

Key technologies for 2015

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Innovation, a key factor for economic development, lies on many scientific, technological, organizational, financial and commercial processes that lead to creation of new or improved services and products. Essential to the competitiveness of companies, ICT contributes greatly to productivity gains and economic growth. Indeed, ICT represent 50% of the productivity growth in Europe. ICT also address grand societal challenges such as improvement of life quality through information access, or sustainable development. In 2009, the global market of ICT was worth 2.791 B€.

The ICT sector

The ICT sector includes all the fields related to technologies, content and digital services.

- Telecommunication equipment

The competition from Chinese actors (ZTE, Huawei) and actors like Cisco and HP is growing. Therefore, the industry only has a few global actors left, such as Alcatel-Lucent, Nokia Siemens Networks and Ericsson.

- Computer equipment

They are engaged in a permanent race for performance. The market remains dominated by American companies (HP, IBM, Dell, Apple...), two Asian ones (Lenovo, Acer) and some local specialists (Hitachi, Fujitsu-Siemens, Bull...).

- Telecom services

This market resisted better to the financial crisis, with a global growth of 2% in 2009. European markets are dominated by some pan European actors (France Telecom, Telefonica, Vodafone, etc.) and some local actors (Free, Bouygues Telecom, Fastweb, etc.). New markets appeared such as mobile internet and broadband, compensating the decline of fixed lines.

- Industrial electronics and components

This sector has huge industrial investment and R&D costs, leading to a concentration of a few global actors (Intel, Samsung, Toshiba, Texas Instruments, TSMC, STMicroelectronics...) and to a partition between design activities and foundry activities. However, companies still running both activities benefit from a competitive advantage (Intel, Samsung).

The major trends in the sector

By 2015-2020, the ICT sector should evolve in a context of new infrastructures, more efficient and more complex, with:

- Electronic components of very small size and huge calculation capacities;
- Broadband ;
- All-IP networks ;
- Huge energy efficiency from systems and networks;



- Development of cloud computing (main evolution in the sector).

The ICT sector should then lean upon more efficient tools and the Internet of Things, allowing things to be connected and to provide information through the Internet such as smart homes.

Technological trends and key technologies

The main technologies for the ICT sector are:

- Nanotechnologies;
- Technologies linked to optical, large range radio for people and things' connectivity;
- Routing network;
- Wireless communication;
- Digitalization and conversion tools;
- 3D engines;
- Interactive men-thing interfaces;
- Services oriented architecture or SOA;
- Virtualization;
- Free software.

It is important for these technologies to be standardized. This integration of more and more complex systems needs huge capacities of management.

Analysis of the situation in France

In France, R&D efforts in ICT are slightly above the European average but remains weak compared to the US, Japan and South Korea. France is in first position in the European industry of electronic components and has major research (CEA Leti, CNRS LAAS...) and industrial (STMicroelectronics, Soitec, NXP, Atmel, Freescale, Altis, Ipdia, etc.) actors. France is also a major country concerning the development of connected things and digital content.

The major assets of France concern its almost unique expertise in complex embedded systems used in aerospace and the military: this market represents more than 15% of the total spending in computing, one of the highest rates in the world. Moreover, some of the largest companies in this field are French, such as Altran.

Recommendations

For a better development of the ICT sector, public support must increase and target key technologies such as ICT. This is the same concerning competitiveness poles and the EUREKA clusters, often essential to find critical mass at the European level. The development of the ICT sector also rests on the development of standards of laws and interoperability.