He explained that *Six degrees of Sharing* would help build an enabling environment through modern regulation and policy harmonization. He added that this gathering of heads of national regulatory authorities from both developing and developed countries will foster substantive sharing of views and experiences through an open dialogue between regulators.

H. E. Mr Mun Patanotai, Minister for Information and Communication Technology of Thailand in delivering an address on behalf of Prime Minister Samak Sundaravej, stated that

the Government of Thailand emphasized the development of basic infrastructure for information technology. He added that extensive and adequate high-speed communications networks at appropriate, fair and competitive prices would serve as the main network supporting Thailand's development into a knowledge-based society, reducing the urban-rural divide and enhancing national competitiveness.

Emphasizing Thailand's support and cooperation in the work of the ITU, H. E. Mr Mun Patanotai announced that for the first time, TELCOM Asia 2008 will be held in Bangkok 2-5 September 2008. H.E. Mr Patanotai declared the meeting open.

An impressive cultural show with music and dancers concluded the opening ceremony.

SESSION I: OVERVIEW AND BASIC INFRASTRUCTURE SHARING

The GILF Chairperson, Mr. Sanjiv Ahuja, Chairman of Orange and Chairman and CEO of Augere, United Kingdom presented the outcomes of the first Global Industry Leaders Forum (GILF) held on March 10, 2008. He stressed that the telecom industry, which traditionally operates in a regulated environment, recognizes its responsibility to serve the needs of the public, customers and employees as well as shareholders while at the same time is expecting support from the regulators in delivering the desired outcomes. During the GILF, industry leaders considered and identified three main areas where closer cooperation between industry and regulators is needed: Universal Service, Emergency Telecom, and Stimulating ICT Investment.

Pointing towards the several billion dollars of Universal Service Funds that remain unused worldwide, the industry expects deployment of these funds to improve voice and broadband connectivity. The GILF specifically recommended ITU to initiate a study on Universal Service Funds focusing on how funds are being used. He noted that GILF participants would support in general infrastructure sharing provided clear ground rules are set to ensure competition, coverage, quality of service and fair prices for that infrastructure. He stressed that in order to stimulate investment a stable regulatory framework is needed. Industry also recommends that regulators consider reassignment of spectrum when it is not used appropriately. In conclusion, the GILF Chairman stressed that it is not a technology or investment issue to connect the unconnected, but rather the question of fair and balanced Public Private Partnership.

Following the report from the GILF Chairperson, **the moderator, Prof. Sethaporn Cusripituck, Commissioner, National Telecommunications Commission (NTC), Thailand** opened the session by highlighting the importance of ICTs. He also pointed out that the theme of this GSR – infrastructure sharing - requires close collaboration between operators and regulators.

Ms. Susan Schorr, Head, a.i., ITU BDT Regulatory and Market Environment (RME) Division, presented the GSR background paper overview of "six degrees of sharing" inspired by Prof. Martin Cave's "six degrees of separation". She indicated that the single biggest reason to share infrastructure is to lower the costs of deploying broadband networks to promote widespread and affordable broadband services. Sharing is not limited to telecom operators but may also include in some cases sharing parts of the network with other public utilities such as water, electricity, gas, etc. or even, sharing the costs of civil engineering when opening roads for other purposes. Sharing is important to both developed and developing countries.

Implementing sharing, however, requires political will and an enabling regulatory environment. As long as there is political will, many of the regulatory tools necessary to implement sharing strategies already exist in today's interconnection and competition frameworks. Furthermore, the time is now right as exclusivity periods come to the end in many countries. This could open the door to new sharing strategies including opening access to international gateways and allowing new Greenfield players who could launch mobile tower businesses or provide fiber backhaul. Sharing does not mean putting infrastructure back in the hands of monopolies. It means using basic competition and interconnection principles to promote more competition.

Sharing is part and parcel of a competitive framework. It could push the envelope of using market forces to meet universal access goals further than today.

Some of the sharing options are in fact different degrees of similar options. For example, interconnection regulations have traditionally included several sharing practices (duct, poles etc.). Some appear to be flip sides of the same coin. Functional separation may force reluctant operators to open their local loops. In conclusion she indicated that there is an enormous body of regulatory experiences on which infrastructure sharing could build.

Mr. Russell Southwood, CEO, Balancing Act, United Kingdom presented the findings of GSR Discussion Paper on Extending Open Access to National Fibre Backbones in Developing Countries.

Mr. Southwood highlighted that new services would come to developing countries once high capacity networks are built. The deployment of high capacity networks would reduce cost and increase affordability but it requires removal of certain obstacles. The key obstacles to such roll-out are linked to issues with incumbents -- exclusivity periods, access to bottleneck facilities and issues of trust and investment. Mr. Southwood pointed out that the role of incumbents has changed as some new entrants are gaining greater market share, such as is the case in some African countries where mobile operators have become the "new incumbents".

He explained that the government has always played a role in extending access, and the debate centers on whether infrastructure sharing should be viewed as strategic or tactical. In regards to public-private partnership (PPP) and infrastructure sharing, some countries such as Kenya and Uganda are leasing management of public networks to private companies, and this type of PPP is also under discussion in Nigeria.

The scope and complexity of sharing also varies considerably from spectrum sharing and Fibre sharing, which is simpler than the more radical functional separation. There are also possibilities to create Joint Ventures to instigate the major build out -- including those with power and rail companies that may already have fibre networks which could be made available in a competitive and open manner. The private sector can also be involved in the process. Rights of Way access is another sharing issue that could be simplified. In countries where there are no potential candidates to roll out infrastructure (e.g., for Greenfield operators), financial incentives can be created.

Mr. Southwood presented three examples of fibre network sharing initiatives: duct sharing in Sweden (Stockab); the public-private fibre backbone in rural Virginia, in the United States, that does not compete in the downstream market, gains access to rights of way from municipalities by offering fibre strands to municipalities in exchange for rights of way, and which offers service providers co-located access points (the Mid-Atlantic Broadband Co-operative), and sharing trenches (SERPANT) in Ireland. Mr. Southwood reiterated that the prize for building high capacity broadband networks is the economic and social welfare that such networks bring to a country.

The floor was then open for discussion with the panelists.

Joëlle Toledano, Member of the Board, Autorité de Régulation des Communications Electroniques et des Postes (ARCEP), France reported on the French experience in moving towards a fibre-based mass market. The communication sector is characterized by innovation cycles followed by investment ones. Today, NGN access networks are opening up a new investment cycle characterized by the replacement of copper with fibre in the local loop to respond to content demand and bandwidth growth. To ensure competition, it is necessary to ensure that a sufficient number of operators participate in this investment cycle. In France, broadband regulation focused on local loop unbundling which encouraged operators to deploy their own national and regional fibre networks, which fostered competition in these areas except in the local loop. With FTTx networks, competition can be extended to the local loop.

68% of the population is covered largely as a result of local loop unbundling. The participation of local authorities helped in promoting broadband by investing 2 billion Euros. Access to civil work can significantly change the economics of the network with ducts amounting to 50 per

cent of the costs. Operators are using these ducts to build fibre networks. France Telecom has committed to provide non-discriminatory access to the ducts.

Access to buildings is major bottleneck in France today. FTTH means cabling into dwellings. She explained that sharing the terminating part of the fibre network is necessary because of the underlying economics and owner's unwillingness to give access to building to more than one operator. This means that a single operator would lay down the fibre and provide access to his network to others. Currently a draft law is being contemplated in France to regulate these issues. It is hoped that the local authorities would cooperate as well.

Robert Pepper, Senior Director, Government Affairs, Cisco, United States explained that the main reason to consider infrastructure sharing is to expand networks to everyone including low income customers. Sharing infrastructure reduces costs – the main barrier to entry. Although the cost of building networks can be lowered by 50 to 70 per cent if infrastructure is shared, this should not lead to a loss of competition. The real dilemma therefore is how to maintain innovation and competition with one network? Where Martin Cave has talked about the ladder of investments, we should talk about the ladder of regulation. In Europe, there was a comparison made between the costs for an operator to either build its own network or to build and share some parts of it. The price changes from 175 Euros per meter to 65 Euros per meter. He indicated that one of the oldest examples of infrastructure sharing is in New York, United States where Verizon had been sharing parts of its network for the last 117 years. There are multiple ways to implement infrastructure sharing.

Ali Ghodbani, President, Instance Nationale des Télécommunications, Tunisia indicated that it is crucial to share to avoid duplication of infrastructure. He added that the experience of developed countries has shown results. Specifically, unbundling of the local loop has proven to be a useful tool in France. He noted that in Thailand, successful sharing of infrastructure exists with mutual use of electricity poles. In Tunisia, regulatory authorities have sought to promote new entrants at the submarine cable level. He added that the country is seeking to expand fixed and fibre networks. The Telecommunication code has been amended to mandate operators to open access by unbundling the local loop. In the context of sharing, he explained that the following main regulatory principles are needed: developing clear standards guidelines, requiring operators to use accountability principles, carrying out consultations among different market players, developing a shared geographical database, promoting transparency, and establishing a clear dispute settlement mechanism.

Anastacio A. Ramos, Director, International Public Policy and Regulatory Affairs, Verizon, United States, noted that having access to passive network elements is important from a new operator's point of view. He added that there has been a long history of sharing ducts in the United States. The FCC established the rules in 1978 and in 1996, the requirements were expanded. Cable companies and new entrants have access to those facilities. The FCC has also established the formulae to determine the prices. The legislation also sets time frames and procedures for complaints. He explained that the incumbent has to cooperate and should carry out the administrative procedures and respond to new comers' requests in a timely manner. He added that a new entrant should be notified of any modifications well in advance and be assured that if a dispute arises, it will be resolved in a timely manner. By sharing infrastructure, the incumbent is contributing to the process of encouraging competition.

The interactive discussion raised a number of questions and concerns:

- ↳ While recognizing the advantages of infrastructure sharing, such as reduction of costs, facilitation of new entrants, environmental issues, the Mauritian experience has shown that sharing can result in disputes that are time and energy consuming for the operator; sharing is difficult to implement; and shared infrastructure creates security of traffic issues.
- ↳ Infrastructure sharing is universally recognized as a must for bringing down the cost. However recognizing that different countries are at different stages of competition, it is appropriate to avoid being descriptive. In India, the regulator, TRAI, has recommended the government adopt active as well as passive infrastructure sharing. Today, only

passive sharing is permitted. In India sharing agreements are implemented on a commercial basis and about 25% of passive networks are shared. It is important to recognize that different operators entering the market at different times have different goals. Hence it is necessary that the rationale for intervention should be acceptable and implementable.

SESSION II: INTERNATIONAL SHARING: INTERNATIONAL GATEWAY LIBERALIZATION

The moderator, Kevin Martin, Chairman, Federal Communications Commission (FCC), United States opened the session stressing that sharing international capacity is critical as the recent cut in international cables have highlighted. The approach to regulating gateways affects prices and services.

Muhd Hanafiah Abdul Rashid, Director of International, InfoComm Development Authority of Singapore (IDA) presented the main points of the GSR Discussion Paper on *International Gateway Liberalization: the Singapore Experience*. He explained that in 1999, Singapore was already a regional trading hub but international communications were too expensive. The Infocomm Development Authority (IDA), the regulator, decided to liberalize the international gateway in order to leverage the investment in Singapore – as there were more than 7'000 international companies in the country at this time. IDA's methodology in liberalizing the international gateway was built on: output assessment; regulation only where there is a market failure; public Consultations and monitoring and reviewing to assess the progress made. IDA's objective was to create a vibrant market, significantly increase available capacity and bring down IPLC rates. It established a Reference Interconnection Offer (RIO), which allows speedy and timely interconnection. The environment also allows and encourages other operators to build, including backhaul connections from the submarine cable landing station to the Points of Presence. Co-location inside the premises was mandated for dominant licensees.

Despite the advanced regulatory measures implemented, IDA realized that there was a bottleneck in connection service, which was very expensive. In order to overcome it, the regulator mandated interconnection costs, calculated on a LRAIC basis. To ensure participation of the private sector, operators are allowed to provide 3rd party backhaul service while IDA served as one-stop shop (among various governmental agencies such as maritime, environmental, etc.) for those seeking approval to land a cable network. These steps brought about significant increase in capacity and generated traffic as well as a drop in international rates. Total submarine cable bandwidth capacity increased from 53 to 28,000 Gbit/s; International Private Leased Circuit (IPLC) rates and International Direct Dialing rates both dropped by 90 per cent; the number of outgoing international telephone minutes per month increased from 64 million to 581 million; broadband penetration increased from less than 5 per cent to 77 per cent and the revenue of the incumbent increased from SGD 4.4 billion to 13.2 billion.

The floor was then open for discussion with the panelists.

✓ **Associate Professor Sudharma Yoonaidharma, Commissioner, National Telecommunications Commission (NTC)** shared some of Thailand's experience, in particular regarding the challenges of liberalizing the international gateway. NTC, the regulatory authority of Thailand, was established in 2005. The International gateway was open to competition and initially three licenses were issued shortly thereafter. For the first year after liberalization, a total of twelve licenses for operating the international gateway have been issued. He stressed the importance of going forward with liberalization as quickly as possible in order to ensure optimal impact. NTC used the gateway license to confer rights and duties on the operators and guarantee that they all comply with existing regulations.

He explained that NTC's overall approach to regulating the telecom sector is based on a regulatory impact assessment (post audit) rather than a pre-assessment. Regulatory practices in place need to be clear and simplified in order to ensure that liberalization has a positive effect to all in the market place. If there are no barriers to competition, prices can decrease

significantly relatively quickly and ensure more benefits for customers. Thailand has experienced more than three times increase in users in the last few years. "We are moving forward", he noted, adding that the liberalization of the international gateway is the key to the whole sector reform.

✓ **John Omo, Commission Secretary, Communications Commission of Kenya**, emphasized the need for clear articulation of policies and shared the Kenyan experience. Kenya is a coastal country but with no submarine cable connection. In 2006, the Government decided to support a submarine cable project to connect Mombasa to the United Arab Emirates. The cable is 85 per cent owned by a Kenyan government company and 15 per cent by Etisalat (UAE). He explained that it was initially expected that the private sector in the country and from the region would join, but this didn't happen. The Government initially funded the entire 85 per cent of the cable. A construction agreement has been signed and construction is likely to begin very shortly, and the private sector is expected to buy in on a later stage. Satellite systems, on which Kenya relied in the past are expensive and might not be reliable.

The goal today is to make Kenya an ICT Hub with the Government's direct involvement. From the regulatory point of view, the international gateway segment in Kenya is fully liberalized. A discussion is also going on for linking with other submarine cable projects in the region. At the landing station level, the precondition is to ensure open access along with collocation. There would be one or at most two cable landing stations. Increased competition in this segment is needed in order to achieve better sector performance.

✓ **Rema Devi Nair, General Manager, TM International, Malaysia** described the international gateway monopoly as one of the last remaining anomalies in the liberalized domestic and international telecommunications sectors. Is this a sustainable position and why, she asked? She indicated that ITU statistics showed that 36 per cent of countries have not liberalized the gateway. Several challenges in opening the sector were highlighted:

- ↳ What approach to liberalization - should it be radical or transitory?
- ↳ How to articulate a clear political intent and a solid regulatory framework?
- ↳ Market trends and new technological developments should be recognized
- ↳ Choice of access retail model: who would provide the retail service: a gateway operator or a domestic telecom operator? This will determine cash flows, structure of revenues, future deployments, usage patterns, etc.

✓ **Ernest Ndukwe, Chief Executive Officer, Nigerian Communications Commission (NCC)**, emphasized that the common overriding objective for regulators and policy makers is to use regulation as a tool to deliver good ICT services to all, at the best price. He pointed out that the liberalization of the international gateway has led to significant price drops and the beneficiaries also include subscribers and governments, which results in facilitating business.

In Nigeria, partial liberalization was implemented in 2001, followed by full liberalization in 2006. The experience was very positive. The liberalization of the international gateway creates a win-win situation for the national ICT market. The Nigerian experience has shown that following full liberalization of the international gateway in 2006, fixed-line rates dropped by 90 per cent, traffic increased considerably and revenues from the sector grew. Today, the main beneficiaries from liberalization are end users. Private subscribers are able to communicate more and more efficiently. New business opportunities were created as well as new revenue streams and business activities are facilitated by improved communications. Government, whose responsibility it is to provide citizens with opportunities, felt beneficiary impact as well.

With regards to collocation, the current Nigerian telecom policy encourages multiple landing points and sharing of existing cables and landing stations. The lack of sharing leads to infrastructure duplication, which might have unfavorable environmental impact and discourage investment. He stressed that liberalization is important for all market players and not only the incumbent's interests should be considered.

✓ **Kathleen Abernathy, Attorney, Akin Gump Strauss Hauer & Feld, United States,** indicated that unbundling and collocation, although they may seem simple, are not so easily implemented. She added that sharing doesn't always come naturally for those who have already invested heavily in infrastructure, and bottlenecks might result from the lack of possibilities to share facilities. Creativity is needed in order to share infrastructure which hasn't been meant for sharing, such as unbundling. There is a need for innovation in collocation and in working out fair pricing. While sharing can result in important benefits, the regulator should ensure that there are still substantial incentives to invest. An appropriate regulatory framework would provide both effective sharing mechanisms and transparency, in order to ensure all market players enjoy maximum benefits.

It is important that new entrants generate money, incumbents generate necessary traffic and end users get the benefits of lower prices. Some licensing issues arise as well, such as who is actually going to operate the gateways – should the regulator issue cable landing licenses or could satellite providers operate a gateway as well?

She noted that a range of problems may arise, including in developed countries. In the United States, many challenges persist in high-cost or un-served areas. One option being explored is the use of reverse auctions, which are technology-neutral and are awarded to the provider requiring the least amount to provide services in high-cost areas¹. Some cost-based incentives might as well be considered to serve public needs.

The floor was then open for comments and discussion with the audience.

- ✦ In countries with large expatriate communities, migrant workers, in the absence of liberalized international gateways, are penalized by paying high prices or opt to bypass the incumbent's gateway. In the latter case, the incumbent loses both traffic and revenues. Remittances, which constitute a significant part of income, are also an issue.
- ✦ International gateway liberalization should go hand in hand with the liberalization of the domestic market in order to reap the full benefits.
- ✦ There shouldn't necessarily be a contradiction between liberalization and sharing. There is a proven business case to accommodate demand within a competitive regulatory framework while preventing unnecessary duplication. Yet from another side, redundant capacities may provide useful backup in case of major natural disasters.
- ✦ Infrastructure sharing can provide a business case to reach un-served areas and better address related challenges. One of India's domestic carriers, which has a cable landing sub-station, has announced the use of its domestic network to carry the traffic of all interested operators. This model can be replicated as a win-win business case in other countries as well.
- ✦ Infrastructure can be shared regionally. In Thailand, the terrestrial facility uses Malaysian and Singaporean facilities. There has also been some sharing with China.
- ✦ Landlocked countries, where there are no landing stations, depend on neighboring countries for their international connectivity. As an alternative solution, a bridge network is attempted through India, Nepal and Bhutan. The cost of such a bridge is significantly higher than international bandwidth. Regulatory intervention may be explored to address the issue.

In Kenya, the national Government has taken the steps to launch a nationwide network following the initiative of the Secretary General of ITU. The idea is to share the capacity with neighboring countries. Regional cooperation is important and should be strengthened.

¹ In the case of Singapore, reverse auction was used for a high speed 1 Gbps network. The Government offered USD500 Million as seed funds and several investors came in.

- ✦ The issues for liberalization of submarine cable networks are different from those of satellite gateways. Both issues should be addressed appropriately, depending on countries' context.
- ✦ International gateway liberalization cannot on its own achieve connectivity goals. A proper regulatory environment is needed to facilitate competition right to the end-user level and ensure affordable services. The real outcome of liberalization is that it removes barriers to new entrants and opens all segments to competition. Broader reform is necessary to ensure a maximum impact. Regulators need to have access to information.
- ✦ Exclusivity agreements may significantly impede competition, including infrastructure sharing. South Africa has adopted facility-leasing guidelines that prevent exclusivity in any legal agreement dealing with electronic means of communication. Nigeria is also considering legal measures against exclusivity.
- ✦ Regulators make use of regulatory tools in extending connectivity and promoting affordable services for all, but there are also other tools possible. Public-private partnerships (PPP) might provide positive results. In Singapore, for instance, the Government will attribute USD10 million to a private operator ready to build infrastructure and then operate it on an open access basis.
- ✦ One issue that is coming up regularly over the last few years relates to theft of copper cable. One and a half million customers worldwide were affected by such theft. Operators have raised the issue to the ITU for guidance.

SESSION III: BUSINESS SHARING: FUNCTIONAL/ OPERATIONAL SEPARATION AND MOBILE ROAMING

The session was moderated by **Matthias Kurth President, Federal Network Agency for Electricity, Gas, Telecommunication, Post and Railway (BNetzA), Germany.**

Mr. Kurth opened the session setting the framework for the panel discussion. He stressed that both the topics of functional separation and international roaming are open and waiting for solutions.

✓ **Malcolm Webb, Partner, MGF Webb, New Zealand** presented the main findings of the *GSR Discussion Paper on Functional Separation* that he authored.

Mr Webb introduced the 3-Box approach that was pioneered by the United Kingdom, followed by in New Zealand and being considered in the European Union. This approach sets the relationship between the various divisions of the incumbent and its competitors through the establishment of a new business division which is kept separate from the incumbent's other business operations. He explained the relationship between the different divisions and the competitors. The access service division (ASD) sells access to the wholesale service division (WSD) (e.g. local loop unbundling service), and the retail Division buys access from the WSD. Competitors can also buy access from the WSD (e.g. bitstream broadband service). This wholesale services division would also acquire access to the bottleneck assets from the access services division and create wholesale products, which can then be sold to competitors and the incumbent's own retail divisions on a non-discriminatory basis. He briefly described the Openreach model implemented by BT that includes the copper access network and certain backhaul assets as well as fibre network assets such as ducting and dark fibre.

Functional separation can be used as a tool to spur broadband competition. However, as a remedy, functional separation can be uncertain and time consuming to pursue. And even more importantly, it is costly to design, develop, implement, manage and enforce.

Some of the key features of functional separation are the virtual separation of the incumbent's business, while being vertically integrated; the "Equivalence of inputs" whereby the incumbent and competitors receive the same service and the same process at the same price; and

monitoring of the incumbent, to ensure compliance with the separation and equivalence obligations, and effective enforcement.

Mr Webb explained that in developed countries, there is a concern that it could hamper Next-Generation Network (NGN) investment. Incumbents feel this would reduce investment. But looking at what happened in the United Kingdom and New Zealand, there has been an increase in investment following functional separation of the incumbent. However, it still needs to be demonstrated whether this was a result of functional separation or not.

In developing countries, the issues related to functional separation are not the same as those in developed countries. If increased teledensity is the overriding goal, functional separation might not be the tool to achieve it. In developed countries, the key issue that called for functional separation was broadband competition – in circumstances where discriminatory behavior was limiting the effectiveness of existing regulatory instruments. This may not be an issue for some developing countries.

One alternative is to consider using blunter regulatory instruments. Ultimately, if the diagnosis is clear that the key regulatory issues will be solved by separation, then it may be better to miss out Functional Separation and go straight to Structural Separation.

In conclusion, functional separation is a recent response by regulators and governments to the serious problem of anti-competitive discriminatory behavior by incumbents. Functional separation seems to be a conceptually sound regulatory remedy; however, it is not a universal panacea – it does not solve all regulatory problems.

The floor was then open for comments and discussion with panelists and the audience.

✓ **Vincent Affleck, Head of International Telecomms, Ofcom, United Kingdom** highlighted the United Kingdom experience in implementing functional separation. He noted that the European Commission regulation provides for non discrimination. But where there is an integrated operator, there are premises for this operator to discriminate. He explained that while accounting separation is an intrusive remedy, functional separation is even more intrusive.

He stressed that an in-depth cost-benefit analysis is a must before making a choice on what remedy to apply. In the United Kingdom, before functional separation was introduced, only 10'000 loops were unbundled. Now there are 4 million unbundled loops and their number continues to increase. He noted that over time, the boundaries of functional separation can be moved. It needs to be seen when and if this would be extended to fibre. According to BT there is no demand for fibre at the moment. Moreover, when moving to fibre, do we still need functional separation? He stressed the need for players to invest in the market and to apply the best remedy depending on each case.

In countries with vertically integrated operators, even mild discrimination could put off new entrants.

✓ **Bat-Erdene Jalavsuren, Vice Chairman, Communications Regulatory Commission, Mongolia**, explained why functional separation might be suitable for developing countries. The challenges include deploying a countrywide network, ensuring Universal Service, avoiding duplication and implementing facilities based competition policy.

He explained that in 2006, Mongolia adopted the separation of its telecom/ITC operator into a network and a service company. Functional, legal and accounting separation has been implemented simultaneously. All transmission equipment belongs to state companies, while switches belong to a service company.

Several problems have been experienced in implementing functional separation, as highlighted in the GSR Discussion paper. The next step today is to decide whether functional separation should be implemented on private operators or not, in particular on mobile operators.

It was believed that value gets destroyed with separation. But now it is being observed that the level of risk changes considerably and the value can actually increase. In India, structural separation has led to heavy value up scaling.

✓ **Tomas Lamanauskas, Deputy General Director, Telecommunications Regulatory Authority (TRA), Bahrain** addressed the international roaming regulation in the Arab region. While Europe has pioneered severe international roaming regulation on the regional level, only part of the European experience can be transferred to Arab countries. The regulation of roaming depends on the level of social, cultural and economic integration in the region. He indicated that there was recently a move in the Arab region towards harmonization of regulation on key issues, such as international mobile roaming rates, which today appear as a barrier to mobile communications in the region.

He added that because of the social impact of roaming rates, it is becoming a political issue. It is not a matter of pure regulation, as it goes beyond competition – rather, it is about consumer protection and globalization of telecom markets. He explained that the Arab region has chosen the proxy cost model. In regions where there is no harmonizing body such as the EC, this is a requirement ensuring that wholesale benefits are passed on to consumers; however this may not be automatic.

✓ **Tom Phillips, Chief Government & Regulatory Affairs Officer, GSM Association, United Kingdom**, conveyed that international roaming regulation is linked to the level of cohesion in the region. From a regulatory agenda point of view, there is a strong difference in economic characteristics from one nation to other. The key is to look at *ex post* impact on consumers (quality and price of services, etc.). Retail price regulation is a powerful regulatory tool but should be only used as a last resort.

Mobile operators in the past have not been transparent in charging roaming rates. The GSM Association is working hard to reflect the prices clearly and transparently. He stressed the need for monitoring and providing information on prices, but indicated that specific regulatory intervention to control tariffs is not necessary. The regulator cannot set the tariffs better than the market.

The interactive discussion raised the following points:

- ✚ How efficient regulation can be defined? Very often there is a lack of clarity regarding the mandate and the competencies of the regulatory authority as well as of other authorities, i.e. competition commission, etc.
- ✚ Voluntary separation can be a complementary issue. PCCW in Hong Kong, China carried out in 2001 functional separation and today the market is very competitive. In countries like Ireland, the incumbent implemented separation mechanisms and this proved successful. There may even be a role for partial funding, but it needs to be carefully examined. However, functional separation could piggyback on service providers without incentivizing the market, and countries must carefully assess if its possible benefits are likely to be greater than the costs involved.
- ✚ It is broadly considered that Functional Separation destroys value, but it appears that you can actually create value and assets for business as well. Developing business regulation that enables different business models is needed.
- ✚ Functional separation is not only about LLU but also about extending backhaul capacities. The largest market is the backbone and this shouldn't be a bottleneck.
- ✚ Other regulatory tools can be used to decrease prices of services, such as notice to operators and financial sanctions.
- ✚ Regulatory mechanisms to enforce international roaming rates regulation are needed at the national, regional and global level.
- ✚ Some industry players claim that a *laissez-faire* approach will be the most appropriate for setting international roaming rates. It is important to look at best practices and carefully adapt them to the national circumstances.
- ✚ Operators should move towards more transparency and informed consumer choices.

- ✦ The difference between international calling rates and international mobile roaming rates is often from the order of ten times or more. In Jordan, a cap and ceiling was set on operators overpricing (sometimes applying tariffs as high as 700 per cent the cost of services) as a result of consumer complaints. This measure was in favor of customers. Roaming tariffs may not only be regulated ex ante, but also monitored to ensure consumer protection.
- ✦ Data roaming rates are even more excessive than those for voice roaming.
- ✦ While competition is good for consumers as it brings down prices for services, excessive market segmentation can create challenges for consumers. The optimum number of players in the mobile market depends on the size, level of maturity and the structure of the telecom segment in the different countries.

SPEED EXCHANGES:

Table 1:	Infrastructure sharing and promoting competition
Table 2:	International gateway liberalization
Table 3:	Functional Separation
Table 4:	Mobile Network Sharing
Table 5:	Open Access to Fibre Backbones in Developing Countries
Table 6:	Spectrum Sharing
Table 7:	End-User Sharing
Table 8:	IPTV y TV Móvil (in Spanish) (Sesión 1) IPTV and Mobile TV (Round 2)
Table 9:	Universal Access
Table 10:	Regulatory Capacity Building (Round 1) Renforcement des capacités humaines dans le domaine de la réglementation (in French) (Round2)
Table 11:	Licensing Issues for Infrastructure Sharing
Table 12:	Improving Mobile Quality of Service: What can regulators do?
Table 13:	How regulators can use Media
Table 14:	Creating Converged Regulators
Table 15:	Strengthening the New Regulatory Authority
Table 16:	Affordable Rural Connectivity
Table 17:	International Mobile Roaming Regulation

The speed exchanges roundtable sessions addressed the above-mentioned topics. Two sessions were held, the first on day one and the second on day two, when the number of themes and tables was reduced.

SESSION IV: MOBILE SHARING AND SPECTRUM SHARING

Kevin Martin, Chairman, Federal Communications Commission (FCC), United States delivered special remarks on the United States' experience in spectrum management. He stressed that sharing is the best way to achieve affordable access. The exchange of views and experiences in such forums as the GSR is very useful to the growing regulatory community. Mr. Martin said that wireless and broadband platforms are proliferating at very fast pace. There has been significant growth in the number of wireless subscribers in the US, where the number increased from 48 million in 1997 to 243 million in 2007. He said that it is difficult to predict what communications will look like in the future, but it is certain that the current trend to mobility will continue to grow.

Mr. Martin underlined that due to the rapid growth in wireless, the digital dividend would need to be shared. Sharing broadcasting spectrum should be encouraged. He also identified three goals necessary for the successful deployment and proliferation of affordable wireless networks that are the allocation of sufficient spectrum for next-generation wireless networks, flexible rules, and protection of consumers' rights. He indicated that over the last three years, the FCC doubled the amount of spectrum for wireless technologies. More spectrum was made available for ISM bands, and broadcasting bands are also being made available for efficient use. According to Mr. Martin, there is a significant opportunity for next-generation wireless networks. Auctions for this spectrum are very successful. The FCC raised USD 19.5 billion for the last auction, which is more than twice as much as anticipated. He stressed that spectrum should be used efficiently. He also underlined the need for an open wireless access platform to facilitate innovation and ensure that vendors can develop applications to be used on any device they wish. Open business models are being adopted and the auction of 700 MHz spectrum in the United States provides an example of how spectrum can be allocated in a flexible, open manner to promote open access.

The moderator, Leong Keng Thai, Director-General & Deputy CEO, InfoComm Development Authority of Singapore (IDA), opened the session and invited presenters to give their presentations.

Camila Borba-Lefevre, Legal Advisor at Machado, Meyer, Sendacz & Opice, São Paulo, Brazil presented the findings of the GSR Discussion Paper on Mobile Sharing. She indicated that mobile sharing can play a vital role in promoting accessibility and affordability of wireless broadband technologies. There are different types of mobile network sharing. Regulators have to assess which measures are better suited to their policy goals. Passive sharing includes sharing of physical space, masts and pylons, cables, battery back-up, shelter and support cabins. It is estimated that passive sharing reduces 60 per cent of the costs and is environmentally friendly. Experiences show that infrastructure sharing poses similar issues as interconnection and there is a need to prepare a list of terms and conditions for site sharing agreements. She sees the encouragement of self regulation as a best practice which may work very well when operators have common interests. However, regulators need to consider anti-competitive issues that may result from such sharing. Regulators need to see what models are economically viable. She noted that in certain cases, passive sharing is not sufficient; therefore regulators may need to look into active sharing. There are several ways in which active networks are shared.

The paper provides several examples of mobile sharing. For example, in Brazil as part of the country's digital inclusion Policy, 3G licenses were auctioned to bring mobile operators in areas with a population of less than 30,000 communities. Coverage obligations were stipulated to cover the entire country by all the licensees collectively. She also mentioned the experience of infrastructure sharing in India that illustrates tower sharing practices supported by the Universal Service Obligations Fund.

Adrian Foster, Founding Partner, McLean Foster & Co., Canada presented the GSR Discussion Paper on Spectrum Sharing. He underlined the complexity of the issue and indicated the necessity to consider it in order to respond to future needs. Spectrum can be shared in several dimensions: time, space and geography. The core objectives are to plan

future needs, efficient usage, and flexibility and encourage innovation. Since spectrum is scarce, there might be a need to undertaken an independent audit of spectrum allocation if disproportionate allocation is made for government use. Other considerations in spectrum sharing are demand estimation, scarcity assessment, market liquidity, technological efficiency and congestion.

The paper suggests practical steps as follows:

- Spectrum Management Strategic Review
- Spectrum Planning
- Spectrum Release Plan
- Spectrum Authorization Reform to include liberalized licensing models.

Finally, he indicated that the paper provides reference for successful examples of spectrum sharing: including Brazil, The EU, Mauritius, Mexico and the United States.

The floor was then open for discussion with the panelists.

Valery Timofeev, Director, ITU Radiocommunication Bureau (BR), presented the key results of the Radiocommunication Assembly 07 and the World Radiocommunication Conference 2007 (WRC 07) and the way forward for the preparation of the next WRC. He drew the attention of participants to the GSR discussion paper on the results of the WRC 07. He indicated that the results of both meetings were characterized by the words flexibility and consensus. He emphasize the need for a good balance between national priorities and the introduction of new services. He indicated that the conference opened the door for tomorrow: compatibility between IMT and digital broadcasting. For the next WRC additional studies should be carried out especially in the areas of Software Defined Radio and cognitive radios. The most critical point in the preparation for the next Conference refers to Resolution 951 and discussion focusing on the possible or necessary revolution of spectrum management at the international level. He indicated that this was on the agenda of the last Conference and will be a new agenda item for the next one. Postponement will not solve the problem and 2011 is the last opportunity to decide on whether to keep it as it is or to move forward. Another important task for the Radiocommunication Bureau is to create a support database for available frequencies for emergency communications. The work is under way and circulars have been sent for responses.

Professor Dr. Prasit Prapinmongkolkarn, Commissioner, National Telecommunications Commission (NTC), Thailand, deliberated on the issue of major concerns in flexible usage of spectrum. He indicated that there is a tendency to move from a command and control model to market forces, and showed that there are 3 or 4 success factors in flexible spectrum use. One of them is the legislative factor; for example, the flexible usage of spectrum has been supported by the Telecommunications Act in the United States. In addition, he noted that it is also important to avoid interference problems. In doing so, it is necessary to have instruments to monitor and manage the spectrum efficiently and thus alleviate the interference effectively. He also stressed the need to encourage spectrum sharing in the same bands, such as in unlicensed bands, and the best approach is to learn from those that have liberalized their markets by introducing market mechanisms. For example, the gradual liberalization of spectrum as was done in the United Kingdom is more efficient and responsive to spectrum user rights.

Nripendra Misra, Chairman, Telecom Regulatory Authority of India (TRAI), stated that in India the connectivity target is to cover 500 million customers by 2010. Since spectrum is a scarce commodity, it needs to be managed in an innovative manner to continue the progress. In sharing passive and active infrastructure, there are two provisions as follows:

- Any operator can qualify for a subsidy from the universal service obligation fund to erect towers if it shares the tower with three other service providers;
- Any operator reaching 75 per cent of its rural coverage targets will only be required to pay 50 per cent of its contribution to the USOF

No auctions of spectrum have been conducted yet. They will start with 3G. He considers Brazil as a very exciting example of 3G Network sharing.

Mahmoud El Gowini, Head of Regulatory and Economic Affairs Sector, National Telecom Regulatory Authority of Egypt (NTRA), expressed his views on various kinds of safeguards which can be provided by regulators for infrastructure sharing. Infrastructure sharing offers opportunities of cost optimization, faster deployment and environment aesthetics. This was considered in a recent regulatory framework issued by the Regulatory Authority on infrastructure sharing. The NTRA also encourages participation of utilities such as railways and electricity for rapid roll-out plans. In addition, new entrants are also encouraged to use national roaming, site sharing and Number Portability. To encourage mobile sharing of networks NTRA acted as a moderator and brought all mobile players around the table, leading to the conclusion of agreements between the incumbents and the third entrant. This created a trustful environment. The third mobile operator continues to use site sharing and has national roaming agreements with the incumbents. For the new landline license, the same plan will be implemented and sharing with the networks of other facilities such as the electricity and gas ones will be encouraged. Finally, he concluded that infrastructure sharing is indeed an important tool for attracting investment.

François Rancy, Director General, Agence Nationale des Fréquences (ANFR), France, pointed out that the WRC 07 decided to use the 5 GHz band for the deployment of Internet and WiFi. However, the difficulty with this band is that it is used by military radars. Extensive discussions at the European level were undertaken to share the band using dynamic frequency selection, and allowing for the manufacturing of equipment throughout Europe. But there has been interference not only with military radars but also meteorological ones. He stressed that interference is key and the ability to eliminate interference is linked to the compliance of the equipment. Without equipment compliance it would not have been possible for France to implement spectrum sharing. There is a need to identify the type of equipment which is non compliant and to eliminate them from the market. Indications for future spectrum sharing show that interference needs to be controlled.

The interactive discussion raised a number of questions and concerns:

- ↳ Compensation mechanisms and the role the regulator: Mr. El Gowini explained that in the case of Egypt, there was an agreement between incumbents and the third operator for site sharing and it was made on a commercial basis for a certain period of time. Initially they did not look at the positive aspects of sharing but the new player discovered the benefits afterwards. Initially, the concept of third player sharing the incumbents' infrastructure as well as competing with them was not well received but in the end it worked very well.
- ↳ The comment was made that the spectrum block is allocated to operators. Therefore, spectrum sharing is limited in many countries for compensation reasons.

It was suggested that subsidies from the universal fund could be used to compensate roll-out in rural areas but no concrete examples are available.

SESSION V: SHARING FIBRE NETWORKS

The Moderator, Marianne Treschow, Director General, National Post and Telecom Agency, Sweden, stressed in her opening remarks that the concept of sharing fibre network should be based on the principle of competition neutrality in order to achieve the goal of effective competition and efficiency.

Dr Tracy Cohen, Councillor, Independent Communications Authority of South Africa (ICASA) presented the main findings of GSR Discussion Paper on Extending Open Access to National Fibre Backbones in Developing Countries. The fundamental assumption is that competition and investments are best achieved by infrastructure sharing. She noted that there are however, several challenges in achieving these objectives. The regulatory approach needs to take into consideration the country's context and tailor country and policy specific solutions.

When doing so, the following considerations for implementation are also important to include: establishing a clear policy; identifying critical infrastructure sites; determining if subsidies will be provided, license fees reduced, other regulatory exemptions offered, more spectrum made available, etc.; and implementing measures such as non-discrimination and transparency, e.g., requiring publication of infrastructure installations, allowing pricing for a reasonable rate of return, analyzing technical feasibility and the competition framework (Significant Market Power/Dominance); and ensuring enforcement and dispute resolution. She highlighted the practical recommendations that include for example to need to consult, create incentives for constant improvement, mandated access to bottleneck facilities and others. She stressed that other entities, such as the local authorities and industry, have a role to play. Close cooperation between the government and local authorities will ensure clear policies for rights of way, increased transparency and encourage commercial negotiations.

The floor was then open for discussion with the panelists

Reinaldo Rodriguez Illera, Chairman, Comisión del mercado de las Telecomunicaciones, Spain shared his views on ways to encourage sharing fibre networks, taking into account differences between rural and urban areas. There is a need to strike a balance between innovations as a means for attracting investment and better service for users and coverage of networks. There are many different situations in markets and there is a need to analyze social characteristics. He stressed that voluntary sharing and all other possibilities of infrastructure sharing should be encouraged. He indicated that for fibre deployment, there is a need to take into consideration geographic specificities and requirements of new operators.

Jaume Salvat, CEO, Servei de Telecomucaciones d'Andorra (STA) commented on whether governments/municipalities should be encouraged to build new networks. He indicated that if they can afford it, they should be encouraged. He noted also that for the access part, while renovating streets, there needs to be provisions for the installation and sharing of active elements. In high density areas, building new access may not make sense while it does in rural areas since governments have to ensure universal access. He indicated that public administrations should not enter the market by offering telecommunication services or even own networks. They can find a public company to do this. He stressed that transport and backbone networks need to be offered to all citizens including those in underserved areas.

Kamal Shehadi, Chairman and CEO, Telecommunications Regulatory Authority, Lebanon expressed his views on policies which could promote competition and fibre deployment. He stated that there is no one size fits all policy; however infrastructure sharing policy should be introduced after liberalizing the mobile and fixed markets. It should be encouraged in uneconomic areas and also for environmental concerns. He noted that the objectives need to be clearly defined and safeguards need to be put in place. When incumbents say that infrastructure sharing reduces their incentives to invest, it is the regulators' role to find the balance between incumbents and alternative operators.

Careful consideration should be given to infrastructure sharing in the mobile market since it should not rule out the possibility for commercial negotiations. There are several ways in which infrastructure sharing can be implemented. For example as a part of licensing conditions where operators may have to coordinate roll-out obligations. Market power is another issue, to avoid this, equal access should be required. Structural separation is one possible solution, e.g., to ensure access to ducts for laying fibre networks are available to competitors. He noted that the TRA of Lebanon was establishing an infrastructure sharing desk to coordinate the joint laying of fibre, e.g., when civil works are open for construction. Other measures, in the context of fibre network sharing, can include adding sharing measures in building codes, improving transparency, establishing dispute resolution mechanisms, and promoting coordination.

Zamani Zakariah, Senior Director, Malaysian Communications and Multimedia Commission provided an overview of Malaysia's five-year Master Broadband Plan. The concept of public-private-partnership is a key concept that involves the government and TM, the incumbent, for broadband roll-out in Malaysia. He indicated that it requires a comprehensive study to stimulate the supply side and to encourage the demand side to take up broadband services. The targets are to offer broadband to the general population in the

range of 10 Mbit/s and 2 Mbit/s. This requires striking the right regulatory balance between incentives and sustainable network competition. He indicated that MCMC has yet to implement accounting separation which is a crucial requirement. The challenge however is in managing the co-existence of copper and fibre, including prospective deployment of ADSL 2+ FTTH with copper. He suggested not to presume that a fibre network is a bottleneck in the initial stages, as it not yet established, noting however that it might become one in the long run. There are several mechanisms to promote equitable access to fibre networks of the incumbent including regulating access prices for new High Speed Broadband Networks and implementing the LRIC methodology for pricing access.

The interactive discussion raised a number of questions and concerns:

- ↳ What can regulators do to make it right? Mr Shehadi stated that a balance needs to be struck before making decisions and safeguards need to be put in place. The main challenge is to get the message across to politicians. In Lebanon, 95 per cent of total telecom revenues belong to the state.
- ↳ It was indicated that for small geographies deployment of FTTH and sharing is easy which promotes universal service objectives.
- ↳ TRAI India invited comments on the impact of fibre sharing on NGN deployment. In response to this, Mr. Rodriguez Illera said that vertical integrated network in the future would have passive fibre sharing and there is a need to adopt more collaborative ways of sharing, and to have a balance between competition and collaboration.
- ↳ Ms. Cohen indicated that careful consideration of appropriate conditions is needed to create effective competition. The regulatory approach will depend on whether it is a Greenfield operator or if there is a possibility to use existing infrastructure. The panelist from Lebanon suggested that if regulators provide a clear signal to operators they will find ways to reduce costs. Sometimes regulation can do more damage than good. Cost savings should be passed to end users.

SESSION VI: END-USER SHARING

Fernando Lagragna, Executive Manager of ITU TELECOM, made a special announcement and invited all regulators to the next edition of ITU Telecom Africa to be held in Cairo, Egypt, 12-15 May 2008 (at: www.itu.int/AFRICA2008/). He indicated that for the first time this year, a VIP networking programme will be organized to enable matchmaking between regulators, industry and administrations in order to build effective partnerships in the field of ICTs. This regional event will, on an exceptional basis, be open to participants from all regions.

The moderator, **Bob Horton, Associate for the Pacific Region and the Far East, Commonwealth Telecommunications Organisation**, introduced the session emphasizing that the focus of this session is on end-user sharing in developing countries. In developed countries, the powerplay is even greater (should you take Wi-Fi, WiMax, etc.), but the challenges for developed countries are less often brought to the spotlight in discussions on the international level.

This issue is not new, discussions on existing disparities in connectivity between the North and the South started in 1982. ITU has had a leading role in promoting effective regulation in modern times. He indicated that the first GSRs already witnessed the great importance of independent regulation and of universal access.

The concept of end-user sharing emerged from universal service. In developed countries, this latter was largely misunderstood, as the provision of telecom services was assumed to be on a one-by-one basis, even in non-commercial areas. On the contrary, in developing countries, end-user sharing allows to extend connectivity through innovative business models maximizing both commercial and consumers' dividend.

Dr. Michael L. Best, Georgia Institute of Technology, United States, presented the key findings of the GSR Discussion Paper on End User Sharing which he authored. He noted that

the term “user sharing” is broad and extensive. Since the very beginning, computing machines were predicated for sharing – some of them, such as the PDP11, were used on a time sharing basis, but facilities were also shared. Ethernet itself is based on sharing where all data is broadcast over shared cables. However, current end-user sharing with phones and computers has today a concrete role in extending connectivity and usage.

The benefits of end-user sharing are great: reducing costs both for providing and using services as well as increasing access. Novel applications and innovative services can be promoted to optimize access and improve learning outcomes.

End-user sharing is not only about resource scarcity, it is also about community, culture, and sharing of expertise, experience, etc. This is an important type of sharing, as it has broad social impact and can lead to a win-win situation, even in very low-income communities. Pro-poor communications based on end-user sharing contribute to extending access. If communications aren't shared, a great number of sharers wouldn't be users at all. Such examples are users sharing mobile phones in India or computers in Africa.

In addition, end-user sharing models have produced successful business cases in all developing regions, stimulating micro-entrepreneurship in low-income communities. He noted that end-user sharing has proven successful under many different forms and helped generate user benefits. Sharing incoming voice, but also text, data, location, money, handsets – end-user sharing is going beyond voice. Value-added services, such as agricultural information services, m-banking and m-commerce help boost the local economy and increase job, business and profit opportunities.

Regulators have an important role to play in ensuring an enabling environment for end-user sharing. As a first step, regulators can ensure that the market is complimented and not constrained by end-user sharing in order to deliver universal service goals. Enabling human and infrastructure capacity building would help leverage shared resources. Fostering low barriers to entry for entrepreneurial sharing is a basic premise for stimulating access. Revenue sharing terms are also critical to ensure the success of low-cost business models based on sharing. Consumers should be protected with minimal service levels. In addition, sharing always comes with security and privacy issues.

The floor was then open for discussion with panelists.

Manzurul Alam, Chairman, Bangladesh Telecommunications Regulatory Commission, provided an overview of the experience of Bangladesh. End-user sharing is very much related to culture and tradition. Sharing models such as the Village phone and the Phone ladies have been developed in societies traditionally based on broad solidarity networks. Grameen phone and banking, launched by Prof. Yunus did succeed in connecting a great number of unconnected thanks to an end-user sharing model. The micro-credit strategy enabling micro-entrepreneurs to buy a phone can also be considered as a form of shared resources.

In Bangladesh, sharing-based initiatives such as Grameen have an important social impact, in particular in empowering women. Phone-based micro-entrepreneurship has fast become a major strategy for learning, communicating and making business. Designed as additional income generating activities, phone-sharing business spread in some 50'000 villages in 439 counties, or to almost 80 per cent of the country. An average phone costs about USD20 or 30, and the women entrepreneur pays the loan by monthly installments, allowing reasonable profit. Typically, services provided are market information and communication with family and friends (within the country and abroad). Local shops are successful as they provide services on the spot, they are convenient and cheap. The business of a phone lady is attractive as it is related to a specific social status – women entrepreneurs are seen as better community and family members, as their activities are income-generating, which also brings non-monetary social benefits including higher recognition and respect. Working women in Bangladesh society produce a positive social impact on the ground and provide a practical business model that effectively ties up community and ICTs.

With regards to sharing computers, an initial scheme is needed providing a framework and tools for sharing. Until now, sharing hasn't been enabled by specific regulation but rather by leveraging broader enabling environment strategies. More thought has to be put today in

promoting innovative sharing models to reach unconnected villages both with voice and data services. Market liberalization and financial incentives might be appropriate to improve the current situation and bring rural connectivity in Bangladesh to the next level.

Jose Rizek, Executive Director, Instituto Dominicano de las Telecomunicaciones (INDOTEL), Dominican Republic stressed the importance of addressing a range of more general issues related to technology and human well-being. Investment in the telecom sector should be targeted at generating end-user benefits, as technological progress is meaningless if not serving people in their everyday life. In the Dominican Republic, the digital divide is only one of the social divides that undermine development. INDOTEL has started mapping the digital as well as the broader social divide to develop an effective universal access strategy. It is important to base the decision-making and planning process not only on technology gaps, but also to put this in the global context of power and food supply, etc. in order to identify, prioritize and better address the needs existing on the ground.

He explained that the universal access programme of INDOTEL was built on 1'300 community access centers offering a range of ICT services. Three quarters of the centers are subsidized by the national Telecom Development Fund but they are expected to become self-sustainable or supported by local business. One of the first challenges of the centers was to tackle computer literacy and change users' patterns. About a decade ago, in the 1990s, ITU-BDT brought assistance in telecom reform in the Dominican Republic to strengthening the telecom sector and helped establish INDOTEL, the national regulator and pass a first series of legislation for the telecom sector. This process then continued with support from the World Bank.

The first step was to launch basic literacy programmes adapted to different target groups. Further, in order to provide more varied and structured user-friendly resources, a virtual library was established counting over 100'000 volumes accessible online. To sustain local economies through effective use of ICTs, English learning courses were offered in virtually all centers, including tourism-oriented modules, since most local economic promotion relies on tourism. Today, over 90 per cent of the staff of the tertiary sector are bilingual, if not trilingual thanks to training received in INDOTEL's ICT centers.

In addition, the farming population benefits from sharing information about farming, agriculture development, etc. through mobile services on subscription-based SMS and Internet access. Internet access community centers received an international ICT award in 2006 for organizing ICT training for children, women, and other groups based on specialized content with support from Cisco.

Today, the ambition of INDOTEL is to go beyond universal access and help provide universal service in the Dominican Republic. In order to be able to do so, Universal Service Funds (USFs) might have a key role to play.

Jorge Sarmiento, Deputy Commissioner, National Telecommunications Commission (NTC), Philippines provided a range of useful examples of successful end-user sharing platforms in the Philippines. He addressed the role of the regulator in spurring mobile banking, commerce, and other innovative financial services for pro-poor communities.

Mobile banking (m-banking), ICT-enabled micro-finance and m-commerce services have become very popular because of the high level of mobile subscribers and the fact that a large segment of the population is unbanked.

From full-fledged banking services to simple payments, from top-up loads to remittances – these are just some examples of innovative mobile commerce applications, from which an ever growing number of mobile phone users benefit. For subscribers, mobile commerce offers an affordable, immediate, convenient and personalized way to perform consumer transactions. It also offers businesses a way to expand their market reach and reduce costs.

Smart Money was the first card in the Philippines linked to the Smart mobile phone offered as a value-added feature to all Smart subscribers. A bank card was issued to every Smart subscriber enabling them to make different payments, withdraw cash at bank machines, transfer money or airtime or receive remittances. The success of the service is due to its user-friendly all-in-one set-up, allowing for a number of usages with a simple click on the mobile

phone. Smart is available both to prepaid and to postpaid customers, allowing them to pay as they go, providing a very convenient usage pattern for low-income communities. New m-finance solutions launched commercially in the Philippines include G-cash, a contactless mobile wallet with no card associated to enable mobile commerce and a variety of services available anywhere and anytime.

What has enabled mobile operators to expand to rural areas? The sari-sari stores, more than 500 community shops offering both wholesale and retail for a very wide variety of goods, from half a glass of oil to agricultural equipment, began providing airtime top-ups a few years ago bringing mobile services in rural areas. The Philippines has some 35 million mobile subscribers in 2008, including 8 million overseas foreign workers, which receive over USD12 billion per year of remittances from abroad over traditional or innovative channels, such as mobile banking. Some 45 per cent of the population has a family member working abroad, and m-transactions are one of the most regular communications between family members abroad and nationally, in particular in rural and remote areas. In addition, the mobile networks in the Philippines transmit the incredible 1,5 billion SMS per day. A major enabling factor for e-commerce is the fact that 90 per cent of rural people have access to a mobile phone. The regulator in the Philippines is committed to ensure that the telecom market is mature. In order to achieve this goal, effective regulation has been used together with strategic partnerships, high investment and broader measures to stimulate a pro-competitive environment.

The interactive discussion raised the following points:

- ✦ Telecom/ICT regulation for low-income markets should be tailored to promote access through innovative business and consumer models. Sharing has a key role to play in achieving universal access and universal service goals.
- ✦ ICTs can do a lot in areas where other development tools haven't been successful – regulation should support the implementation of development-oriented ICT projects. Regulation should be based on best policies, regulations, financial and business models to connect people effectively and efficiently. A group of African countries together with 8 non-African peering countries have joint efforts to extract best practices and make policy recommendations. Partnerships at all levels are necessary to change the status quo: 80 per cent of Sub-Saharan Africa is today unconnected.
- ✦ In the Maldives, mobile and CATV companies have put forward strategies of sharing facilities and the experience was very positive.
- ✦ It is often possible to replicate best practices in regulation, however, the specific context of each country should be carefully examined and strategies adapted accordingly. In addition, the role of regulation is seen in a different light in different countries.

SESSION VII: SHARING POLICY AND REGULATORY APPROACHES

The moderator, Alan Horne, General Director of the Telecommunications Regulatory Authority (TRA), Bahrain and President of the Arab Network of Regulators (ARAGNET), opened the session stressing that in the area of international mobile roaming there are still a number of issues to be addressed. Tariffs are often too high, and this creates a hostile environment for roaming users. He noted that this issue is addressed differently according to the regions. He emphasized the need for global cooperation if not global harmonization of regulatory practices.

Vaiva Lazauskaite, ITU/RME, presented the findings of the [GSR Discussion Paper on International Roaming](#) that she authored. She indicated that the main goal of the paper was to provide an analysis of international mobile roaming worldwide to detail what is being done at the regulatory level and illustrate that International Mobile Roaming (IMR) rates is an important issue for regulators.

Why is IMR so important today? There are more than 3 billion mobile subscribers worldwide and over 4 billion people are traveling by plane every year. This represents a huge market, even if less than half of the travelers actually roam over their mobile phone.

What makes IMR so expensive? Is this because of related costs? She indicated that if the reason is cost, then the difference between an international call and a roaming call is just the roaming-specific charges and these are unlikely to be of levels to match the actual prices. She added that according to European Commission estimates, roaming-specific costs are from 1 to 2 euro cents or around 2 per cent of the current retail cap.

Are prices high because of cooperation between mobile operators? International roaming agreements are an essential precondition for IMR, setting tariffs agreed bilaterally by mobile operators. She explained that tariff-setting mechanisms often lack transparency and few regulators actually know what these rates are. The situation results in an information asymmetry between operators and regulators.

What can regulators do? They have at least four strategic options to deal with IMR rates issue:

- ✦ No regulation of IMR rates, leaving market forces to set the most fair price;
- ✦ Regulating wholesale tariffs;
- ✦ Regulating only retail tariffs;
- ✦ Regulate both retail and wholesale tariffs.

She concluded by indicating that the choice will depend on the goals of the regulator and the powers they have. There are not many examples apart from the EC and measures under consideration by the Arab States. Success will largely depend on how closely stakeholders cooperate and how openly they discuss and debate the issue. It is very important to share regulatory practices and common ideas. Cooperation amongst regulators at the regional level can play an important role in reducing IMR.

Janet Hernández, Senior Vice President of Telecommunications Management Group (TMG), presented the GSR Discussion Paper on IPTV and Mobile TV. She indicated that IPTV is largely being deployed by incumbent telecom providers and alternative telecom operators in virtually all developed countries and in some developing countries as well. This allows telecom operators to compete directly with cable operators in offering triple-play bundles of voice, data and video. Mobile TV can be offered through mobile cellular networks and one way broadcast networks. The potential services include live TV channels, Video on demand, pay per view, personal video recorder and multimedia function.

She raised the following challenges associated with IPTV and mobile TV:

- ✦ How to classify them? Are IPTV and mobile TV telecom or information services? One approach is to treat them on a technology neutral basis. This would ensure equal regulatory treatment of all service providers, thus facilitating deployment and operation.
- ✦ What license? Different approaches are being adopted. In Pakistan and Korea, a separate license category has been created for IPTV. Some countries require more than one license to provide such services. In some other countries, such license is considered a part of the existing carrier license.
- ✦ What framework? Existing frameworks are designed for a single platform environment, and may cause some constraints for incumbent telecom providers seeking to deploy IPTV. For example, in order to foster competition and avoid market concentration, some countries, such as Argentina and Brazil, restrict incumbent operators from providing cable services or prohibit an incumbent from acquiring a cable company. Some regulators consider that these restrictions should be changed. Foreign ownership restrictions can impede investment (e.g. different foreign ownership caps on telecommunications companies versus broadcasters). Furthermore, content regulations applicable to broadcasters can also be imposed on IPTV providers. Likewise, IPTV providers may fall under the jurisdiction of different authorities (telecom, broadcasting,

and content regulations) and be subject to different requirements. This has resulted in delays in roll-out of these services or limitation on the number of services that the providers can offer (in the Republic of Korea and Colombia).

Deployment of IPTV and mobile TV also offer enormous opportunities for the sector, specifically providing consumers with more choice and more services, enhancing competition between telecom providers and cable providers, increasing broadband development as telecom providers must upgrade their bandwidth capability to support video services, thereby facilitating the broadband penetration goals of many countries.

The floor was then open for discussion with panelists.

Jean-Louis Beh Mengue, Agence de Régulation des Télécommunications (ART), Cameroon provided useful highlights on his country's experience. He explained that international roaming is prescribed in the law on telecommunications. International roaming is mandatory for mobile operators to ensure that consumers can freely communicate no matter who their provider is. The authorities have signed roaming agreements with many operators and roaming charges are reasonable. However, due to the absence of clear rules, regulators face some concerns from domestic mobile operators and consumers regarding very high international roaming rates. He stressed that regional and sub-regional organizations should discuss and address this issue which is of growing importance. International forums, such as the GSR, could offer a grid of rates that can be used for dispute settlement based on clear and transparent rules.

Regulation is at the core of the mobile roaming issue. Cost-based principles could be applied to international roaming. Alternatively, domestic roaming rules could be extended to international roaming. Enabling better access to networks can be done through the setting of clear rules and harmonizing regulatory strategies at the regional and sub-regional levels.

Creating international gateways can allow the routing of international traffic at a lower cost. In addition, existing domestic roaming might allow operators to piggyback to reduce the costs. The number of exchange points will promote, or constrain, sharing of existing infrastructure.

Syed Nasrul Karim Ahmed Ghazvani, Pakistan Telecom Authority (PTA), Pakistan, highlighted the cross-border nature of international roaming, and the fact that it covers a variety of services, including voice, data services, etc.

He noted the different approaches regulators have taken in different countries to address disproportionately high roaming tariffs. He mentioned the ARAGNET initiative to address the issue, the Australian Competition and Consumer Commission (ACCC) decision to monitor prices rather than introduce restrictive regulation, and the EU regulation. He explained that a variety of regulatory instruments, that are more or less interventionist, are included in the regulatory toolkit and it's up to the regulator to choose the most appropriate one to resolve a specific regulatory issue.

He stressed that to address the issue of international mobile roaming cooperation and dialogue are a must. The first option would be to start at the regional level and then move on to a global agreement once there is consensus within the regions. However he cautioned that this might be difficult because of diversity. An alternative approach would be to work within groups of likeminded countries. A third option would be to rely on self-regulation. In all three cases, the regulatory objectives are similar, whereas the needs are often different. Therefore, harmonization on the supra-national level is needed.

On the issue of IPTV and mobile TV licensing, he indicated that in Pakistan providers traditionally needed service-specific licenses. New services, such as IPTV and mobile TV have prompted many regulators to revise their licensing framework in order to adapt it and facilitate market access. A number of jurisdictions have converged regulators, making it possible to issue a single license. In countries with separate broadcasting and telecom regulators, like Pakistan, this process is more challenging.

With regards to innovative services, governments have to address issues such as common standards, quality of service (QoS) and ownership. Spectrum management and unbundling might also be challenging.

Marc Furrer, President, Communications Commission (ComCom), Switzerland noted that the EU move to reduce international roaming tariffs was successful but indicated that these are not applicable to Swiss operators. There is a risk of waterbed effect – operators may decide to compensate lower international roaming rates either with higher local tariffs for national users, or to differentiate prices between roamers from different countries or regions. In the same time, he also recognized that it is not acceptable that a Swiss mobile user going to Spain pays more for roaming communications than for the airfare.

Because there is more outgoing traffic than incoming traffic in Switzerland, wholesale regulation might be a solution. However, this would not be applicable to operators with lower tariffs. Another option would be to regulate retail tariffs. A similar problem is now coming up with data. He indicated that these issues have to be discussed and tackled both on the national and the international levels. International organizations, such the ITU and the World Trade Organization (WTO) do not have the legal power to impose regulations; rather, they can serve as foras and provide platforms for cooperation among regulators.

He stressed that infrastructure-based competition is good for the market and for consumers. It is very positive that telecom operators can go into broadcasting and vice versa. In Switzerland, there are no licenses for carriage or content. However, providers are subject to the broadcasting law and limitations on content apply (time of advertising, etc.).

With regards to mobile TV, a license is required for the provision of services. Mobile TV will be commercially launched in the first quarter of 2008, for the European football championship. He noted that content for mobile TV would need to be specially created or at least be adapted, as normal TV programs may not be a success.

Basuki Yusuf Iskandar, Director General on Posts and Telecommunications, Indonesia indicated that international roaming is not regulated in Indonesia. Addressing this issue is very complicated because of its cross-border nature. While customers expect fairer tariffs traffic is constantly growing even if prices are relatively high. He indicated that a regional approach to roaming regulation might be the most appropriate. The first step is to foster transparency and ensure equal treatment of roaming customers. There should be a constructive dialogue with industry players and ITU can facilitate this. Soft regulation might be preferable to heavy regulation. It is important to empower regulators and give them the appropriate mandate to deal with these kind of complex issues. In the long term, a global solution can and has to be reached. This issue may be taken up by WTO as well in order to find a viable solution, as international roaming is part of the broader economic integration and globalization processes.

With regards to IPTV, there are separate regulators and regulations on telecom and broadcasting in Indonesia. Recognizing the need for convergence, it is necessary to harmonize and merge both two laws.

Mohammed Gheyath, Director Technical Affairs, Telecommunications Regulatory Authority, United Arab Emirates (UAE) draw some parallels between the European and the Arab countries' experiences in the area of international roaming. There is a need to act quickly to address high roaming tariffs in the Arab Region and operators have not proven very cooperative. The Arab group has taken a new initiative at the level of the Council of Ministers and this will discussed at the next ministerial meeting.

Roaming tariffs in the Arab region are now published on a website hosted by GSMA. However, such initiatives in the region should be led by regional players. There is a common understanding that there should be a regulatory obligation to notify consumers with regards to the roaming charges applied. This is already the case in the UAE.

In the UAE, new services such as IPTV and mobile TV are considered important and they can be assimilated to telecom services. In order to ensure best services for consumers, cooperation between service and content providers has to be taken further. Service deployments should be supported by the regulator as well as the production of content together with operators. He stressed that IPTV is not possible without good-quality content. The regulatory status of IPTV in UAE is complex since the current telecom regulation doesn't take into account such services. IPTV should be part of the Telecommunications Act. For the

time being, IPTV licenses have already been awarded and more specific legislation is in progress.

Sami Al-Basheer Al-Morshid, BDT Director, stressed that the issue of mobile roaming is complex as multiple factors enter in consideration. It is hard to accept tariffs as high as 700-800 per cent the cost of international mobile services. Both the industry and the regulatory community should look for solutions and explore all options to bring prices for services down. He noted that the GSR Best Practice Guidelines could serve as a vehicle to start the discussion, provide input for regulators and contribute to a solution. These Guidelines are not legally binding, but they are based on best practices and can provide useful recommendations.

The interactive discussion raised the following points:

- ✦ The EU challenged the high tariffs applied, and this is only a first move to bring IMR rates down. But the experience of EU is not universally replicable.
- ✦ In addition to the possible regulatory solutions to high IMR rates, there are commercial solutions (one card – multiple numbers). Regulation is intended to help industry move forward.
- ✦ Self-regulation could also provide transparent prices for consumers.
- ✦ Panelists called upon administrations to collect traffic data in order to be able to better analyze the roaming phenomena and take informed decisions and regulations.
- ✦ International roaming rates are high often because of practices of cross-subsidizing domestic rates by international roaming rates.
- ✦ High licensing fees might also account for the high rates. Auctions are often preferred for the purpose of transparency, but they can result in high fees. The move towards beauty contests might help reduce prices.
- ✦ A coordinated action is needed both at the regional and the international level in order to find remedies to excessive IMR rates in all regions.

SESSION VIII: BRINGING IT ALL TOGETHER: PROMOTING UNIVERSAL ACCESS TO ICTS

Moderator, J. P. Morgan, Director General, Office of Utilities Regulation (OUR), Jamaica opened the session and invited Sonja Oestmann to present ITU-infoDev ICT Regulation Toolkit.

Sonja Oestmann, Director of Consulting, Intelcon Research, Canada presented the Universal Access Module, the latest addition to the ITU-infoDev ICT Regulation Toolkit. She highlighted the structure and completeness of the Module. She indicated that Universal Service Funds have been collected over a period of time and some have expressed concerns about funds being unused. She explained that only a few USFs are facing difficulties in using their resources. She noted that it may also be worthwhile to review the amount collected from contributing operators. The percentage of revenues to be contributed may be reduced when more operators contribute. She mentioned that the best practices on USFs include technological neutrality, transparency, fairness, openness to public audit, the use of competitive auctions for subsidies, for funds to be used as a last resort, to focus on sustainability, and to collect only the needed amount from operators. She shared the examples of US Funds from Uganda, Mongolia and Chile.

She explained how infrastructure sharing can be a part of UA policy and strategy. She noted that there is a possibility for regulators to consider mandating infrastructure sharing if US Funds are used. For example:

- ✦ Extending the backbone to rural areas (Mozambique made it mandatory for sharing with others);

- ↳ Subsidizing to build towers (India);
- ↳ Using USF funds for shared open access networks where industry does not see a business case to invest in broadband networks (Canada);
- ↳ Funding pilot projects under condition of making the information public (Peru).

On the opportunity of funding broadband through USFs, she explained that countries need to be cautious about not distorting the market, since USFs have traditionally been used to fund those who do not have access to services that are accessible to the majority. The EU decided in 2006 not to include broadband services among those to be funded by USFs. When considering whether broadband should be excluded, two issues should be taken into account:

- ↳ The EU looked at broadband services from the household perspective while Universal Access focuses on community access;
- ↳ The necessity to promote broadband in order to move towards the Millennium Development Goals.

Universal access policies that promote broadband need to focus on implementing the necessary sector and regulatory reform that creates incentives for broadband development (such as open access to broadband infrastructure). However, the use of USFs should be based on careful consideration and feasibility studies.

The floor was then open for discussion with the panelists.

H.E. Ambassador Ronaldo Mota Sardenberg, President, Agência Nacional de Telecomunicações do Brasil (Anatel), Brazil, indicated that Brazil has more than 10 years experience and can now show the result of its efforts through the high level of telecommunication penetration in Brazil. Regulations are stable and based on coordination between operators and the state. He explained that a lot was achieved through dialogue. He indicated that the Universal Access goals have recently been changed and as a result the Agency has revised the obligation of fixed line incumbents to build 8'500 telecenters across the country into an obligation to build backbone infrastructure through 2010. The government is also working with the private sector to provide 55'000 schools with broadband (1 Mbp/s) free of charge. By 2010, backhaul infrastructure is targeted to cover about 5'500 municipalities with capacity in proportion to inhabitants. Rural areas have not been included at present but would be taken care of by other means. The advantages are clear as broadband can offer new arrays of services: public services, telemedicine and etc.

He indicated that as a result of competition in the mobile market, the number of mobile subscribers grew significantly – from 1.7 million in 2002 to around 122 million in 2007. Last year 3G licenses were tendered for 15 years generating 3 billion USD revenues. He noted that infrastructure sharing requirements are also included in the license. Four operators in each region will provide services, meaning competition throughout the country. This year further tenders will be held. The 3G operators are expected to supplement fixed line efforts. Furthermore, in Brazil, there is a move towards a single (unified) license.

Regarding unused USF funds, he indicated that Brazil has been constrained in using its funds as a result of a judicial decision that confines spending of USF funds to the fixed network. Efforts are presently made to expand the scope of the fund.

Issei Yamamoto, Director General, Institute for Information and Communications Policy, Japan, noted that at present, Japan is one of the most advanced countries in ICTs, especially in broadband services. In 2001, Japan had only 0.85 million broadband subscribers while by 2005 the number grew to 20 million and in 2007 has reached 27 million. FTTH is increasing very sharply and has now reached 10 million subscribers. The usage charge has fallen to a third i.e., from 70 dollar per month in 2001 to about 20 dollars in 2005. Japan is ranked as one of the fastest and cheapest services in the world.

The two main policy success factors included:

- ↳ Establishment of a national target in government led ICT strategy e-Japan, and
- ↳ Introduction and implementation of a program with appropriate competition policy.

He explained the role of the National e-Japan policy formulated in 2005 and the e-Japan strategy II that promoted utilization of ICT through efforts coordinated between the government and the private sector. This was followed by the u-Japan policy introducing the concept of the ubiquitous network society. He added that the Next-Generation broadband strategy started in 2006 aims at the elimination of zero broadband areas by 2010. Similarly, the target for Ultra High Speed Services (FTTH) is a 90 per cent household penetration by 2010.

Mbaké Fall, National Council Member, Autorité de Régulation, Mauritania said that the Regulatory Authority was initially created as a sector specific regulator in 1999, and became a multi-sectoral regulatory authority in 2001. In addition to telecommunications, the Regulatory Authority is responsible for the postal and electricity sectors. He noted that in addition, a multi-sectoral Universal Access Agency was created in Mauritania. This agency is responsible for ensuring universal access to different public services such as telecommunications, water, and electricity. This allows benefiting from experiences in different sectors. He indicated that the Agency is financially independent and that two organizations will lead for greater efficiency and effectiveness.

John S. Nkoma, Director-General, Tanzania Communications Regulatory Authority, stressed that technological neutrality and liberalization of international gateways are important principles of regulation. International gateways are liberalized in Tanzania and there are four gateways. He also indicated that 3G HSPDA services are being provided making Tanzania the second African country, after South Africa, to offer the service. He indicated that the main advantages of infrastructure sharing are the ability to reduce cost, to facilitate market entry, to avoid duplication, and to respect environmental issues. However, there are some disadvantages which include disputes and traffic security issues.

On the issue of mobile roaming, he indicated that in Africa this issue is being solved quite successfully. He provided the example of the mobile operators in twelve countries, covering a population of 400 million, who have entered into roaming agreements to offer their customers roaming at national roaming rates. In conclusion, he mentioned that a Universal Service Act is being passed in Tanzania and that there are a lot of lessons to be learnt from the GSR sessions in this regard.

The final comments were made by the **ITU-APT Foundation of India**. The representative stressed that as spectrum is scarce, and as it is an important resource, pressure on spectrum is increasing. Therefore a lot of work will need to be done on spectrum sharing. He made two suggestions: first, that countries should be encouraged to deploy ITU-R harmonized bands for wireless systems, and second, that ITU-R should increase the focus and activities of technical Study Groups. They should provide guidelines, especially in dealing with interference issues.

THE WAY FORWARD & CLOSING

Sami Al Basheer Al Morshid, BDT Director opened this session by giving the floor to Mr. Maniewicz, Chief, BDT/POL Department, and Ms. Valerie D'Costa, *infoDev* Programme Manager to introduce the latest joint ITU-*infoDev*-World Bank project, the Global Capacity building Initiative(GCBI) and report on the online ITU-*infoDev* ICT Regulation Toolkit (<http://www.ictregulationtoolkit.org/en/index.html>). The session continued with the granting of the G-REX awards, the presentation and adoption of the GSR 08 best practice guidelines and discussion on the themes for the next GSR.

Mr. Maniewicz indicated that the objective of the GCBI is to develop a full fledged regulatory capacity building programme based on the ICT Regulation Toolkit and other resource material, such as the GSR discussion papers and best practice guidelines. He explained that there is a capacity building gap that needs to be bridged, and this is what the GCBI would be meant to do. He indicated that the positive feedback received from participating regulators and regional regulators associations at the GCBI informal roundtable discussion, held on 10 March, will help ITU and *infoDev* tailor the GCBI to the needs of regulators.

Ms. D'Costa added that the GCBI is based on three main pillars that are: long term sustainability, client-oriented, and global in reach (scope and scale). She invited participants to inform ITU and *infoDev* of their training needs and proposals. She explained that the ICT Regulation Toolkit was the foundation of a partnership *infoDev* considers very precious. She reminded participants that the first chapters of the Universal Access module are now available online. She also encouraged regulators to provide feedback on the Toolkit. She concluded by thanking the ITU/BDT, NTC and all the regulators.

Mr. Al Basheer Al Morshid continued with the next item on the agenda and presented the G-REX Awards. Awards were given to those who were most active, both in asking and replying to questions on the ITU Global Regulators' Exchange (www.itu.int/grex). G-REX is the ITU password-protected website for regulators and policy makers which enables them to continue their dialogue following the GSR. Participants can pose questions and receive replies from their counterparts around the world.

The 2008 G-REX awards were given in order of level of activity to:

- ↳ Pakistan Telecommunication Authority - Pakistan
- ↳ Organismo Supervisor de Inversión Privada en Telecomunicaciones de Peru (Osiptel) - Peru
- ↳ National Telecommunications Regulatory Commission of Saint Vincent and the Grenadines
- ↳ Autoridad Reguladora de Servicios Públicos - Costa Rica
- ↳ Comisión Nacional de Telecomunicaciones (Conatel) - Venezuela
- ↳ National Telecommunications Corporation (NTC) - Sudan
- ↳ Office of the Telecommunications Authority (OFTA) of Hong Kong, China
- ↳ Communications Regulatory Authority – Lithuania

He expressed his high appreciation to all winners and encouraged all regulators and policy makers to join the global online dialogue.

2008 Best Practice Guidelines

Turning to the GSR 08 best practice guidelines discussion, Mr. Al Basheer Al Morshid thanked NTC for coordinating and consolidating the guidelines and gave the floor to Mr. Professor Sethaporn Cusripituck, Commissioner, National Telecommunications Commission (NTC), Thailand.

Professor Sethaporn Cusripituck introduced the proposed GSR 08 best practice guidelines on innovative infrastructure sharing strategies to promote affordable access for all. He thanked regulators for their contributions and useful comments prior to, and during, the GSR and stressed the collaborative efforts of ITU Member countries. He then opened the floor to comments.

Nigeria, Bahrain, Botswana, Lithuania and Senegal, thanked the NTC and the ITU for organizing this event which provides a platform for regulators to share information. They expressed their support to the GSR 08 best practice guidelines that they consider to be a useful tool for regulators. A representative of the Malaysian ministry indicated that they have gone through the process of infrastructure sharing and noted that while it looks good on paper implementation is very difficult. Competition will not always reduce costs in the long term. CTO and Jamaica also thanked NTC and the ITU. Jamaica suggested that the role of regional organizations should be added to the guidelines and CTO noted to importance of investment incentives. Mr Sami Al Basheer Al Morshid indicated that the comments would be taken into consideration. Consensus on the 2008 GSR Best Practice Guidelines was reached.

Theme for next GSR

Lastly, Mr Al Basheer Al Morshid asked participants for suggestions on the theme for the next GSR. Bahrain and ARGNET suggested three topics: 1) "beyond universal access", innovative approaches to ensure everyone has access to the ICT services they need, inspired by the discussion introduced in session 6 on end users sharing, 2) "where one is not enough: regulating cross-border", that would examine cross border regulation such as protection of users and international mobile roaming, and 3) environmental issues related to telecommunications and what regulators can do. The Regional Commonwealth in the Field of Communications thanked Thailand and suggested to examine issues related to consumer protection and quality of service. To give regulators more opportunity to reflect on the theme for the next GSR, the BDDT Director invited participants to submit any additional proposals in writing up until 13 April. He ensured that ITU will keep participants informed of the results.

Following the GSR, an additional proposal was made by Lithuania to focus on convergence as a technologically driven trend that is in process of defining a new environment, in which the general objectives and demands of public and private institutions will have to be accommodated. Infrastructure sharing, as discussed in GSR 08, is an enabler and prompter of converged services and businesses, delivering more variety, easier accessibility and wider affordability of ICT services. However, an outstanding question is how all the implications of convergence will be employed in the regulator's daily agenda? Will regulators need or be able to manage IP based networks and their inter-relation with conventional networks? Does expanding the core network ensure equal access for all? What is the regulator's outlook to users' active involvement in Information Society service delivery? How does technology neutrality correlate with service neutrality? One approach is for regulators to employ the best practices arising from the Internet, beginning with its overarching idea of openness to its simple Bill and Keep accounting model, while continuing the best elements developed from the traditional regulatory framework, e.g., noting that the move toward IP-based networks does not necessarily eliminate traditional market power but could lead to the emergence of new competitive bottlenecks. Convergence creates lots of opportunities, but its proper employment, to ensure that all users derive maximum benefit in terms of choice, price, and quality, minimal distortions or restrictions of competition, should be discussed further.

Mr. Al Basheer Al Morshid extended his warm thanks to the MICT and NTC for the excellent organization provided by their staff and the exceptional hospitality displayed by everyone in Thailand. The BDT Director reiterated his deep appreciation for the wonderful gala dinner NTC organized on Tuesday evening, and for offering all coffee breaks and lunches as well as a relaxation area. He thanked Iridium and TOT Public Company Limited for sponsoring the Women's event and Cisco for Tuesday night's reception. He also thanked all the companies that participated in the technology exhibit, Nokia/Nokia Siemens Networks, the WiMax Forum, Shin Satellite, Microsoft, GSM Association and Rhode & Schwartz.

He also extended his thanks to all participants, moderators, panelists, speakers and the GSR Discussion Paper authors for sparking such a fruitful dialogue and making this event such a success. He reminded participants that they are welcome to provide their comments on the GSR Discussion Papers through 13 April 2008. He concluded by thanking his staff and the interpreters for making this event a success, and noted that ITU has every confidence in its Thai hosts as ITU moves from the GSR to Telecom Asia, which he is assured will be a huge success.

Professor Sethaporn Cusripituck thanked as well the ITU, MICT, speakers, panelists, GSR discussion paper authors, NTC staff, PCO (NTC's event organizer) and participants for their invaluable contributions. He concluded by stressing the significant role sharing can play in lowering the costs of deploying networks, providing access and reducing the digital divide. He noted that NTC was created three and half years ago and, for NTC, sharing information and knowledge is crucial. All participants were then treated to a video capturing the highlights of the GILF and GSR, which is available at the GSR website (www.itu.int/gsr08)



ANNEX A

The GSR Best Practice Guidelines 2008 are available in the six official UN languages at: www.itu.int/ITU-D/treg/bestpractices.html.



Global Symposium for Regulators 2008

Best Practice Guidelines on innovative infrastructure sharing strategies to promote affordable access for all

Over the last decade, the telecommunication sector worldwide witnessed a first wave of reforms resulting in the establishment of a regulator in the vast majority of countries, introduction of competition in some or all service segments and at least partial privatization of the incumbent operators (among other measures). The result has been unprecedented take-up of mobile voice services in developing countries. However, despite these impressive gains, much of the world's population still remains without access even to voice services, and very few citizens in developing countries have access to multimedia broadband services including Internet. Regulators around the world are considering infrastructure sharing as a tool to promote infrastructure deployment, in particular IP backbones and broadband access networks. Today, a second wave of regulatory reforms is necessary.

We, the regulators participating in the 2008 Global Symposium for Regulators, have identified and proposed best practice guidelines for innovative infrastructure sharing and open access strategies to promote affordable broadband access.

A. Promoting an enabling environment

1. Appropriate Regulatory framework

We recognize the need for an appropriate regulatory framework fostering broadband access including Internet, to enable the development of infrastructure-based competition, in addition to service-based competition, and the emergence of new innovative players at the national level.

Certain sharing options can deliver specific benefits while others could pose risks, in particular by reducing competition, and these need to be carefully balanced in the light of specific national circumstances when designing the most appropriate regulatory strategy.

In doing so, regulators recognize the importance of holding public consultations with all stakeholders on the various strategies and regulations that deal with infrastructure sharing.

2. Competition and investment incentives

We recognize the potential benefits of infrastructure sharing, whether mandatory or optional, in situations where competition and investment incentives are not undermined, bearing in mind the need to safeguard competition and investment incentives. We recognize that offering of shared facilities must not be biased towards any specific service provider or types of services.

Where capital and operating expenditures are likely to be reduced by the joint deployment, management and maintenance of certain facilities (for example, by tower sharing), such

sharing can bring about long-term efficiencies, which may in turn enable more investment in innovative products and services and ultimately benefit consumers.

We recognize the importance of ensuring that regulatory policy does not restrict competing market players installing their own independent facilities, and that it promotes open access to international capacity and international gateways (for example, collocation and connection services at submarine cable landing stations).

We believe that the establishment of Internet Exchange Points could also encourage shared and more affordable access to national and international broadband capacity for Internet service providers willing to enter the market.

B. Innovative regulatory strategies and policies to promote infrastructure sharing

We also recognize that successful infrastructure sharing may be facilitated by the introduction of regulatory obligations and regulatory policies that include:

1. Reasonable terms and conditions

It is important that implementation of sharing takes into account the necessity to protect the value of existing investment in infrastructures and services. However, price and non-price terms and conditions should not act as an artificial barrier to sharing.

2. Pricing

Pricing for shared facilities should provide the right economic signals to market players, assisting them in making reasonable and commercial "build-or-buy" decisions (i.e., is it more commercially reasonable to self provision facilities or to lease existing ones). At the same time pricing should provide for the right incentives for investments in infrastructure (in a form of reasonable return on investment), but should not be used as an artificial barrier to entry for new market players. Commercially negotiated pricing should prevail, except where market power exists.

3. Efficient use of resources

Non-replicable resources such as towers, ducts and rights of way can be shared for installations that serve a similar purpose, which allows for optimal use and can be offered on a first-come first-served basis subject to commercial agreements under fair pricing conditions.

4. Scarce resources

Shared-use bands could be promoted as long as interference is controlled. Spectrum sharing can be implemented on the basis of geography, time or frequency separation.

5. Licensing

Regulators could consider licensing or authorizing market players that only provide passive network elements, but which do not compete for end-users, such as mobile tower, public utilities companies with rights of way access, companies and fibre backhaul providers.

6. Conditions for sharing and interconnection

Regulators recognize that infrastructure sharing can only take place on a neutral, transparent, fair and non discriminatory basis and that interconnection frameworks can ensure that all licensed operators are granted the right to interconnect as well as encourage the sharing of essential facilities and guarantee that network security and quality of service are not compromised.

7. Establishing an infrastructure sharing one-stop-shop

Establishing a one-stop-shop would facilitate the coordination of trenching and ducting works between telecommunications service providers as well as between telecommunications service providers and those of other utilities.

Regulators recognize the key role local authorities could play in fostering the deployment of broadband access and development of competition and the importance of close cooperation to

simplify administrative proceedings and ensure timely response to requests for infrastructure sharing.

8. Improving transparency and information sharing

Regulators recognize the need for transparent processes to facilitate infrastructure sharing, and market players need to know what is available for sharing under clearly established terms and conditions, in order to avoid unfair actions. Regulators could require publication on websites of the details of existing as well as future infrastructure installations available for sharing by other service providers, such as the availability of space in existing ducts, planned deployment or upgrading works and interconnection.

9. Dispute resolution mechanism

We believe that regulators should introduce necessary enforcement tools to ensure compliance and successful adoption of infrastructure sharing regulations. As an infrastructure sharing relationship between service providers involves elements of both cooperation and competition, the regulators recognize the need to first explore alternative dispute resolution mechanisms which are speedy and simplified to encourage negotiated outcomes while maintaining the certainty of an adjudicated decision where necessary.

10. Universal access

To encourage infrastructure sharing in support of its universal access goals, regulators can consider the introduction of incentives for service providers that share infrastructure as part of their efforts to deploy to rural and underserved areas. Such incentives may, for example, take the form of regulatory exemptions (ensuring that such exemptions do not lead to re-monopolization of the market and do not unreasonably restrict consumer choice) or financial subsidies taking into account the need to minimize distortions to competition.

11. Sharing with other market players and industries

Regulators also recognize that sharing should be encouraged not only within the boundaries of the Telecommunications/ICT and Broadcasting industry, but together with other infrastructure industries (such as electricity, gas, water, sewage, etc.) as well. In the context of technological development, joint infrastructure building (with other market players and with other industries) may be encouraged, providing for timed, organized opportunities for access to ducts and conduits (for example, for the joint laying of fiber) to distribute the cost of civil works among service providers and reduce the inconvenience for traffic in towns and cities. This would also provide for a positive environmental (including aesthetic) impact, in particular by reducing the number of mobile masts and towers.

12. Sharing of regulatory practices

Regulators recognize the need for an appropriate level of international and regional harmonization to ensure that best practice regulatory policies on sharing are widely spread, and regional organizations have an important role to play in this regard. This is even more important in areas where a specific regulatory issue has a significant cross-border effect and thereby cannot be tackled by a national regulator.

This document draws from the contributions of: Bahrain, Bolivia, Botswana, Brunei Darussalam, Cameroon, Côte d'Ivoire, Dominican Republic, France, Germany, Indonesia, Lebanon, Lithuania, Japan, Malta, Mauritania, Oman, Portugal, Qatar, Russian Federation, Singapore, Sri Lanka, Switzerland, Thailand, Tunisia, United Arab Emirates and the United States.