Annex 2. Smart Infrastructures

1. Introduction: Smart Infrastructures for Smart Living

The first Electra report considered infrastructure as one of the leading drivers of growth for Europe, notably transportation and mobility, e-Health, energy (generation, transmission and distribution infrastructures), safety, intelligent buildings, industrial processes and digital infrastructures.

In 2012, the modernisation of European infrastructures has become even more of a key objective of the European Union. Under its growth-strategy "Europe 2020", the European Commission lists a number of flagship initiatives and activities such as the Digital Agenda, the Innovation Union, or "Industrial policy for the era of globalisation." The Commission has proposed guidelines for trans-European energy infrastructures and measures on resource efficiency, including energy policies ("Energy 2020"), as well as the EU's Transport White Paper and the eHealth Action Plan.

The electrical engineering industry in Europe can provide answers to many of these European infrastructure policy initiatives. It is this industry in particular that produces the technologies and systems needed for the modernisation in Europe. Industry's common aim with European policy makers is to develop future technologies in Europe, deploy them here first, and then showcase and market our solutions to the rest of the world. This will increase the global competitiveness of Europe, make the European Union the most attractive place to live and work in the future, encourage the best brains and talents from around the globe to work here, and help the European industries to succeed in international markets.

2. Opportunities and Challenges

Opportunities

- *Create a smarter Europe:* Give Europe the energy, digital, transport, health and building infrastructure it needs to be competitive.

- *Strengthen Europe's electrical engineering industry:* Enable Europe's electrical engineering industry to deploy and showcase its technologies, thus stimulating growth and technology leadership.

Challenges

- *Lengthy permitting procedures:* Infrastructure projects at Member State level and notably when cutting across borders are often subject to lengthy permitting procedures. Streamlining these is a key challenge to modernise Europe's infrastructure.

- *Financing:* Infrastructure projects require considerable funding. Notably, in times of economic crisis, funding and access to credit needs to be made available and facilitated at EU level.
- *Public acceptance of infrastructure projects*: Public acceptance will determine the success of many of the envisaged key infrastructure projects in Europe. Whether it is the train station of the future, the new airport, the smart grid power lines, the wind wheel park or public surveillance for security reasons, this will only happen if the people, the legitimate democratic decision-maker, will accept those projects. As previous experience has shown, it is important to drive those projects from the very beginning in a transparent way, including thorough discussions with all stakeholders involved. Policymakers in Europe, from the local, the regional, the national and at the European level need to get a solid understanding of the challenges and opportunities of an infrastructure project and need to start information and marketing efforts at the very outset. This communication campaign needs to envisage regular and thorough stocktaking of different interests and positions. Politics and industry should work hand-in-hand and share experiences and best practice.

3. Recommendations and Key Messages

A) Energy infrastructures

Energy infrastructures in Europe are outdated. Compared with other infrastructures such as roads, we are lagging behind. In its Infrastructure Guidelines published in October 2011, the Commission clearly states: "*Electricity networks must be upgraded and modernised to meet increasing electricity demand due to a major shift in the overall energy value chain and mix. The grids must also be urgently extended and upgraded, including through electricity highways, to foster market integration and maintain the existing levels of system's security, but especially to transport and balance electricity generated from renewable sources, which is expected to more than double in production and consumption in the period 2007-2020. At the same time, reaching the EU's 2020 energy efficiency and renewable energy targets will not be possible without more innovation and intelligence in the networks at both transmission and distribution level, in particular through information and communication technologies.*"

In this context, the proposal for a set of guidelines and a financial mechanism, to replace and significantly strengthen the current TEN-E framework, is very much welcome, even if it is limited. Indeed, as pointed out by the Commission itself, only for the high voltage electricity transmission system, some €140 billion in investment will be necessary by 2020. The regulation

proposals only aim at investing €9.1 billion for all energy infrastructures over the same period. In its 2010 Ten Year Network Development Plan (TYNDP), ENTSO-E foresees the need for 35,000 km of new transmission lines and 7,000 km of existing line upgrades. According to ENTSO-E, around 44% of these targets were on course to be completed by 2015 and 56% by 2020. At this point in 2012, it seems increasingly unlikely that these objectives will be met.

To upgrade and modernise energy networks, political action and rapid implementation are needed. EU Commissioner for Energy Günther Oettinger has clearly stated that now is the time for another "historical investment."

As a whole, the electrical engineering companies in Europe can provide the technology for many possible changes in Europe's electricity infrastructure network, notably by offering the technologies to:

- upgrade and expand the existing AC distribution and transmission networks, by increasing voltage levels and power loads, reducing losses through reactive power compensation and reduction of equipment losses or by introducing partially undergrounded hybrid systems.
- create a DC overlay network to transfer large amounts of electricity over long distances, by developing switchgear technology or changing AC lines to DC.
- develop an emergency concept (cyber security, reliability, fire load etc.).
- implement a common power management system across Europe.
- enable power access for the expected growth in e-car usage.

High- and extra high voltage transmission networks

Europe's meshed Alternating Current (AC) grid network has reached a critical age and requires short-term upgrading. AC overhead line technology has and will be the main technology for high- and extra-high AC voltage transmission lines (220 – 400 kV). This said, in sensitive areas, partial undergrounding may be applied to address local concerns.

In addition, Europe is setting out to create a High Voltage Direct Current (HVDC) grid structure to transport high power loads over long distances with minimal losses. HVDC overhead technology is compatible with HVDC underground cables. Meshed grids / networks will require the use of DC circuit breakers with high power breaking capacity.

A hybrid transmission system consisting of HVAC 400 kV+ and HVDC overlay network will require state-of-the-art patterns of operation. From the operational point of view, the interoperability of equipment and systems, particularly converter stations, will be key. Also, management and monitoring of wide areas of the grid with relative control systems across state boundaries will be required. It will also be necessary to address the potentially problematic operations of managing such hybrid transmission systems, when they are open to power contributions from many volatile sources. The reliability of supply in the different phases of the operations, with volatile sources, will have to be tested and supported by proper regulation (regulation in the sense of grid-codes by network regulators, not in the sense of EU legislation).

Concrete Recommendations for Transmission Networks:

- Research and Development and Deployment (RD&D) are to take a two-stage approach; the first stage dealing with short- and medium-term achievable targets and a second stage targeting the longer-term (say 2035) targets.
- As foreseen by the Commission's Infrastructure Guidelines, permitting procedures are to be streamlined, financing is to be secured and public acceptance is to be addressed from the outset of project consideration.
- Deployment of new technologies is to be enabled including:
  - Integration of partial undergrounding in upgrading of 400kV grid.
  - Complementing 400kV grid with additional HVDC overlay grid via DC breakers and converter stations.
- Lighthouse projects should be identified for the deployment of new technologies in a larger framework. Such projects should use methods and KPIs (key performance indicators) that identify the benefits with respect to the EU 20/20/20 targets. Based on best practice from the pilot projects, other projects could be set up over the coming decades.

Smart low to medium voltage distribution networks

With more and more renewable energy sources coming on stream, an increasingly decentralized electricity grid will be required to allow an active power distribution. Power distribution is more obviously, though by no means exclusively, impacted by the changes implicit in the basket of developments often referred to as the "smart grid." Much has changed since 2007 when the EU Commission set out its R&D agenda via the Smart Grids Forum (formerly the Smartgrids Advisory Council). These changes include:

- Widespread acceptance of Smart Grids as a major contributor for avoidance of black-outs and integration of massive proportions of renewables.
- Electric vehicles / e-mobility have emerged as major issues.
- The politics of nuclear power have changed in the aftermath of Fukushima.
- The SET plan and its daughter initiatives (e-storage, wind, solar, etc).

Concrete Recommendations for Distribution Networks:

- Distribution system operators (DSOs) need to gain more experience and they need to be supported for R&D spending in this field by appropriate regulation. (Regulation in the sense of grid-codes by network regulators, not in the sense of EU legislation).
- The current approach, using only cost-analysis to assess risk, penalises the highly technological changes required, for instance to integrate small-to-medium sized renewable sources. System operations in distribution will have to evolve to a new standard in reliability as well as functionality to guarantee proper reliability of supply.
- The RD&D of pilot projects in this sector, in the short-medium term, using the recommendations from the EEGI (European Electricity Grid Initiative) will speed up the knowledge-sharing process among the different DSOs. For mid to long-term objectives, that which is indicated in the Strategic Research Agenda (SRA 2007) could be applied.
- The current approach, using only cost-analysis to assess risk, penalises the highly technological changes that are required, for instance to integrate small-to-medium sized renewable energy sources. Recommendations from the EEGI will speed up the knowledge-sharing process among the different DSOs. For mid to long term objectives, that which is indicated in the SRA 2007 should be applied.

In order to speed up the deployment process, European T&D industries have entered into a close dialogue with the European networks systems operators for electricity. A mutual understanding of the technologies already available and those currently under development is crucial for a successful and long-term modernisation of European energy infrastructures. In that regard, ENTSO-E's TYNDP is an important tool for long-term planning.

We are not yet convinced that a fast enough pace has been reached to implement all necessary measures on time. One major concern is due to the formal and complex procedures, permissions, approvals necessary to build a new line, a power station, or any other large infrastructure elements, leading to huge delays. It is very complicated and significantly delays the construction. Those formal legal procedures should be short, focused and harmonised across the EU. This is why the proposals on public granting and public participation are particularly welcome, even if they only apply to "projects of common interest", as defined in the regulation proposals.

To reach the "20/20/20" targets, investment in transmission and distribution infrastructure needs to be considered a high priority. EU energy policy objectives need to be supported by a reliable pan-European electricity grid infrastructure capable of interconnecting and integrating large-scale, variable renewable energy types. In particular, the power transmission system needs to be upgraded and it will have to be structurally rather different from that of today.

Complements

Additional points, for both transmission and distribution, which emerged from the discussions in connection with the new SRA 2035 in the Smart Grids Forum included:

- Reactive power control in distribution:
  - technology for FACTS (Flexible AC Transmission Systems), etc. exists, but is not yet affordable in distribution.
  - there is need for commercial, economical solutions for distribution.
- Demonstration projects developed for trial in the existing network are still relevant but are also a major bottleneck.
- Generally, less-proprietary solutions are needed:
  - utilities need to collaborate in the design of functionalities, i.e. specifying functionalities rather than technologies.
- Evolving assets:
  - the network will continually be changing and have an increasing number of intelligent knots.
- Philosophy will need to change towards an overall philosophy for both power transmission and distribution operations:
  - Separation of transmission and distribution will not be so necessary for technical reasons.
  - There is a need to develop a grid code for low voltage and medium voltages.
  - The architecture of a transmission grid with a lot of DG and RES, etc. will also affect the distribution grid. We need to find a way for transmission and distribution systems to work together technically.
- In Europe, we shall need bulk power transmission in a meshed grid.
  - Point-to-point power transmission at 800 kV DC already exists.
  - The technology to enable meshed DC grids needs further R&D, but to enable 800 kV DC meshed grids would need extensive further research.
  - Alternatives to DC should not be excluded for bulk power transmission, e.g. superconducting, UHVAC, etc.

- Forecasting technology:
  - In this area, what parameters to forecast will depend on the market design.
- Research is needed in cross- and beyond-border / multi-state market designs.
- Electric vehicles represent a new demand since the conclusions of the SRA 2007.
- Electric vehicle charging is not just a cost of electricity issue:
  - It is a mobility issue; it is also a storage issue.
  - To enable better operability, the grid industry needs to interact with car manufacturers.

- Generally, there could be advantages for the grid industry also to interact with other industry sectors:
  - e.g. design power plants and plant for other electrical-energy-intensive industries (chemical, refining, etc.) in coordination, as an alternative approach to storage of energy.

B) Smart Buildings - building installations

There are ever more demands on the electrical installations associated with smart buildings and these installations must be capable of meeting these challenges and requirements. The electrical installation will be the energy and communication network for such buildings. It has to connect new type of loads e.g. LED-lamps, heat pumps and for the re-charging of electric vehicles. Moreover it also has to connect new sources of electric energy, such as photovoltaic and fuel cells to the grid. These are just a few examples; the future will see more new producers and consumers (ProSumers) of electrical energy appearing, all needing to use the electrical installation to both connect to the grid and to provide the means to communicate with and control them.

Moreover, taking into account the future "age pyramid", the electrical installation will need to be able to support residents who wish to remain longer in their home whilst remaining safe. The task of the electrical installation will be to provide safe energy and also vital communications.

The majority of existing installations cannot meet these requirements. These installations have to be checked and, where necessary, updated with safe products compliant to modern European standards. This is necessary to ensure the safe use of electricity with the communications required by:

- Future ProSumers.
- Connection to the Smart Grid.
- Improved protection against electric shock and fire with reduced damage and injuries or deaths.
- Supporting ambient assisted living and reducing its cost so that people are able to stay at home longer

Last, but not least, making this change possible will create jobs in the European manufacturing industry and many more amongst the SMEs in the electrical contracting and associated industries.

Current Situation

Dwellings stock situation

- Over 75% of the dwelling stock in Europe is more than 30 years old.
- For the majority of the electrical installations in buildings in Europe, especially considering residential buildings, there is no preventive maintenance and no renovation.

Construction year of dwellings in Europe (27 Member States)

Sources: IGNES:based on NCB&ECB calculation, BPIE survey 2010, European Copper Institute, G&P estimates, European Environment Agency, OTB Research institute)

- When a building is renovated, the focus is on optimising energy efficiency and energy saving, which means that the heating installation is renewed, the windows will be changed and the walls of the building will be insulated. But in most cases, the electrical installation remains untouched despite the fact that over the past 30 years the number of electrical appliances in use has significantly increased. The result is that many of the old installations are operating at their limits.
- Since the 1980s, electrical installations through standards have been designed to protect people against electric shock and fire.

→ So with no maintenance and no updating, electrical installations could be considered to be "at risk".

Market penetration of electrical appliances impacts electrical installations

- The market penetration of electrical appliances in the home has significantly increased in recent years. (Examples include: washing machines <25% in 1960, 88% in 1980 and 95% in 2005. Electric cooker, 50% in 1960, 77% in 1980 and 83% in 2005. Small electrical equipment items, <10% in 1960, about 80% in 1980, >93% in 2005).

→ Today, old installations are already operating at their maximum limits, or even above them.

Maintenance and renovation solutions need to be interoperable with the existing infrastructure

- An example of problem of interoperability related to maintenance is where new light sources are not necessarily compatible with the existing lighting control systems. Therefore, those new light sources can no longer be controlled by existing lighting control systems and this may result in a dangerous situation.

- Renovation approaches should also ensure that there should be no need for drastic modifications beyond the intended renovation. Some new lighting controls require three wires to be connected to the infrastructure for proper functioning. So, if only two wires are available in an installation, these solutions are not considered as being effective.

→ To ensure interoperability, alternative solutions need to be made accessible to the market.

Future ProSumer and large loads for electrical installation

- New and more powerful loads will be connected to a greater extent: heat pumps and electric vehicles are significant consumers of electricity.
- New producers are also connected to existing electrical installations. Photovoltaic, block heat, power generators and, in future, fuel cells will also be connected to the existing switchgear, if no additional facilities are available.
- The electrical installation must make a significant contribution to achieving energy efficiency targets (according to "20/20/20")

→ To connect these "ProSumers", the electrical installation must be checked and updated.

Electrical installation update to answer to social aspects

- The structure of Europe's population is changing due to an increasing age profile.
- Taking into account the future age pyramid, an electrical installation will have to handle expected future requirements to enable residents to stay longer and remain safe in their homes.
- Healthcare at home (See also part D, on eHealth).
- Unavoidable basic needs for a handicapped person

→ Requirements to enable the future functionalities regarding these demands (e.g. communications systems for sensors, actuators, etc) must be considered too.

Non-compliant and counterfeit products are found on European market

- Many actions to combat counterfeit devices are launched at local (Member State) and at the European level, but in itself this is not sufficient.
- A strong political will supported by reinforced control and enforcement to eliminate these non-compliant and counterfeit products is required.

Concrete Recommendations for Smart Buildings – "Electricity for ALL":

Two pillars are to be defined:

- Electrical installation renovation with conformity assessment.
- Campaign against non-compliant products

The main actions for a successful implementation are to:

- Establish an appropriate legal framework for updating electrical installations (renovation and conformity assessment) with effective transposition at country level.
- Elaborate European requirements for electrical renovation of buildings.
- Require periodic control of electrical installations.
- Take into account financial support for renovation.

In detail, we recommend:

- To gather official statistics (accidents and fires originating in electrical devices).
- To map the country regulation situation in Europe.
- To establish an appropriate legal framework to update electrical installation (renovation and conformity assessment) with effective transposition at country level.
- To elaborate European requirements for electrical renovation of buildings.
- To impose periodic control of electrical installations.
- To take into account financial help required by consumers for renovation.
- To organise the fight against non-compliant products and reinforce RAPEX database.
- To educate end users on inherent risks with their old electrical installations.

Impact on the market and the jobs in Europe

- Allow existing electrical installation to accommodate new needs and solve new problems with total safety.
- Improved protection for consumers against electric shock and fire.
- Fewer injuries and fatal accidents (fewer electrical accidents).
- Less damage (caused by fire).
- Enabling greater ambient assisted living: health and senior citizens.
- More jobs due to market expansion:
  - For SMEs (electrical installers, planners, etc).
  - For Industry (from SMEs to large companies).
  - For Sales (e.g. Wholesalers).

C) Safety and security infrastructures

Living, working and moving safely and securely are some of the principal concerns of all European citizens. While the European Union is a relatively safe and secure place compared to other regions in the world, greater mobility, critical infrastructures, urban developments, large events and the peaceful cohabitation of many people from different origins require a political framework and actions that reassures European citizens while going about their legitimate activities.

The planned EU communication on the "Security Industrial Policy – Towards a Strong Security Initiative", as a follow up to the recent EU communication on Industrial Policy, recognises the strong role the security industry in Europe has to play to assure utmost safety and security for all citizens. A number of concrete steps have now to be taken.

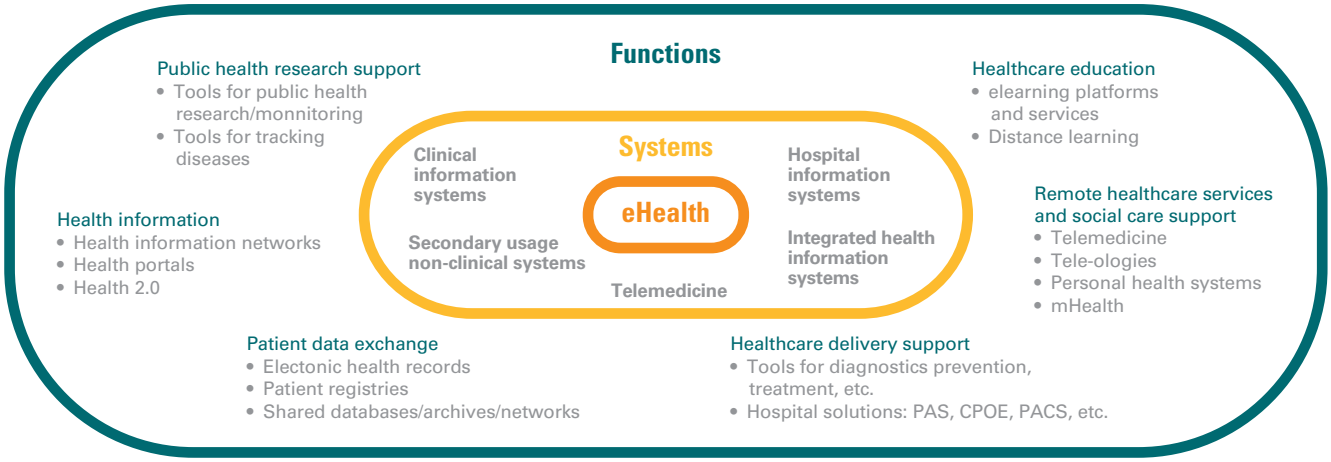
Concrete Recommendations for Safety and Security Infrastructures:

- Europe has to emphasise norms and standards to a greater extent and to implement them more speedily:
  - A reduction in market access barriers and commercial barriers.
  - Norms and standards are to be interpreted as exploitation and market development instruments.
  - Success is only achieved with quality requirements accepted on an extensive basis.
- Previous mental demarcations have to be overcome when analysing security matters - also on the question of defence.
  - Example of an as yet unsuccessful integration: Draft programming mandate addressed to CEN, CENELEC and ETSI in order to establish Security Standards, dated 18 October, 2010:
    - Objective: developing a work programme for European security standards in the security guideline market. Focus: an exclusively civil orientation is required but dealing with the question of Border Security.
    - Border Security demands the integration of defence considerations with "Blue Limits".
  - Example of successful integration: Notification of the Commission dated 20 October 2010 on the draft of a timetable for establishing the joint information scope for monitoring the maritime sector:
    - An express reference to the fact that practical experience and already developed military information exchange systems are to be taken into account.
- EU standards and industrial policies have to take account of service-related considerations to a greater extent; these have been focused on products and systems to date:
  - The standardisation and certification of security services have to form an integral part of a European industry and research policy on the question of security.
  - Article 26 of the EU domestic market directive: *"The Member States promote the development of voluntary European standards in collaboration with the Commission in order to improve the compatibility and consistency of services performed by service providers from various Member States, the information of the relevant service recipients and the quality of services..."*

  Industry has an advanced performance obligation:
  - ZVEI has proposed a standard for the "European Proof of Competence for Services in respect of Security Equipment", submitted by CEN/CENELEC.
- Establishment of a "One-Stop-Testing, One-Stop-Certification" approach in Europe:
  - Third-party certification is to be established in the safety market as a recognised means for quality assurance – including security.
  - Simplification and uniformity of third-party certifications have reduced costs for companies operating throughout Europe, thereby creating larger markets.
- Bringing life into the Security Label proposed by ESRIF together with industry:
  - Quality of security products – disregarding cheap imports that endanger quality standards.
  - Definition of interfaces for ensuring the interoperability and compatibility of products and systems.

Research and Development, Time to Market

- Security research is to be flanked by:
  - An industrial-related approach: "European Guideline Market for Security."
  - A more effective inclusion of public and private users and consumers in order to avoid erroneous technological and economic developments.
  - More intensive interlinking of research, innovation and industrial policies, including norms and standardisation.
  - An innovation-oriented public acquisition policy.
- A comprehensive and systematic definition of security in industrial policies and research:
  - Target objective: development and promotion of previously diversified markets into an "Integrated Safety and Security European Market".
- Ensuring the transfer of research achievements:
  - The EU has excellent research and development capacities in numerous key technology sectors.
  - There is no correspondingly successful strategy for marketing research results with the help of commercial goods and services and achievements.
  - An increased strategically-oriented approach is necessary with regard to research, innovation *and marketing (!).*
  - An early inclusion of norms and standards is essential in the research processing sector.
  - A speedy implementation of innovative products and new business models is to be particularly promoted by KMU or other relevant associations as well.
- No security research without an industrial participation and a public user or consumer:
  - Public users and consumers were under-represented in the 7th EU Research Programme – compromising the potential future development of the market if the relevant demand is not properly researched.
  - Public users and consumers have to develop buying procedures for innovative and comprehensive interfaces – many of them being "Pioneer Customers".
- Development of related matters (e.g. urban security) for research clusters in order to avoid fragmentations:
  - Systematic approaches give rise to the formation of "critical masses" and thereby to system considerations extending beyond the present company or association limits.



Source: COCIR

- Promotion of research and research establishments:
  - Promotion of demonstrators and market preparatory measures.
  - Inclusion of realities in the value-added chain during the relevant promotional practice.
  - European parallels based on the model of the BMWI High-Tech Founder Fund: The High-Tech Founder Fund provides technology-oriented business formations with the necessary starting capital. In addition, it provides the necessary assistance and support of the founder team (http://www.high-tech-gruenderfonds.de).
  - Influence of socio-cultural aspects with regard to acceptance of the technology used: interdisciplinary projects and accompanying research on critical issues are envisaged in the national security research programme – to be transferred on a European level.
- Political support for international/large projects/export promotion
  - Infrastructural projects such as events (e.g. Football World Cup or the Olympic Games) are of significant relevance for companies and also for Member States as industrial locations.

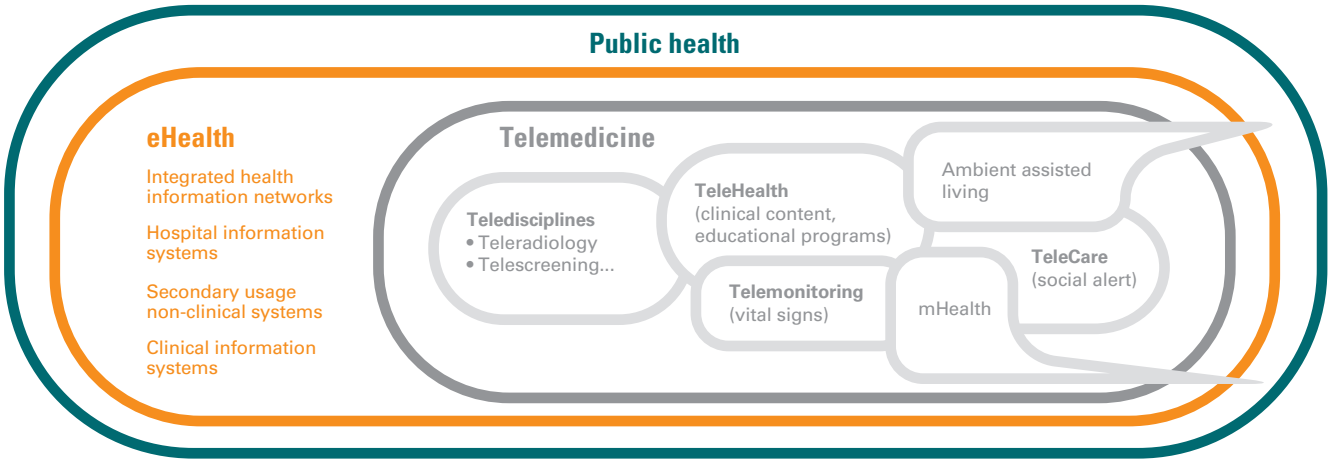
D) eHealth

eHealth describes the application of information and communication technologies across the whole range of activities and functions that affect the health sector – such as hospital information systems, clinical information systems, telemedicine, integrated health information networks and secondary-usage of non-clinical systems.

eHealth covers the following functions:
- Data exchange
- Health education
- Health information
- Public health research support
- Healthcare delivery support
- Remote healthcare services social care support

The benefits of eHealth are many. The European Council Conclusions on the "Safe and Efficient Healthcare through eHealth" (December 2009) recognise the "importance of eHealth as a tool to improve quality and patient safety, to modernise national healthcare systems, to increase their effectiveness and make them better adapted to meet the individual needs of patients, health professionals and the challenges of an ageing society." The European Commission has outlined its activities in the "eHealth Action Plan 2011/2012."

The WHO Global Observatory on eHealth report however stresses that "even the most progressive eHealth policies are at risk if not supported by an adequate and complementary funding environment." The current payment systems often do not encourage care providers to invest in eHealth and do not reward providers for improing the quality of care via ICTs. In addition, the costs and benefits of adopting new technologies are not shared equally among the stakeholders.



Source: COCIR

Concrete Recommendations on eHealth:
Therefore, it is recommended to:

- Consider eHealth as a worthwhile investment, not as a cost.
- Measure the non-financial impact of eHealth to make informed funding decisions.
- Finance the deployment of eHealth.
- Develop reimbursement mechanisms for eHealth services.
- Foster standards and interoperability.
- Enable market development.

Telehealth or telemedicine in the context of eHealth can be defined as the delivery of healthcare services through the use of information and communication technologies in a situation where the actors are not at the same location. The actors could be either two healthcare professionals or a healthcare professional and a patient. Telemedicine includes all areas where medical or social data is being sent/exchanged between at least two remote locations.

Concrete Recommendations telemedicine:
In order to foster the deployment of telemedicine across Europe, the following actions are recommended:

- European Commission and Member States to establish an appropriate legal framework with effective transposition at member state level.
- Strengthen cooperation between healthcare stakeholders to "best practice health strategies" supporting telehealth / telemedicine adoption in routine clinical practice.
- Finance more and sustainable large-scale projects with health economic evaluation to assess the impact of telehealth solutions.
- Integrate telehealth into existing care delivery structures and ensure interoperability of telehealth solutions.
- Establish sustainable economic model for telehealth by starting a dialogue between healthcare stakeholders.

E) Information and Communication Infrastructures

Digital technologies will increasingly drive productivity, sustainable growth, innovation and employment throughout Europe. All manufacturing sectors in Europe use ICT tools for their production and services. The European Commission has outlined its vision in the "Digital Agenda", one of the flagships of the Europe 2020 strategy.

Achieving the digital vision for Europe requires a concerted effort, with a focus on several building blocks:

- Digital infrastructure / Next-Generation networks
- Future Internet/Next-Generation services
- Digital Single Market
- ICT Research and Development
- eSkills
- OnlineTrust and Security
- Trade
- Governance.