Internet of Things policy of the European Commission

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• IoT Policy

• IoT in Framework 7 R&D
  – Call 7: Objective 1.3
  – “Internet connected objects”
IoT – Underlying trends

Scale

MOORE'S LAW

transistors


10,000,000,000

1,000,000,000

100,000,000

10,000,000

1,000,000

100,000

10,000

1,000

Intel 486 Processor

Intel 486 Processor

Intel Pentium processor

Intel Pentium II Processor

Intel Pentium II Processor

Intel Pentium III Processor

Intel Pentium IV Processor

Intel Pentium IV Processor

Intel Pentium Pro Processor

Intel Pentium Pro Processor

Intel Pentium Processor

Intel Pentium Processor

Intel Itanium Processor

Intel Itanium Processor

Dual-Core Intel Itanium 2 Processor
IoT – Underlying trends

Scale
IoT – Underlying trends

Scale

Mobility

- GSM
- WiMAX
- Bluetooth
- ZigBee
- NFC
- WiFi
- LoWPAN

IoT policy
IoT – Underlying trends

- Scale
- Mobility
- Heterogeneity & Complexity

IoT policy
The underlying trends will occur regardless of public intervention. It will bring a new set of challenges (some directly affecting individuals) and deep societal changes. Simply leaving the development of the IoT to the private sector is not a sensible option.

A not-that-different debate at the World Summit on the Information Society has driven to similar conclusions: public authorities cannot shirk their responsibilities towards their citizens.

A 14 action plan to ensure that the use of IoT technologies:
• Stimulate economic growth
• Improve individuals’ well-being
• Address some of today’s societal problem
IoT policy

Governance

- How is this identification’s structured?
- Who assigns the identifier?
- How is information security ensured?
- Which stakeholders are accountable?
- Which ethical and legal framework applies?

Action 1

- Define a set of principles underlying the governance of IoT
- Design an ‘architecture’ with a sufficient level of decentralised management
Privacy and protection of personal data

Fundamental Rights

Action 2
- Continuous monitoring of the privacy and the protection of personal data
- Communication on trust and privacy in the ubiquitous society

Action 3
The ‘right to the silence of the chips’: individuals should be able to disconnect from their networked environment at any time
Trust, Acceptance and Security

Security for individuals

Security in the business

Action 4
The Commission will follow ENISA work on the identification of emerging risks and provide a policy frameworks to develop IoT

Action 5
The Commission will follow the development of IoT infrastructures becoming a vital resource to economy and society
**IoT policy**

**Standardisation**

- Interoperability
- Economies of scale
- Low entry barriers
- Level playing field

**Standards Mandate:**

- Launch or extend currently standards mandates to include issues related to IoT
- Ensure IoT standards are developed in an open, transparent and consensual manner
Research and Development

Connecting a thousand objects is easy, connecting several billions remains a faraway challenge

Action 7
Finance research projects through FP7 projects

Action 8
Contribute to the respective Public-Private Partnership:
- Green cars
- Energy-efficient buildings
- Factories of the Future
- Future Internet
Openness to innovation

- New applications
- New uses
- New business models
- New barriers to innovation

**IoT policy**

**Action 9**

Innovation and pilot projects: promoting the deployment of IoT applications by launching pilot projects through CIP
Institutional awareness

- Act hand-in-hand with other institutions
- Understand the challenges
- Understand the opportunities

The Commission will inform European Institutions and relevant stakeholders about IoT developments
International dialogue

Borderless applications mean joint solutions

Action 11

International dialogue to promote the lines of action laid down in this Communication
Waste management

- RFID tags can have negative impacts on environments
- RFID tags could help the recycling process

Action 12

To assess the difficulties of recycling tags and the benefits and nuisances that the presence of tags can have on the recycling of object
Future developments

The story has just only started

**Action 13**

Monitoring the introduction of IoT related technologies to allow the assessment of their impact as well as the effectiveness of the related Community policies

**Action 14**

The Commission will assess the evolution of IoT
Call 7 - Objective 1.3

Internet-connected Objects
The Internet of Things is a Metaphor

Each object can be addressed

Objects can be linked and communicate

Horizontal and cross-cutting application areas
Sensor Networks and Decentralised intelligence
Integrated part of the Future Internet
Internet of Things - Typical examples
Introducing Objective 1.3: Internet-connected objects

**Objective 1.3 in the context of Challenge 1**

a) Contribution to the Network and Service layers

b) Applied research in the enterprise and business environment:
   - Architecture and technological foundations for cooperative smart objects
   - Towards integration and decentralized intelligence

**Target outcomes**

a) An open networked architecture

b) Adaptive software supporting data acquisition

c) Coordination and support actions
a) An open networked architecture for Internet-connected objects

- **Open architecture**
  - End to end characteristics
  - Manage a large population of devices
  - Conceal the heterogeneity of networks technologies

- **Architecture with large and dynamic capabilities**
  - Interoperability across providers and consumers of information and services, re-use of object entities
  - Open interfaces
  - Self-management, self-configuration, self-healing properties

- **Technologies should ensure**
  - Integration of the IOT into the service layer of the Future Internet
  - Distribution and aggregation of information
  - Communication among networked objects
b) Adaptive software supporting data acquisition

Funding scheme: IP & STREP

- Integration with business platforms and components
  - Large number of sensors delivering data
  - Compatibility with existing business environment

- Interpretation of the environmental and context information
  - Information from human behaviours and multi-modal interactions
  - Act on behalf of the users’ intentions

- Additional functionalities
  - Interoperability, privacy, security
  - Discovery and mapping of real, digital and virtual entities
c) Coordination and support

**IoT Fp7 call 7 actions**

Funding scheme: CSA

- **Roadmaps, standards, benchmarks, ... for future industrial developments of IOT applications**

- **International collaboration**
  - Analysis of research agendas, preparation of concrete initiatives (China, Japan, U.S., Brazil, ...)
  - Coordination of related EU R&D programmes/activities
Impact and Funding schemes

• **Expected impact**
  - New range of Internet services based on interconnected objects communications and integration with business processes
  - Novel business models on objects connectivity
  - Emergence of new companies (SMEs) offering innovative solutions
  - Consensus by industry (standards, benchmarks) and by stakeholders (governance) of the IOT

• **Funding schemes**
  - a), b): IP, STREP; c): CSA

• **Indicative budget distribution**
  - IP/STREP: EUR 27 million; the objective is to support 2 IPs
  - CSA: EUR 3 million

• **Call**
  - ICT call 7
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IERC – Internet of things European Research Cluster: