

# INTERNET OF THINGS

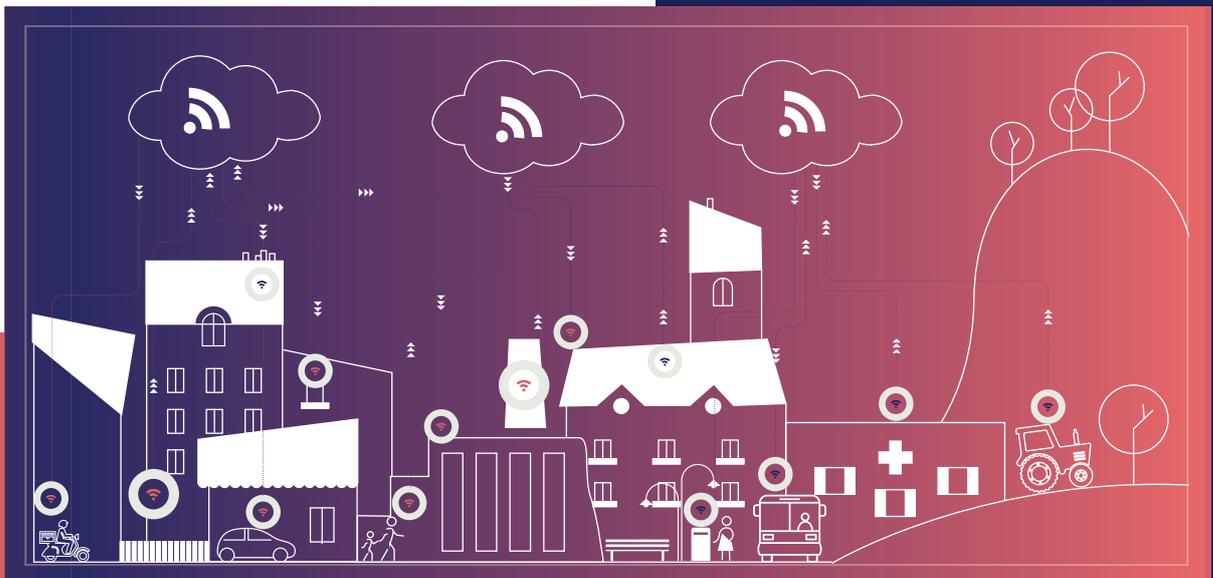
## INVENTING PRO-INNOVATION REGULATION



ARCEP SYMPOSIUM

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#IoTArcep



### Preparing for the IoT revolution

The Internet of Things (IoT) is growing rapidly, and already revolutionising the daily lives of individuals, businesses and local authorities.

Because it combines telecoms, cloud computing and big data, the Internet of Things encompasses a great many issues and challenges, ranging from standardisation and open access, to protecting users' data by way of managing numbering and frequency resources.

In autumn 2015, Arcep began a collaborative process with ANSSI, ANFR, DGALN, France Stratégie, CNIL and the DGE, whose aim was to enable the IoT ecosystem's self-organisation. For Arcep and its partners, this means mapping out the challenges inherent in the Internet of Things' deployment, to fully explore, understand,

facilitate and support this revolution, but also to identify and anticipate possible structural decisions that need to be made.

To ensure this process is successful, Arcep and its partners established an open dialogue with the ecosystem's stakeholders, who expressed themselves over the course of 30 interviews, three thematic workshops (smart industry and transportation, smart cities and buildings, connected health) with 28 enterprises, and a public consultation in summer 2016 which received feedback from more than 40 contributors.

An open and collaborative process between public sector stakeholders

# DEPLOYING THE IOT: 5 KEY CHALLENGES

The 30 interviews and three thematic workshops enabled Arcep and its partners to identify five core challenges for a successful Internet of Things revolution.

## 1 Ensure multiple, mobile, reliable and affordable connectivity

The Internet of Things requires ubiquitous connectivity supplied by a range of technologies. New, dedicated IoT networks (LPWAN, etc.) serve to complete existing fixed, cellular, satellite and short-range (Wi-Fi, Bluetooth, etc.) systems, to satisfy an array of varying coverage, latency, autonomy, energy and cost requirements.

## 2 Guarantee the availability of scarce resources

**Frequencies.** Frequencies are governed by either a system of individual licences or one of general authorisation. The latter are referred to as unlicensed frequencies and are used by a growing number of players, whose applications are not catalogued. If, in the medium term, the use of these bands is not likely to result in their saturation, the situation nevertheless raises the question of how much spectrum will be needed to meet the IoT's growing requirements.

**Identifiers.** On the matter of addressing, the exponential increase in the number of connected objects raises questions over the uniqueness and possible dearth of IP addresses, and particularly over the transition from IPv4 to IPv6.

## 3 Keep it open to everyone

The Internet of Things sector is just now taking shape. Several technologies exist but no single standard has taken hold thus far. For Arcep, it is vital not to impede innovation, and to leave it up to users to choose between available options.

## 4 Help to build trust

Users' trust in IoT solutions is built on two pillars: proper management of both private and business data, and the networks' security, to guarantee their adoption and protect traffic.

## 5 Support market players, foster a thriving ecosystem

The array of solutions opened up by the Internet of Things is growing, and already revolutionising the daily lives of people, places and businesses. This profound, ongoing change means that Arcep must continue to work on bringing the IoT ecosystem's players together on a regular basis, to discuss specific topics.

## The Players

### INTERVIEWS

Actility  
Intel  
Connectings  
Commission de régulation de l'énergie  
Idate  
Huawei  
Numericable-SFR  
Adeunis RF  
Chaire «Internet of Everything» de Polytechnique  
Bluelinéa  
ERDF  
IBM  
Kowisio  
Google  
Ericsson  
Sequans  
Optiflows  
Kerlink  
Nest  
Cisco  
STMicroelectronics  
Bouygues Telecom  
Sigfox  
Qualcomm  
Sagemcom  
Legrand (bâtiment)  
Orange  
SNCF - Direction Digital  
Eutelsat  
Samsung

# 3 ARCEP TOOLS

## SERVING THE IOT ECOSYSTEM

working together



### START-UP AND TRIALS OFFICE

An information conduit and single point of contact, within Arcep, to support start-ups as well as businesses and local authorities in conducting trials and experiments.



### UNLICENSED FREQUENCY PORTAL

Dedicated to bands that are subject to general authorisations (scheduled to launch in the first half of 2017) to:

- inform market players on the existing regulatory framework and the latest developments;
- collect, on a voluntary basis, information from IoT industry players on their use of unlicensed frequencies;
- report any quality of service issues on unlicensed bands.



### ARCEP'S THEMATIC WORKSHOPS

Starting in 2017, to continue the dialogue between public sector stakeholders and IoT industry players, focusing on specific topics and issues, sharing information, experiences and feedback.

THESE NEW TOOLS WILL COMPLETE ARCEP'S THINKING PROCESS AND ACTIONS, within a European and international context. Arcep will continue its regulatory work on the Internet of Things: implementing the new framework for conducting trials introduced by the Digital Republic Act, reviewing the conditions governing the use of unlicensed frequencies, IPv6, numbering and eSIMs.

### WORKSHOPS

#### Smart industry & Transportation

Blue Solutions

Hub One

Mission Transports

Intelligents

Renault

RTE

SNCF

Thalès

Transdev

#### Smart cities and buildings

AFNOR

AVICCA

Enedis

Ijenko

JC Decaux

M2ocity

Nokia

Oledcomm

Sigfox

Suez

Vertical M2M

#### Connected health

AFNOR

Altran

ASIPS

DGCCRF

INRIA

Korian

Medappcare

Nokia

Orange Télécom

Télécom ParisTech

Arcep's complete action plan is detailed in document 2 of the White Paper: «Preparing for the Internet of Things Revolution».

Arcep's dedicated IoT website:

<http://www.arcep.fr/iot/>

**internet des objets**



# MANIFESTO

## ARCEP, COMMUNICATIONS NETWORK ARCHITECT AND GUARDIAN

Internet, fixed and mobile telecom and postal networks constitute the **“Infrastructures of freedom”**. Freedom of expression, freedom to communicate, freedom to access knowledge and to share it, but also freedom of enterprise and innovation, which are key to the country's ability to compete on the global stage, to grow and provide jobs. Because it is essential in all open, innovative and democratic societies to be able to enjoy these freedoms fully, national and European institutions work to ensure that these networks develop as a **“common good,”** regardless of their ownership structure, in other words that they meet high standards in terms of accessibility, universality, performance, neutrality, trustworthiness and fairness.

Democratic institutions therefore concluded that independent state intervention was needed to ensure that no power, be it economic or political, is in a position to control or hinder users' (consumers, businesses, associations, etc.) ability to communicate with one another.

The electronic communications and postal regulatory authority (Arcep), a neutral and expert arbitrator with the status of quasi autonomous non-governmental organisation, is the **architect** and **guardian** of communication networks in France.

**As network architect,** Arcep creates the conditions for a plural and decentralised network organisation. It guarantees the market is open to new players and to all forms of innovation, and works to ensure the sector's competitiveness through pro-investment competition. ARCEP provides the framework for the networks' interoperability so that users perceive them as one, despite their diversity: easy to access and seamless. It coordinates effective interaction between public and private sector stakeholders when local authorities are involved as market players.

**As network guardian,** Arcep enforces the principles that are essential to guaranteeing users' ability to communicate. It oversees the provision of universal services and assists public authorities in expanding digital coverage nationwide. It ensures users' freedom of choice and access to clear and accurate information, and protects against possible net neutrality violations. From a more general perspective, ARCEP fights against any type of walled garden that could threaten the freedom to communicate on the networks, and therefore keeps a close watch over the new intermediaries that are the leading Internet platforms.