VIVIANE REDING

The future Internet must be

It is now well recognized that the Internet as we know it today defies traditional regulatory theories and governance practices. The main reasons are linked to the blurring of the concepts of national territory and sectors. But as we consider the future of the Internet, we see even greater challenges ahead, with many questions related to privacy, security and governance. Now is the moment to initiate a global reflection on achieving an improved, more effective and inclusive Internet.

All these dimensions of the future of the Internet are of crucial interest for Europe - and I believe for the rest of the world. For this reason, the European Commission will step up, from 2009, its efforts and its involvement in all these dimensions. We will increase research and development; actively participate in discussions on the regulatory approach to applications and services; make proposals on governance issues, and actively promote IPv6 roll-out. With more than 3 million ".eu" domain names registered to date, the European Union has an even stronger legitimacy to be a key player in the future of the Internet.

The Internet economy is changing

The Internet underpins the entire economy in an increasing part of the world. Information and communication technologies (ICT) contributed 40 per cent of overall productivity growth in the economy for the ten years up to 2004. The networking effect has made possible an accelerated and global diffusion of innovation. The ensuing changes to our economy, as well as to the lives of our citizens, have been remarkable. The diversity and sheer number of applications and business models supported by the Internet have also greatly affected its nature and structure - Internet traffic increases by 60 per cent every year!

Could one say that the Internet has become mature infrastructure which has exhausted its innovation and growth potential? I am deeply convinced that this is not the case. Let me share with you not only why I believe that we are at the

start of a new phase of Internet-driven innovation and growth, but also what we have to do to unleash this potential, which is even more necessary in times of economic trouble. Indeed, to get out of the economic downturn we need to stimulate solid and sustainable business growth in high-value goods and services that respond to real market needs. For example, we in Europe need to make full use of the economic potential of the single market that is still locked up in our fragmented national markets. This should apply primarily to services based on the Internet, which has, by its nature, a cross-border dimension.

Internet drivers

What are the current drivers and future perspectives of the Internet? I see at least three main drivers: social networks, the Internet of things and the mobile Internet.

Social networks

A first driver clearly emerging is a shift from "Web 2.0 for fun" to Web 2.0 for productivity and services. "Web 2.0 for fun", is all about social networking. It is today one of the fastest developments of the Internet and also has the potential to connect minds and creativity for business on a scale never before attained or even imagined. The sheer power of networking that the Internet offers makes it possible to reach unprecedented levels of information regarding the collective behaviour and needs of entire populations.

Web 2.0 networking in the business world holds the prospect of interoperability across different business segments. This is an important opportunity, especially for small-and medium-sized enterprises, because more and more sophisticated and high-added-value products and services will be delivered through opportune collaboration of a multiplicity of business actors.

The Internet of things

A second important driver of the Internet of the future is the emergence of an "Internet of things". Soon the Internet, which today connects computers, servers and web pages, will start connecting myriads of objects and devices of all kinds.

What will be the implications of such an extended nervous system? Surely, new classes of application will come to life, combining information from the virtual world with perception of the physical world. The economic prospects are very significant, with an estimated global market of €30 billion by 2016 just for the segment of applications enabled by radio-frequency identification (RFID). The increased intelligence and connectivity of objects and devices will be of prime relevance to our citizens, as it opens up new prospects for greater accessibility and gives them more control over their lives. Tremendous pay-offs can also be realized in terms of better energy distribution and consumption, environmental controls, urban transport, health and care services, and so on.

But to achieve the promise of the Internet of things, both policy-makers and industry need to work intensively, be it in terms of architecture, of standards, of security or of governance. We cannot just ignore the privacy and governance issues related to the Internet of things. So, my intention for 2009 is to set certain principles for the European Union in order to give legal certainty to the industry, and to have a sound dialogue with our main trading partners on the public interest issues at stake.

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Open service infrastructure

Reaping the benefits of these promising applications will not be possible without a powerful open service infrastructure. The trend towards deployment of server farms with distributed "cloud" computing capability is leading in that direction. An interesting characteristic of "cloud" infrastructure is that it lowers the barriers to market entry and enables small companies - even micro ones - to develop their own online commercial offers with zero infrastructure investment.

A second aspect regarding these "cloud" services, which needs careful consideration, is associated with

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operational business risks as well as the potential for serious data storage risks. To what extent will businesses accept moving truly mission-critical applications outside their firewalls? How should the governance of data migration be handled? Again, these are questions about which industry and public authorities need to speak to each other.

Mobile Internet

A third key trend is the Internet going mobile. The emergence of a wireless web is becoming a reality, under the combined influence of two factors. The availability of smartphones, whose penetration is increasing very fast, is boosting the mobile Internet, with usage more than ten times higher than that through less sophisticated terminals. This is enabled by the advent of true broadband mobile networks. Operators that have implemented third-generation (3G) mobile high-speed options - and there are more than 220 such networks in 100 countries - have seen their data traffic skyrocket in no time. And you can imagine how it would be with more affordable prices, notably for roaming across borders.

Today, the volume of data traffic in high-speed mobile networks is, on average, three to four times larger than that of voice traffic. It will therefore be crucial to release the necessary radio-frequency spectrum for high-speed wireless Internet access, to ensure an adequate level of competition and to foster coordinated allocation to generate economies of scale. To make the mobile Internet become an economic reality for Europeans, for example, we must also devote great attention to ensuring that the "roaming borders" that still exist in Europe are progressively brought down.

Other key issues at stake
Openness of the Internet

We will only be able to reap the full social and economic benefits of a fast-changing technological landscape if we manage to safeguard the openness of the Internet. Openness is one of the key ingredients that has made the Internet so successful as a place of innovation, and we have to make sure that it is not compromised. In its Communication on future networks and the Internet, adopted at the end of 2008, the European Commission outlined three key areas where we have to ensure that openness remains preserved.

Net neutrality

In the first place, "Net neutrality" has to be guaranteed. New network management techniques allow traffic prioritization. These tools may be used to guarantee good quality of service, but could also be used for anti-competitive practices. The Commission has taken additional steps, through measures proposed to reform the EU's telecommunication package, to better prevent such unfair abuse to the detriment of consumers.

Open standards

Another important issue relates to open standards. We need to take advantage of the win-win scenario of open interfaces and standards so that the market can grow for all. Dominant players may try to use proprietary standards to lock consumers into their products or to extract very high royalties, ultimately stifling innovation and forestalling market entry by new players. The European Commission's competition rules have an important role to play in tackling such practices.

Openness is also key for the Internet of things. If no coordinated action is taken, we can expect multiple architectures, standards, and intellectual property models to proliferate. The RFID domain already gives us an example where, due to a lack of openness, standards are being produced with significant intellectual property access costs. And if we want these systems to be integrated with all sorts of business or entertainment processes, market entry barriers need to be lowered in such a way that small and medium-sized enterprises can play their role as economy boosters.

But a lot remains to be done before these platforms can be integrated into complete enterprise systems, because use of proprietary solutions hampers interoperability. In this field, governments have a key role to play as "interoperability

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and openness pathfinders". This is what we are doing in the Commission under our IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens) initiative. This proposes an interoperability and openness framework for pan-European governmental services.

Globalization

There is no doubt that the future Internet will be truly global, and reach populations that have so far not been connected. China is already the largest country in terms of Internet users. This trend can only accelerate, with a clear consequence: the demand for a certain shift of Internet "power" from the developed regions to the developing ones.

This has far-reaching consequences and it is not certain that we can understand them all today. Multilingualism is one of them. Seventy per cent of Internet users do not have English as their native language. We need to prepare for a future Internet that takes languages and local cultures into account in a much better way. This is another form of openness, and a crucial one in my view.
Globalization may bring about a "Balkanization" of the Internet, for such reasons as attempts to preserve national security, cultures, or economic systems. Again, this possibility must reinforce our commitment to work in global partnerships to defend the open model that we want.

Economic recovery

In these times of economic trouble, we must continue investing in areas that are essential for our short- to medium-term recovery and our long-term future.

Let's look at the longer term first. The current debate is about how the Internet will evolve to support an ever-larger number of applications, business models, users and environments. There is, however, no guarantee that today's Internet architecture, which was designed more than thirty years ago, is going to support these changes. In Europe, we are moving forward with the 7th Framework Programme and our ICT research initiative. Under this umbrella, European industrialists and academic researchers have together launched a large-scale coordinated effort, worth some €400 million, addressing the future of the Internet. At its meeting in November 2008, the European Council welcomed the Commission's intention to move towards an industry-driven public-private partnership in this domain.

High-speed fixed and mobile broadband networks are the arteries of the emerging economy. But they require huge investments, which need to be optimized to maximize returns. In these times of economic downturn, we must invest in promising technologies that provide the competitive edge that will accelerate the economic recovery. The Commission proposed a "Recovery Package" in November 2008. Infrastructure investment is clearly identified as a priority and the sum of €1 billion has been earmarked to support high-speed broadband deployment. In order to maximize the reach of the Internet in Europe, we have proposed that this money should be used to support high-speed broadband in rural and remote areas that tend to be ignored in commercial deployment plans.

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