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GSMA Information Paper: GSR12 Consultation on Best Practice Guidelines on Regulatory Approaches to Foster Access to Digital Opportunities through Cloud Services

The GSMA welcomes the opportunity to provide a mobile industry perspective on the Best Practice Guidelines related to cloud computing, which are being prepared for the upcoming Global Symposium of Regulators 2012 meeting in Colombo.

The mobile industry is a major provider of broadband access, and in many countries mobile has far outstripped fibre as the primary means of accessing the internet and cloud-based services. As such, mobile-sector considerations and best practice should be reflected in these guidelines.

We firmly agree with the premise that cloud computing creates substantial economic value and opportunity for businesses and consumers and, furthermore, that public-private collaboration is needed to ensure excellent and dependable quality of service and universal access to broadband, thereby earning the confidence of investors, service providers and end users in cloud computing. Indeed, these goals are fully compatible with the objectives of the mobile industry.

Of the proposed guidelines, there are several that affect the mobile sector, and touch on issues that relate to mobile telecommunications policy and regulation.

Broadband Infrastructure

In many parts of the world, and particularly in rural areas, fibre-based access does not exist and mobile represents the most cost-effective way to extend broadband access to people in these areas. Regulators should therefore make sure that mobile is appropriately represented in their national broadband plans, and establish a regulatory framework that allows for fast and efficient development of mobile networks.

Infrastructure licensing

Explicit planning approval processes for mobile base stations should be defined, to avoid lengthy delays in network deployment.

- Base stations provide geographic coverage and additional network capacity where needed. New mobile services require additional, technology-specific infrastructure.
- Mobile network operators face a variety of requirements and conditions, depending on the country, in securing permits for base-station deployment. Procedures can be defined at different government levels, even though the local authority (e.g., the municipality) is the main point of referral. Regional or national requirements may also have to be met.
- We support mechanisms to avoid delays related to bureaucratic inefficiencies, including exemptions for small installations or certain site upgrades, 'one-stop shop' licensing procedures and tacit approval.

Infrastructure Sharing Between MNOs

Regulatory frameworks should allow voluntary sharing of infrastructure among mobile operators.

- Common in many countries, infrastructure sharing arrangements allow mobile operators to jointly use masts, buildings and even antennas, avoiding the unnecessary duplication of infrastructure.
- Infrastructure sharing has the potential to extend mobile coverage to underserved areas more quickly, strengthen competition, reduce the number of towers, reduce the carbon footprint of mobile networks and reduce costs for operators.
- Spectrum and infrastructure sharing can intensify the use of physical assets, to the benefit of society and consumers. The regulatory framework of a country should facilitate all types of infrastructure sharing arrangements, which can involve the sharing of various components of mobile networks, including both so-called passive and active sharing.
- While it may at times be advantageous for mobile operators to share infrastructure, network deployment remains an important element of competitive advantage in mobile markets, so any sharing should be a commercial decision and not mandated.
- Infrastructure sharing agreements should be governed under commercial law and, as such, be subject to assessment under general competition law. Such agreements should be the result of commercial negotiation, not subject to regulatory constraints or additional fees.

Gateway liberalisation

Gateway liberalisation delivers substantial economic benefits to a country. These include lower international call prices, more international bandwidth and lower costs in the provision of international services.

- International gateways (IGWs) are the services through which international calls are sent and received. Although most developed markets now have fully competitive international telecommunications markets, many countries in Asia Pacific, the Middle East, Africa and Latin America are yet to liberalise IGWs, and monopoly supply continues. By allowing IGW monopolies to operate, governments are faced with significant regulatory and law-enforcement costs to prevent illegal bypass, while losing out on the tax revenue that could be generated by legal services.
- In contrast, IGW liberalisation has the ability to deliver lower retail prices, better services and wider benefits for the country as a whole (e.g., by lowering the cost of business and facilitating trade and investment. thereby raising employment and living standards).

Spectrum

Like all data-driven services, cloud computing requires bandwidth. Spectrum has often been called the 'lifeline' of the mobile industry, without which it cannot ensure the geographic coverage and data throughput that consumers expect. As the 'keepers' of their country's spectrum, regulators play a critical role in allocating spectrum for the best social and economic outcomes for their citizens.

The Digital Dividend

The Digital Dividend refers to the spectrum made available for alternative uses, following the analogue-to-digital television switch-over. A share of the Digital Dividend spectrum should be allocated to mobile.

- The Digital Dividend is a key enabler for universal broadband access, bringing socio-economic benefits to people in cities as well as rural and remote areas where fixed-line penetration is low. It is reasonable for coverage obligations to be employed to ensure efficient use of this spectrum.
- For mobile, the freed-up spectrum has made two potential bands available, 790-862MHz (aka the 800 band) used in ITU-R Region 1 (including Europe, Africa and the Middle East) and 698-806MHz (aka the 700 band) used in ITU-R Region 2 (American states) and Region 3 (Asia Pacific)

- The economic benefits of licensing this spectrum to mobile are far greater than allocating it to any other service.
- Regional harmonisation of the band is necessary to drive economies of scale (keeping handset costs low) and avoid interference along national borders.

Cognitive Radio and Spectrum Management

It is too early to support unlicensed shared use of spectrum. Further study is needed to assess whether current or future uses of the spectrum by the incumbent owners would be negatively affected by cognitive radio.

- Cognitive radio (CR) systems remain an area of continuing research. One possible application of CR is to implement communication systems in so-called spectrum ‘white spaces’ that are unused in certain locations or at set times (as with television broadcasting) or that naturally fall between licensed spectrum bands.
- CR is designed to allow the system to adjust its parameters and protocols according to the operational and geographical environment. CR systems avoid interference with other radio transmissions by automatically switching frequencies or turning off the system.
- While it shows promise for specific applications and uses, CR’s technical and commercial viability is uncertain and unproven. However, an operator who owns a mobile network and operates in its licensed spectrum may benefit from CRS capabilities (intra-operator scenarios).
- Governments should promote the most effective use of spectrum and continue to consider all types of licences in the management of the radio spectrum. Cognitive technologies may, in the future, allow sharing in bands where it was previously not feasible, but some regulatory aspects and property rights need to be resolved.
- The fact that liberalised spectrum usage rights have not — through normal market processes — led to shared use of spectrum is an indicator of the challenges posed by cognitive radio.

Technology Neutrality and Change of Use

We support a technology-neutral approach to the use of mobile frequency bands. Governments should amend technology-specific licences to allow new technologies to be deployed, enabling operators to serve more subscribers and provide each subscriber with better, more innovative services per unit of bandwidth.

- Technology neutrality is a policy approach that allows the use of any noninterfering technology in any frequency band. In practice, this means that governments allocate and license spectrum for particular services (e.g., broadcasting, mobile, satellite), but do not specify the underlying technology used (e.g., LTE or WiMAX).
- Many of the original mobile licences were issued for a specific technology, such as GSM or CDMA, which restricts the ability of the licence holder to ‘refarm’ the band using an alternative technology. Refarming in the mobile industry often refers to the 850/900MHz and 1800/1900MHz spectrum bands, which were allocated for GSM (2G) use in most markets. Refarming these bands can provide much-needed bandwidth for newer mobile technologies, while supporting 2G voice and data until those services are outmoded.
- Technology neutrality ensures competition, allowing markets to determine which technologies succeed, to the benefit of consumers and society. Adopting harmonised, regional band plans for mobile ensures that interference between services can be managed. Governments should allow operators to deploy any mobile technology that can technically co-exist within the international band plan.

Spectrum Harmonisation

Spectrum harmonisation is critical and will remain so for the foreseeable future. All markets should harmonise regionally where possible, as this benefits the entire global mobile ecosystem. There is no advantage to going it alone.

- Common frequency bands for mobile, between neighbouring countries and across regions, offer many advantages:
 - Lower costs for consumers, as device manufacturers can mass-produce less complex devices that function in multiple countries on a single band
 - Availability of a wider portfolio of devices, driven by a larger, international market
 - Roaming, or the ability to use one's mobile device abroad
 - Less cross-border interference
- Adoption of harmonised bands has enabled huge economies of scale, leading to unprecedented use of mobile telephony worldwide. Because there are a limited number of bands that can be supported in a mobile device. Each new band supported increases the device cost, reduces the receiver's sensitivity and drains the battery.
- Even small variations on standard band plans can result in device manufactures having to build market-specific devices, with costly consequences for consumers.

Net Neutrality

We believe in an open internet, but to keep it open and working, mobile operators need the flexibility to manage traffic and innovate.

- There is no single definition of 'net neutrality'; it is often used in the context of prioritisation of traffic over networks. Some argue it is necessary to legislate that all traffic carried over a network should be treated in the same way.
- Traffic management has always been used in networks, for example to prioritise emergency communications. The recent focus of the net-neutrality debate is on promoting transparency and competition rather than specific legislation on traffic management.
- Operators need to differentiate between application and device types so that they can manage the end-to-end quality of service and provide consumers with a satisfactory experience in line with consumer preferences. Likewise, not all traffic is equal; for example, voice is time-sensitive and therefore needs prioritisation.
- Traffic management is essential to efficiently manage the limited mobile network capacity, while the traffic over the networks keeps growing.
- Mobile operators must continue to have the flexibility to manage their networks to deliver consumer choice and innovative services and market propositions. Restrictive regulation would limit the flexibility required to build a sustainable, well-functioning network.

Quality of Service (QoS)

With ever increasing levels and complexity of traffic and given the increasing issues around security, operators must be able to retain and employ all appropriate network management tools, including those highlighted above.

- The GSMA does not support any regulatory limitation or mandate on carriers' network management practices, which are focused on ensuring network stability and consumer confidence in competitive markets. These practices can include:
 - Congestion management (the ability to manage networks to effectively avoid congestion and to react effectively to congestion when it occurs);
 - Secure operations (managing networks to enhance security for customers and for its own operations);
 - Invalid traffic management (dealing with invalid traffic at the edges to effectively manage traffic; e.g. invalid addresses, invalid headers, etc.)
- The current system has allowed for continuing evolution of the networks and development of better approaches to handling complex traffic, such as through the development of content delivery networks and internet exchange points. The flexibility of the current system has ensured that even with major

increases in users, traffic and data complexity, the Internet ecosystem has been able to successfully evolve.

Privacy and data protection

Consumer privacy

Industry collaboration is crucial to identifying mobile-friendly ways to help users manage their privacy across the global mobile ecosystem, and to promote trust.

- Online privacy is subject to a patchwork of inconsistent industry and technology approaches, and geographically bound national and local laws (where they exist). But new mobile apps, services and data flows are global and immediate. These approaches and geographically-bound privacy laws are not interoperable and seem unable to provide an effective privacy experience for mobile users in a globally connected world.
- Mobile users want their privacy to be respected and protected, regardless of the type of device, platform or service they are using or where the service provider is based.
- Research shows mobile users want transparency, choice and control over their information. They are especially concerned about apps that 'secretly' access and use their personal information.
- Policymakers should ensure that the same rules apply to all players in the mobile ecosystem. Such rules must also reflect the global nature of apps and services and be interoperable between countries. We ask policymakers to ensure that data protection and privacy rules are clear and flexible enough to address potential future risks, while encouraging continued innovation in technology and information use.

Mobile Security

The mobile industry is committed to maintaining the integrity of its communications services. While no security technology is guaranteed to be unbreakable, the barriers to compromising mobile technologies, and UMTS and LTE in particular, are extremely high, rendering any but the most technically complex attempts ineffective.

- Security attacks threaten all forms of ICT, including mobile technologies. Consumer devices such as mobile handsets are targeted for a variety of reasons, from changing the IMEI number of a mobile phone to re-enable it after theft through to data extraction or the use of malware to perform functions that cause harm to users.
- Mobile networks use encryption technologies to make it difficult for criminals to eavesdrop on calls or intercept data traffic. Legal barriers to the deployment of cryptographic technologies have been reduced in recent years and this has allowed mobile technologies to incorporate stronger and better algorithms and protocols, which remain of significant interest to hackers and security researchers.
- The protection and privacy of customer communications is at the forefront of operators' concerns. Although mobile malware has not reached predicted epidemic levels, the GSMA is aware of the potential threats and has established a Mobile Malware Group to coordinate the operator response to identified threats. The group facilitates the prompt exchange of information between industry stakeholders and encourages best practice to manage and handle malware by producing comprehensive guidelines for its members.
- Reports of GSM eavesdropping capabilities are not uncommon, but such attacks have not taken place on a wide scale, and there are no known cases of eavesdropping on UMTS or LTE networks.
- The GSMA supports global security standards for emerging services and acknowledges the role that SIM-based secure elements can play, as an alternative to embedding the security into the handset or an external digital card (microSD), because the smart card has proven itself to be resilient to attack.

Conclusion

The GSMA and its members appreciate the ITU's transparent and inclusive process in defining these best practices for regulators to support the growth of cloud computing. We hope our views shared here will be taken into account by the regulators attending GSR12, and that our contributions are seen to be useful and relevant.