

ENABLING THE NEXT TECHNOLOGY REVOLUTION

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Kroes' future? 'I'm not going to grow roses'

European Digital Agenda Commissioner Neelie Kroes aims at getting a green light for the establishment of a genuine EU single market for telecoms before the end of her mandate and does not rule out staying in business. "I'm not going to grow roses," she told EurActiv in an interview at the Mobile World Congress in Barcelona.



As her mandate draws to a close, Kroes is determined to lay the foundations for a real telecoms common market before autumn, when the current European Commission will be replaced by a new executive.

Europe can indeed claim a common airspace market where airlines companies compete across the bloc, with lower tariffs for consumers. The energy market is far from completed, but is at an advanced stage. The same cannot be said for the telecoms market, where users are still forced to pay extra-fees for the same domestic mobile services when they cross a border within the EU. Hurdles for wholesale services or auctioning are even higher.

Kroes thinks that obstacles which have so far hampered progress may be overcome in the next few months. "The main thing to do is to implement the telecoms single market. Hopefully, it will be accepted by

the relevant bodies before the end of the mandate," she told EurActiv.

She is aware that this may likely be the main challenge for the next EU commissioner in charge of the Digital Agenda. Even if progress is made on the negotiation table, "it would just be a start. Then we have to stimulate the implementation. And we also should take into account that we have to do quite a bit of pushing to national governments," she said.

But this role will not necessarily fall in somebody else's hands. Asked what are her plans for the future, she said: "There are still more than 250 days to go. I'm trying to be as active as I can," said the Dutch commissioner, who was born in 1941, when the Second World War was still raging. She added with an ironic touch: "I'm not going to grow roses."

Global deal on 5G "by the end of 2015"

Another issue that will keep Kroes busy in the last months of her mandate is the development of the fifth generation of mobile connectivity, the 5G, which features as a prominent topic at this year's Mobile World Congress.

Speaking in Barcelona to the Commission's major private partners for the development of 5G, Kroes said: "Let's find a global consensus on the scope of 5G, its main technological constituents, and the timetable for putting it in place. Let's work this out together. And let's work it out soon: by the end of 2015. So all our citizens can get the 5G boost as early as possible," she said.

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She confirmed the Commission's €700 million investment by 2020, but put a lower, although ambitious, figure on the private sector. "The telecoms industry responded, matching our investment by up to 5 times, with over €3 billion" for 5G development, she said.

The EU executive had been more optimistic in its previous estimations of industry involvement, setting the private sector's financial engagement at "five-to-ten times" the level of Brussels' €700 million investment.

Asked why Europe puts so much emphasis on 5G rather than completing the 3G and even the 2G networks where they are not fully functional, Kroes replied: "Developing the newest technology is needed for giving a competitive position to Europe. 2G and 3G will still be at stake, but we should be aware that missing the 5G opportunity would create a disadvantage to our economy and our competitiveness."

Spying, the second oldest profession

Kroes' remarks went beyond 5G and future challenges, as she was asked to comment on US spying activities during a press conference in Barcelona.

She dealt with the issue with a touch of irony, simultaneously avoiding confrontation over the German proposal for a European internet detached from the United States for security and privacy reasons.

"Spying is the second oldest profession. Sometimes [it] is even combined," with the oldest of all professions, she told journalists, arguing that a better way to increase data protection was to make citizens more aware of the risks they face in sharing plenty of personal data online.

German Chancellor Angela Merkel's remarks about a European internet came just a few days after Kroes had presented the Commission's strategy on internet governance, which called for governments to prevent the balkanisation of the Web.

Investment piles up on 5G development

Public and private investment is taking off to push the deployment from 2020 of the fifth generation of mobile communications, the 5G, which will be among the hot topics under debate at the World Mobile Congress, starting today (24 February) in Barcelona.

or fridges will respond to wireless orders and will also be able to communicate among themselves, say experts working towards the 5G revolution.

As a consequence of this surge in connectivity, the EU Executive foresees energy savings up to 90% per service provided. 5G is expected to make equipments, services and entire cities smarter.

Big investments are piling up already now to develop the enabling technologies and to position companies and countries in the new emerging market.

In the last seven-year budget, the European Commission co-funded projects for the roll out of the 4G and the initial



The 5G is expected to exponentially increase the speed and capacity of wireless communications, while driving the convergence between wired and wireless connections and paving the way for the emergence of a real 'Internet of Things'.

The European Commission estimates that 7 trillion things will be connected thanks to the next generation of communications system. Computers, cars

development of the 5G architecture. Around €350 million were set aside between 2007 and 2013 to fund research on wireless technologies through projects such as Metis, 5Gnow, IJoin or Tropic.

Many top telecom companies were involved in these projects, including British Telecom, Ericsson, and SAP.

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The 7 billion game

The commitments towards the next generation platform have now grown significantly. Last December, the EU Executive signed a number of partnerships with private actors to jointly fund research and innovation in key sectors.

The development of 5G is one of the priority sectors. By 2015, the Commission is engaged to channel up to €125 million for this public-private partnership. This sum will increase up to €700 million by 2020. The private companies involved in the partnership have committed the same

amount from their part.

Expectations are however much higher and put the private investment at up to €7 billion. In addition to the €700 million already committed, “the telecommunications industry will invest five to ten-times this amount in activities contributing to the objectives of the partnership,” reads a note of the Commission.

These figures are ambitious, include several parallel investment, and their final delivery is far from certain - depending on market conditions and global economic trends. But they certainly do not represent an overestimation of the investment needed.

Outside Europe, huge sums are being

hoarded to fund the 5G development. Huawei, one of the main Chinese players, announced investments for a commercial roll-out of 5G of minimum \$600 million by 2018. Adding other private actors, and public intervention, the overall Chinese investment is expected to be much bigger.

In South Korea, the government announced a plan to spend \$1.5 billion for the 5G, with the objective of increasing wireless capacity 1,000 times more than currently possible with 4G, which in South Korea is already much more developed than in Europe.

Japanese telecoms operators are planning to roll out 5G in time for the Tokyo Olympic Games in 2020.

Industry warns radio frequencies may become scarcer than oil

While the EU faces the serious risk of a new indefinite delay in regulating radio spectrum access across member states, industry warns against mobile data gridlocks and potentially higher prices for smartphone usage, as frequencies become “scarcer than oil”. EurActiv reports from the Mobile World Congress in Barcelona.

By 2020, in Europe there will be more than 30 times as much mobile internet traffic as there was in 2010, according to European Commission forecasts.

The telecoms industry foresees a ten-fold global increase of mobile data traffic between 2013 and 2019. “If total monthly smartphone traffic is 1 exabyte



today, in 2019 it will be 10 exabytes,” reads the Ericsson Mobility Report 2013.

In terms of mobile subscriptions, whether with smartphones, cell phones or other devices, the forecast is set at 9.3 billion globally by 2019, from 6.6 billion in 2013.

Against this surge in demand, and

since the radio spectrum through which all this traffic goes is a limited resource, it is not unfair to say that “frequency will be scarcer than oil,” Ericsson’s Ulf Ewaldsson said. In these conditions, prices will go up and the quality of service will go down.

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Ewaldsson is a vice-president of Ericsson, which is one of the European companies in the frontline of the development of the infrastructure aimed at sustaining the future of data traffic, the so-called 5G, or fifth generation of mobile connections.

The regulators' quagmire

But for technology to provide the necessary solutions, regulators must play a key role.

The European Union, with its fragmented market, is a business' nightmare, despite the frequent proclamations about the importance of the single market.

The reform of the telecoms sector tabled by the European Commission last September, for all its flaws, remains the only attempt to make radio spectrum access more harmonised and simpler across Europe.

However, this week's postponement of

the vote on the reform in the committee of the Parliament with the main responsibility for the dossier makes it hard for the EU assembly to pass the legislation within its current mandate, as its last plenary session is in April.

Even in the case of a positive vote, negotiations with member states are likely to drag on to the second semester of 2014 when a new Parliament is set to take office, making the outcome of the lengthy legislative process even more unpredictable.

The Commission proposal addresses the politically hot issue of spectrum allocation, trying to define which frequencies should be assigned across the continent to different users, whether mobile operators, broadcasters or satellite operators.

Each EU country has a different history of spectrum usage, with states traditionally giving, for instance, priority to broadcasters, as in Italy or the UK, or to public security services, like in some Eastern European nations.

The Commission proposed to attribute a specific part of the radio spectrum to Internet mobile operators, in order to allow companies to have a clearer legal framework all across the continent.

With no overhaul approved, the situation is set to remain as fragmented as it is now. Moreover, the other issue of spectrum auctioning at member state level will remain untouched.

The commissioner in charge of digital agenda, Neelie Kroes, last year called for an end to what she called the "spaghetti spectrum" in Europe. She went so far as to say that in the future it may be possible for the EU to be the only body responsible for auctioning the European spectrum.

But she had to downsize her expectations after resistance from member states and conflicting interests within the industry. Asked on the sidelines of a conference at the MWC in Barcelona this week about a possible deadline for a common spectrum auction in Europe, she said: "I don't dare to say".

Europe tries to move towards an open and safe cloud

As digital data piles up, protection and access to mass information have become the two keywords of European industry and governments in shaping the future of cloud computing. EurActiv reports from the Mobile World Congress in Barcelona.

The concept of openness does not immediately convey the idea of security, which tends instead to be associated with barriers, walls or fences.

However, when it comes to data

storage this approach is increasingly challenged in Europe, where the cloud, the storing of digital data remotely, is being developed with the idea of being open and, at the same time, safe.

The push for safety is linked to the nature of the cloud which, being remote, requires a higher level of security. One thing is to store information in the home computer, another thing is to put it in machines located in unknown places.

"One of the obstacles to making the most of the cloud can be a lack of user trust; particularly about the security of systems (and for both individual users and businesses)," said Neelie Kroes, the European Commission vice-president in charge of the digital agenda.

A recent study undertaken by Ponemon for Axway demonstrates the depth of corporate concern over the use of public cloud services. The research questioned 621 IT professionals about the use of public cloud services, and found that only 11% were likely to know if data

was lost through the cloud; 80% were concerned about negative consequences from the loss of intellectual property; 69% said they did not know whether staff were using the public cloud; 66% consider the practice risky, and just over 50% believe popular cloud-sharing services are suitable for business.

Although this survey was specifically looking at public cloud file-sharing services (such as Dropbox, Box and Drive), the results are indicative of the lack of confidence in using cloud services.

Encryption techniques, security standards, certification schemes and a number of technological developments have significantly increased the security of data, but the recent US spying scandal has given sceptics new arguments.

Many questions can be addressed by proper certifications, said Kroes. These are schemes for adequate standards that protect customers, but these cannot guarantee

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protection 100%, the Commissioner stressed.

EU's Network and Information Security Agency (ENISA) announced on Tuesday (25 February) a list of certification schemes for the cloud, the Cloud Computing Certification Schemes List, or CCSL.

"The Agency has investigated: the specific certification schemes (based on the EU Cert.-SIG feedback); what standards and specifications they certify against; and who actually provides the assurance," it announced.

"This gives potential cloud customers more transparency about existing certification schemes and how they relate to the cloud."

The Snowden-effect

Not surprisingly, in the wake of Edward Snowden's revelations, German Chancellor Angela Merkel openly called for a European cloud where digital data of EU citizens would be stored in databases located in the European Union, and therefore subject to EU data protection rules.

However, her plan should not be misunderstood, as it does not imply a fenced cloud, but goes instead with Berlin's push for a digital data storage system that is more open than it is now.

Germany is one of the founding members of the European Cloud Partnership, a group of industry and government representatives, set up under the European Commission's umbrella, which aims at pushing Europe towards an open and interoperable cloud, where data stored online can be accessible by the legitimate owners with the full range of applications and devices.

The ECP works towards common standards and for the gradual migration of public administrations to a secure and interoperable cloud.

The partnership's objectives go as far as calling for "better public procurement of cloud services in Europe, based on

common definitions of requirements, and possibly eventually going as far as joint procurement across borders," reads an explicative note on a Commission webpage.

Making cloud services interoperable and getting public administrations on board would form the basis of the development of a European cloud industry, which in turn could create 2.5 million new European jobs and boost EU GDP by €160 billion by 2020, according to the Commission forecasts included in the EU executive's cloud strategy.

Moving to the cloud would also benefit the environment, significantly decreasing the energy costs linked with ICT services.

Network infrastructure developers are the main allies of open cloud supporters, as they would profit from higher demand

for building cloud infrastructure, although they face pressure from providers of closed cloud services, such as Apple.

The emergence of the new model would change the way of seeing computers and the internet from within, making them more efficient as data traffic increases exponentially.

This revolution makes the net similar to an egg, according to Huawei, China's main telecommunications networks developer, and one of the biggest in the world.

"Being broken from inside means rebirth. Being broken from outside gives just food," the company explained. In one of its brochures Huawei shows the image of an egg and its two possible outcomes, being a chick or ending up in a frying pan, depending on the way you break it.



Mobile streaming in the spotlight at World Congress

Video streaming devices, apps and infrastructure featured high in this year's edition of the Mobile World Congress as the sector is expected to exceed 80% of global internet traffic in the next few years. EurActiv reports from the Mobile World Congress in Barcelona.

The European Commission reckons that video streaming accounts for around half of the volume of data transfers across the Web, as the surging number of internet users access movies, music and TV online.

This percentage is expected to soar further and go beyond four fifths of all Web activities while online video entertainment habits may increasingly be matched by new internet-based video services, such as high-quality video-calls or academic and medicine applications, such as distance-operations and advanced e-learning.

The 2014 Mobile World Congress, which ended yesterday (27 February) in Barcelona, highlighted the growing trend, featuring a great number of technologies aimed at making mobile video take off in the coming years.

At the moment, watching online videos at home benefits from the capacity for ultra-fast fibre-optic internet, while the viewing experience on smartphones is hindered by intermittent mobile connections. However, the existing gap may soon become memory, as new devices and infrastructure attempt to make mobile internet as good as domestic connections.

Handsets and network-driven revolution



One of the most successful stands in this year's MWC was LG's devices showroom where the South Korean company put on display its new G Flex smartphone which, as the name suggests, is a curved handset.

The key advantage offered by the new design, its makers say, is an improved video-viewing experience, where the display adapts to the shape of human eyes. The company aims at using its flagship model to beat competitors in the growing market for mobile video watching.

New applications for increasing the quality of the mobile video experience were also widely available at the Barcelona fair.

In a huge hall dedicated exclusively to apps, many companies presented their

innovative solutions to improve mobile TV. Over 50 firms from Israel to the United States, China and Spain showed off their new software applications to increase the quality of images and tailor-made applications for Video-on-Demand or Live TV.

But perhaps the most important innovation for the future of mobile video came from the new infrastructure solutions aimed at making mobile internet as fast and efficient as fixed-network connections.

As the industrialised world moves on to the deployment of 4G networks, telecoms equipment companies are already discussing the new standards and requirements for the

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fifth generation of internet connection, the so-called 5G.

The stands of network developers, such as Huawei and Alcatel-Lucent, showed how far the technology had already gone. Micro-antennas are about to be deployed in all big cities to make mobile internet coverage ubiquitous.

Today, mobile internet is available mainly due to huge antennas located on top of high buildings. They are often disliked by citizens for being invasive both visually and in terms of radio interference.

Experts do not like them either, as their signals cannot be spread equally in cities due to physical barriers. Users complain of black spots where the signal does not arrive clearly, or hotspots, where the signal is clear but the high levels of usage often make the internet experience poor.

To cope with both problems, the solution is to deploy small antennas where the signal is hampered or disturbed. The new generation of antennas are embedded in small boxes, the size of a mailbox, which can be attached to street lamps, buildings and even trees.

This silent revolution is already happening as 4G becomes a part of daily life in many cities. With 5G, the antennas will be able to distribute larger amounts of data, and will easily switch frequencies to maximise traffic speed.

The radio spectrum allocation will to be adapted to cope with the greater volume of data being transmitted and will have to be more efficient than it is today.

Apart from the spectrum allocation debate, the European institutions have been watching developments with little interference over the past few years.

EU Digital Agenda Commissioner Neelie Kroes has been much quieter on the issue of mobile TV and streaming than her predecessor, Viviane Reding, who intervened in the sector with a number of initiatives, although perhaps when the technology was not yet ready for take-off in Europe.

The situation has now changed drastically, as Kroes also acknowledged by launching in January an advisory group to provide ideas on the future of TV and wireless broadband.

“The TV viewing habits of young people bear no resemblance to that of my generation. The rules need to catch-up in a way that delivers more and better television and more and better broadband,” she said in announcing the new advisory group and a six-month deadline for advisors to provide results.

Internet guru: Digital world must have in-built ethical system



As the Barcelona Mobile World Congress ends, EurActiv explores the ethical aspects of the internet and the move towards ever-more connected objects and devices. Per Strömbäck, editor of Netopia, says machines can and should be adjusted to fit the moral values of individuals and the wider society in which they operate.

Per Strömbäck is the editor of Netopia, an organisation working to develop a free and open internet, which recently published a report on ethics in the digital world. He was answering e-mailed questions from EurActiv's editor and publisher, Frédéric Simon.

Can individuals maintain control of their privacy in a world where personal data circulates freely among machines? Or is there necessarily a trade-off between the two?

Privacy is already a challenge with today's technology and services. Most of us voluntarily trade privacy for free services like search and e-mail – and involuntarily

we are monitored by government agencies as Edward Snowden's leaks have shown.

With machines increasingly taking over communication, privacy will be even more of a challenge. One of the scholars interviewed in the report – Dr Adrian Cheok, Professor of Pervasive Computing at City University London – says he believes most of us will choose convenience and just “go transparent”. But transparency is a two-way street and those who monitor us today are not at all transparent to us, but rather covert or at least faceless.

Health is a good example, there is a lot of technology developing now in the health sector and the potential benefits are great. With an aging population, many countries will have to rely on technology rather than manual labour to care for the elderly. If you can carry sensors like blood pressure monitors on your body, that will save you many visits to the doctor's office for standard check-ups. Technology can free up time for health professionals to focus on more complicated cases.

But the flipside is privacy also in this case. With all that health data collected,

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you as a patient are vulnerable to leaks, viruses, data mining – all of which are breaches of patient-doctor confidentiality. Insurance companies will want to get that information in order to classify patients based on individual risk factors, rather than templates like today. Some may not be able to get insurance at all.

There are also issues of hackers, one illustration is the remote pacemaker hack – that is a nightmare scenario. Plus – who owns your information: yourself? The hospital? The online services that collect it? We talk about some of these things today, but with new technology the implications will be far beyond our current topics.

What rules should be put in place to govern such data? Should there be different degrees of data sensitivity for example with private data related to people's health, finance, or sexual orientation?

The report has some recommendations based on the findings. One is “device sanctity” – as our devices become more and more personalised, it is important that they are loyal to us rather than third parties who want to access the information on them.

Another is the introduction of a regulatory body, similar to health inspectors or the US Federal Drug Administration which has a dual task to inform the public and regulate the tech. These are some of the recommendations from the report authors. From my perspective, I'd like to add that it is important that the government does not take over the liability from the tech companies, the best solution is if legal compliance is built in to the technology from the outset.

Is 'net neutrality' achievable or even desirable?

Network neutrality is a dicey term, some people use it to say network operators should be left to their own devices. Others say that it means no discrimination of traffic, except for legal or network integrity reasons.

In these days of traffic shaping and protocol discrimination/prioritisation network neutrality looks like a mirage. I think we should start from the opposite end: rather than thinking about freedom as the absence of regulation, let's take the departure point in human rights. Society has built up all these institutions to protect these rights in the physical space. Let's use the technologies and methods currently applied by telcos and intermediaries for optimising their profits, but for the greater purpose of protecting human rights and rule of law. That is the difference between freedom and anarchy.

Can the 'right to be forgotten' be enforced in practice?

It's software so anything is possible! It's all about how it is designed. Oxford professor Viktor Mayer-Schönberger, who was interviewed for this report, suggests an expiry date on personal information. There is no reason that can't be built into the code, just like a Snapchat messages that disappears after a few seconds. Sure it can be hacked, but the quest for Platonic perfection should not stand in the way of pragmatic solutions.

Can or should a system of ethics be imposed on computer software and the internet of things itself?

Yes, it needs to be built into the code, not added as an after-thought. Think about how stock market trading platforms are set-up differently depending on local legislation. But the real challenge is – whose ethics?

There is no pre-defined set of ethics, rather we humans spend a lot of time debating moral issues – with ourselves and others. That conversation has been going on since the dawn of civilisation. So the system must be able to adjust to changing circumstances and the individual users morals, as well as norms and laws in the surrounding society.

The internet being global in essence, are nation-states fit to deal with regulation on such matters? What place do you see for

regional organisations like the EU or global organisations like the UN?

Yes, this is an interesting challenge. But to a large extent the internet is run by global organisations, not governments but private companies that dominate certain niches. So that's where governance can enter the game.

I believe the EU is the only organisation that has the power to do it. The UN is too fragmented, but the EU has a real legal system, proper institutions, a track record of legal action against private companies when appropriate and most importantly a market that is too big for any global service provider to ignore. It is up to the European Union to take the lead in establishing human rights and democracy online.

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