IMAGINING EUROPE

The Digital Infrastructure as the Next "EU Grand Project"

Andrea Renda*

1. Introduction: Towards an "age of resilience"

Recent years have witnessed an unprecedented, and largely unforeseen, reconsideration of some of the basic *tenets* of economics, and consequently of the basic approaches to economic policy and regulation. The subprime mortgage crisis in the United States triggered a hectic debate on the need for smart regulation in complex markets such as financial services; and the fact that even Europe's heavily regulated banks could not avoid contagion suggested that regulation, *per se*, means nothing, and that it is well-designed regulation that is needed.[1] At the same time, the enduring economic downturn has unveiled the shaky accounts of many governments: internationally-driven austerity policies, however,

ABSTRACT

The global economy is entering a new "age of connectivity", spurred by the increased availability of "always on" broadband communications. This is creating new challenges for policymakers: infrastructure and connectivity emerge as key priorities for public policy and essential preconditions for global competitiveness. How is the EU positioned in this global race? This paper argues that the EU's approach to the information society was ill-conceived, and has led to an unnecessary and undesirable fragmentation of the market. Key EU policymakers have realized only recently that, absent a significant shift in pace, the EU will not be able to keep up with global competitiveness due to a lack of integrated, connected, smart infrastructure. Key areas in which substantial change is needed include incentives and PPPs for broadband rollout, spectrum policy, net neutrality and, overall, competition policy for the high-tech market. The paper explores potential policy options for the future of the EU digital agenda, argues that a gradual "evolution" is not sufficient for the EU to regain its leadership in the ICT sector, and proposes policy scenarios for a more united, effective and "digital" Europe.

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[1] For an account, see Section 5.5 in Andrea Renda, *Law and Economics in the RIA World. Improving the Use of Economic Analysis in Public Policy and Legislation*, Cambridge and Portland, Intersentia, 2011, p. 190 ff.

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have been based on a flawed assessment of their impact on employment, welfare systems and social cohesion, and even the International Monetary Fund has had to go through a painful *mea culpa* for the dramatic consequences of these rather adventurous and intrusive "natural experiments". Today, the global community has reverted back to the idea that only growth and competitiveness can lead "sick" countries, and especially Southern European countries, back onto the road to prosperity.

Against this background, Europe stands out as a very problematic region, due to its inability to show consistent signs of recovery. Not only are national accounts quite hard to fix in some Member States: the worst aspect of Europe's current crisis is that even before the economic downturn, indicators of growth and innovation were already quite gloomy for the EU27. Suffice it to recall that, already in 2004, the "Kok Report" sadly announced that the targets set in for 2010 by the Lisbon agenda back in 2000 had become unattainable.[2] And in 2005, OECD data were clearly indicating that Europe was lagging behind the United States in most research and innovation indicators, as well as in terms of *per capita* investment in telecommunications infrastructure. Overall, research in academia and institutions such as the OECD and the European Commission pointed to a clear, unequivocal, widening of the productivity gap between the US and the EU.[3] The crisis merely exacerbated this problem: the devastating effects of the downturn overshadowed the underlying structural weaknesses of the European economy, which could be attributed to a generalized lack of competitiveness and growth-friendly policies.[4]

Far from being an exception, the digital economy is indeed the "poster child" of this troublesome, declining period of EU history. As a matter of fact, the most striking difference between the economic performance of the US and the EU over the past decade has concerned development of information and communication technology (ICT) markets on the two sides of the Atlantic: over the past decade, IT has become the main determinant of EU productivity growth, and at the same time, the main determinant of the US-EU produc-

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[2] See the Report of the high level group chaired by Wim Kok, *Facing the Challenge. The Lisbon strategy for growth and employment*, November 2004, http://bookshop.europa.eu/en/facing-the-challenge-pbKA6204260/.

[3] See i.e. Bart van Ark, Mary O'Mahony and Marcel P. Timmner, "The Productivity Gap between Europe and the United States: Trends and Causes", in *The Journal of Economic Perspectives*, Vol. 22, No. 1 (Winter 2008), p. 25-44, http://dx.doi.org/10.1257/jep.22.1.25.

[4] Andrea Renda, "Globalization, the New Geography of Power, and EU's Policy Response", in *Transworld Working Papers*, No. 10 (March 2013), http://www.transworld-fp7.eu/?p=1050.

tivity gap. US universities have flourished, dominating worldwide research and attracting students from all over the world, linking these talents to the blossoming economy of Silicon Valley, where private capital markets and angel investors are ready to fuel new ideas and bring them to the market. Since the dot-com bubble at the turn of the millennium, the US ICT sector has never stopped reinventing itself and riding the wave of the tech revolution. In Europe, early achievements such as (strongly subsidized) leadership in wireless telephony standards (GSM) and the opening up of basic telecom infrastructure to competition (in the so-called "Open Network Provisions" era) have been wiped out with the failure to unite the telecommunications and IT markets. In other words, Europe has failed to fuel the most important engine of growth for a modern economy: no wonder this has led to an inexorable loss of competitiveness: after a decade of denial, even Vice President Kroes has started to openly admit that the EU is in a state of emergency as concerns the digital agenda.[5] The recent "Connected Continent" proposal by the Commission aims to fill the gap by restoring an investment-friendly, competitive environment to the benefit of end users.[6]

Against this background, policies for infrastructure deployment have become more prominent in the public debate than in recent years. Today, infrastructure is both a challenge and an opportunity for Europe, perhaps the only real opportunity Europe has to restore its growth, competitiveness and sustainable development potential in the medium term. To be sure, with a prospective 1 trillion investment needed to upgrade electricity networks and an estimated €350 billion to bring optical fiber to all citizens in the EU, infrastructure is a real challenge for budget-strapped governments aiming to fix their finances before looking at future growth-enhancing policies. However, developments in the global economy – and in particular, in the patterns of global production and consumption – are so breath-taking that when the EU turns to its growth strategy again, the landscape will have changed significantly.

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[5] See Kroes' speech "Building a Connected Continent", in which the Vice President of the European Commission in charge of the Digital Agenda states that "Europe, once an ICT leader, is now lagging behind. Japan, South Korea and the USA combined have around the same population as the EU - but over 8 times more fixed fibre broadband, and almost 15 times more 4G […] Current trends are unsustainable for the sector, and unsustainable for our whole economy. The single market boost can revive the European telecoms sector, and help our whole economy: but we must move fast". Neelie Kroes, "Building a Connected Continent", in *Neelie Kroes' Blog*, 11 September 2013, http://ec.europa.eu/commission_2010-2014/kroes/en/content/building-connected-continent.

[6] European Commission, *Proposal for a Regulation of the European Parliament and of the Council laying down measures concerning the European single market for electronic communications and to achieve a Connected Continent* … (COM(2013) 627 final), Brussels, 11 September 2013, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=celex:52013pc0627:en:not.

More in detail, the global economy is entering a new "age of connectivity", spurred by the increased availability of "always on" broadband communications. This, at the same time, is leading to path-breaking changes in the economy. More in detail:

- *Tangible and intangible network industries are merging into a single, converged infrastructure*. Examples of this trend include the emergence of smart meters and smart grids, the ongoing deployment of intelligent transport systems, and the recent call for the development of innovative services and solutions for the future rail network in Europe. The convergence and integration of tangible and intangible infrastructure chiefly responds to a desire to boost efficiency by cutting costs and achieving seamless interoperability and remote control over the networks involved: however, as will be argued below, this also creates significant concerns in term of resilience, since an integrated infrastructure will always be as vulnerable as its weakest link.
- *Businesses and citizens are relying increasingly on the converged infrastructure to boost pro ductivity and compete on a global scale*. Examples of these trends include cloud computing, 3D printing, teleconferencing, telework, e-Health, M2M communication, driverless cars, intelligent shelves and much more.

These tendencies are creating new challenges for policymakers: in particular, infrastructure and connectivity are emerging as key priorities for public policy and essential preconditions for global competitiveness: most industrialized countries are already pursuing stable, dynamic, resilient infrastructure that, in turn, facilitates the emergence of a vibrant, diverse environment in the internet ecosystem. Recent episodes such as Deepwater Horizon, Fukushima and the DDoS cyberattacks that hit Estonia and, more recently, several governments (including the European Parliament) have led to increased attention for critical infrastructure protection (CIP) and critical information infrastructure protection (CIIP).[7]

Moreover, additional and perhaps even more important reasons are leading policymakers to gradually shift their attention to infrastructure policy. First, in the age of increasingly globalized production, multinationals and large conglomerates choose where to locate their production based on a mix of factors, including traditional "ease of doing business" characteristics, such as absence of corruption and red tape, strong rule of law, ease of hi-

[7] Bernard Haemmerli and Andrea Renda, "Protecting Critical Infrastructure in the EU", in *CEPS Task Force Reports*, December 2010, http://www.ceps.be/node/4061. And also Andra Renda, *Protecting Critical Information Infrastructure*, Working document No. 1.0, 2012 (on file with author).

ring and firing, etc.; but they also look increasingly at infrastructure and education as the key features that drive the decision to locate production in a given territory. The explanation is straightforward: in the age of videoconferencing, cloud computing, 3D printing and global clusters, being able to rely on a resilient infrastructure becomes essential. The speed and reliability of the broadband connection is thus going to become a decisive competitiveness factor in the age of global value chains.[8]

How is the EU positioned in this global race? This paper argues that the EU's approach to the information society policy in the past decade was ill-conceived, and has led to an unnecessary and undesirable fragmentation of the market. Only in the past few months have key EU policymakers realized that, absent a significant shift in pace, the EU will not be able to keep up with global competitiveness due to a lack of integrated, connected, smart infrastructure. Key areas in which substantial change is needed include incentives and PPPs for broadband rollout, spectrum policy, net neutrality and, overall, competition policy for the high-tech market. The remainder of this paper explores potential policy options for the future of the EU digital agenda; it also argues that a gradual "evolution" is not sufficient for the EU to regain its leadership in the ICT sector; and proposes policy scenarios for a more united, effective and "digital" Europe.

2. The Digital Agenda: erase and rewind?

This section discusses the main reasons for Europe's gradual loss of competitiveness in the digital economy, especially as concerns the regulatory environment.[9] In particular, Section 1.1 below briefly discusses the main features of the 2002 "telecoms package", which turned out to be poorly designed or perhaps, with hindsight, not future-proof enough to remain effective in the Internet age. In addition, the section discusses other aspects of EU policy, including most notably competition policy, and innovation and industrial policy, which have proven to be barely in line with the features and dynamics of modern digital markets. Section 1.2 then outlines a number of measures which could restore some

[8] See i.e. OECD, WTO and UNCTAD, *Implications of Global Value Chains for Trade, Investment, Development and Jobs* (Report prepared for the 2013 G20 Summit in Saint Petersburg), 6 August 2013, http://www.oecd.org/sti/ind/G20-Global-Value-Chains-2013.pdf.

[9] Section 1 of this paper elaborates on a chapter titled "Erase and rewind? Towards new Rules for the EU Digital Single Market", written by Andrea Renda for a forthcoming collection of essays by AT&T titled "Creating Pathways for Investment in Europe's Digital Future".

of the preconditions needed to make the European Union competitive and attractive for investment in this specific domain, with an eye to the emerging technological developments that are leading to another paradigm shift in the way our lives are affected by ICT. In particular, the section distinguishes between "pure maintenance" options or "quick fixes" to the e-communications package, and more ambitious, far reaching regulatory proposals aimed at completing the Single Market and triggering industry consolidation at the infrastructure layer of the ICT ecosystem. Section 1.3 briefly concludes, explaining why the gradual evolution of the current regulatory framework is unlikely to lead to desirable results.

2.1. The EU regulatory framework for electronic communications

History often repeats itself, and countries find it very difficult to learn from other countries' mistakes. They prefer to make their own. Think about the 1996 Telecommunications Act, hailed as a "Camelot moment" in the United States when it was passed by Congress. This Act, which put an end to more than a decade of uncertainty following the 1984 AT&T break-up, relied on the possibility of opening up incumbent players' networks to enable gradual access of new entrants to unbundled network elements (UNE). The underlying philosophy was the so-called "stepping stones" theory, which postulated that the best way to trigger entry into the market was to allow new entrants at first to merely resell the services provided by incumbents, then gradually to invest to deploy their own local loops and, finally, to build their own networks. But the law largely failed to create a level playing field for competitors using different technologies (copper, cable, mobile); and it also failed to create adequate incentives to invest when it came to upgrading the telecoms networks to optical fiber. This is why, over time, the Telecommunications Act has remained largely a "narrowband" regulatory framework: since 2003, the FCC has started to lift regulatory obligations on incumbent players who wish to invest in high-speed DSL and FTTx technologies, triggering a massive increase in investment as a response to regulatory relief.[10] Today, facilities-based competition reigns in the States: the FCC reports that more than 90% of residential Americans have access to at least six facilities-based networks that provide affordable local voice services, and eleven facilities-based nationwide networks

[10] See i.e. Andrea Renda, "The Costs and Benefits of Transatlantic Convergence in Telecom Services", in Daniel S. Hamilton and Joseph P. Quinlan (eds.), *Sleeping Giant. Awakening the Transatlantic Services Economy*, Washington, Center for Transatlantic Relations, November 2007, p. 156-193.

that increasingly offer high-speed broadband.

The US story suggests that, in Europe, the problems that would be faced by a regulatory framework based on "access policy" were already largely known when the European Commission started proposing the "new regulatory framework" for electronic communications, finally adopted in 2002. Moreover, previous years (the so-called "open network provisions" era) had highlighted the insufficiency of access policy as a stimulus for investment in new networks. That said, as the FCC was about to lift regulatory obligations on incumbent copper network owners, the European Commission was introducing rules that mirrored, to a large extent, that same "stepping stones" model that had proven inadequate on the other side of the Atlantic. This marked the beginning of a decade in which the "investment ladder" approach has largely dominated the EU telecoms landscape.[11]

2.1.1. A retrospective look at the 2002 e-communications framework

The 2002 e-communications framework must be praised for having contributed to a widespread decrease in price levels across the EU, and for having introduced a general authorization regime which replaced *ad hoc* licensing of new operators. As stated in Article 8 of the framework's most important directive (the so-called "Framework Directive"), the objectives sought by the EU institutions were *i.e.* increased competition, efficient investment in infrastructure, innovation, efficient use and effective management of radio frequencies and numbering resources, development of the internal market for e-communications and, more broadly, promotion of the interests of EU citizens.

Ten years later, these goals appear to have been only partly achieved. First, as concerns competition, the e-communications framework seems to have triggered remarkable new entries in national markets: however, while static efficiency might have been realized through a generalized price decrease for traditional fixed-line voice services, dynamic efficiency has been severely hampered by the regulatory framework, in particular by the provisions on access policy, but also by the inherent design of the rules. As a matter of fact, the framework aimed at liberalizing e-communications market within their national

[11] Andrea Renda, "Competition-regulation Interface in Telecommunications. What's left of the Essential Facility Doctrine", in *Telecommunications Policy*, Vol. 34, Nos. 1-2 (February-March 2010), p. 23-35.

borders, and not at triggering competition across national borders.[12] And this is exactly what happened, to an extent that today, approximately 2,000 telecom operators survive in the EU27, in the overwhelming majority of cases without having invested a single cent on infrastructure.

Second, while the European Commission (already in 2001, and then again in 2007-09) attempted to achieve a greater level of centralization in the regulation of e-communications markets, and in particular of key resources such as spectrum, Member States have always resisted this trend by preserving significant national discretion on the way e-communications should be regulated. Even the attempt to extend the Commission's veto power to the remedies proposed by the National Regulatory Authorities (NRAs) failed during the review of the telecoms package in 2009, leading to a more modest expression of "serious concerns", which hardly affected the regulatory process.[13]

Finally, and even more importantly, despite many high-sounding statements on the solidity and future-proof nature of the 2002 regulatory framework by the Commissioners who have dealt with this agenda in the course of the decade, the framework's overall architecture has proven inappropriate in the face of the deployment of new, high-speed networks, which have in turn blurred the boundaries between fixed and mobile telephony, between telecoms and media, and between telecoms and IT. Put simply, just as the US 1996 Telecommunications Act had to be almost totally abandoned as the broadband era arrived, the same should have been done with the EU regulatory framework.

2.1.2. The Digital Single Market: an "impossibility theorem"

All in all, the factors briefly outlined above have created a rather odd situation in this field: the framework is too rigid to govern the evolution of the e-communications markets, and too flexible at national level to create the conditions for a Single Market to emerge. This, in fact, comes as no surprise: as described,[14] the framework in and of itself was not designed

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12 Jacques Pelkmans and Andrea Renda, "Single eComms Market? No Such thing...", in Communications & Strategies, Vol. 82, (2nd Quarter 2011), p. 21-42. Previously publ. in *CEPS Policy Briefs*, No. 231 (January 2011), http://www.ceps.be/node/4143.

13 Andrea Renda, "The review of the EU telecoms framework: a tale of the anti-commons", in Martin Cave et al., *Monitoring EU Telecoms Policy 2009* (1st NEREC report), September 2009, p. 9-18, http://www.nerec.es/?p=553.

14 Jacques Pelkmans and Andrea Renda, "Single eComms Market? No Such thing...", cit.

to generate any real market integration. So, why would one expect any Single Market for e-communications to emerge?

The most stunning aspect of this story is the fact that, until very recently, there has been no common understanding of what a single market should look like. National e-communications regulators mostly refer to the Single Market as simply a "convergence of regulatory approaches", whereas the Treaty definition of Single Market goes far beyond, into concrete outcomes such as cross-border trade and shopping, and ultimately (partial) price convergence. Recently, a working document by the European Commission,[15] clarified that the notion of Single Market should incorporate, at least as a tendency, some degree of convergence in prices: this is exactly what is not happening in the EU27, with price divergences still remarkable, unrelated to living standards, and often on the increase. Moreover, remedies adopted by some national governments and endorsed by the European Commission – such as functional or structural separation of networks – have made it even more complicated to speak of a single market, given that the current regulatory fragmentation makes it very challenging to engage in cross-border trade.[16]

As a result, all current talk of a future Digital Single Market cannot really rely on the current framework as a driver of integration. On the contrary, it would be impossible to achieve a more integrated single market without a major rethink of the regulatory framework.

2.1.3. The myth of "better regulation"

A *mantra* of the past decade has been that the 2002 framework is "sound", mostly since it adopts a technology-neutral approach, evokes principles of better regulation and borrows tools from competition policy, thus paving the way for a smooth transition from systematic ex ante regulation to *ad hoc*, ex post scrutiny by competition authorities. Emphasis on the inherent "quality" of the framework was so evident that the review completed in 2009 passed it as the so-called "better regulation directive". This feature is, however, neither evident nor complete in the framework for at least three reasons.

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[15] Emmanuelle Maincent, Dimitri Lorenzani and Attila Eordogh, "Market Functioning in Network Industries - Electronic Communications, Energy and Transport", in *European Economy Occasional Papers*, No. 129 (February 2013), p. 26, http://dx.doi.org/10.2765/40736.

[16] For example, the UK has decided to opt for the functional separation of British Telecom's network: this implied the creation of a separate business unit ("Openreach") in charge of providing access to the "last mile" at equal conditions and affordable tariffs for all operators, including of course also BT's retail branch.

First, the technology-neutral approach was partial from the beginning, given the rigid distinction between fixed and wireless communications, and this became even more evident during the implementation of the framework, with some markets being defined on a technology-specific basis (copper loops, broadcasting, etc.).

Second, NRAs were given the possibility of avoiding the application of the criteria that should be verified fr regulation to be needed (the so-called "three criteria test") whenever they decided to stick to the pre-definition of relevant markets contained in the Commission Recommendation:[17] this meant that a bias existed in favor of keeping the list as initially drawn up by the Commission – and as a matter of fact, Brussels has never looked with favor upon NRAs' decisions to deviate from the list. Accordingly, most of the decisions by NRAs have not been backed by an impact assessment or any justification of the proportionate, efficient, effective nature of the remedy selected.

Third, the framework was highly praised in 2002 because it borrowed extensively from competition policy tools in its design of the regulatory process and remedies available to national regulators. This would guarantee, at least based on what EU institutions declared at the time, a smooth transition from the application of *ex ante* regulation to *ex post* competition policy within just a few years. However, the transplant was far from perfect: not only was access policy applied well beyond the tight boundaries drawn by the Court of Justice in antitrust cases involving essential facilities;[18] but overall, the whole, dynamic, evolving telecoms market was enchained into as many as 18 would-be relevant markets, most of which would hardly have met the definition of relevant market in competition law. Moreover, the "Significant Market Power" (SMP) concept applied in the telecoms package – if properly applied – might be useful in identifying which markets should be subject to regulatory measures, but does not really help regulators understand how to regulate, *i.e.* which remedies are likely to be most appropriate. In addition, the "litmus test" that would lead to the decision whether to regulate a market was biased in at least three ways: (i)

[17] The "relevant market" is a concept widely used in antitrust cases and represents the set of products or services that are viewed as reasonably replaceable by consumers, and as such can be said to compete against each other. The telecoms package borrowed the notion of relevant markets by asking NRAs to analyse the stand-alone relevant markets they could identify on the domestic fixed and mobile networks and, in case they found operators with significant market power (SMP), impose remedies. The Commission also provided a "predefined" list of relevant markets, in order to support the work of the NRAs: that list was contained in the 2003 Recommendation on relevant markets, later revised and shortened and likely to be further shortened in 2014-2015.

[18] See Andrea Renda, "Competition-regulation Interface in Telecommunications …", cit.

the three-criteria test that would have in principle dictated the choice was relegated to a marginal, almost-hidden position; (ii) the framework established a bias in favor of regulation for all markets pre-defined by the European Commission in its recommendation on relevant markets, by mandating the application of the three criteria test only in case NRAs wanted to deviate from the definition given by the Commission, and (iii) the provision on emerging markets initially contained in the Recommendation on relevant markets remained *de facto* dead letter during the past decade.

2.2. The "Connected Continent" proposal[19]

The "Connected Continent" package presented by the European Commission on September 11, 2013 promises a significant change of direction compared to the previous e-communications framework adopted at the EU level in 2002 and revised in 2009, but also significantly complemented by additional layers of regulation (e.g. on international roaming) over time. The Commission is attempting (for the third time, after 2001 and 2006-07) to acquire stronger control over remedies proposed by national regulators, and to foster more pan-European coordination in the award of spectrum in key bands (such as the 700Mhz and 800Mhz bands). Both proposals are likely to meet substantial hostility in the European Parliament – where the package has recently been discussed in public hearings by both the ITRE and the IMCO committees – and most notably in the Council, which can easily be defined as the strongest opposer of further delegation of regulatory competences to the EU level in this field. At the same time, even before being diluted by co-decision, both proposals appear too "shy" to really trigger the shift in pace that Vice President Neelie Kroes has announced for the remainder of her mandate.

Against this background, remarkable prominence has been given to a proposal contained in the package, which addresses with more emphasis than before the issue – once termed as "irrelevant" for Europe – of net(work) neutrality, *i.e.* the principle whereby Internet Service Providers should not be allowed to inspect the packets of data (bits) that flow on their networks, and accordingly should not be able to block any application or content (with the exception, widely recognized, of spam filtering), and should not be allowed to prioritize or degrade the speed of any packet. Likewise, Internet service providers (ISPs)

[19] Sections 2.2-2.3 of this paper are based on: Andrea Renda, "Net Neutrality and Mandatory Network-Sharing: How to disconnect the continent", in CEPS Policy Briefs, No. 309, 18 December 2013, http://www.ceps.be/node/8770.

under mandatory net neutrality regulations would not be allowed to create "toll lanes" on the Internet by offering guaranteed Quality of Service (QoS) to some application or content providers in exchange for a fee: as a result, forms of product differentiation such as those available in many other sectors (think of the various levels of services offered by airlines, or by express couriers) would not be allowed on the Internet, at least at the infrastructure layer.[20]

Endorsing this principle, many argue, would be the first and foremost pillar that guarantees that the Internet remains "open", *i.e.* an environment in which end users can access any content, anytime, anywhere and from any device without being inspected or manipulated by their ISPs. This, in turn, is said to be an essential precondition for the Internet to allow freedom of expression and pluralism: not only could the possibility of shaping or blocking traffic lead ISPs to place applications that do not have enough resources to acquire minimum, guaranteed quality of service in a "dirt track"; but the possibility of inspecting packets of data might also offer an easy opportunity to exercise censorship and jeopardize the extraordinary potential of the Internet as a means of enhancing democracy. Following these considerations, countries such as the Netherlands, France, Slovenia and – to a more limited extent – the United States have adopted legislation that seeks to carve in stone the principle of net neutrality, thus making it almost impossible for a network operator to manage traffic on its own infrastructure. However, other countries (e.g. the UK) have taken a completely different approach, claiming that the creation of "toll lanes" (termed specialized services) on the Internet might provide ISPs with an opportunity to monetize their investment in new, high-speed networks.

2.2.1. Net neutrality in the Connected Continent: five syndromes to be avoided

In this fragmented regulatory scenario, the European Commission has proposed a rule that seeks to strike a balance between these opposing stances. On the one hand, the Connected Continent package recognizes that net neutrality is "what keeps the Internet open", and as such should be the default principle for all ISPs in the EU28. On the other hand, however, the proposed rule leaves the door open to the creation of "specialized services" through agreements between ISPs and application/content providers, on the

[20] Andrea Renda, *Neutrality and Diversity in the Internet Ecosystem*, 19 August 2010, http://ssrn.com/abstract=1680446.

condition that such services "do not disrupt the open Internet". This, in turn, means that national regulators should monitor Internet traffic and enforce remedies whenever they see that ISPs are degrading the level of service for the end users on the "open Internet" below a certain level of quality.

With the exception of some neutrality "extremists", who do not recognize any merit in the creation of specialized services, to the majority of commentators the proposal looks balanced and commendable. The European Parliament's IMCO committee, though replacing net neutrality with a reference to the "open Internet", is also essentially in line with the Commission's approach.[21] However, the proposal raises a number of concerns, which will have to be fully addressed at the adoption stage, if it is to generate any benefit for European netsurfers. These concerns are addressed below, by referring to four "syndromes", which we call the "'legislate first, then think' syndrome", the "Galileo syndrome", the "Trabant syndrome" and the "keys and lamp post" syndrome.

Syndrome n. 1: "legislate first, then think"

Good regulatory practice requires that legislators think about the ease of implementation of proposed rules before deciding whether to adopt them. Pity that this practice is very seldom followed in Brussels, also due to the fact that implementation, enforcement and compliance take place at a much later stage and under the competence of national authorities, rather than EU institutions. Accordingly, it is often the case that rules conceived as theoretically optimal in Brussels become very impractical when interpreted and implemented.

The existing EU rules on net neutrality, included in 2009 in the amended Universal Service Obligations (USO) Directive at Articles 20 and 22, are a good example of close-to-inapplicable provisions. First, Art. 20 of the USO Directive mandates that network operators that manage traffic should inform end users in a transparent way of the practices they adopt, so that users can make an informed choice when deciding whether to subscribe. Howe-

[21] European Parliament, ITRE committee, *Draft Report on the proposal for a regulation of the European Parliament and of the Council laying down measures concerning the European single market for electronic communications and to achieve a Connected Continent …*, 14 November 2013, http://www.europarl.europa.eu/sides/getDoc.do?type=COMPARL&mode=XML&language=EN&reference=PE522.762

ver, the rule says nothing about the way in which consumers will be informed: a thick manual of traffic shaping practices drafted by the company's engineers would probably not help the average end user very much. Economists have argued since the 1960s that consumers cannot be asked to gain full information about the specifics of a given service (George Stigler argued back in 1961 that "rational ignorance" is to be expected in these cases);[22] accordingly, a synthetic, easy-to-grasp way of signalling the amount and type of restrictions or shaping that occurs in a given network should be elaborated and offered to consumers in the form of a "traffic lights" system or something similar. Legislators have not thought about this, nor has the industry come up with a proposal, and the rule has remained almost unapplied to date.

Even more importantly, Article 22 USO introduced the possibility for national regulators to intervene and imposed a "minimum quality of service" level in case the quality of certain applications became unacceptable for end users, arguably due to traffic management practices. Actually, this rule is the predecessor of the current proposal to empower regulators to intervene whenever specialized services 'significantly impair' the functioning of the "open Internet". But what does 'significantly impair' mean? And what does it mean to reduce the quality of service to an unacceptable level? Quality of service inevitably means something different for different services and for different users. Since the speed and quality of delivery depends on the congestion found by the packets of data on the network, quality will also change across the territory and will differ at any given moment in time in different areas, neighbourhoods, buildings. How can the national regulator patrol the Internet and provide an instant interpretation of all cases in which a given service has become too slow or low-quality for the end users? And what is the threshold of speed and quality that should be applied?

In a nutshell, the existing rules are impractical and the newly proposed rule will face even bigger problems of implementation, interpretation, discretion at local level, further fragmenting regulatory approaches in the single market. This despite the fact that the Connected Continent package aims at further strengthening the Single Market. Therefore, a key issue has to be addressed by the EU institutions in charge of the dossier: since the current rules on net neutrality are almost impossible to apply, how can the problem be

[22] George J. Stigler, "The Economics of Information", in *The Journal of Political Economy*, Vol. 69, No. 3 (June 1961), p. 213-225.

fixed before they adopt the new proposal on specialized services?

Syndrome n. 2 ("Galileo syndrome"): you build the pipes, they call the tune?

A few years ago, in 2007, the European Parliament had to cast a dramatic vote in a highly tense session dedicated to the Galileo project, aimed at creating a satellite system that would support EU communications (the so-called "European GPS"). The Parliament's vote was aimed at deciding whether the amount of public funding devoted to Galileo could be tripled with respect to the original budget – this meant an additional €2.4 billion. What had happened? The story, in short, is that the private sector had initially declared its interest in joining the huge new project, aiming to develop enticing commercial services for consumers and secure long-term contracts for military applications. However, the European Commission then informed them that, at least initially, no commercial services or military applications were envisaged, only civilian use – hence their decision to withdraw ... and the need for further funding.

The Galileo syndrome reminds us of the tendency of EU policymakers to assume that private players will do things just because they have the responsibility to do them, and not because certain investments are good business. Similarly, the debate on net neutrality and, more generally, on the EU Digital Agenda has often taken investment incentives for granted. But the contrary is true, the EU is currently in a profound *impasse* as concerns the deployment of new, high-speed, high-capacity broadband infrastructure, be it fixed or wireless: this has been caused mostly by the application to the broadband world of a rule conceived for narrowband telecoms (mandatory sharing of the network infrastructure with new entrants), *before* the infrastructure was actually built. Today, Europe finds itself with very limited coverage of very high-speed broadband, and with the need to provide telecommunications operators with some incentives to put optical fibre networks, as well as 4G wireless networks in the right spectrum frequencies in place.

Faced with this emergency situation, the Commission has turned to its net neutrality proposal as one of the only opportunities left for some monetization of the upcoming investments in optical fibre. The rationale is easy to understand: if internet providers know that they will be able to charge application providers for quality of service when setting up so-called "specialized services", then they will be able to count on an additional source

of revenue, and might decide to deploy high-speed broadband. Otherwise, full net neutrality will leave the EU with a dilemma: whether to build networks, share them with new entrants at regulated prices and make them available for free to application providers that compete with them in some services (SMS, voice calls); or to leave things as they stand, and enjoy the current situation a bit longer. What would you choose?

Syndrome n. 3 ("Trabant syndrome"): is standardization synonymous with democracy?

Another problem that has emerged in the net neutrality debate in Brussels is the tendency to equate neutrality and democracy with standardization of services. From consumer organizations to members of the European Parliament, the temptation to advertise a fully "open" and "neutral" Internet as something that would serve the interest of the end users seems too strong to resist. The underlying idea is that, if bits are not discriminated on the Internet, end users will have the possibility to access all services and content they wish, through any device, anywhere, any time. Under current conditions, this assumption is heroic at best. In fact, a fully standardized, neutral, unmanaged Internet would serve users' interests in the same way that the grey "Trabant" served consumer preferences in Eastern Germany under the Communist regime. Since no one should be discriminated against, let's give everyone a bad, affordable car, with no possibility of upgrading.

The absence of traffic management on the Internet and the absence of specialized services in the future means that all traffic, regardless of its need for timely delivery, will be held up in the same traffic jam. It also means that consumers that wish to use the internet for very light applications (e.g. social networking) will subsidize heavy Internet users, since there is no possibility of charging more for bandwidth-intensive uses. And it also means that some services – from remote health monitoring to IPTV – will never take off due to the impossibility of guaranteeing any minimum quality of service. Quality will always depend on how much traffic there is on the information superhighway: no toll lanes, no guaranteed arrival time. How does that sound?

One potential counter-argument is that even with neutrality obligations for ISPs, the Internet will remain an extraordinarily lively playground in which application and content providers will manage to engage in product differentiation for the benefit of the end users. This issue will be looked at in the next section.

Syndrome n. 4 ("keys and lamp post syndrome"): what about other layers of the Internet?

A recurrent fallacy occurs when policymakers craft legal rules without adopting a holistic, comprehensive view of the problem. This brings to mind the man who was found looking for his car keys under a lamp post at night: when they asked him whether he had lost his car keys near the lamp post, he replied "no, but this is the only place where there's some light!".

If the ultimate problem that would trigger mandatory net neutrality obligations is that end users are entitled to non-manipulated content and non-filtered applications, then policymakers should realize that the real restrictions to applications and content take place at higher layers of the Internet architecture, where platform competition leads to reductions of interoperability, most often to the benefit of the end user. For example, applications for Apple's iOS do not run on the Android ecosystem, and both platforms do not communicate with Windows. Apple has long refused to accept Adobe Flash applications out of security and quality concerns: this means that Apple users do not have access to a number of applications powered by Flash. In a nutshell, the application layer of the Internet is increasingly non-neutral: a recent paper co-authored by one of the inventors of the internet, David Clarke, shows clearly that the architecture of the "network of networks" has become a conglomerate of sometimes open, sometimes proprietary platforms that are interlinked. Almost the opposite of neutrality. Is this a problem? Not necessarily, since the possibility to fence off, at least partly, one's own ecosystem just provides more incentives to invest in new platforms. Imposing neutrality and interoperability obligations on, say, Apple will probably be welfare-reducing for consumers in the long run. Is this a problem for innovation and entry of new players (the so-called "next Facebook" argument)? Again, no: the current rhetoric in Brussels is that only the open Internet will facilitate entry for European start-ups; but in reality, some of the most successful start-ups of the past years in Europe – for example, Rovio entertainment – have found their way to consumers through Apple's App Store, not exactly the open internet. All this because it is in the interest of large platform operators to exploit indirect network externalities and provide their end users with the largest possible variety of applications and content.

A similar logic can be applied to search engines, an area in which the European Commission seems determined to impose new forms of neutrality. The current Google antitrust

investigation is leading the giant IT company to propose new ways of showing results to the end users, which are apparently more "neutral" and echo the rather unfortunate "ballot screen" imposed on Microsoft a few years ago after the "Opera" investigation by the European Commission. Without entering into the merits of the Google investigation (this will soon be the subject of another piece), what stands out as the "elephant in the room" is that a neutral search engine is not going to be very useful for the end users. The fact that on the Internet "a wealth of information creates a poverty of attention"[23] determines the success of those companies which, like Google, can retrieve results that match the needs of its end users: forcing Google to behave "neutrally" would mean asking the company to significantly worsen its product, to the benefit of nobody in the long run. Another case in which the "Trabant syndrome" is likely to surface.

Syndrome n. 5 ("Stockholm syndrome"): I love my captor!

The debate on net neutrality started in the United States after the *Madison River* decision by the Federal Communication Commission (FCC) and rapidly became an epochal battle to defend the rights of the end users to access all content and – the flip side of the coin – not to be censored on the Web. The Dynamic Coalition for Net Neutrality, recently created at the Internet Governance Forum in Bali, approaches the neutrality problem from a fundamental rights perspective, defining neutrality as a key driver of freedom of expression. This is certainly a powerful argument: a "dumb" network is one in which no one can inspect and block communications on the basis of their content, and as a result no one can block "undesired" content. Not surprisingly, many governments around the world that exercise censorship on a daily basis (China, Iran, Pakistan, and many others) would not want to see this form of neutrality endorsed at the international level, and this explains many of their attempts to increase government control of Internet governance (including, most notably, the proposals filed by Russia, China and other countries at the World Conference on International Telecommunications (WCIT) conference in Bali a year ago).

So far, so good: but is this really what the Commission proposal on net neutrality is endorsing? Actually, it looks as though the Commission is proposing quite a different measure. It is as if the end users were told "since we want to make sure that no one controls you and

[23] Herbert A. Simon, "Designing Organizations for an Information-Rich World", in Martin Greenberger (ed.), *Computers, Communication, and the Public Interest*, Baltimore, The Johns Hopkins Press, 1971, p. 40.

discriminates against you, we will watch you constantly, every day, every minute, and will inspect all communications that flow to and from your IP address, so that – should quality fall below certain levels – national regulators will immediately intervene". How aligned with the original sentiments towards net neutrality is this approach?

The proposal would create a huge monitoring system for Internet traffic: in the Datagate era, it is ironic to see neutrality advocates support a proposal that enables even more patrolling of what end users do. As a result, the debate boils down to an uneasy choice: either ISPs will inspect you or public authorities will – the same public authorities that have spied you and e-tapped you for years, while defending net neutrality in international fora. Have we end users fallen in love with our captors, or what?

2.3. Tragic choices: Connected Continent and the dynamic nature of the Internet

As clarified above, it is both meaningless and impossible to discuss the proposed rule on net neutrality without considering the broader picture of the development of the Internet ecosystem in the EU, and the ease (or lack of it) of implementation of the rule. First, the Internet has become a complex jumble of various types of infrastructures and platforms that operate across the original architecture of the network of networks, and often violate the original principle of separation of layers.[24] The more complex and rich the Internet ecosystem becomes, the more end users seem to feel the need for someone who guides them through the Web – hence the role played by gatekeepers and platform operators, who normally violate the principle of neutrality extensively on their platforms, most often to the benefit of the end users. This new ecosystem is key to the future of our economies: the more we delegate key daily activities to the "connected infrastructure" (think about cloud computing, or smart cities), the more we need that infrastructure to be in place, always on, resilient and reliable. This calls for urgent action to stimulate the deployment of infrastructure in Europe.

However, current data are not very encouraging: not only does the deployment of high-speed fixed broadband seem to be too slow to meet the targets of the Digital Agenda,

[24] K.C. Claffy and David D. Clark, "Platform Models for Sustainable Internet Regulation", Paper presented at the *TPRC 41: The 41st Research Conference on Communication, Information and Internet Policy*, Arlington, 17-19 September 2013, http://ssrn.com/abstract=2242600.

but revenues are declining steeply for EU telecoms operators, with an expected 10% reduction despite a projected 900% increase in Internet traffic in the 2006-2016 decade.[25] And also in the mobile sector, which will be a key driver of growth in the years to come, Europe is doing badly thanks to a killer mix of uncoordinated spectrum policy and lack of clarity and certainty as regards neutrality. According to a recent study by CTIA,[26] "the level of wireless capital expenditures in the US grew more than 70% between 2007 and 2013, while it declined in the EU": the difference in spending was such that by the end of 2013, "nearly 20% of US connections will be on 4G (LTE) networks compared to less than 2% in the EU". The gap in the speed of connection is already huge (US users surf at double the speed of EU ones) and likely to widen in the coming years. And almost ironically, in the US, mobile prices are declining sharply and the average revenue per minute is less than a third of the European average. As a result, between 2007 and 2011, the US wireless industry gained almost 1.6 million new jobs while total US private sector jobs fell by 5.3 million.

Against this background, net neutrality seems to have become one of the only solutions left for Europe to trigger investment in new infrastructure without fully repealing its telecoms package, and avoiding a fight with Member States on a fully centralized, and more dynamic, spectrum policy for mobile telephony. However, it is unlikely that the proposed rule will be easily applicable in practice, nor does it seem to be a suitable way to achieve the long-awaited single market for telecoms.[27] Hence, back to square one: how do we ensure that Europe gets back on track with broadband and, as a result, restores one of the key building blocks of future competitiveness?

To be sure, the answer cannot rely only on the trade-off between a largely inapplicable net diversity rule and a largely undesirable (if coupled with access policy) net neutrality rule. At the same time, the answer cannot rely only on competition law, and in particular on what Art. 102 TFEU prescribes in terms of abuse of dominance: the "anticompetitive foreclosure" test currently applied by DG COMP to exclusionary abuses is very difficult to interpret and apply to the blocking, or degrading of the quality of, applications and content. Thus, ironically enough, perhaps the main (if not only) virtue of a mandatory net neutrality rule is that it provides more clarity and certainty than any net diversity rule coupled with extensive monitoring and patrolling of QoS on the Internet.

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25 European Commission data, https://ec.europa.eu/digital-agenda/en/scoreboard.

26 CTIA, *The U.S. Wireless Industry: Leading the World in Investment, Value, Innovation, and Competition*, November 2013, http://www.ctia.org/docs/default-source/default-document-library/statistics.pdf.

27 Jacques Pelkmans and Andrea Renda, "Single eComms Market? No Such thing...", cit.

Faced with this *impasse*, the EU should attempt to shift gear by adopting a number of new, courageous initiatives. First, the EU should launch a "grand project" on infrastructure, aiming at enhanced integration among important players in the fixed and wireless sectors in Europe, and between them and other utilities (e.g. electricity companies, in view of the deployment of smart grids): this move should be coupled with a more flexible approach to wholesale access, with high-speed broadband being potentially exempt if the company respects basic norms of fairness in pricing and activism in new investment. This "grand project" could be launched explicitly during the upcoming mid-term review of the Europe 2020 strategy, together with other two large initiatives on education and employment (this issue will be returned to in a future essay). Second, giving priority to infrastructure also means that EU budget resources and national funds should be reoriented towards infrastructure to a large extent. Third, the EU should multiply efforts to convince Member States that the allocation of spectrum should be more centralized in certain bands (e.g. 700 MHz), and tightly coordinated in others (e.g. unlicensed spectrum for wi-fi): as already mentioned in past commentaries, a pan-European spectrum auction seems to be the only way for the EU to "erase and rewind" after a decade of unnecessary, systematic fragmentation of the wireless market, and move towards the creation of strong, pan-European mobile operators that can negotiate more balanced conditions with giant mobile platform providers. Fourth, a list of reasonable traffic management and data management practices should be developed in cooperation with industry and in alignment with US rules (this is likely to become a hot issue during the TTIP negotiations): we cannot afford keeping divergent rules in the age of global Internet and emerging new platforms. Fifth, the creation of separate networks that do not rely on the global Internet should be made possible (along the lines of the "Comcast" model in the US), subject to clear competition rules. Sixth, the application of competition rules and the interpretation of the concept of neutrality in cyberspace should be clarified through a joint communication of DG COMP and DG CONNECT, subject to extensive consultation – otherwise, the net neutrality investigation and the Google investigation might end up leaving the whole Internet ecosystem in a state of uncertainty: internet providers, cloud providers, search providers, OS developers, should they succeed on the market, will not know whether a public authority is going to come knocking at their door with heavy requests concerning their business model. Finally, ISPs should simply be made responsible for guaranteeing the speed they advertise, users should be empowered with measurement tools, and in case of gross, systematic deviation from the promised speed, they should be given speedy online redress.

These rules, all together and coupled with a pro-active approach to skills and employment, might lead Europe back on track in the global competitiveness race and will provide the Internet ecosystem with a long-awaited sense of legal certainty. At the same time, this approach does not require either intensive monitoring and straight-jacketing of the Internet, or acrobatic efforts to inform consumers of the throttling measures in a given network. To be sure, cyberspace will remain the domain of diversity – but this privilege will be left to those layers that have shown to be much less stable and more transient in the past years than the more stable infrastructure layer.

2.4. Beyond the telecoms package: how growth-friendly is the EU acquis?

Beyond the rigidity of the e-communications framework, other parts of the EU *acquis* are still insufficiently geared towards growth and investment. These include the following:

- *Competition policy, even when applied in toto and ex post, still maintains a rather "structuralist" approach*, aimed at preserving a reasonable number of competitors in the market, rather than privileging the intensity of competition or the achievement of an efficient market structure. ICT markets often display features of "Schumpeterian", dynamic competition, in which the optimal number of competitors at any given moment in time is limited. Market players in this field often compete aggressively to become "one generation monopolists". If they know that they will have to share the prize with their competitors anyway, if they win the game, then why compete in the first place? This aspect of competition policy, which emerges in particular for single-firm allegedly exclusionary abuses such as refusal to deal or tying, could stifle the emergence of a sound, welfare-enhancing platform competition in cyberspace – indeed, this is where most of the future innovation will come from.
- *Intellectual property protection and data protection are still largely fragmented*. On this aspect, the European Union is trying to act swiftly to avoid fragmentation, but the current situation still creates significant uncertainty for market players, especially as concerns copyright licensing and patent litigation. In addition, the absence of mutually recognized rules on online data protection is a potential obstacle for all those non-EU companies that wish to invest in the EU as a part of a more global strategy.
- *Net neutrality was largely ignored until 2009*, when it became the hottest item on the table during the last months of the review of the e-communications package. To-

day, Member States still have very different stances on how to balance the need for services with a neutral internet. Even the European Commission and the European parliament have diverging views. This is regrettable, also because the European Commission seems to have developed a very balanced view of the problem in the past few years: a view that allows the creation of managed, guaranteed QoS services, but at the same time requires that a robust 'best effort' internet be preserved, with its end-to-end architecture constituting a guarantee of freedom and democracy.

- More generally, *Europe is still trapped in an innovation emergency*, which partly depends on the difficult governance of innovation policy at the EU level, the absence of adequate rules on university-industry technology transfer, an under-developed venture capital market and cultural factors that make European SMEs very reluctant to engage in high risk/high reward projects.
- Partly also due to the failure of the e-communications framework in promoting investment, *Europe cannot count on a world class broadband infrastructure today*. Instead, this, together with adequate legal rules, resilient electricity networks and education forms the core endowment of countries that attract investment today. Especially in the era of global value chains, large firms relocate most of the phases of the supply chains to save costs: Europe, in this respect, is becoming more of an "assembling" region than a producing one.[28]

There are now numerous signs of EU institutions' readiness to rethink some of the past policies that have proven not growth-friendly, also in response to the economic downturn and the relative ineffectiveness of austerity policies. For example, in the past year the European Commission has been working on a proposal to modernize state aid rules in a more growth-friendly way. Likewise, a Communication on industrial policy was released by the European Commission in October last year, with a key focus on supporting the competitiveness of select EU industrial sectors. Accordingly, it came as no surprise that the Digital Agenda, perhaps the most promising area of the Europe 2020 strategy in terms of potential contribution to GDP, has also been increasingly focusing on the identification of reforms, or in some cases radical rethinks of existing policies that might bring Europe in line with both a growth trend and sound economics.

[28] See Andrea Renda, "Globalization, the New Geography of Power, and EU's Policy Response", cit.

3. Scenarios for future action

The last section explored the fundamentals of the emerging debate on rethinking ICT policy in Europe. That debate is still very confused, however, and lacks a holistic approach to attracting investment to the ICT ecosystem. This section outlines an agenda with an incremental approach for making Europe a place to invest in ICT. Accordingly, Section 2.1 below discusses some "quick fixes" to the telecoms package, whereas Section 2.2 considers more ambitious reforms that would lead to harnessing the ICT ecosystems' potential to bring Europe back on the road to recovery and leadership at the global level.

3.1. Quick fixes: reforming the telecoms package

Knowing the rigidities of the EU policymaking process, it is not easy to imagine a way out of the current *impasse* that completely departs from the current regulatory framework. It is, in other words, more practical and realistic to think of some kind of evolution of the current framework, rather than (only) a revolution. At a minimum, there is a need for simplification and fuller application of smart regulation principles in the e-communications framework. This would include the following measures:

- *Introducing a general obligation of ex ante impact assessment of regulatory decisions*. One of the reasons why this should happen is that certain shortcuts in the regulatory framework (such as the limited use of the three criteria test) were more justified when the regulatory framework was in its infancy, and NRAs had to experiment with new tools such as market definition and SMP. Today, this is no longer the case, and transparency and accountability in public regulation should be restored fully. This requires, *i.e.* that NRAs also justify the proportionality of the remedies they propose, assess them on an incremental basis (from the least intrusive to the most heavy-handed) and provide a reasoned justification for the adoption of their preferred remedy, possibly on the basis of a cost-benefit analysis. This simply means that NRAs should be bound to a transparent analysis of the likely effects of their decisions to regulate a given relevant market: if they cannot convincingly prove that *ex ante* regulation would be preferable to the application of *ex post* competition law, then they should not be allowed to regulate. The decision on how "convincing" the analysis is should be left up to the

European Commission under the "Art. 7 procedure", which gives the Commission a veto power on market analysis and the findings of SMP. In other words, the European Commission should behave *vis à vis* NRAs like the Impact Assessment Board does with the Commission DGs (or better, like the OIRA does with federal agencies in the United States): as an adversarial gatekeeper in charge of ensuring that the sector is regulated ex ante only when needed, and in a way that is proportionate to the ultimate goal of promoting consumer welfare. This requires little or no change in the architecture of the framework, but a major shift in the way the European Commission advises and controls NRAs in the implementation of the framework (see below, next bullet point).

- *Further simplify the list of relevant markets*, and replace it with reasoned guidance to NRAs on how to approach competition analysis in the ICT ecosystem, looking at all layers including infrastructure, as well as logical, application and content layers. This does not mean that NRAs will not be able to regulate anymore, but simply that the market analysis performed by NRAs should start from available consumer choices in the geographic market considered, where choices are related to the bundles of products offered to consumers and related price levels. The first observation should thus be related to the retail markets, and in particular to whether retail competition between fixed, wireless, cable and other types of bundled offers is such that no player can effectively behave independently of competitors. At the same time, NRAs should be asked to evaluate whether market power at higher layers (in particular, the application layer) is such that even large infrastructure-based players cannot effectively behave independently of their app providers.[29] Finally, only when the market analysis suggests that the market is not sufficiently competitive in terms of effective consumer choice, and that such level of competition will not increase over time due to the competitive dynamics of the market, might NRAs proceed to a cost-benefit analysis of a range of remedies, starting with the least intrusive and then choosing the remedy that features the best cost/benefit ratio, or extent of net benefits. Remedies should also be limited in time, and coupled with review clauses, so that their effectiveness can be monitored and reviewed over time.

[29] See for a more detailed explanation, Andrea Renda, *Neutrality and Diversity in the Internet Ecosystem*, cit.

3.2. More ambitious actions

The reforms outlined above – both relative to the e-communications framework and the Single Market dimension – are both too controversial (especially the rule on emerging markets and the centralization of spectrum) and too limited in scope to bring Europe back on track. Internal conflicts within the European Commission (in particular, between the three DGs: CONNECT, COMP and MARKT) are likely to hamper even these reforms. However, the EU would need to go beyond them and approach more aggressively the issue of creating a single market in which competition at the application and content layers can flourish. Such a more pro-active approach might entail the following reforms:

Fixed broadband:

- *Speed up the deployment of super high-speed networks* through public funding, with the help of public-private partnerships and public-public projects between the European Investment Bank and national, regional or municipal governments. This would mark a substantial change with respect to what happened recently during approval of the EU budget, when the initial budget allocation to the Connecting Europe Facility was significantly narrowed down.
- *Trigger consolidation by promoting mandatory network sharing arrangements among facilities-based operators, based on reciprocity, in areas where no facilities-based competition can be envisaged*. This would mean that facilities-based European operators would be able to strike agreements to offer each other access to their networks at non-discriminatory conditions in their respective countries of origin. However, the long-term impact of this proposal would need to be carefully addressed, especially as concerns the likelihood that prices are kept artificially high due to the multi-market contacts that the pan-European competitors would be able to count on, which might trigger non-aggression deals at local level. Also, this would mean that all operators that do not own sufficient facilities would either remain pure local resellers, be acquired by larger players, or simply disappear from the market. As a result, mandatory network sharing agreements should be limited to those (normally remote) areas in which no room for more than one fixed network can be envisaged.
- *Promote the creation and development of multi-utility pan-European companies*. These would be able to offer services in the future competitive race in which electricity com-

panies, IT companies, media companies and "app giants" are expected to start selling bundles of "home services" that include energy consumption packages, broadband connectivity packages and value added services that run on top of the infrastructure. Without consolidation at the infrastructure layer, this field is likely to be dominated by non-EU IT giants in the not-so-distant future.

Wireless broadband:

- *Centralize the management of spectrum through a pan-European agency*. The illusion of the end of ex ante regulation – which led many commentators to reject the proposal to create a pan-European regulatory authority in 2001 and then again in 2007-09 – is clearly a mirage today, as it has become clear that the evolution of broadband markets will require increasingly "smart" regulation, not no regulation. That said, a pan-European agency for spectrum would be able to manage the upcoming spectrum auctions more effectively, securing coordination and harmonization of the auction rules, less dependence on local political powers, and possibly the design and launching of pan-European spectrum auctions (see below, next point).
- *A big bang auction for 4G-5G spectrum*. The opening up of the 800MHz band, still to be achieved in at least 10 countries despite the expiry of the 1 January 2013 deadline, is a necessary but not sufficient condition for the roll-out of effective wireless broadband. The European Commission, or a future EU spectrum agency, should work in the direction of designing and launching a pan-European spectrum auction in the 700MHz band. The auction should be announced with ample notice and designed in a way that will lead to the availability of at least two wireless broadband operators for every portion of territory of the EU28. This would be a "big bang" approach to trigger industry consolidation where the sector needs it most – in mobile broadband. Consolidation of players would also mean better possibilities for EU operators to negotiate their conditions with global application layer giants such as Google and Apple when offering their platforms to the end users. And again, national competition authorities and DG COMP should remain vigilant that such consolidation creates a suitable market structure without leading to either re-monopolization of markets, or simply a pan-European cartel.

4. Towards a more united and effective Europe: is digital infrastructure the next "EU grand project"?

The previous sections have explored several angles of the "infrastructure emergency" that Europe is currently experiencing, with specific respect to the digital infrastructure. In the future, a number of scenarios can be envisaged, which correspond to different degrees of centralization and different levels of effectiveness, with regard to Europe's potential to get back on a growth path. Below, four different scenarios are distinguished:
1) a "**baseline scenario**" with small adjustments to the regulatory framework;
2) a "**harmonization scenario**" in which competences for e-communications and internet policy are increasingly centralized, but the overall approach to regulation remains unaltered;
3) a "**harmonization plus scenario**", in which harmonization is coupled with industry consolidation at the infrastructure layer of the Internet (both fixed and mobile); and
4) a "**convergence scenario**" in which the regulatory framework for utilities and telecom companies is merged into a single, infrastructure "grand project" for Europe, which becomes the beginning of a completely new approach to regulation.

The baseline scenario entails that the competences remain allocated as they currently are between the European Commission and NRAs: the former sets the rules and scrutinizes market analyses provided by NRAs; the latter remain in charge of market analysis and the selection of remedies. NRAs also monitor quality of service on the Internet and impose minimum QoS whenever certain services are degraded or too slow for the end users to fully enjoy them. Spectrum policy remains essentially a national prerogative, with the only exception being the (loose) coordination required in certain bands by the RSPP and the Connected Continent package, such as the 700Mhz and 800Mhz. But here Member States still decide on the modes of allocation (beauty contest, auction), the timing and the design of the relevant rules. Investment in broadband is stimulated by the "less digging" draft regulation presented in March 2013 by the Commission. Net neutrality would be based on the current compromise proposed by the Commission between the open Internet and specialized services.

Under this scenario, incentives to deploy high-speed broadband are likely to remain very weak in Europe. Network operators would still face the double dilemma they face today: why invest if new networks will have to be shared with new entrants at (rather low) regulated prices? And why set up high-speed broadband to then see their end users switch over to top players such as Skype, Whatsapp or others? Uncertainty over specialized services would make things worse, with welfare-enhancing agreements between content providers and ISPs being jeopardized by the uncertainty of the regulatory approach that would be adopted by NRAs under the guidance and coordination of BEREC.

Compared to the baseline, the harmonization scenario seems to provide both benefits and costs: most notably, this scenario requires centralization of power over remedies chosen by NRAs and potentially the creation of the long-debated pan-European regulator for e-communications. This, in turn, would mean creating a new, permanent body in charge of an activity that was originally conceived as transient in 2002, when the telecom package was finally adopted. Importantly, this scenario would not be sufficient to trigger the industry consolidation that many commentators now consider essential if Europe wants to move in the direction of a prosperous Single Market. The "harmonization plus" scenario could lead to greater benefits in this respect, especially if pan-European allocation of spectrum is envisaged – the auction instrument could be useful as a "big bang" to trigger consolidation in the short term, moving from several hundreds to a much lower number of players in the EU wireless sector and attracting investment also from large non-EU companies.

As explained in this paper, without a significant change of direction, the EU will not be able to compete at the global level in the future, given the importance of ICT and the increased prominence of the Internet ecosystem as an engine of economic growth, social sustainability and environmental benefits. The "convergence scenario" – certainly the most ambitious of the ones presented here – might become the right move forward for the EU institutions: this requires that access policy be abandoned at the sectoral level (electricity, gas, telecoms) – at least in rural and remote areas – and wholesale access offered to players that wish to create a multi-utility converged model. Access to the converged infrastructure should then become possible for all application layer operators that wish to develop value-added services on the converged infrastructure – these will include, besides the current applications for Internet and mobile platforms, also home automation and M2M services.

It must be recalled that any rule that is discussed in Brussels today will enter into force, reasonably, in 2017-18. Infrastructures might have converged a lot more by then, unless incumbent operators in the electricity and telecoms markets succeed in crystallizing their market position (enviable, in particular, for utilities such as DSOs in electricity) to avoid changing their business models and potentially facing new competitive constraints. The current debate on smart grids in Brussels shows worrying signs of stalemate, due precisely to the regulatory uncertainty associated with the future of converged infrastructure.

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Imagining Europe

As the unprecedented financial crisis and ensuing economic recession push Europe to the brink, a critical question arises as to what the foreseeable trajectories for EU governance are in the decades ahead. The crisis has already accelerated EU policy and institutional evolution in key policy areas, but the integration project remains torn apart by centrifugal political and economic forces. The "Imagining Europe" series aims at delineating what kind of governance models the EU could head towards, and which of these models is best suited for the purpose of a more united, effective and legitimate EU. In particular, the research sheds light on the degree and nature of integration at the "core" of Europe and the relationship of that core with those member states (current and future) which opt to remain outside it. It does so by exploring five policy areas: fiscal and monetary policy, infrastructure and communications, security and defence, migration and citizenship, and energy and environment.