The EU Innovation Union

Executive Summary

This paper looks into the drivers of Innovation and identifies the factors which will increase Europe's Innovation capacity. The chain of elements where we need to outperform includes education and mobility, research and development, venture capital, strong and accessible IP protection for inventions, excellence in standardization, demand for the consumption of innovative products and services enhanced through trust, security and a more integrated European marketplace. The paper provides some insight into Nokia's own innovation-related activities, including actions to increase innovation in its surroundings by offering unused patents to SMEs for exploitation and strategies to maintain the innovation capacity in the regions that host Nokia activities even at difficult times when business needs to be scaled down or sites closed.

Europe will have a role to play in the world of tomorrow if we manage to keep our economic strength. Being competitive is a determining factor for creating wealth, maintaining our social model and the stability of our societies. The engine of our competitiveness is our Innovation capacity. Europe will only be able to build upon its success stories of the past – a prominent one being the transformation of Nokia into a successful global player in a core, future-oriented business area - if our political leadership manages to set the right course. Those deciding what we spend our money on and how we adapt our legal and regulatory system to the new realities will have to be open-minded, flexible, and swift to bring about the fundamental changes we need in Europe in order to enhance our Innovation capacity.

Actions focusing on what can be achieved at EU level in the area of **education** need to include the development of joint school/university/industry curricula in future-oriented science areas while stimulating creativity and entrepreneurship, further internationalization of education through EU funding and university co-operation and the promotion of a joint EU/MS career guidance service online.

Concerning **research**, European R&D investments need to be increased to 3% of GDP and while the European Institute for Innovation and Technology needs more funding, also rapid launches of smaller and targeted R&D projects with fewer participants and less administrative burden need to be enabled. Reporting obligations of EU funded research projects need to be reduced and participants allowed to adapt project objectives and time horizons to their needs.

The proposals for a **unitary patent** and a European Patent Litigation System need to be brought to fruition but not without accommodating the needs of the user community.

Standardization needs to witness the launch of cross-sector initiatives based on systemic approaches and development of models, system concepts, functional components and standard roadmaps in key business areas.

The various obstacles to the creation of a single market for **venture capital** need to be removed. To advance the **(digital) single market**, a solid and harmonized EU framework for data protection, security and ISP liability should be developed and a test case should be launched in which businesses and consumers can agree to apply the country of origin principle online for all contractual obligations, allowing businesses immediate access to the Digital Single Market and consumers to benefit from improved offers and lower prices.

1. Introduction

It is Europe's Innovation Capacity which will ultimately decide the future of our continent. The ability to innovate and thus to reassert our position in the global market place with competitive products, services and business models will determine our prosperity and the sustainability of our social model in the years to come. Our innovation capacity will also be critical in finding solutions to help our planet cope with the environmental burden we place upon it. The quality of any society is largely determined by its capacity to generate genuine learning, work together, produce new visionary knowledge and innovate.[1]

This has been recognized by our political leadership. Though we did not have a clear Innovation strategy in place in Europe until very recently, the issue is now receiving attention from EU Heads of State and the Leadership of the EU Institutions. Underpinned by a sound research base[2] and political commitment, the EU Innovation Union is one of the seven pillars of the Europe 2020 Strategy and some supporting instruments are already in place – such as the European Institute of Innovation and Technology with its Knowledge and Innovation Communities (KICs)[3], The Competitiveness and Innovation Framework Programme (CIP), the first European Innovation Partnerships and the new Innovation Union Scoreboard – or are being developed – such as Horizon 2020, the future Framework Programme for Research and Innovation.

We believe that the importance and urgency of making Europe more innovative have been understood conceptually. However, it remains uncertain as to whether the proposed EU Innovation Union actions are enough to put Europe back on track for an innovative and competitive future. More importantly, is there a strong enough central political leadership in the EU and consensus on the individual political decisions which need to be taken and the legislative acts which need to be adopted?

This paper aims at explaining what Innovation is really about. It looks at the main parameters which influence Europe's Innovation capacity, some of which need urgent reform. It identifies the areas where Europe is still in stalemate despite many good intentions. The purpose of this paper is to secure broad political support for the detailed policy measures which need to be adopted. We believe that Nokia has a contribution to make to the political debate and the implementation of Europe's Innovation Strategy and, as a highly innovative European company, are willing to share our own experiences.

1 'Aalto University – the forerunner of European University Reform to increase Societal Impact' in Service Innovation Yearbook 2010–2011
2 The Lisbon Council: An Action Plan for Europe 2020, The Reflection Group on the Future of the EU 2030: Project Europe 2030, The Policy Report on the Evaluation of the Finnish National Innovation System, The High-Level Expert Group June 2011 Report on Key Enabling Technologies, The Aho report on Creating an Innovative Europe, in addition to the reference documents under http://ec.europa.eu/enterprise/policies/innovation/documents/index_en.htm
3 EIT's Strategic Innovation Agenda (SIA) – Investing in Innovation Beyond 2014, June 2011

2. What is Innovation?

According to Collins, an Innovation[4] is 'something newly introduced, such as a new method or device' as opposed to an invention which is limited to the 'thinking up or creation of something new'. The important difference is characterised by the term 'introduced', i.e. the successful economic application of an idea, often by finding new ways of meeting or creating consumer needs.[5] Innovation is a process consisting of different stages, from generating an idea (over possibly conceptualization, design, engineering, financing, product development and potentially other stages) to the concrete commercialization/diffusion of the result in the marketplace.

According to the OECD there are essentially four types of innovation identified in the Oslo Manual[6] for measuring innovation: product innovation; process innovation; marketing innovation and organisational innovation. In industry and literature this differentiation is broadened further depending on whether the Innovation is non-commercial (cultural or social) or commercial and in the latter case whether it is implemented in products, services or the strategy of a company, whether it is a technology innovation or even a 'value innovation' leading to the creation of 'blue oceans' (new markets in which the first mover faces no competition at the beginning). Others would call the latter disruptive or radical innovation.[7] At macroeconomic level four types of Innovation are often distinguished: indigenous creation of new industry, transplantation of new industry, diversification of old industry into related new, and upgrading of mature industry. What also matters to modern innovators is to make a difference between traditional (atom-based) Innovation in hardware and bit-based Innovation. 'The Internet Innovation paradigm' goes even further by revolutionizing Innovation with the provision of nearly unlimited new tools, methods, increased speed and access and participation.

> *"When people talk about Innovation, it is not only about a new device or feature. It can also be about how you can get it to the customer much better than anyone else!"* said Robert Keusgen, Vodafone Key Account Manager on the occasion of granting Nokia the Vodafone Germany Best Supply Chain Award 2011 for Nokia's overall logistics performance and also the successful completion of an innovative pilot on 'vendor-managed-inventory', "a topic of highest importance" to Vodafone.

What is most important to look at is which parameters drive Innovation. A former Nokia employee and Manager of a Nokia Research Center has characterized the drivers of innovation with 'The nine Cs': Challenges, Changes, Convergence, Competition, Collaboration, Competencies, Curiosity, Creativity and Culture.[8] The sections of this paper confirm that these nine Cs need to be present to drive Innovation in Europe. The paper will also come to the conclusion that another C is vital: the Chances and opportunities to be successful in the market place. And this requires the development of a truly (Digital) Single Market in Europe which we have addressed in section 9 of this paper in a holistic manner and in sections 4–8 by looking at the most relevant specific aspects.

4 http://www.collinslanguage.com
5 Innovation – How Europe can take off – Contributions by John Kay and Helga Nowotny, The Centre for European Reform, July 2011
6 http://www.oecd.org/document/33/0,3746,en_26 49_34451_35595607_1_1_1_1,00.html
7 Evaluation of the Finnish National Innovation System, pg. 23
8 Donal O'Connell, Harvesting External Innovation, Gower Publishing 2011

3. Why is Innovation so important? And how can public policy stimulate Innovation?

On a macro-economic level, Innovation is a fundamental component and enabler of societal welfare.[9] Regarding the UK economy for instance, innovation was responsible for two-thirds of the UK's private-sector labour productivity between 2000 and 2007.[10]

The most desirable scenario would be for Europe to become more innovative – meaning that the innovation capacity and as an output the amount of innovations should increase in Europe – without too much (and unnecessary) direct public intervention. This needs, on one hand, public policy which sets an appropriate framework for innovations to occur naturally. (This is described in sections 4–10 of this paper).

On the other hand, in the narrow sense, Innovation policy could favour direct intervention, for instance through 'picking-the-winner' policies which focus on supporting companies with high growth potential or by choosing business areas in which a Government has decided to support major innovative breakthroughs (for instance by supporting horizontal clusters tasking them to develop standardized e-Health or e-Payment solutions). The latter policy is more difficult to design and has a much greater likelihood of being unsuccessful.[11] It should therefore be limited to areas of (innovation) market failure.[12] Also, at EU level, such policy must focus on large projects with a clear potential to result in societal gains, in particular productivity improvements.[13] When these two recommendations are taken together, it becomes clear that the current EU approach is the correct one in its main elements, which include the European Innovation Partnerships and reforming the public procurement systems. The focus of the EU approach is thus rightfully focusing mainly on the demand side – how markets can be encouraged to endorse and celebrate Innovation – and on large projects. Furthermore, tightening environmental regulation has promoted Innovation in the EU in the past (e.g. the RoHS Directive[14]) and will certainly continue to do so in the future.[15]

4. Education and mobility of people to create Innovation

Highly educated, creative, culturally diverse and entrepreneurial people are the engine of all innovations. The shift away from an industry-based working culture towards a knowledge- and innovation-based culture creates new job opportunities, but it requires new skills and competencies and investments in knowledge creation.[16] Skills shortages on the European labour markets are one of the main obstacles to economic growth in the EU and a severe bottleneck for new innovations and business creation.[17] The Europe 2020 Strategy rightfully addresses this key area by dedicating it a specific Flagship Initiative entitled 'Youth on the Move'. The European education systems need to provide society with the right competences to succeed in a globally networked economy. As recommended in the Commission's Communication, more and targeted investment is certainly

9 Evaluation of the Finnish National Innovation System, p. 24
10 NESTA Innovation Index Report 2009 p. 3
11 Evaluation of the Finnish National Innovation System, p. 31
12 Evaluation of the Finnish National Innovation System, p. 20 and 47
13 Evaluation of the Finnish National Innovation System, p. 9 ; what holds true for innovation policy at Member State level (–which is already high) is particularly relevant for the EU level.
14 http://ec.europa.eu/environment/waste/rohs_ eee/index_en.htm
15 See also the evaluation of the Finnish National Innovation System, p. 48

required at Member States level. This should encompass much higher investments into stimulating the intelligence of infants (1-3 year olds), the promotion of talented students, the avoidance of drop outs of pupils, improving study and career guidance services, teaching key competences for today's globalised knowledge economy and society (including communication – especially also in foreign languages, entrepreneurial skills and the ability to fully exploit the potential of ICT (including media literacy and source criticality) up to understanding of data structures/algorithms and delivering programming skills already at secondary education level[18]). Ultimately, a higher share of pupils should be convinced to strive toward higher education. Here again the question is what can and should be done at EU level? The most manifest and easy-to-implement recommendation would be for the European Commission to intensify the internationalisation of education (and learning through research) in the Member States by building upon the good results of EU funded programmes (such as Erasmus and Marie-Curie) and by expanding them. The Commission should also encourage European Universities to develop campuses in and close partnerships with universities in other key countries. Furthermore, an additional effort should be made to attract foreign talent by raising the prestige of the European educational system by supporting the development of a network of European Universities of Excellence (building upon existing initiatives such as the EIT label).

Other initiatives driven by the Commission or European Institutes - which at this stage do not require the often burdensome co-ordination and agreement process of the Member States should be pursued with more emphasis and should be increased in scope. A good example is the development of curricula to foster innovative and entrepreneurial skills by the educational institutions within the Knowledge and Innovation Communities (KICs). In this respect, one needs to learn from past experience: CAREERSPACE[19], an EU funded programme to develop curricula for students and engineers to match the employment needs of the European ICT industry was well intended but largely failed because there was not enough emphasis on the promotion, monitoring and measuring concerning the uptake and implementation of results, i.e. the endorsement and utilisation of the curricula guidelines by the educational sector. The Commission needs to be wary and open to improvements: while the targets of the KIC's are well oriented towards the improvement of European innovations, their success cannot yet be evaluated. The KIC's seems to suffer from the same difficulties as other EU driven R&D, i.e. excessive bureaucracy, which results in long lead times before products hit the market, and inadequate participation and commitment from the real business units of the participating companies. This dilutes their link to industry and commercialization. However, apart from this, what will be indispensable will be a much stronger commitment of the Member States to co-ordinate their educational policies at EU level in order to gain efficiencies, adopt best practices and eradicate mediocre approaches in favour of excellence. The Commission Communication to set out the key challenges and actions needed for higher education in Europe in a 2020 perspective later in the year should be just a starting point for more solid and binding EU level instruments.

EU policy to improve the integration and free circulation of foreign talent should follow. This includes revisiting the partly failed EU Blue Card initiative, a truly facilitated intra-corporate mobility of workers and a considerable easing of legislation affecting traineeships. Last but not least the reorganisation of businesses and the allocation of talent to the right areas in order to create or take advantage of innovations by disseminating them would need a review of the overall employment protection legislation where it is overly restrictive.[20]

16 'Aalto University – the forerunner of European University Reform to increase Societal Impact' in Service Innovation Yearbook 2010-2011
17 EIT's Strategic Innovation Agenda (SIA) – Investing in Innovation Beyond 2014, June 2011, p. 3
18 A Finish research study finds that the number of pupils studying programming in Finnish high-schools dropped from 12% about 30 years ago to just 2% in 2010 whereas the demand for this skills base is increasing and necessary for R&D in a variety of research areas. It has been a relief for the Finnish economy that Nokia currently has to make dedundant 1400 IT engineers because they are urgently needed by SMEs and other innovative companies. Regarding the accute lack of software professionals in Europe do also read 'The e-Skills Manifesto' of 2010 by Ade McCormack.
19 http://www.eaeeie.org/theiere/meeting_wien/Curriculum_Development_Guidelines.pdf
20 Innovation – How Europe can take off -, The Centre for European Reform, July 2011, contribution by Nicholas Crafts, p. 27

5. Research and Innovation

The EU's Framework Program for Research and Innovation should become a core element of the EU's Innovation Policy. However, regarding FP7 the participation of businesses accounts approximately for only 25% due to the complexity, unjustified administrative burden, slowness and a lack of flexibility of the programme. Nokia's participation has also declined through the years and is very low in FP7 mainly due to these issues. Insufficient participation from industry players and the fact that applied research and large projects with industrial relevance are being neglected leads to the result that the effects of FP7 on European innovation are non-satisfactory and well below potential.

Nokia strongly recommends a reorientation of the EU's research policy. An effective and result-driven program at EU level needs to focus on grand challenges where the EU can develop critical mass. Other research projects should be left to the Member States or be carried out in the spirit of 'enhanced cooperation' where some Member States provide joint programmes and funding. Industry should play a greater role in the European Research Council and the status of 'associated partner' used in FP5 should be re-introduced to secure more SME participation. Since Europe's most important grand challenge is to set Europe on a sustainable economic growth path, research in ICT need to be at the center of any successful research policy. This industry sector has the highest potential to at the same time innovate and grow itself and to stimulate and enable other European industries to grow. The focus here should be on multi-disciplinary research and the funding should target selected priority research areas and support the entire innovation chain.

A higher level of funding and more freedom in terms of governance should be provided to Joint Technology Initiatives. Smaller and more effective consortia should be allowed. Time to grant should be reduced from one year to six months and the bureaucracy regarding the application process, contracts and cost accounting and reporting should be reduced: the leitmotif should be 'trust the researchers' and let them concentrate their time and resources on research and innovation! Individual projects should be able to adapt their goals, execution and KPIs to competitive developments. Commission policy officers should also be exempt from responsibility (personal liability) in case of a failure of the research consortium having received a grant to avoid that they are too risk-averse and half-hearted.

Nokia experience: Notwithstanding the argumentation left, not everything should be concentrated on applied research: the case of academia.

When scouting for future-looking, blue sky research areas, Nokia Research Center has observed a general shift of academic focus towards applied research. In the last five to ten years, academic institutions across Europe have faced increased pressure to deliver societal and economic impact. In an attempt to increase impact, Universities have been encouraged to focus their research on topics relevant to industry. The shift towards applicative research is now becoming excessive, to the point that is increasingly difficult for industry to find real novelty in academic labs. We are approaching a "catch 22" situation, whereby industry looks at academia for blue sky ideas, whilst academia seeks industry input to determine future research direction. This spiral leads to more and more incremental innovation and the leveling down of competetiveness and innovation across the combined ecosystem of industrial and academic R&D.

Nokia experience:

Venture capital to fund the creation of technology intensive start-up companies is becoming increasingly scarce in Europe. Although this is a global trend, it does constitute a particularly severe problem in Europe, where we have witnessed numerous international VC funds reduce or close their investment portfolios. A drop in the rate of creation of new ventures means killing technologies that do not fit in today's corporate business focus, but may use alternative, stepping-stone markets to become attractive innovation and diversification options for the future of the European industry. With a view to using Open Innovation and new venture creation as option management tools for the future competitiveness of Europe's innovation, steps must be taken to inject public funding at the seed investment stage and thus encourage both corporate venture and venture capital activities.

6. Financing Innovation

Many good ideas are generated in Europe outside of large and financially viable organisations. In order to ensure that the brightest of these ideas are eventually incorporated in products or services, venture funding needs to be available (in addition to good access to bank loans for SMEs and start-ups), otherwise innovation will simply not happen. Unfortunately, there is a dramatic shortage of funds in Europe today. The venture capital markets in Europe are fragmented and underfinanced compared to for instance the US market[21]. This does not only translate into a lack of finance for potential growth companies in Europe but leads to the fact that also the accompanying management support, market intelligence and commercial networking services that venture capital provides for is missing. After the sharp decline of funds as a result of the financial crisis, the recovery has been extremely slow, especially in Europe. In 2010 for instance the venture capital/private equity financing in the area of clean technology has been more than three times higher in the USA than in Europe and Israel combined. In the first quarter of 2011 it has even been ten times higher.[22] Other areas, such as life-science and ICT do not look better. While top funds in Europe still have access to capital, even they do not receive enough funding any longer to invest in all the good projects with high potential they would like to invest in.[23] Venture capitalists often observe the phenomenon of 'Innovation leaks', meaning that Europe builds small scale talent and innovations which when growing and becoming successful are bought by US investors, eventually transferring most part of the know-how and market potential to the US.

Nokia is contributing to improving the situation by Nokia Growth Partners[24] (NGP), a premier venture investor focused on growth stage companies in the mobile industry. With US$350 million under management, NGP invests in companies and people that are changing the global face of mobility, communications and the Internet. NGP offers a global perspective and deep network in the mobile industry to help accelerate company growth. NGP works closely with Nokia to facilitate successful partnerships between Nokia and portfolio companies. NGP has offices in Menlo Park, Helsinki, Beijing and New Delhi.

The EU should facilitate the set-up of pan-European venture capital companies and funds by harmonizing the applicable rules - for instance regarding the tax regime for start-up companies and reconsidering exemptions to the Basel II and Solvency II requirements for VC funds. The EU should also consider the introduction of a funding scheme, similar to the 'Small company investment scheme' in the USA – a system of guarantees operating like an insurance system. Ultimately, the EU needs to make progress on achieving a true European home market for SMEs (single market and Digital Single Market) to attract venture capital and to facilitate growth of SMEs in Europe rather than their expansion into the USA.

21 Boosting Innovation in Europe, Bruegel Policy Contribution, June 2010, p. 4
22 Record number of Clean Technology Venture Investment Deals in 2010. Cleantech Group, January 2011
23 Dr. Rainer Strohmenger, General Partner, Wellington Partners
24 www.nokiagrowthpartners.com

Differences between European and US fund management.[25] Mainly: intelligence of capital and speed of capital		
Phases in innovation development and commercialization	Current situation in EU	Situation in US funds
1. Search for good ideas/companies	1. Many small deal flows; often quite ad hoc	1. Large deal flow (US or global); proactive search
2. Evaluation of ideas/business plans	2. Market knowledge from one country or region (financial emphasis)	2. Market knowledge from whole US or global (market / finance emphasis)
3. Linking idea/company with complementary partners	3. Partner knowledge from one country or region	3. Partner knowledge from whole US or global
4. Helping to find best management	4. Management resources from 1 country or region (passive)	4. Mngt resources from whole US or global (active)
5. Investing into growth phase	5. Limited market knowledge, limited risk taking and networking	5. Larger funds, wide market knowledge and networking enables higher risk taking
6. Support in marketing and selling in several markets	6. Support in one country or region (often ad hoc)	6. Support in large market area (systematic)
7. Other	7. ?	7. Speed of evaluations, decision making

7. Innovation & IP

Nokia's business is premised on innovation and Intellectual Property is a key asset of the company. In 2010 Nokia spent Euros 5.9bn on R&D globally representing 13.8% of net sales. Intellectual property rights (IPR), especially patents, are a key vehicle for protecting the company's innovation, enabling a return on investment, and providing more freedom of action to compete in a highly innovative and rapidly evolving technology environment by mitigating the risk of infringing third party patents.[26]

Nokia has invested in building one of one of the world's largest cellular patent portfolios, illustrated as follows:

Patents in Nokia Products
In line with the ICT sector generally, Nokia products include many innovative technical features and as such are typically covered by large numbers of patents (possibly hundreds or even thousands in products such as smart-phones). By contrast products in other sectors may involve fewer technical features covered far fewer patents. For example, in the pharmaceutical sector a blockbuster drug may be covered by one or very few patents.

Patents, standards & interoperability
Patents play a pivotal role in innovation in standardisation. This is because patents enable participants in the standard setting process openly to share their knowledge and make technical contributions to the standard, early in the process, confident that their technology is protected by a patent application.

Nokia invests significantly in innovating in the standards arena, helping to create open standards which afford interoperability for the benefit of consumers because it means products from different manufacturers interoperate seamlessly.
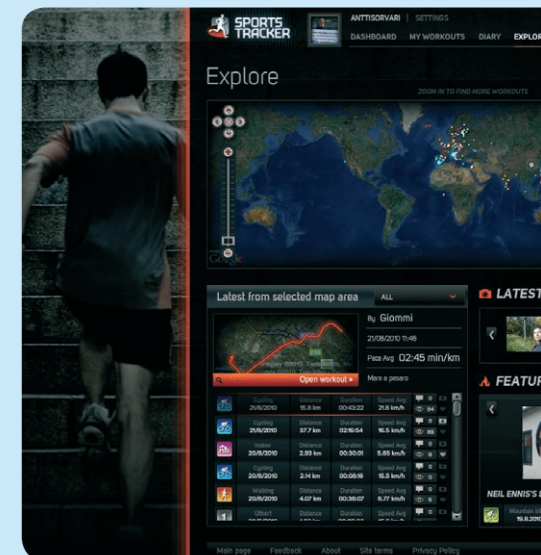
25 Source: Jouni Keronen, Fortum Corporation
26 At global stage, we are witnessing an extraordinary rise in research and development spending in Asia which is reflected in the fact that Asia has become the biggest filing region for 'international patents' under the International Patent Co-operation Treaty' in 2010 (PCT – The International Patent System Yearly Review 2010, WIPO; 'Patent Proof of Rising Innovation', FT May 20, 2011).

European Patent Reform

A unitary patent system will impact innovation and competitiveness of enterprises doing business in Europe for decades to come and it remains as vital as it has always been to get a European patent system (including the litigation system) which is right for users. An EU (unitary) patent system must be accessible, cost-competitive, efficient, reliable and have a simple language regime and bring real improvements for users compared with the system today, both in terms of award and enforcement. Enhanced cooperation is a pragmatic approach in order to turn the unitary patent system into a reality even if Spain and Italy are not willing to participate (yet).

The proposal for a unified patent litigation system is also a vital component of the EU patent reform package and the proposals for unitary patent protection should not be adopted into law until there is clarity and certainty about the legal basis for a unified litigation system. A proper functioning patent system cannot not be envisaged without a corresponding, dedicated, unified court system.

8. Standards and Innovation

Standards can play an important role to stimulate innovation. Provided that standardization is done in the right area at the right point in time and the standardization process is efficient, well suited and can keep pace with the speed of innovation, it helps promote innovative products and services by building confidence among market players and by creating large scale markets. On top of this, a standard can create a solid basis on which further innovation, such as the development of new applications can take place. Especially in networked economies, it can break down barriers to innovation, lead to the substitution of old technologies by new ones and promote innovative solutions from small and medium-sized companies which could otherwise have more difficulties to prevail. The Internet itself but also mobile communications (e.g. GSM, UMTS) serve as tangible examples of systemic approaches using standardization to boost innovation with network effects (realized by global roaming for instance). This has resulted in the development of totally new ecosystems favourable to innovations within all parts of the system, especially in terminals and services.

Europe should now consider launching cross-sector initiatives based on systemic approaches and develop models, system concepts, functional components and standard roadmaps related to Smart Homes, Cars, Buildings, Traffic, Grid, eHealth, eGovernment. These and other areas offer the prospect of clear user benefits and network effects, and have the potential to grow into large scale environments for smaller and bigger follow-on innovations with fairly easy market access within the system. The role of Standards bodies needs to be better understood as part of the innovation process in Europe and standards bodies on the other hand have to make an effort to become more responsive to innovators needs like recognition, visibility of contributions and people networks. Innovative solutions in the standardisation world should be supported, such as the Industry Specification Groups set up by ETSI, which are quick to establish and which can deliver timely results.

9. Large scale demand for Innovative products and services

It is European consumers who ultimately decide upon the success of every innovation in Europe. From a business perspective, it is the market potential which innovative businesses encounter in Europe that guides them in their decision making regarding European Innovation. Will they invest to innovate in a certain product or service? Will they bring their new offering to the European market first, or even at all? In theory, our Single Market offers a potential of over 500 million[27] customers. In addition to this, public procurement in Europe is to some extend used to 'purchase innovation' and equals 16% of EU GDP[28]. Unfortunately, Europe still has a long way to go to truly benefit from the potential of a large common market.

The European (Digital) Single Market

Europe has benefited enormously in the past from the single market success of the mobile phone revolution. The single market at that time combined with telecoms liberalization and the GSM standard has stimulated European technology companies to be at the forefront of innovation and has allowed Nokia, Ericsson, Alcatel, Vodafone, and some other operators to grow to become world champions.

Today, however, the world has moved on and the drivers of the Digital Society are Internet content, service and application eco-systems. A study indicates that already in 2008 the revenues generated by online content were almost twice as high as the combined revenues of the connectivity, the user interface and the enabling technology and service.[29] Consequently, mobile phones are less and less differentiated by their shape but increasingly by their operating software and the access to services they facilitate. In the online environment the 14 top businesses today are either located in the USA (10) or in China (4).

A significant reason for Europe's failure in this innovation driven high value-add growth market is the fact that Europe does not currently benefit from a Digital Single Market. Most online activity in the EU stops at national borders.[30] Divergent legislation and practices in crucial domains such as consumer rights, secure contracting systems, privacy and data protection, and copyright licensing and levies are discouraging businesses to supply online services to the entire EU market.

There is an urgent need for the EU to harmonise fragmented regulations concerning buying, selling and interacting online. According to figures published by the European Policy Center building a Digital Single Market could lead to incremental GDP growth of 4.3%, or € 500 billion, over 5 years. Clearly – the primary role of government in promoting Innovation is the promotion of markets[31] including the removal of (market entry) barriers[32].

In order to improve the access to services, new innovative service enablers as in particular the use of White Spaces TV channels should be exploited.

Only the transformation of our society into a Digital Society can deliver the necessary productivity and innovation enhancements. The Digital Single Market is one of its most important building blocks. The EU should consider using one of its most successful tools in order to make progress: applying the CE mark to digital services, meaning that when certain requirements are met a service should be allowed to operate across the EU.

> **A positive example which illustrates well how favorable regulatory market conditions offer enormous competitive advantages and a good climate for innovation can be taken from the area of medical devices.** While the CE-mark approach in the EU allows manufacturers of medical devices to market their new products after approximately an 11 week timeline starting from the first interaction with regulatory authorities, it takes between three to five times longer in the USA to go through all approval phases. While the marketing of the same innovative product can have grown into a 100 million business in Europe it may still be at the stage of clinical trials in the USA.

Public Procurement

The other important form of user-driven Innovation is innovative public procurement. There are three main tools to make use of public procurement to support European Innovation: pre-commercial procurement, forward commitment procurement and innovative procurement (deployment of already existing technologies or know-how). Looking at pre-commercial procurement, just three billion Euros are invested in the EU 27 annually, compared with € 50 billion in the USA (if military equipment is left out, the figure is still four times higher in the USA in areas such as energy, health etc.).[33] Pre-commercial procurement can have an enormous impact in making the public sector more efficient. Europe should introduce a rule (similar to the one existing in the USA) that a certain percentage of procurement expenses shall be used on pre-commercial procurement. Nokia supports the Commission's efforts to make progress in this area. This includes the lead markets initiative under which the cross-border building of networks of procurers are encouraged to reach a demand of critical mass (e.g. specialised hospitals, fire brigades). Nokia also supports the development of e-procurement and the development of methodologies to calculate the life-cycle cost of goods or services in view of their procurement (helping to avoiding going for the "cheapest offer" resulting in the procurement of relatively low quality or low tech goods and services which often happens in practice).

Third countries market access for innovative European products and services

Being the largest global trading block and the world's number-one exporter, Europe has a vital interest to advance international trade talks in order to achieve free, balanced, open and fair trade as a driver of productivity, innovation, improved competitiveness and job creation[34], especially in the area of ICT and other important technology areas, such as technologies with energy-saving potential. A first step should be a newly agreed Information Technology Agreement (ITA) with expanded product coverage, actions against non-tariff barriers and further signatory countries to ensure global free trade for all ICT products, services and applications in the future.

27 http://epp.eurostat.ec.europa.eu
28 Expert Group Report on Risk Management in the Procurement of Innovation, DG Research 2010
29 A.T. Kearny analysis commissioned by Vodaphone
30 5th Consumer Conditions Scoreboard, European Commission 2011: 36% of individuals ordering online domestic while only 9% ordering cross-border http://ec.europa.eu/consumers/strategy/docs/5th_edition_scoreboard_en.pdf
31 Innovation – How Europe can take off, The Centre for European Reform, July 2011, contribution by John Kay, p. 11
32 Innovation – How Europe can take off, The Centre for European Reform, July 2011, conclusion by Simon Tilford, p. 71
33 Presentation by Ulf Dahlsten, Principal Advisor DG INFSO, European Commission at the K4I dinner in the European Parliament, April 13, 2011
34 A Transformational Agenda for the Digital Age : DIGITALEUROPE's VISION 2020

10. Trust, Security and Innovation

As basis for the provision and consumption of Innovative products and services in full confidence, European networks, services and applications suh as those used for mobile payments must be safe and the privacy of the user needs to be protected.

The overarching goal needs to be the maintenance of a resilient network infrastructure and the fight against any illegal behaviour on the Internet. Resilience of the information infrastructure is critical for the economy, affecting areas such as research co-operation, B2B transactions, e-commerce, inventory tracking through just-in-time (JIT) systems, and financial networks. The optimal approach for tackling these challenges is through dialogue and partnership among all key stakeholders – including the private sector. The pace of innovation, rapid evolution of both technologies and security challenges, and the need for flexibility and speed in responding to attacks mean that the private sector is well placed to play a leadership role in protecting network and information security. In recognition of the essential role of industry, many strong public-private partnerships already exist in Member States, bringing together service providers, government security personnel and relevant vendors. EU-level initiatives should support these national structures and encourage their development in all Member States, helping them to coordinate with each other where relevant, without creating alternative structures that divert resources.[35]

Regarding privacy policies, a free flow of information within a globalised, internet society is a prerequisite for European businesses to operate, innovate and prosper. The creation of a privacy culture in Europe should be fostered with cooperation between public and private sectors. Privacy education, awareness to common threats, creation of a privacy profession based on a privacy knowledge base and certification for categories of privacy professionals should be promoted. In addition, research into underlying technology standards and engineering processes for Privacy by Design principles should be supported.

A reform of the existing European data protection framework is necessary to remove unnecessary and often costly data privacy requirements and to replace them by more effective measures which ensure that individuals continue to enjoy adequate privacy protections. The principle idea of introducing the CE mark could potentially serve as a replacement for current ex ante prior registration and other similar Governmental Authority approval-based approaches in the European data protection regime. To be successful, i) external criteria against which conformity is declared; ii) supervisory authority; and iii) enforcement is needed.

The next generation regulatory framework on data protection[36] should foster trust in digital life by ensuring that users have fair and informed choices as to how their personal data is processed, users are offered with effective rights of access, erasure and blocking, data processing is reasonably secure through application of appropriate organizational and technical security measures, on a state of the art basis, and that controllers are accountable for their data processing. A right balance between data protection and other legal protections in a world where most human social behaviour takes place in digital context needs to be found. The free flow of information should be facilitated by an unambiguous European framework built with proper legal instruments and structures allowing for harmonised rules across Member States

(avoiding divergent implementation and interpretation) based on mutual recognition and limiting administrative burden by adopting a harm-based approach and exempting standard processing from notification or prior approval requirements. The global nature of information flows in the information economy should be recognized by streamlining the legal instruments for international data transfers. A system based on holding the service provider accountable offers a meaningful basis for international data transfers. Companies should be able to certify their data processing on a worldwide basis. Work towards global privacy standards should continue.

11. Nokia and Innovation/ Case Studies

Throughout the years Nokia has developed the maxim that innovation is not limited to within the four walls of the company, taking place only in isolated research and development laboratories. Experience has proven quite the opposite – innovation today is democratised and driven by people and their needs, working together in increasingly open and transparent ways, so that the knowledge and insight this provides can be the catalyst for moving the company forward. Our business of bringing new connections, contacts and knowledge via airwaves to billions of disparate individuals across the globe is characterized by an extremely complex and constantly evolving environment. It requires a deep understanding of trends, knowledge of needs and behaviours, immersion with people to understand and anticipate what people will need in the future while most of them do not even know about their desire to receive it.

The development of text messaging (SMS) began as an innovation by accident, yet it developed into one of the most pervasive ways people communicate today. Nokia's objective is to make sure that innovation does not happen solely by accident, but by design. Bringing cameras to mobile phones was based on the trend of photography in the early 1990s to go digital which has kicked off a revolution in the ways and numbers people want to take and share pictures. The cooperation with Carl Zeiss has allowed Nokia to accelerate mobile phone camera development to match the quality of digital cameras and to become the biggest manufacturer of digital cameras in the world. The emerging trend of social networking has lead innovators to facilitate the sharing of pictures taken with a mobile phone with contacts on social networking sites via 'one click'. Billions of photos taken with mobile phones are now shared on Facebook alone every month. Open innovation is pursued further and leads to the emergence of thousands of services and applications, developed partly regionally or locally on all continents by people placed at the centre of innovation. Some examples are mentioned later in this chapter under 'Eco-innovation'.

With the current violent eruption of eco-system competition between various smart phone technologies combined with access to content and applications, Innovation in terms of providing the best cutting-edge customer experience is more important than ever before.


We made this!

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35 EICTA 2009 Comments on the European Commission Consultation "Towards a Strengthened Network and Information Security in Europe" which includes further information and recommendations.
36 Nokia 2011 Position on the European Commission's Consultation on proposed Reforms to the European Data Protection Framework

Open Innovation/Crowdsourcing[37]

Innovation has become essential for companies to remain competitive in the knowledge economy. However, innovation failure rates have reached almost 9 in 10, primarily because of the lack of end-user adoption; and often innovation developers don't have specific knowledge of the user's preferences and requirements.

The increasing demand for new thoughts and the lack of user acceptance have forced companies to look for new sources of ideas. Collective thinking has become more effective than the innovation of separate users and involving consumers in the "ideation process", which, besides being cost effective, offers valuable insight into customers' thoughts, wishes and preferences. It can also facilitate consumer adoption of the innovation because their opinions have been listened to.[38]

The importance of external resources in the ideation processes has been demonstrated: it has been discovered that firstly, most ideation happens when different knowledge domains are crossed and secondly, ideas are more likely to arise in teams that consist of people with different personalities, knowledge, skills and backgrounds.

This is why Nokia has built a web-enabled developer community of over 4 million participants as open innovation platform more than 10 years ago. Developers have downloaded essential software from the Forum Nokia website and created their innovations on the top of this software. Their innovations have been brought quickly and effectively to the global market place in over 180 countries and in over 30 different languages.
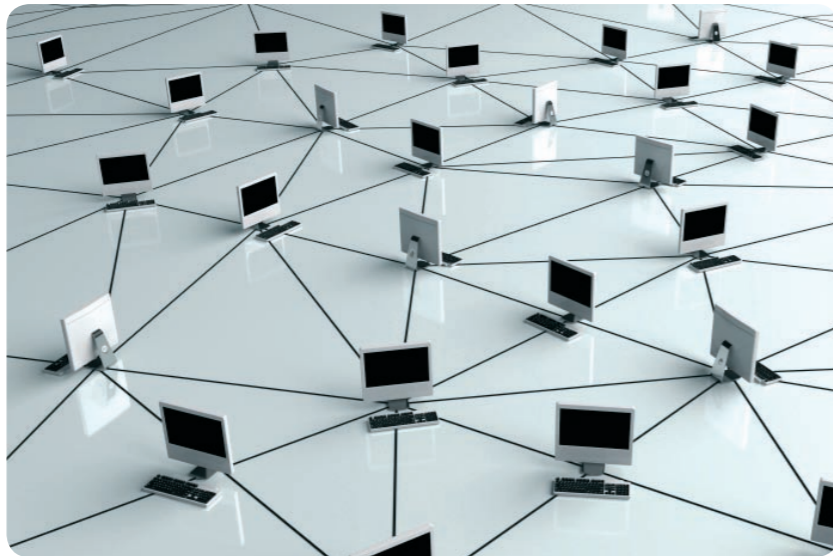
Nowadays, improvements in computer and communications technology have even enabled users to participate in new product and service developments. Users can freely share their ideas with others, creating rich intellectual communities. Ideation marketplaces, enabled by social media tools and the wisdom of the crowd combined with artificial intelligence, can act as mediators between mentioned actors. This whole phenomenon it is known as 'crowdsourcing'. Crowdsourcing is defined as "the act of outsourcing tasks, traditionally performed by an employee or contractor, to an undefined, large group of people or community (a crowd), through an open call." However, for Nokia, crowdsourcing is the junction of open innovation and social media.

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37 Pia Erkinheimo-Mennander and Karoliina Harjanne, Nokia in 'Service Innovation Yearbook 2010–2011' by the European Commission DG Information Society, page 105–107 with further references
38 The Promise of Crowdsourcing – Benefits, Contexts, Limitations, Tanja Aitamuro, Stanford University, Aija Leiponen and Richard Tee, Imperial College London

Nokia experience:
Open innovation & social media/crowd sourcing[39]

Nokia uses the capacity of its own employees and of external audiences such as consumers, users, lead users, developers, universities and partners are also invited to participate in different phases of the innovation process. The Ideas Project, Nokia Beta Labs, Calling All Innovators, Make My N8, Innovate Afrique and other initiatives were all developed for different purposes, but are all based on crowdsourcing.

The IdeasProject website brings together leading thinkers on the mobile internet. These are people from all walks of life with great ideas that will impact the future of communications. Nokia Beta Labs is a space to share new applications and services with a vibrant community of active users, either prior to commercial release or for experimental research. The feedback and comments from the Nokia Beta Labs community is crucial to understanding and improving the applications in real-life situations. Calling All Innovators is a global developer competition designed to inspire creativity by challenging developers to create applications and services for Nokia mobile devices. In the Make My App competition, Nokia connected the best application ideas generated by consumers with top developers from all over the world. Out of 7691 shared total ideas, the best 13 were developed into real apps for the new Nokia N8 at the Nokia World Developers' Summit 2010 and competed for the main prize of about 80 000 Euros.

In the near future, crowdsourcing at Nokia will become an ecosystem enabler. Nokia's aim is to build a systematic crowdsourcing capability that will facilitate and generate new and exciting ideas. When harvesting the masses of ideas we take the advantage of statistic methods and cloud computing, e.g. regression analysis with text mining and neural networks.

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39 Pia Erkinheimo-Mennander and Karoliina Harjanne, Nokia in 'Service Innovation Yearbook 2010–2011' by the European Commission DG Information Society, page 105 with further references

Social Innovation

The following Nokia examples serve the purpose to illustrate a type of Innovation which is very different from the standard Innovation type of 'bringing a new innovative product or service to the market' in order to broaden the perspective of the reader. Also, it underlines the fact that the 'Social Innovation Union Initiative'[40] is an important element of the Flagship Initiative 'Innovation Union'.

Nokia experience:

Organisations need to realise that they operate in a global business and innovation eco-system which consists in its building blocks of a multitude of local eco-systems. During sometimes difficult but unavoidable restructuring processes – such as Nokia has undergone in the past and is doing again right now, innovative solutions can be found in order to mitigate the negative effects on local communities and to outweigh them as much as possible, also in order to leave the business and innovation environment intact.[41] Nokia has made invaluable experiences by mastering such a situation in the past which will help solving the current challenges. Because of increasing cost-efficiency requirements due to global competition Nokia was forced to close its Research and Development operation in Jyväskylä in 2009, which affected approximately 320 employees. Recognising that the business ecosystem consists of all of the "organisms" in a particular area, Nokia partnered with employees, other companies, governments and other related stakeholders. Different working groups were established, including representatives of all partners, to create a new operating model for local structural changes offering new business models and solutions. The new model – at the end of the process even adopted by the national Finnish government – has three main focus areas:

1. New business and new companies
2. Competence enhancement and new employment opportunities for the highly-skilled/educated workforce
3. The renewal of the local economic structure

As a result of this initiative 450 new jobs were created in the ICT sector of the Jyväskylä area between 2009 and 2010. Nokia together with the project partners was able to secure that 75 percent of its employees found new jobs with other employers or founded their own business. Others received education and training qualifying them for other jobs.

The recently launched Nokia Bridge project which is necessary to implement Nokia's new strategy does include a carefully designed innovation programme consisting of creating spin-offs and providing early stage funding of projects alongside a transition programme which contains severance packages and re-employment activities.

40 http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/188&format=HTML&aged=0&language=EN&guiLanguage=en
41 On the importance of keeping talent and trust of employees and on the importance for companies to strive for mutual benefit with the communities they supply and which supply them, see also "Sustainable Growth is the new Incarnation of Capitalism" and "Power to the People" in "Mastering Growth", FT supplement of May 18, 2011

Eco-Innovation

Eco-Innovation is characterized by its favourable impact on the environment. It includes all forms of Innovations which reduce environmental impacts and/or optimize the use of resources throughout the lifecycle of related activities. It can be associated with the concepts of eco-efficiency, cleaner production and eco-design.[42] Eco-Innovation can be stimulated by carefully-designed legislation. However, Nokia has decided more than a decade ago to be 'ahead of the game' and has achieved more than what it foreseen by EU energy efficiency regulations or substance bans for instance. This has required Nokia to be at the forefront of eco-innovation across all operations. Nokia's product creation is guided by life cycle thinking, minimizing environmental impacts across the lifecycle of a product.

Some of our newest devices showcase our environmental leadership by using new, innovative materials such as bio paints, recycled metal and bio plastics. They are all energy-savvy with OLED displays, power save mode and high efficiency chargers with lowest stand-by power consumption (less than 0.03 KW/h, corresponding to a reduction of up to 95%), bicycle chargers available in developing countries as an environmentally friendly renewable energy source. In 10 years, Nokia has reduced the overall energy consumption and CO_2 emissions of its products by up to 65%. All materials in Nokia phones can be used again to make new products or generate energy, so nothing is wasted.

Today more than 5 billion people are connected to mobile communication networks.[43] Everyone being connected to what matters most, anytime, anyplace enriches our lives, our relationships and professional possibilities. It is part of Nokia's new strategy to bring the next billion new users to the Internet via mobile phone connections. Reading emails and browsing the internet using a mobile device requires only 3 % of the energy used by a laptop computer.

The environmental footprint (in terms of greenhouse gas emissions) of the Nokia N8 equals about 96 km driven with a typical family car (160 g/km) – the opportunities provided by mobile phones are far greater.

Innovative opportunities provided by services directly related to the environment accessible via smart phones include for instance receiving information on water quality, receiving guidance on irrigation requirements or controlled use of pesticides by farmers, citizen engagement and reporting of environmentally relevant incidents (for instance providing info, picture and location data related to protected or invasive species).

The goal of being a leader in sustainability has driven considerable innovation within Nokia and has been recognised. In 2010 the Dow Jones Index names Nokia as world's most sustainable technology company for second year in row: Nokia scores high in all aspects, economic, environmental and social performance. Nokia is among the top three technology companies in Carbon Disclosure Project Nokia has also been the number 1 in Greenpeace's Guide to Greener Electronics for several consecutive quarters.

42 Better Policies to Support Eco-innovation, OECD Studies on Environmental Innovation, page 29; OECD 2011
43 http://www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf

Nokia Technopolis Innovation Mill

Last but not least, the use of Innovations sometimes also needs innovative approaches and concepts. The following case study should serve as a model of how Innovation can be promoted when major innovation players act together.

12. Conclusions and Recommendations

Innovations can be small or substantial, they can take many forms and be truly inspirational. They can change technology, business models and even our society as a whole. Together, they will determine our level of competitiveness and shape the current and future prosperity in Europe. To what extent Innovation will happen in Europe or elsewhere depends on our capacity to innovate. The main factors which enhance or limit our Innovation Capacity have been described in this paper. Considering the content of the paper, as well as re-assessing relevant literature and expert discussions which form the basis of this paper, one comes to the conclusion that – as EU – we have gathered the relevant intelligence, developed the right ideas and prepared to some extent policy plans that seem to lead to the results we need.

However, in practice tangible progress remains the exception. Europe and its leadership seems to be good at fire-fighting: when we are standing with our back to the wall and nearly all is at risk, such as we experienced with the financial and the Euro crisis, then we are able to take and implement tough decisions which have harsh consequences. However, when it comes to improving Europe from a structural, competitive and innovation capacity point of view – arguably is at least as important in the medium and long term – then progress seems incredibly slow and half-hearted. EU educational systems do not benefit from a fundamental review taking today's requirements into account, the ambition for change regarding EU Research Programmes seems to allow only random and cosmetic changes, the Digital Single Market remains a construction site, in the area of copyright online the reasons for Europe to fail are known but the political appetite for an adequate review is negligible, radio frequencies are only reluctantly and to a small extent freed for new services and applications, no substantial progress is being made regarding the development of a European venture capital market. "European politicians talk a lot about innovation, but are not prepared to come clean about what is necessary to increase it"[44] because of "their fear of economic dislocation which often encourages them to opt for policies that have only a limited impact on productivity"[45] and Innovation.

The symptoms which prove these facts are manifold: it seems to be too difficult for the Commission to propose hard legislation in key areas, reverting instead increasingly to Recommendations and Communications; Members of Parliament sitting in the Internal Market Committee complain that they are frustrated because accordingly nothing of substance has been proposed to them in the last two years; Directives adopted during the last legislative term were watered down in the process by Council or Parliament and lost their teeth (e.g. Services Directive, Blue Card). Many Member States governments generally show little enthusiasm to deepen

the EU's single market, as the financial crisis – unfortunately – seems to generally have discredited market-led reforms.[46]

It is not an easy task to conclude this paper by prioritising a set of recommendations which will be seriously looked at considering that huge amounts of similar recommendations addressing some of the very same issues have been submitted by many European organisations. Most of them are relevant and important; they all compete for attention, but their fate is that the vast majority is still not being implemented because proposals are either not introduced into the legislative process or lack ambition.

A good set of top priorities would be:

Education:

A. Develop and promote a joint EU/MS career guidance service online.

B. Further internationalise education through EU funding and university co-operation.

C. Develop joint school/university/industry curricula in future-oriented science areas while stimulating creativity and entrepreneurship.

Research:

D. Increase the funding of the European Institute for Innovation and Technology. Increase possibilities to quicker launch smaller and targetted R&D projects with fewer participants and less administrative burden. Raise European R&D investments to 3% of GDP.

E. Radically reduce the reporting obligations of EU funded research projects and allow participants to adapt them to their needs in terms of objectives and time horizon.

Standardisation:

F. Launching cross-sector standardisation initiatives based on systemic approaches and develop models, system concepts, functional components and standard roadmaps related to Smart Homes, Cars, Buildings, Traffic, Grid, eHealth, eGovernment.

European (Digital) Single Market, Pan-European business

G. Remove the obstacles (regulatory, tax,…) to facilitate the creation of a single market for venture capital.

H. Launch a test case (based on the CE-mark) in which businesses and consumers can agree to apply the country of origin principle online for all contractual obligations to reduce transaction costs, allowing businesses immediate access to the Digital Single Market and consumers to benefit from improved offers and lower prices.

I. Work out a solution in which right-holders of music online benefit from higher sales and higher revenues on the basis of improved licensing and elimination of copyright levies.

J. Develop a solid and harmonized EU framework for data protection, security and ISP liability.

K. Support the pan-European use of new service enablers as cognitive radio used with TV White Spaces through the facilitation of combined activities of industry, academia and governmental authorities.

44 Innovation – How Europe can take off – The Centre for European Reform, July 2011, contribution by Michael Schrage, p. 72
45 Innovation – How Europe can take off – The Centre for European Reform, July 2011, contribution by Simon Tilford, p. 8
46 Innovation – How Europe can take off – The Centre for European Reform, July 2011, conclusion by Simon Tilford, p. 72

The substantive proposals should be supported by an innovative procedural approach

However, only in exceptional cases has progress been made at EU level on the basis of such recommendations. Examples are the proposals for a unitary Patent and a patent litigation system for Europe. Here, after decades of frustrating political standstill, it seems that sufficient momentum has been built up to proceed based on the enhanced co-operation procedure despite two blocking Member States. The reason for this has been an incredibly strong drive within the Commission in support of these connected files and the choice of an exceptional process in the last three years. It consisted of consulting the experts of the Member States and jointly elaborating a proposal, and to bring it close to maturity before launching the ordinary legislative process.

One should learn from this approach and from other unconventional pre-procedural developments of solid proposals, such as through the European Conventions[47], which have led to some results. **It is our core recommendation** to apply basic ideas from these processes while considering some others to develop a new and innovative pre-legislative process which could build up sufficient momentum on selected key issues, as those listed above (A.–K.). Ideas on substance contained in the previous chapters (4 to 10) of this paper should be fleshed out on the basis of such process and then submitted to the EU legislator.

In more concrete terms, first of all, the deliverables should be defined in selected areas as discussed in the chapters of this paper (such as reforming copyright online in order to facilitate licensing and abolish copyright levies to secure a modern source of income for right-holders). A group of experts of about 3 Member States, a Commission official and 3–4 Members of the European Parliament – which understand the challenge, are capable of resisting vested interests and are open to change – should be set up to work out a proposal, supported by a Commission secretariat. Once the proposal is mature, support from the highest political levels should be sought for before the Commission prepares it for launching it into the ordinary legislative process.

47 The 1999 Convention responsible for drafting the EU Charter of Fundamental Rights, lead by Roman Herzog and The European Convention drafting a European Constitution, led by Valéry Giscard d'Estaing
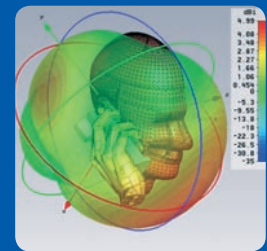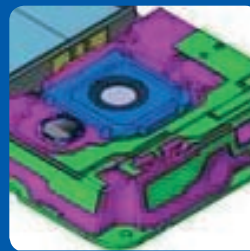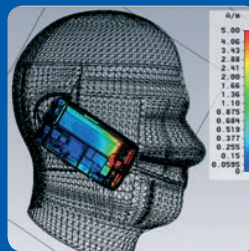
Nokia Excellence Award **2011**

On June 7, 2011 Nokia for the 13th time awarded its Excellence Award in the four categories 'Consumer', 'Operational Excellence', 'Research' and 'Sustainability'. It was a difficult selection from 258 applications!

Fewer dropped calls and better coverage! Stronger IPR portfolio with six granted patents and two pending applications! Implementation in eleven Nokia products! Antennas may not be the sexiest issue in this day and age, but they remain the backbone of every success story. This was also recognized by the Jury who handed the first prize in the Research category, from fifty-six entries, to a team titled "Multiband Loop Antennas – A Continuous Innovation Story". The on-going saga began to unfold in 2002 and the results are impressive. Without extra investments, the team has produced unique MBLAs which are the only antenna concepts to meet the AT&T and T-Mobile US criteria. Providing best-in-class over-the-air performance and unique hearing aid compatibility, this could prove to be a key to success in the US market.

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