

Digitising European industry

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The Commission presents a staff working document on advancing the Internet of Things (IoT) in Europe.

It notes that the **Internet of Things represents the next major economic and societal innovation wave enabled by the Internet**. With the IoT, any physical (e.g. a thermostat or a bike helmet) and virtual (i.e. a representation of real object in a computer system) object can be connected to other objects and to the Internet, creating a fabric between things as well as between humans and things. The IoT can combine the physical and the virtual worlds into a new smart environment, which can **make lives easier, safer, and more efficient**.

The [Digital Single Market strategy for Europe](#) underlines the need to avoid fragmentation and to foster interoperability for the IoT to reach its potential.

Expected benefits: less than 1% of objects are currently connected to the Internet. The number of IoT connections within the EU is **estimated to increase from approximately 1.8 million in 2013 to almost 6 billion in 2020**, leading to the EU IoT market being higher than one trillion euros by 2020. This growth in connectivity is expected to bring **vast economic benefits**, whereby the IoT significantly reshapes industry structures, with borders between products and services, as well as borders between industrial sectors becoming less obvious than today.

In the opinion of Commission services, Europe's future digital industrial strengths will depend on the **capacity of its industry to seize the opportunities coming from the wider diffusion of digital innovation across sectors**. Given Europe's current strengths in vertical markets, the development of the IoT offers a unique opportunity for Europe, since it has the potential to lead to the establishment and reinforcement of the new digital value chains in Europe attracting investments and innovators.

This staff working document, which builds on a series of studies and consultations organised over the past 4 years, is part of the digital single market technologies and public services modernisation package. It discusses:

- the challenges for the implementation of the Internet of Things, including the need to avoid fragmentation of the market;
- the key features of the IoT in a single market, including IoT architecture and data handling;
- the obstacles to connectivity, particularly spectrum availability and network coverage;
- the importance of standardization and interoperability, and obstacles to achieving them;
- possible obstacles to data flow and access to data;
- the need for a thriving IoT ecosystem, with a dynamic interaction between the vertical and horizontal dimensions;
- spurring innovations in lead markets. The Annex describes the lead markets in greater detail.