SAMENA
TELECOMMUNICATIONS COUNCIL
BUILDING DIGITAL ECONOMIES

SAMENA CONSULTATION RESPONSE to

A Public Consultation issued by ITU in relation to Public Policy considerations for OTTs

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EXECUTIVE SUMMARY

SAMENA Telecommunications Council welcomes the opportunity to respond to ITU's Public Consultation on Public Policy Considerations for OTTs.

Global OTTs have clearly brought and are continuing to bring benefits to the digital ecosystem and the economy. They also raise important questions in relation to their compatibility with current national regulatory and economic frameworks. These incompatibilities have created an uneven playing field and local market distortions (local profit and value shifting and base erosion), have exposed significant gaps in relation to national privacy and security policy and have highlighted the need for a coordinated cross-border approach to data movement and data protection.

The key concern raised by network operators is one of competition between partners within the same ecosystem on an uneven playing field. This is negatively impacting operators' incentives to invest and operators' revenues, with some sources suggesting OTTs are responsible for a loss of around 12% of mobile operator revenues in 2017[1]. If national legacy regulatory frameworks that typically do not apply to OTTs persist, they could increase an uneven playing field in a 5G environment. This risks not fostering the balanced convergence of OTTs and network operators. It is therefore essential that policies and regulations consider the increasing convergence between telecom and OTT services, i.e. the substitution between telecom and OTT services on the demand-side, and the blurring boundaries between telecom and OTT services in a 5G / cloud environment on the supply-side.

Policies need to be reviewed with a forward-looking perspective, rather than playing catch-up with technology innovation which would deter the development of, and investment in 5G. A situation should be prevented where OTTs are the sole innovators going forward, not only in services but also in network technologies (e.g. network virtualization, which allows networks to be hosted on standard IT server equipment and thereby enables the separation of hardware from the intelligence). National governments and regulators are therefore urged to define new clear forward-looking policies and regulatory frameworks that support innovation, investment, competition, new business models and local value creation. These new policies and frameworks must establish a level playing field based on the principle of "same service same rules"[2] to aid balanced transition. New regulations should be light-touch, outdated regulations should be removed, and key principles should be transferred to the entire digital ecosystem, including principles of pluralism, proportionality, openness, non-discrimination, neutrality, public interest, standardization, security and consumer protection.

[1] According to a study from Juniper Research published in January 2017, the consumer migration from operator voice and text services to OTT voice and messaging services and social media will cost network operators nearly US$104 billion in 2017. This is equivalent to 12% of their service revenues.
[2] These rules may not be the same that exist today.

Introduction & General Comments

SAMENA Council welcomes the opportunity to provide its response to the ITU's Public Consultation on Public Policy Considerations for OTTs[3].

OTTs have brought a multitude of opportunities and benefits to end-users, network operators and equipment manufacturers and have enriched the digital ecosystem and the economy. Content, applications and services provided over the Internet have enriched end-users' online and offline experiences by enabling them to interact and communicate instantaneously, at scale and with reach, across multiple economic sectors, participate in, create and share content, and conduct business in ways that were previously not possible. Economies of scale and network effects have aided various OTT business models to evolve that are driving rapid take-up, enabling consumers to enjoy services and products cross-border and "for free". In exchange, consumers join and use Internet Platforms and related services and applications, which generate usage data, which, in turn is monetized. The demand for and use of OTT services may also positively impact the value of networks by driving optimization of network resources and network development to provide seamless user experiences.

The conduit for delivery of OTT services are traditional network operators' networks, which provide instant access to a global network of content, services, applications and established end-customer relationships. End-users can bypass the services offered by traditional network operators and cross national boundaries, thus obtaining multiple new routes to market, and OTT providers have access to a global network of end-users. OTT providers depend on and use telecom operators' networks and infrastructure to offer their services, yet they do not directly contribute to telecom operators' network investment costs or revenues other than through the generation of data. Instead, it is the end-user that pays the network operator an Internet subscription fee, which contributes to operators' data revenues. At the same time, through engaging with OTT services and applications, end-users produce data and generate revenues for OTT providers.

Given the continuously increasing and exponential demand for data spurred by the use of OTT services and applications, traditional network operators are under significant pressure to upgrade their existing infrastructure and to make major investments in network technologies.[4] At the same time, traditional network operators must compete with OTT services, which consumers increasingly use as substitutes to traditional products and services, but at different, often restrictive conditions. Traditional operators are bound by national rules, regulations, and fees that determine how and under what conditions services can be offered. These include rules on privacy and security, network access, bundling and margin squeeze regulation, retail and wholesale tariff pre-notification rules, and net neutrality regulation, to name but a few. These often delay and hinder the timely introduction of innovative and competitive services. Other obligations relate to spectrum fees, telecom license fees, corporate and sales and local taxes and various other permissions from the government in the form of e.g. Rights of Way. These rules typically do not apply to OTTs; partly because OTTs often do not have a physical establishment (PE) in the markets where their services are offered and consumed and partly because OTT services do not properly fit into current market or legal (service) definitions. Consequently, traditional operators' profit margins are under pressure due to declining revenues on traditional services, impacting the ability to invest in network upgrades and new technologies.

The debate about the impact of OTTs is therefore often presented in terms of the **level playing field** and the relative position that OTTs have along the digital value chain vis-à-vis traditional network operators. As highlighted above, traditional network operators must compete in their national markets based on national conditions, and corresponding business models against unconstrained global providers and with global services that are offered "for free". This is a true dichotomy. OTT business models work because of network effects and economies of scale achieved through global presence and limited physical infrastructure. Moreover, OTTs are truly digital and do not face the parallelism of digital and analogue

[3] OTTs in the context of this consultation response means providers offering "over the top" Internet-based applications and services and is interchangeably used with OTT providers.

[4] The deployment of mobile over the last 30 years or so has seen it grow from a niche product for wealthy business users, to a mass market phenomenon, with the ITU predicting 4.3 billion subscriptions by the end of 2017. According to the GSMA 2017 Mobile Economy report, mobile operators have invested $1.2 trillion since 2010, which helped to fund 4G roll-out, which covered around 60% of the global population at the end of 2016. Further investments will be required to fund future 4G and 5G deployments. This has all been achieved without government funding, and driven by competitive markets and private investment. To date OTT investment in telecom infrastructure has been minimal, and mostly limited to blue sky research.

services and support systems, hardware-based and proprietary network infrastructures, legacy operating and billing processes, and usage/per unit-based cost and business models, which a significant number of network operators still do[5].

The complete transition from national telecommunications operators to regional data companies or cloud factories may enable network operators to fully embrace digital through achieving sufficient scale by leveraging NFV and SDN as well as network slicing, and share in the value and compete with OTT services and applications in the (near) future. However, the completion of transition is difficult and made even more complex and time intensive through regulatory frameworks and policies (or the absence thereof) that do not reflect and aid this transition.

Given the above, global OTTs raise several important questions in relation to their compatibility with current national regulatory and economic frameworks. These incompatibilities have created an uneven playing field and local market distortions (local profit and value shifting and base erosion), have exposed significant gaps in relation to national privacy and security policy and have highlighted the need for a coordinated cross-border approach to data movement and data protection. They have also shown the disconnect between global economic interests and nationally designed policy- and economic frameworks.[6] It is therefore important to identify, understand and assess the impact that (particularly global) OTTs have on national and regional economies and different ecosystem stakeholders within current economic and regulatory frameworks. The market and digital ecosystem won't stop evolving towards a fully digital one with 5G and eSIM-one-contract environments enabling more and more cross-border economic and operational activity. It is therefore important to ensure that regulatory frameworks are ready to aid a smooth transition by enabling a level playing field and value creation also at the national and regional levels.

Whether existing regulations on traditional network operators are scaled back or adjusted to aid digital transformation or whether new regulations or governing principles and policies that are developed for the new digital ecosystem are introduced, or a combination of the two must be closely scrutinized. But it is clear, that the current imbalance cannot be sustained without further driving and manifesting an uneven playing field leading to further inequalities, undesirable market structures and market distortions.

[5] Some operators are still obligated under their USF obligation to continue to operate public payphones for example.
[6] There is little sense in ridding national markets of monopolies through regulation to replace them at the global level with new monopolies that are not regulated.
[7] The European Commission has proposed a new Communications Code, which has redefined electronic communications services to include "interpersonal communications services", both that use numbers (such as voice calls and Skype) and those that are not number based (such as Message+ and WhatsApp).

To ensure that regulatory frameworks reflect the Digital Age and aid transformation, the following recommendations are put forward by SAMENA operators and members to governments and regulatory authorities:

- **Review markets analysis to reflect a broadened definition of Communication Services that includes both OTT and telecommunications services[7].**

- **A review of regulatory frameworks is required to remove impediments to a next generation of seamless communication services between OTTs and telecommunication network operators. Regulatory areas of impediments that need to be explored include:**

  - **Security:** technical and organizational steps to manage security risks and notify the appropriate authority of any significant breach in an acceptable time-line

  - **Privacy:** ensuring end-to-end confidentiality of communications

  - **Interoperability between interpersonal communication services:** arrangements should be made to give OTTs the means to provide emergency calling numbers, interconnection and lawful intercept

  - **Blocking of numbers/services:** management of non-compliant numbers / services by OTTs (e.g. fraud, misuse)

  - **Accessibility:** how to ensure that disabled users have equivalent access to communication and benefit from the choice available to the majority of end users.

- **Consumer protection:** ensuring a consistency of consumer protection frameworks with the regulations imposed on number-based communications, including: requirements to be authorized by NRAs, consumer protection requirements in relation to transparency, bundling, duration of contracts and quality; provision of information for directory enquiry services; and must carry services.

- **Introduction of cross-border data protection frameworks**

- **Introduction of bi-lateral or multi-lateral cyber-security cooperation frameworks**

- **Assessment whether current licensing regimes would remain applicable under a broadened definition of communication services**

- **Review of the current telecommunications tax regime in the context of a broadened definition of communication services to achieve a level playing field**

- **Digital rules should be future-proof, tech neutral and applying same rules for the same services** in a **lighter regulatory regime**

- **Relaxing network operators' license obligations on QoS:** Currently, licenses include very prescriptive obligations, while OTTs do not have such obligations. In a more liberalized environment, **QoS should become a differentiating element** in the service offering rather than an obligation mandated on network operators only.

- **Enabling network operators to explore new Internet models:** In the longer term, policies should provide network operators with comfort that in a 5G environment, they will be allowed to adopt **differentiated pricing models for the different network slices** they will provide. Without such a comfort, investments in 5G infrastructures raise major uncertainties.

- **Providing affordable and flexible spectrum:** Most spectrum auctions currently are designed to maximize short term revenues for governments, rather than long term benefits for the economy. In the longer term, spectrum fees must come down, either through better auction mechanisms or through making more spectrum available. In addition, restrictions on spectrum use prevent and hinder the optimal use of spectrum resources (e.g. spectrum sharing, spectrum trading). Going forward, a shift towards a long term and flexible spectrum management approach is essential.

SAMENA Council sets out its detailed comments, reflecting SAMENA operators' and members' views, in the following section.

SAMENA Council's Responses to Specific Questions

1. What are the opportunities and implications associated with OTT?

The continued emergence and presence of OTT services and applications has several implications and opportunities for the digital ecosystem locally and internationally, as well as for national economies and the global economy. The key issue is one of competition between partners within the same ecosystem on an uneven playing field, and the need to ensure continued investment in domestic network infrastructure.

The key opportunities associated with OTTs are the following:

OTTs present an opportunity to network operators, because network operators operate in a two-sided market. On the one hand, they address a demand for broadband connectivity from end-users. On the other hand, they address a demand to deliver the traffic from and to OTTs. Both demands are related: the demand for OTT services has created an exponential growth in the demand for broadband connectivity from telecom operators. The demand for and use of OTT services are therefore drivers of fixed and mobile broadband consumption and may also positively impact the value of networks by driving optimization of network resources and network development to provide seamless user experiences. OTT services also provide opportunities relating to new revenue streams through sharing of revenues with OTTs, and efficient utilization of customer data. Opportunities also exist for OTTs, which may include easier access to operators' networks, and greater financial value.

The current relationship with network operators depends on collaboration, with network operators providing access services that allow customers of both the network operators and OTT providers to gain access to OTT services. Network operators will now need to leverage their distinct assets and capabilities i.e. their fixed and wireless networks, millions of customers; customer data; logistics and other services they can offer to stay afloat. Network operators will need to re-think their business models to adapt to a new paradigm by staying focused on their core connectivity business, providing digital services, finding new revenue streams and changing their business cases and prices in line with market demand (e.g. from flat rates to volume based data plans). Moreover, network operators need to partner and collaborate with OTTs, which can be a way to enhance brand-loyalty to both parties. Also, to foster local value creation, OTT services could be encouraged to develop at the domestic or regional level through new OTT converged regulations and regulators.

Going forward, the boundaries between the supply of network operator services and OTT services are becoming increasingly blurred, particularly in the context of 5G services and the supporting 5G ecosystem. This can create significant opportunities for both, network operators and OTTs. 5G networks will leverage network virtualization technologies (NFV, SDN and network slicing), which will enable a shift from predominantly hardware-based and proprietary networks to essentially cloud based networks. Moreover, network slicing will allow multiple virtual networks to be created on top of a common shared physical infrastructure, which are then customized to the specific needs of applications, services, devices, customers or operators[8]. This means that network operators will be able (if regulation allows) to fundamentally change their operating and business models from being domestic / national network and service providers, to being regional "Cloud Factories", enabling the provision of services from one single cloud across their footprint.

Network operators' business models will become much more similar to those of OTTs who can produce and deliver services from one point of presence in the world (e.g. WhatsApp), while network operators currently need to replicate infrastructures in each country. OTTs on their side will have an opportunity to provide network functions (software) to telecom operators (Virtual Network Function As A Service). This will level the playing field to some extent. However, 5G will not solve all of the challenges: network operators will still need to maintain 1000's of radio base stations and large backhaul networks. The vision of "Cloud Factories" can help reduce operator costs, but most network costs tend to be driven by the radio access

[8] Each virtual network (network slice) comprises an independent set of logical network functions that support the requirements of the particular use case, with the term 'logical' referring to software. Each will be optimized to provide the resources and network topology for the specific service and traffic that will use the slice. Functions such as speed, capacity, connectivity and coverage will be allocated to meet the particular demands of each use case, but functional components may also be shared across different network slices.

network. As such operators will always be under the regulatory oversight of the jurisdiction in which they operate (for example requiring spectrum licenses), which is not the case for an OTT.

The key implications associated with OTTs are the following:

Because OTT services (especially voice and messaging services) are increasingly used by consumers as substitutes to legacy telecommunication services (and in the brick & mortar world, such as hotel bookings, books, taxi rides etc…), there are several implications for network operators as well as for governments and other economic stakeholders. These include:

- A negative impact on revenues, decreasing ARPU and profit, and a decrease in employment for impacted sectors and firms.

- Revenue losses to governments due to the absence of license fees, spectrum fees and taxes.

- Loss of a degree of control of governments, given that governments typically have no jurisdiction over OTTs and can therefore also not subject OTTs to reporting requirements, QOS assurance, SLAs, Universal Service Requirements, data privacy or consumer protection regulation, fines or redress mechanisms, taxes[9], and legal intercept (surveillance).

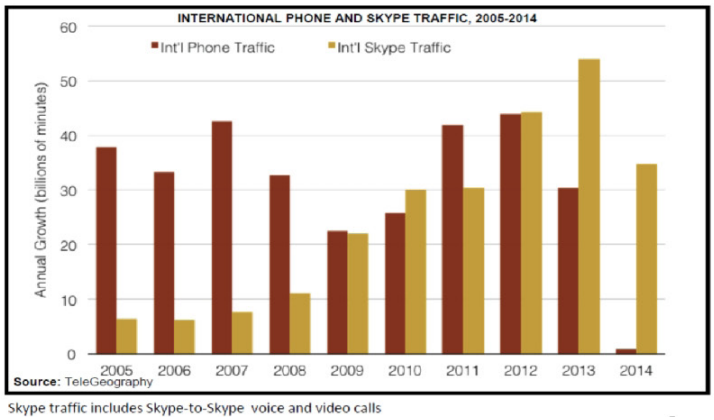
Further implications include risks of losing further ground to global competitors, privacy and security risks and breach, risk of access and service monopolization and OTT's short term approach to revenue.

1. Impact on revenues and decreasing ARPU:

Due to the similarity in service, OTT applications and services may substitute for traditional telephony, messaging and broadcasting services, as consumers are increasingly using "for free" OTT services to make phone calls or send messages or consume video / broadcasting content (see Figure 1).

On the one hand, this negatively impacts network operators' traditional voice and messaging revenues. On the other hand, network operators need to commit significant investments to upgrade their capacities and ensure QoS to cater for the new traffic profiles that are increasingly mobile, video and time-sensitive. Telecom networks were not initially designed to cater for this exponential growth of traffic that has been fueled by access to the Internet and increased data traffic. Coupled with the constraints posed by regulation that remains out of step with the evolution and dynamics of this demand as well as costs incurred to acquire 3G and 4G licenses, the thriving traffic translates into an exponential growth in costs. Yet on the revenue side, competition dynamics prevent network operators from monetizing the growth in traffic per customer. There is increasing pressure on network operators at the retail level to offer an increasing data allowance for a fixed price, rather than a variable price per usage. This results in a disconnect between costs, traffic growth and revenues, which ultimately translates into lower margins for network operators. This disconnect also occurs at the wholesale level, where most interconnection agreements are peering agreements without the exchange of payments based on the assumption of symmetric traffic (uplink = downlink), which no longer holds.

Substitution effects also apply to many online services that are not OTT in the sense that they do not compete with traditional communication services. They may compete with "brick and mortar" stores, with hotels, with banks, or with taxi services.



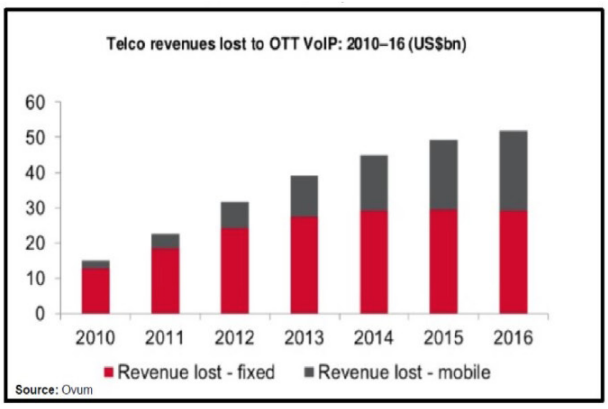


Figure 1: Impact on traffic and revenue from substitution of legacy services with OTT services

[9] Some countries have already introduced e.g. a Netflix tax collected by credit card companies, some States in the US have introduced a video streaming tax and some have changed the legal definition of "digital goods" to include anything "perceptible to the sense", encompassing software, electronic files, "on demand" video and audio downloads. See GSR ITU Discussion Paper "The impact of taxation on the digital economy" 2015, p.26

2. Revenue and control losses to government

The traditional telecommunications network operator is bound by entry conditions that pertain to specific geographic locations and that are pre-determined by the terms and conditions under which it gains access to scarce national resources (spectrum and licenses). In addition, it must also make very large investments in network equipment. Once in the game with all the equipment set up, the rules of the game are national in scope: national competition frameworks, privacy and security regulations, consumer protection regulation, telecommunications access and interconnection regulations, net neutrality regulation, as well as retail tariff and wholesale and non-discrimination regulation must be adhered to alongside a number of one-off and recurring taxes, fees and charges imposed to earn the right to provide services.

OTT providers, in most cases, are not faced with any such obligations, because governments have no jurisdiction over OTTs. They can therefore not subject OTTs to e.g. reporting requirements, QOS assurance, SLAs, Universal Service Requirements, data privacy or consumer protection regulation, fines or redress mechanisms, taxes[10], license and spectrum fees, and legal intercept (surveillance). OTTs also do not have to bring any equipment to most markets they offer their services in (with servers being able to be placed almost anywhere) and thereby avoid the high barriers to entry. Moreover, they gain instant access to an established customer base.[11] The policy questions in this context are complex: How can and should global services offered by companies that do not have a physical establishment in the market they sell into be obligated to comply with the rules imposed in those jurisdictions? Which areas of current regulatory frameworks should be targeted as most promising to create win-win outcomes?[12]

One area that should be reviewed in this context is taxation. Because of substitution to OTT services by users, government tax revenues are impacted (1) through the loss of tax revenues from declining traditional voice and messaging services, and (2) the current exemption of OTT services from tax. Typically, no VAT is imposed at the point of consumption / purchase, as the service is for free[13]. Moreover, because OTTs do not have a point of presence in most markets their services are offered in, governments cannot charge corporate tax. This can create an imbalance and lead to an uneven playing field between OTTs and local network operators. The principles of taxation dictated that taxation should attempt to be neutral and equitable across all sectors of the economy. Ensuring this principle in the digital economy, however, is a lot more complex than it used to be in the analogue world. The changes brought about by the digital economy raise more systemic challenges. At the high level, these challenges relate to the ability of the current international tax framework to ensure that profits are taxed where economic activities occur and where value is created.[14] This direct allocation is at best blurred, if non-existent in the digital economy.

Business in the Digital Age can be conducted without a physical establishment (PE), which creates difficulties to subject providers of and digital goods and services to taxes and fosters tax minimization strategies (such as employed by global MNEs and Internet Platforms). It also means that income generation can be decoupled from the service provision, in that it is the end-user that triggers income generation for a service he receives for free (at least in the advertising model that global Internet platforms rely on). Both these challenges affect the imposition and collection of both direct (corporate and vat) and indirect (or sales) taxes.

In the digital space the impact and implications for governments, consumers and market participants can be observed as four (possible) asymmetries (this can differ in each jurisdiction)[15] along the digital value chain:

» If taxes increase the total cost of ownership (meaning device, activation and subscription costs), consumers, particularly those that are price sensitive, face an affordability barrier in the adoption of technology. A tax reduction strategy can result in additional adoption of devices and broadband usage and enhance economic benefits in the long run.

[10] Some countries have already introduced e.g. a Netflix tax collected by credit card companies, some States in the US have introduced a video streaming tax and some have changed the legal definition of "digital goods" to include anything "perceptible to the sense", encompassing software, electronic files, "on demand" video and audio downloads. See GSR ITU Discussion Paper "The impact of taxation on the digital economy" 2015, p.26

[11] It may also be the case that OTTs with servers abroad share customer data with their local law enforcement agencies without the customer's approval (or the approval of the country in which the consumer is in).

[12] Voice over IP (VoIP) can be viewed as having been the first major OTT service. Regulatory experience with VoIP provides useful signposts for the study of the OTT area as a whole.

[13] Some countries are starting to consider and have introduced a tax on e.g. Netflix content via credit card companies that withhold the tax (see GSR 2015 discussion paper on taxation in the digital economy).

[14] The 2015 Organization for Economic Co-operation and Development (OECD)/G20121 Base Erosion and Profit Sharing ('BEPS') policy package seeks to close the gaps in international tax rules which allow Multinational Nation Enterprises ("MNEs") to artificially shift profits and avoid paying taxes. Enterprises operating in the digital economy, particularly OTT content providers, are noted as unique business models that enable global profit - splitting and -shifting. The 2015 OECD report concludes that broad reforms are sufficient to address general BEPS issues in the digital economy. The project also identifies possible technical options to deal with further specific tax issues created by digital economy enterprises. However none are formally adopted as internationally-agreed standards. As the project shifts into an implementation and monitoring phase in 2016, these options may be adopted formally in the future. See: OECD, 2015, 'Information brief: summary', see www.oecd.org/ctp/policy-brief-beps-2015.pdf

[15] For a detailed discussion of the asymmetries, see ITU 2015, GSR Discussion Paper "The impact of taxation on the digital economy"

» When Internet firms are not taxed at the same rate as network operators, then a disparity in tax burdens imposed on telecommunications operators can arise. This disparity is 5% in Europe, 7% in Emerging Markets, 14% in India, and 5% in China[16].

» If there are no international rules that curb tax minimization strategies of global digital players, then global digital platform and technology providers continue adapting their deployment footprint according to a minimization of tax burden, which leads to a global taxation asymmetry; it is simply easier to impose taxes, fees and charges on operators as they have PE. Moreover, collection is easy, as relationships in the value chain are clear.

» If government policy favors the subsidization of other industries or goods & services (fuel or electricity), in-country taxation asymmetries can arise relative to the digital sector, as someone will have to "fill the revenue gap".

Governments and industry stakeholders need to understand these asymmetries and assess whether they represent a source of distortion within their jurisdictions, and carefully weigh them against their overall public policy and vision for the economy and consider trade-offs between revenue generation and the potential negative impact of the development of the digital sector.

The following questions remain to be answered in relation to OTT and taxation:

» Should (and if, how) consumption of digital goods be taxed?

» Should consumers be taxed when buying smartphones, tablets and PCs?

» How should internet sales be taxed when there is no physical address?

» Should telecommunications operators be taxed for buying capital equipment?

» Should the global Internet platforms be taxed at the country where revenues are generated, or should they benefit from international rules that allow them to take significant corporate tax exemptions?

» Should ISPs pay taxes the same way as telecommunications carriers?

2. What are the policy and regulatory matters associated with OTT?

The main policy challenges associated with OTTs are that OTTs provide services that compete directly with network operators' legacy services (e.g. voice and messaging), but they are not subject to the same regulations and obligations as network operators, and do not incur the same costs as a result. There is therefore a need for a new regulatory framework that reflects the key characteristics of the Digital Age, but that also effectively integrates OTTs into the fabric of regulation within a given jurisdiction (this could include current or new cross-border cooperative arrangements and rules. These rules or arragements my not be the rules or arrangements that exist today).

OTT services and applications are typically offered in competition with, and as direct substitutes to services offered by licensed operators, but they are typically not (properly) considered in the market analysis carried out by regulators. OTT services and applications sit outside the scope of telecom sector regulations (for example in relation to licensing, emergency calls, taxes, consumer rights, data privacy, legal interception, USO contribution and quality of service). These have been put into place to protect consumers and ensure that all providers make a fair and proportionate contribution to local economic growth through investment, employment and tax. In addition, as OTT voice and messaging services become more and more popular, they increasingly render the regulation of termination and roaming unjustified. Also, currently licenses include very prescriptive obligations, while OTTs do not have such obligations. In a more liberalized environment, QoS should become a differentiating element in the service offering rather than an obligation mandated on network operators only. Operators' license obligations on QoS should therefore be relaxed.

There are few who would disagree with the general proposition that similar services that are similarly provided, and that compete with one another, should be subject to obligations that are similar. While it is undesirable that more regulation is imposed, the current situation puts network operators at a disadvantage and is untenable. Both, operators and regulators are reacting to these emergent challenges. Regulators in the SAMENA region, for example, are adopting a rather protectionist approach, i.e. telecom services require a license; OTTs do not have a license hence are not allowed to provide such services.

[16] See ITU 2015, GSR Discussion Paper "The impact of taxation on the digital economy"

The following considerations are put forward by SAMENA operators as areas for discussion regarding policy and regulatory matters:

The Need for a New Cloud-based Operating Model

Virtualization technologies, which are a key element of 5G will allow a radical transformation of networks from being proprietary and hardware centric to being essentially software and (partly) open source. This technology shift enables new production models for network operators whereby network functions across several countries will be virtualized in a centralized cloud. This allows significant economies of scale, leading to estimated savings of up to 60% of the virtualized infrastructures according to benchmarks. Some leading network operators in Europe have already made great strides shifting to a more centralized business model (e.g. Telefonica, Deutsche Telekom).

In SAMENA countries, most licenses and regulatory frameworks do not currently allow a centralized production model to emerge. There are two regulatory reasons for this:

- **The lack of a comprehensive cross-border data protection framework:** for regional clouds to emerge, there is a need for mature data protection frameworks in SAMENA countries, where the concepts of data collection and data processing are clearly defined, and with appropriate measures in place to safeguard the privacy of personal data. This would then allow in a second stage "safe harbor"/ bi-lateral "privacy shield" type agreements between SAMENA and with other countries. This is essential to allow data collected in e.g. the KSA or Egypt to be stored in the UAE for instance. In the absence of such a framework, datacenters remain mainly collocated (e.g. Equinox in Dubai) and for domestic purpose only.

- **National security:** regional clouds imply that the data and infrastructures of a country can potentially be managed from a country overseas. For this to happen, the country hosting the data centers must be able to guarantee the confidentiality, integrity and availability of the information and ICT infrastructures hosted. This requires first and foremost a mature data protection framework in the concerned countries, but also a bi-lateral or multi-lateral security cooperation framework between the concerned countries. An indicator of the cybersecurity maturity is the ITU Global Cybersecurity Index (GCI), which was updated in 2017.

The Need for New Internet Models

Some network operators are exploring new Internet models both on the retail and wholesale side to absorb / monetize the increase in traffic and costs.

On the retail side, network operators' main challenge is the increasing share of packages with a large data allowance for a fixed price, including sometimes unlimited allowance ("all you can eat"). Network operators can control costs by adding a reasonable usage provision, restricting excessive usage above a certain threshold, or by going back to a variable price per Mb. But in most competitive markets, competition pressure prevents network operators from doing so, which exposes them to the risk of losing significant market share. In many countries, retail regulations prevent any price increases, rendering corrective actions in response to price plans that are too aggressive, difficult for operators. Moreover, affordability measured by low price, is a key regulatory objective set in many countries; it is also an important criterion of the Network Readiness Index for instance. However, such a focus on low prices might be counterproductive in the long run: it deters operators' incentives and ability to commit long term investments, eventually diminishing consumer welfare.

On the wholesale side, the key issue stems from the pricing model that has also become increasingly disconnected from traffic. Indeed, most Internet interconnection agreements are peering agreements, i.e. two ISPs interconnect physically at an exchange point based on capacity. 99% of these peering agreements on the Internet do currently not entail payment flows, i.e. they do not generate any interconnection payment. Such a pricing model was suitable in a symmetric traffic environment, which was the case more than a decade ago. Yet digitization over the last 15 years has dramatically changed the traffic patterns, resulting in major imbalances between downstream and upstream traffic. The symmetric traffic assumption is not valid anymore. To reflect this change, network operators' options are to block or throttle the excessive downlink traffic sent, or charge upstream players (Tier-1 or tier-2 ISPs or application and content providers) for the excess capacity required.

In Europe, where stringent "net neutrality regulations" are in place, most attempts from network operators to offer new Internet models have led to disputes (See Deutsche Telekom vs Cogent, 2015), or have been heavily contested by OTTs. Network operators have publicly raised their serious concerns that such restrictions on their business models was significantly deterring their investments ability, and putting at risk a timely roll-out of the next generation services[17]. With the turnaround in net neutrality regulation in the US,

[17] http://telecoms.com/wp-content/blogs.dir/1/files/2016/07/5GManifestofortimelydeploymentof5GinEurope.pdf

operators such as Verizon, AT&T, T-Mobile and Sprint are introducing "unlimited plus" data plans to reflect the higher costs incurred by higher usage such as music or video streaming.[18]

In the future, it is essential that the discussion on net neutrality be framed differently to enable 5G. In a 5G environment, networks will be "sliced" to clearly separate the needs of different services in terms of bandwidth and latency. This is essential to ensure that services that are critical (e.g. national emergency services, or driverless cars) are not altered by services that are less critical (e.g. streaming of a video on Youtube). Managing the different requirements in a 5G environment does not work in a single best-effort Internet, where "a bit is a bit". On the contrary, one of 5G's most important benefit is the ability to allocate network capacities where they are needed the most, and hence to differentiate traffic based on usage, devices, etc. The 5G concept does not work in a stringent "Net Neutrality" environment promoted by the OTTs in the US and Europe. To enable the next wave of digital innovation and investments, it is critical that a more constructive approach be put in place between network operators and OTTs, one that does not close the door to the provision of potentially new commercial (differentiated price) and technology (differentiated QoS) offerings from network operators.

Unlocking OTTs investments

Another issue related to OTTs that is specifically relevant to the Middle-East and Africa footprint is the lack of investment into data centers. Overall, the investments in data centers per capita in Africa and the Middle-East represent 1/10th of that in Europe[19]. If we consider some the largest internet players (Google, Facebook, Yahoo, Microsoft), none have invested in a proprietary data center in the SAMENA footprint (see Figure 2 below).

Figure 2: Data Center of Top OTTs

Source: Vox, retrieved from https://www.vox.com/a/internet-maps

Figure 3: Map of Internet Exchange Points

Source: Telegeography, Internet Exchange Map

In addition to the lack of local data centers in SAMENA footprint, there are very few root name servers in the region. This has several implications on the quality of the Internet experience in SAMENA countries. Firstly, there is an initial delay in the request to the root name server to identify where the data is hosted. Secondly, once the location of the server is identified, there is a significant additional delay to download the webpage / content. A round trip time for a server from London to London is ~ 2ms, while a roundtrip time from Nairobi to London is close to ~ 200ms. Each webpage requires dozens of similar requests.

The lack of regional data centers and root name servers complicates the case for investments into Internet Exchange Points (IXPs), which are the platforms where all internet constituents interconnect and exchange traffic through no payment peering agreements: data centers, CDN providers, ISPs, domestic operators. The lack of investment in regional data centers is largely due to regulatory reasons, namely the lack of data protection frameworks, and the relatively low level of maturity in cyber security frameworks.

To this end, national governments and regulators are urged to define new clear forward-looking policies and regulatory frameworks that support innovation, investment, competition, new business models and local value creation. These new policies and frameworks must establish a level playing field based on the principle of "same service same rules"[20] to aid balanced transition. New regulations should be light-touch, outdated regulations should be removed, and key principles should be transferred to the entire digital ecosystem, including principles of pluralism, proportionality, openness, non-discrimination, neutrality, public interest, standardization, security and consumer protection.

[18] See https://techcrunch.com/2017/08/22/verizon-throttles-video-for-good-with-its-new-not-so-unlimited-unlimited-plan/
[19] Oxford research, Finland's Giant Data-Center Opportunity
[20] These rules may not be the same that exist today.

3. How do the OTT players and other stakeholders offering app services contribute in aspects related to security, safety and privacy of the consumer?

Personal data collection, processing, storage and protection are crucial issues for all digital services (and Internet-enabled and IoT devices). Given the global reach of the Internet and the cross-border nature of Internet-enabled services, there is a need for cross-border / global regulation and law enforcement services and data movements. Currently, OTT services typically do not have to comply with national public authorities' requirements in terms of security, privacy, integrity, lawful intercept and liability. Ensuring consumer security and privacy should be in OTT providers' best interests, as security and privacy are turning out to be important customer considerations.

There are several specific areas, where OTTs manage to bypass domestic privacy and security obligations, whereas network operators are strictly complying (and bearing the corresponding cost):

- **Legal interception:** in each country of operation, network operators are subject to lawful interception obligations. This includes storing the detail records of each communication during a certain period of time (typically one year minimum), as well as providing authorities with real time access to communications. Refusing to comply with such obligations would have serious consequences for any network operator, ranging from a fine to potentially a suspension withdrawal of the license. OTTs provide voice and messaging communication but have the flexibility to refuse to provide the requested information without suffering the consequences. Google, for instance, is reporting the number of requests it receives from governments in its Transparency Report, and the percentage of requests where some data is produced. In July 2016 for example, only 60% of the requests resulted in the production of some data. Google makes a call on each request on whether they comply with the government request or not: "We review each request we receive to make sure it satisfies applicable legal requirements and Google's policies. If we feel that a request is overly broad—asking for too much information given the circumstances—we seek to narrow it. In certain cases we'll push back regardless of whether the user decides to challenge it legally."[21];

- **Data privacy:** unless OTTs have a physical presence in a country through a data center (which they do not have in SAMENA countries), they do not conform in most cases to data privacy requirements. For example, a Facebook customer in the UAE will have its personal data collected in the UAE, and sent across the border to be held in another country. Yet the UAE do not currently have a data protection framework in place, along with safe harbor agreements ensuring that personal data sent overseas is safeguarded with an acceptable level of protection. OTTs bypass domestic privacy regulations by seeking "absolution" from the consumer through the sign-off of Terms and Conditions.

With the spread of internet encryption and browser proxies (data traffic of OTT communications services is encrypted and hence technically not accessible), network operators might no longer be able to fulfill their obligations. This could impose serious threats to national security considering that OTT services might be used to transmit unlawful content without being detected or monitored. For example, OTT encryption might prevent network operators from identifying and blocking websites in the fight against sexual abuse and the sexual exploitation of children. Moreover, the ability of network operators to track malware and other technical intrusions might be affected.

Therefore, it is essential for governments to set some baseline standards or requirements (also in relation to encryption[22]), police compliance, and implement solutions across companies, networks and countries. Any such baseline requirements should provide direction for securing data, without prescribing explicit technology or standards to be adopted to guard flexibility and agility. Organizations should be allowed flexibility to implement the security measures that are most appropriate to mitigating the risks, and reduce vulnerabilities. Cyber threats evolve rapidly and, therefore, operators and OTT providers should have the flexibility to change the solutions they use to better protect their customers. A self-regulatory approach through safety and privacy by design for apps has been put forward by the GSMA[23].

One approach to guarantee security, safety and privacy of consumers could be to group these functions as part of government supported co-created platforms where all OTT players and digital services providers can get validation of their services and qualify through transaction-based criteria. These qualified services can guarantee the value to consumers under a policy

[21] Retrieved from https://transparencyreport.google.com/user-data/overview
[22] Increasing the encryption standards in the country will enhance security, safety and privacy of consumers.
[23] See http://www.gsma.com/publicpolicy/privacy-design-guidelines-for-mobile-application-development

standards umbrella. By having co-created platforms, OTT capabilities can also be scaled to address a larger consumer base and achieve cost-effectiveness across offerings. Moreover, establishing joint consortia of digital services players for each of the economic sectors (e.g. healthcare, education, transportation, etc.) can help to achieve common policy guidelines and support academia and industry collaboration to build an innovative environment where collaboration can have a solid impact.

4. What approaches might be considered regarding OTT to help the creation of environment in which all stakeholders are able to prosper and thrive?

Generally, it is very important that national governments and regulators create an enabling environment which is based on fair and sustainable competition that promotes the best interests of operators, service providers and consumers. Key aspects of such an enabling framework include a fair economic model, which allows fair competition, incentivizes investment in digital infrastructures and restores the link between traffic, revenues and costs for all players along the value chain.

There are different approaches that can be taken to help develop such an environment where all stakeholders can contribute and create value and ultimately benefit. Governments can enable such an environment by e.g. creating innovation centers to enable local knowledge sharing and collaboration for SME's which can build apps around common platforms and facilitate local and international players in providing its services to consumers in a better way. In Singapore for example, the government has co-created 110 apps for its citizens using its open data sets related to real estate transactions, real time weather information, traffic congestion, etc. to achieve e-government initiatives in place. According to Singapore Deputy Prime Minister, "Governments must take on the roles of a facilitator and enabler – to collaborate with the public, private and people sectors in creating new solutions, new businesses and new wealth."

In this context, it is essential that policies and regulations consider the increasing convergence between telecom and OTT services, i.e. the substitution between telecom and OTT services (demand-side), and the blurring boundaries between telecom and OTT services in a 5G / cloud environment (supply-side). These trends are developing extremely rapidly. Policies therefore need to be reviewed with a forward-looking view, rather than playing catch-up with technology innovation which would deter the development of 5G (net neutrality for example). A situation should be prevented where OTTs are the sole innovators going forward, not only in services but also in network technologies (e.g. network virtualization, which allows networks to be hosted on standard IT server equipment and thereby enables the separation of hardware from the intelligence). While currently there is a symbiotic relationship between OTTs and network operators, in a 5G environment this symbiosis may be undermined to produce benefits for OTTs only going forward, with network operators being left with their physical assets (and associated costs) but no control over what and how content and services run on them.

Several regulators around the world have started factoring the effects of convergence between telecom and OTT services into their competition regulation frameworks. These include NKOM (Norway), CNMC (Spain), or ANACOM (Portugal), who have commenced deregulating SMS and voice markets. In other geographies, regulators are taking an even more aggressive stance to withdraw current regulations which artificially limit the interoperability between OTT and managed voice services: allowing interconnection, mobile number portability, access to numbering resources, QoS regulations. For examples the regulators for Singapore and Hong-Kong offer a specific class of licenses for voice OTT services which provide them access to certain numbering resources as well as the right to interconnect with operators. In a fully liberalized environment, same rules apply to both managed and OTT communication services which are both left to ex post competition rules.

Three areas could dramatically improve the equation for network operators, and subsequently release the tension between network operators and OTTs:

» Relaxing network operators' license obligations on QoS. Currently, licenses include very prescriptive obligations, while OTTs do not have such obligations. In a more liberalized environment, QoS should become a differentiating element in the service offering rather than an obligation mandated on network operators only.

[21] Increasing the encryption standards in the country will enhance security, safety and privacy of consumers.
[22] See http://www.gsma.com/publicpolicy/privacy-design-guidelines-for-mobile-application-development

» Providing affordable and flexible spectrum. Most spectrum auctions currently are designed to maximize short term revenues for governments, rather than long term benefits for the economy. In the longer term, spectrum fees must come down, either through better auction mechanisms or through or through making available more spectrum. In addition, restrictions on spectrum use prevent and hinder the optimal use of spectrum resources (e.g. spectrum sharing, spectrum trading). Going forward, a shift towards a long term and flexible spectrum management approach is essential;

» Enabling network operators to explore new Internet models. In the longer term, policies should provide network operators with comfort that in a 5G environment, they will be allowed to adopt differentiated pricing models for the different network slices they will provide. Without such a comfort, investments in 5G infrastructures raise major uncertainties.

5. How can OTT players and operators best cooperate at local and international level? Are there model partnership agreements that could be developed?

Having witnessed various technology and industry evolution waves over the last three decades, telecom operators have now shifted their utmost focus on ensuring better digital customer experience as a means for differentiation and for meeting shareholder expectations. To this end, collaboration with OTT service providers has appeared to be a plausible means to achieve this. OTT service providers themselves, having undergone model maturation, are evolving. They too have high investor expectations to meet, and hence reliance on and cooperation with telecom network operators is paramount. OTTs understand that it is not in their best interest to tread the path to innovation without being in direct communication with operators. Collaboration is imperative.

On the business front, regulatory restrictions and current technology maturity limit considerably the extent of possible cooperation between network operators and OTTs. This should dramatically change in a 5G environment, where OTTs will potentially become providers of Virtual Network Functions, and network operators will expose their network capabilities to OTTs through APIs. This could prepare the way for cooperation and further integration in relation to ensuring QoS and for jointly sharing responsibility in relation to customer care / complaints.

To ensure that all key stakeholders of the digital ecosystem benefit, networks and services need to be sustained. In the absence of cooperation between OTTs and network operators, the ecosystem will not thrive and there will be a risk of further distortions to evolve and manifest. A cooperation framework could be developed that enables a revenue share model:

- where OTT traffic over a network is identified and revenues are shared between network operators and OTTs or where bundling is possible;
- where data connectivity and delivery for OTT content is identified and differently priced;
- where end-users pay differently to enable specific services; or
- where access fees on OTTs are imposed as a charge for their usage of the national networks.

Moreover, OTTs and network operators could partner on infrastructure to share the costs of network roll-out. Also, to foster local value creation, OTT services could be encouraged to develop at the domestic or regional level through new OTT converged regulations and regulators.

Another key area of cooperation between OTT and operators could be a joined advocacy. In spite of their divergences, there are numerous areas on which network operators' and OTTs' interests are aligned: for instance, data protection frameworks or national security, which would be to the benefit of network operators' new operating models as well as the whole Internet experience in SAMENA countries. There has been limited if any joint advocacy initiative to date to provide a comprehensive digital ecosystem perspective on the needed policy improvements. While the most common partnership models adopted across OTT industry currently are revenue sharing models, cooperation could be extended to include cost sharing as well.

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