



HIGH-FLOWN IDEAS

Should we be striving for the ‘level playing field’ with regulation of innovative, next-generation communications? **BRIAN WILLIAMSON** makes a strong case for setting them free

Globally, next-generation communications apps such as Skype, iMessage, WeChat, Line, Viber, WhatsApp, Facebook Messenger and Google Hangouts (also referred to as over the top, OTT, apps) have taken off.

These applications offer substantial benefits to consumers and businesses. They have, however, led to complaints by vertically integrated communications service providers that they ‘free ride’ on their network investments and benefit from the lack of a regulatory level playing field.

This article considers these questions and what policymakers should do about legacy and next-generation communications.

IN THE BEGINNING WAS THE INTERNET; THEN THERE WERE APPS

Next-generation communications, notably Skype, are products of the internet. The more recent wave of next-generation communication apps has been promoted by the launch of apps stores from mid-2008, the rise of smartphones and expanded and improved mobile data and WiFi availability.

Internet based communications may have first gained a foothold because they enabled consumers to bypass high tariffs for voice and SMS, particularly call termination, cross-border communication and roaming charges. However, in doing so, they contributed to reduced cross-border barriers to communication and a more integrated market.

Top: Facebook's latest solar-powered internet plane – evidence that OTT players are investing in innovative access

Further growth has been driven by innovation such as group calling and chat; presence, video calling, video and photo sharing; extensions beyond communication including location sharing; sending and receiving money; and the use of forms of identity beyond a telephone number. Business adoption is also growing, particularly among small firms. Next-generation communications apps also help those with disabilities to communicate using sign language and text to speech, and help break down language barriers with live voice translation in Skype and a ‘tap to translate’ feature in Android.

The rest, as they say, is now history. WhatsApp passed the 500 million and 1 billion user milestones in April 2014 and February 2016 respectively, while by 2016 Facebook Messenger and WhatsApp are now carrying 60 billion messages a day, three times more than SMS.

COMMUNICATIONS IN EVERYTHING, EVERYTHING IN COMMUNICATIONS

Communications is now ‘baked’ into a wide range of applications and platforms spanning e-commerce (eBay), networking (LinkedIn) and games. Communications is in everything.

Messaging apps are also transforming into platforms for other applications and are incorporating artificial intelligence. WeChat is an example of a messaging app with a developed ecosystem of additional services.¹

During 2016 a number of other next-generation communications apps providers announced they were opening communications to developers and incorporating artificial intelligence. Facebook announced in April 2016 that it would turn Messenger into a platform that includes services such as Uber.

Google followed with the announcement of a new communications app, Allo, while Apple announced artificial intelligence enhancements to iMessage and opened it as a developer platform in June. Slack, a next-generation communications app focused on enterprise users, also incorporates artificial intelligence and allows integration of third party apps.

In becoming platforms in their own right, next-generation communications apps are becoming inseparable from the wider ecosystem of devices and apps. Since there is no clean boundary between next-generation communications and apps generally, extension of regulation to one may amount to an extension to the other.

Artificial intelligence is now part of the mix owing to progress in making it useful, such as in conversations that offer contextual information for other interactions, including transactions. For example, discussion of a possible business meeting could trigger an offer by an 'intelligent agent' to book flights and accommodation, while searching for compatible meeting times and making calendar entries. See the panel on page 26 for more on the promise of artificial intelligence.

BUT IS THERE A FREE RIDER PROBLEM?

Some have argued that next-generation communications apps 'free ride' on the investments made by network access providers. However, far from free riding, next-generation communications apps stimulate demand for improved coverage and monetisable data.

Providers of network access do not as a rule pay next-generation communications providers for bringing demand to their platform, and vice versa. However, richer applications increase end users' willingness to pay for network coverage, speed and data capacity. Next-generation communications, rather than legacy voice and SMS, help stimulate investment in next-generation networks.

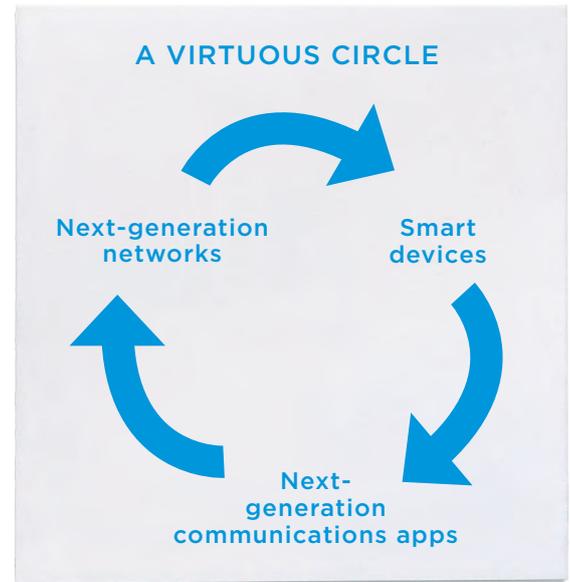
A study by AT Kearney for the GSMA found that access revenues had grown globally at a rate of 14% per annum between 2008 and 2015:²

"Connectivity revenue grew from 199 billion euro in 2008 to 508 billion euro in 2015, but this represents a smaller share of the of the total internet value chain, declining from 18% to 17%..."

Overall revenues may of course differ from connectivity (access) related revenues. However, globally between 2010 and 2014 operators' overall revenue also grew – at an annual average rate of 2.7%; though in Western Europe revenues declined by 5.8%.³ The fact that next-generation communications are global phenomena suggests that they do not explain regional differences in outcomes. As can be expected, some network operators adapt better to change than others.

Ericsson analysed the performance of market-leading network operators and concluded that:⁴

"With voice revenues under pressure and mobile data use soaring, operators have been forced to evolve both their networks and their business models. Some have been more successful than others – we call these operators frontrunners. Between 2010 and 2014, frontrunners enjoyed



a 9.6% CAGR while competitors in their markets achieved only 2.7%."

Ericsson noted that frontrunners *"... do not regard OTT players as threats, but instead generally leverage their offerings."*

In 2014 the CEO of UK operator EE noted that next-generation communications apps were not a threat:⁵

"... the growth of mobile-messaging services like WhatsApp wasn't a threat to his business as the sector's growth is driven by data-hungry consumers."

In 2016, Steve Chege, corporate affairs director of Safaricom, noted the upside of next-generation communications apps for operators in Kenya:⁶

"The introduction of services such as WhatsApp has been good for telcos in Kenya, as it is driving increased use and uptake of data both socially and from a business perspective."

A survey by WIK of consumers in Germany found that increased use of next-generation communications was linked to increased adoption of post-pay mobile contracts – and so presents a new opportunity to monetise network access:⁷

"Consumers who use OTT communication services intensively have likely purchased a new mobile plan with more high-speed data allowance within the last two years. These new contracts are more likely to be pay-monthly plans than pay-as-you-go ones. Thus, the trend towards OTT communication services helps telecommunications providers sustain their revenues and plan ahead." (See also the article on page 31 for more on WIK's consumer study of smartphone users and why OTT services do not have similar functionality to traditional telecoms – ed.)

The message is that next-generation communications do not free-ride on access, just as network access providers do not free-ride on next-generation communications. Access and applications are complementary. ➔



Far from free riding, next-generation communications apps stimulate demand for improved coverage and monetisable data.



← **MESSAGING APP PROVIDERS ARE INNOVATING AND INVESTING IN CONNECTIVITY**

Next-generation communications providers have made targeted investments in infrastructure, including servers and network infrastructure.⁸ The aim is not to do what others are doing efficiently, but to lower costs and extend access where the market has not fully met demand.

Microsoft has invested in affordable access; Google has invested in fibre to the premises, is experimenting with high speed wireless access, and has developed balloons (Project Loon); Facebook is developing solar-powered aircraft to deliver internet connectivity⁹ and is researching the extension of mobile access and a high speed wireless last mile fibre substitute technology.¹⁰ Microsoft and Facebook are also investing in a 160 Tbps transatlantic fibre link.¹¹ Not only have internet companies drastically increased capital expenditure, they invest heavily in software development.¹²

Next-generation communications apps providers are not only investing in network technology, but are leaders in developing innovative new network technologies.

CONNECTIVITY NEEDS ARE SHIFTING, DRIVEN IN PART BY NEXT-GENERATION COMMUNICATIONS

While next-generation communications require connectivity, and contribute to data demand, their needs in terms of speed are in general comparatively modest. The desire to reach everyone motivates global application providers to use compression and other techniques to minimise bandwidth requirements. For the markets with the greatest prospects for growth, such as India, this is essential.



The notion of a level playing field in terms of regulation is not helpful.

As Kenji Kushida, commenting on the lessons concerning widespread fibre to the premises deployment in Japan, concluded:¹³

“Japan quickly discovered that taking advantage of the broadband environment to produce innovation, productivity growth, and economic dynamism, was far more difficult than facilitating its creation. It discovered regulatory barriers for the use of [ICT] in various areas of the economy. Like Europe, Japan was not home to the ICT industries that drove the ICT revolution, producing innovation and productivity gains. Moreover, the advent of US-centred cloud computing services potentially decreases the minimum bandwidth requirement to access global-scale computing power.”

The shifting balance of needs driven by mobile applications, from peak speed to the premises to ubiquitous wireless coverage able to support apps, should be reflected in policy priorities.

REGULATORY DIFFERENCES DO NOT NECESSARILY POINT TO DISCRIMINATORY REGULATION

“Stagecoach companies were unhappy in the late 19th century, just as disrupted taxi companies are today. Legacy players will claim they are facing unfair competition from players that are not abiding by the same rules.”¹⁴

A range of sector-specific regulation applies to legacy services that does not apply to next-generation communications. But such regulation is not in general applicable to next-generation communications, for the reasons in the table (left).

The notion of a level playing field in terms of regulation is not helpful as a general guiding policy principle. As a regulatory report by NERA Economic Consulting notes:¹⁵

“...differences in technology may require different regulatory treatment to achieve a common objective.”

Further, if next-generation communications are not simply applications but platforms, then as Molly Cohen and Arun Sundararajan have noted we should rethink the role and place of externally imposed regulation:¹⁶

“...platforms should not be viewed as entities to be regulated but rather as actors that are a key part of the regulatory framework... For non-intermediated peer-to-peer exchange in the past, the primary solution to market failure was intervention by a government agency. But today, the existence of third-party platforms that mediate exchange fundamentally alters what the market is capable of providing on its own, and it creates a new institution capable of affecting what Michael Foucault referred to as the ‘conduct of conduct’.”

MORE INTEROPERABLE THAN LEGACY SERVICES

Next-generation communications are, in important respects, more interoperable than legacy services – as the table on the next page illustrates. Making interoperability compulsory with other next-generation and legacy services may also not be practical or desirable. Regarding practicality, the competition directorate at the European Commission (DG Competition) considered interoperability in relation to the Facebook acquisition of WhatsApp and concluded that:¹⁷

LEGACY REGULATION: MOSTLY NOT APPLICABLE		
CATEGORY	REGULATORY AREA	PROPOSED APPROACH
Simply not applicable	Spectrum fees, access regulation, contracts, number portability and universal service obligation	Separate focus on access and apps – most regulation is applicable to access not apps
Monopoly problem specific to legacy services	Call origination, call termination, voice and SMS roaming charges	Reduce/remove legacy regulation as competition from next-generation communications develops
Balance of costs and benefits differs	Legacy voice has better coverage than data and is a managed service – it is better suited to emergency services. Extending emergency calling to apps would be costly and could result in confusion and delay	Maintain legacy voice focus for emergency calling

INTEROPERABILITY OF SERVICES	Voice	SMS	Skype	WhatsApp
Phone number interoperability (by default)	✓	✓	✗	✗
Device interoperability, eg. PC, tablet, mobile	✗	✗	✓	✓
Network interoperability	✗	✗	✓	✓
Ability to use competing services on device	✗†	✗	✓††	✓

† Some devices and networks allow WiFi calling
 †† Consumers can readily adopt and use multiple services (multi-homing)

“...technical integration between WhatsApp and Facebook [including Facebook Messenger] is unlikely to be as straightforward from a technical perspective as presented by third parties.” (Para 139)

Regarding desirability, technology markets involve a constant search for the combination of closed versus open and interoperable elements which maximises innovation and benefits.¹⁸ Innovation and interoperability can be in tension. Next-generation communications apps have innovated far faster than legacy standards based services. As Viber founder Talmon Marco put it:¹⁹

“You can choose to interoperate or innovate; you cannot do both at the same time.”

DATA PORTABILITY AND SWITCHING

Next-generation communications services do not suffer from traditional barriers to customer switching, such as contracts and number portability. Some have argued, however, that data portability may be a barrier to switching.

DG Competition considered switching in relation to the Facebook acquisition of WhatsApp and found, in its market investigation, that there are no significant costs preventing consumers from switching between different apps.²⁰

“First, all consumer communications apps are offered for free or at a very low price. Second, all consumer communications apps are easily downloadable on smartphones and can coexist on the same handset without taking much capacity. Third, once consumer communications apps are installed on a device, users can pass from one to another in no time. Fourth, consumer communications apps are normally characterised by simple user interfaces so that learning costs of switching to a new app are minimal for consumers. Fifth, information about new apps is easily accessible given the ever increasing number of reviews of consumer communications apps on app stores.” (Para 109)

“...the Commission has not found any evidence suggesting that data portability issues would constitute a significant barrier to consumers’ switching in the case of consumer communications apps.” (Para 113)

LEGACY SERVICES ENJOY ADVANTAGES FROM INTEGRATION

Legacy services enjoy a number of competitive advantages stemming from integration. When a consumer purchases mobile service from a network operator, voice is as a rule bundled and is the default and irreplaceable service attached to the legacy voice app (the calling ‘button’).²¹

Legacy voice also makes use of 2G coverage (which is in general superior to 3G and 4G coverage), has access to a managed service (versus competing services which operate over the ‘best endeavours’ internet) and de facto enjoys zero rating, ie. usage does not count towards one’s data allowance.

Legacy service advantages due to integration should not necessarily be removed, since integration can offer advantages for consumers. Neither should such advantages necessarily be extended

to next-generation communications apps. However, they illustrate that the competitive playing field is not necessarily tilted against legacy services. The reality is complex and not all disadvantages and advantages should, or sensibly could, be eliminated.

IS IT TIME TO NARROW SECTOR-SPECIFIC REGULATION TO NETWORK ACCESS BOTTLENECKS?

The vibrancy of next-generation communications comes from the freedom to innovate. Extension of regulation to them would chill innovation in the development and use of rapidly evolving apps, and by extension into the wider device and broader app ecosystem.

Not only would this harm consumers and businesses who use such apps; it would also harm the app developer community – a global success ➔

EUROPE’S IMPENDING PROPOSALS

If there is regulatory invention, what could it be? The highest profile example is currently the European Commission’s proposals (as reported by Reuters)²² – that next-generation communications providers will have to ensure the security and integrity of their services, including reporting breaches to authorities and having contingency plans and service continuity strategies. Services using a number or allowing users to call a number, such as Skype and messaging app Viber Out, will also have to offer emergency calls under the new rules.

My view is the same as expressed in my article: these proposals would raise barriers to innovation and would be more likely to harm rather than benefit consumers. There is no clear rationale for proposing specific data integrity provisions beyond those proposed under general data protection provisions, while extending emergency calling requirements to services that allow users to call a number could result in withdrawal of such functionality.

Further, it could result in confusion over which next-generation communications services allow users to contact the emergency services, or a lack of the ability to do so owing to the limitations of mobile data coverage in mobile voice services.



PROMISE OF ARTIFICIAL INTELLIGENCE (AI)

AI has had a number of false dawns stretching back to the 1960s. However, about two years ago self-learning neural networks began to show commercial promise with success in tasks such as translation, image recognition and games such as AlphaGo, which was the first Go program to beat a professional player in a game which has a decision tree that is too large to compute (pictured above).

A combination of techniques including deep learning (layered neural networks which mimic the structure of the brain), specialist computing hardware (a development of video cards utilised for gaming) and large datasets from the internet have enabled AI to finally take off.

AI is now incorporated into search, digital personal assistants, autonomous vehicles and a range of other applications. The field is expanding rapidly and promises to offer everyone an intelligent digital assistant. Much as household appliances allowed us to exercise executive control over repetitive manual tasks such as washing clothes, AI promises to release us from routine information processing tasks such as organising an itinerary. AI will likely be layered into just about everything, particularly as online and offline

blend. AI also offers the prospect of new forms of machine interface, in particular harnessing natural language processing and the power to anticipate users' needs (in some cases this may complement a touchscreen, in others substitute for it). The full range of applications and implications of AI are, however, hard to predict.

Implications will include attitudes and policy on data sharing (the more an AI app knows about you the better it may be able to help you), the impact on bandwidth demand (by anticipating needs an AI app may be able to work around bandwidth constraints in space and time), questions about liability, and the transparency of algorithms that are self-learning. In noting these points, it is not suggested that AI is necessarily a problem that policymakers need to address. Rather, a fresh perspective is required.

AI, by opening up new forms of interface and enabling communications apps to act as platforms, may expand competition in digital ecosystems. An algorithm may also be fairer and less corrupt than a human decision maker – a point made to me by more than one Uber driver in relation to human taxi dispatch services.

← story.²³ Harm to applications would, in-turn, harm network operators and network investment – by stifling demand for more ubiquitous higher quality access. The entire ecosystem would suffer.

Rather than extending sector-specific regulation to the broader messaging environment, and by extension apps in general, the focus of ex ante regulation should be narrowed to network access bottlenecks. We should instead follow the maxim of the medical world 'primum non nocere' – first do no harm.

Convergence has been associated with a shift from vertical service stacks to a layered structure where applications are separate from access. Since next-generation communications are separating access from communications, we should contemplate separating regulation of access from applications. Network access bottlenecks could fall under the responsibility of sector specific regulation, while applications running over access networks would be subject to general competition, consumer and data protection law.

The freedom to innovate that has characterised the apps market and which has delivered so much already and promises to deliver much more, should be extended to all providers of communications services; and by extension, to applications and services more generally. Increased competition should result in less, not more, regulation.

BRIAN WILLIAMSON is a member of Communications Chambers, focusing on strategy and policy concerning the internet and telecoms, and is based in London. This article draws on work for the UK Computer and Communications Industry Association. The views expressed are those of the author.

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