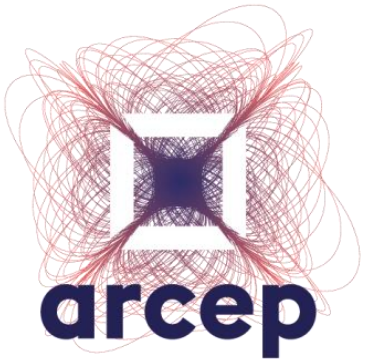



# Telconomics

## How to face regulatory challenges in the digital age?

30 June, 2016

# New challenges for the French telco regulator

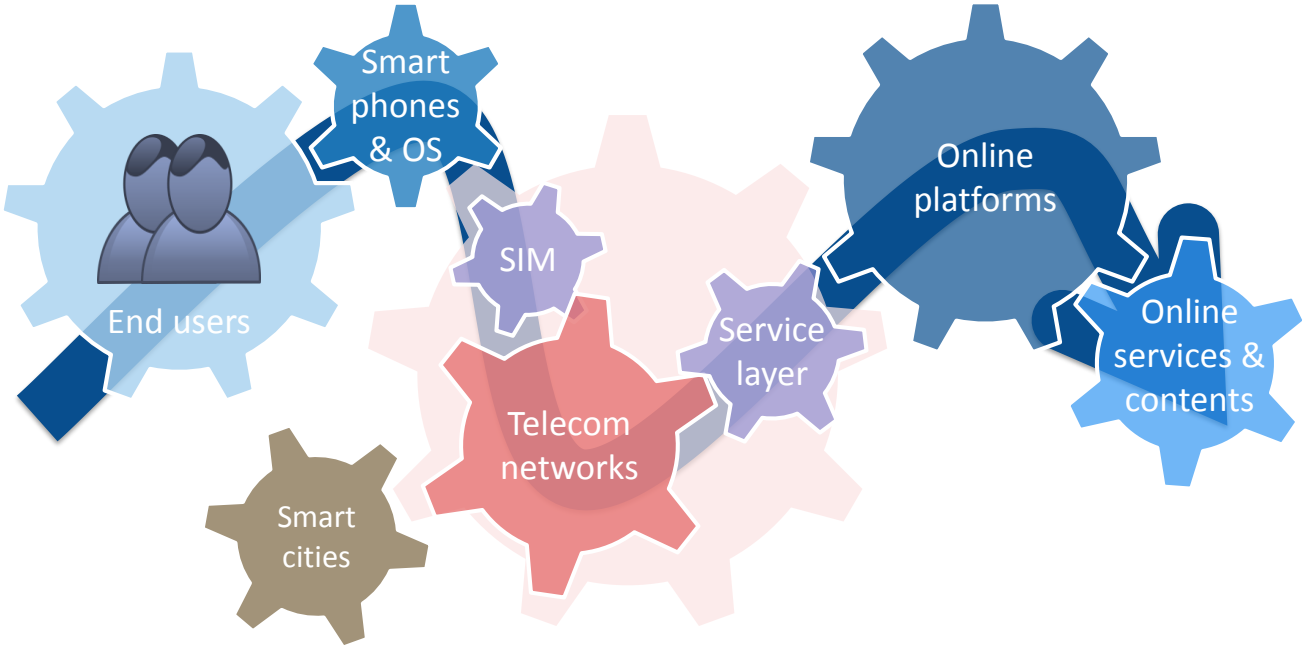
Connectivity, a key objective in the digital age

# A booming but complex digital ecosystem

Over the last decades, the digital sector recorded an unprecedented expansion…

that benefited not only the telecom operators; new services have emerged:

- Sometimes, they compete with traditional telecom services;
- They often require a better performance of the networks;
- They are granted the application of the net neutrality principles.




**Given net neutrality, the role of telcos in the next years will be to provide the connectivity needed by the digital economy.**

# The regulation of connectivity consists of a multifaceted approach

## Connectivity involves 3 sub-dimensions:

- Coverage gives end users the capacity to use digital services;
- Performance of the networks provides the end users with fast and reliable access;
- Affordability fosters the penetration of new technologies and services.

### Coverage

- ✓ 92.2% of unbundled copper lines (source: Arcep)
- ✗ 24th in Europe for LTE coverage (source: DESI 2016)
- ✗ 29th in Europe for NGA coverage (source: DESI 2016)

### Performance

- ✓ 6th in Europe on Internet usage (source: EC, Eurobarometer 2015)
- ✓ 679 MB per mobile user per month, almost x2 between 2014 and 2015 (source: Arcep-Credoc-CGE, Digital Barometer 2015)

### Affordability

- ✓ Among the lowest prices in Europe for mobile offers (source: OECD, Digital economy outlook 2015)
- ✓ Among the lowest prices in Europe for fixed bundle offers with >12 Mbps downlink (source: Van Dijk, Broadband Internet Access Cost, February 2015)

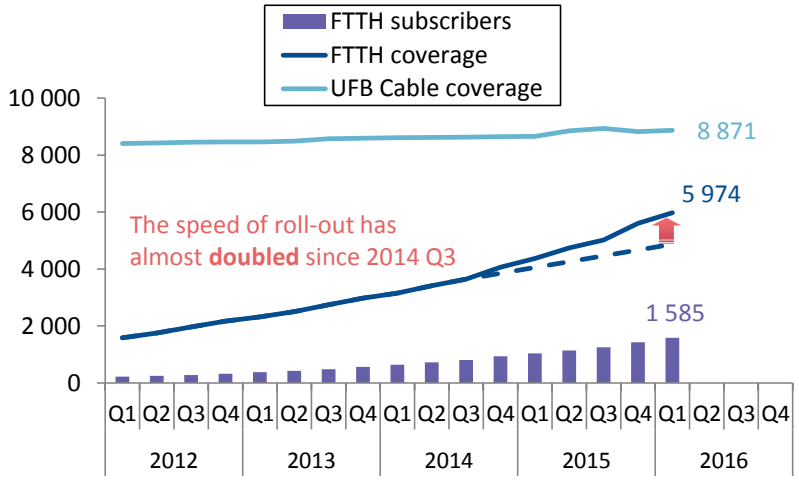
**Since prices and performance are satisfactory, the main challenge in France is to extend the coverage of ultra-fast broadband networks.**

# Filling the gap in connectivity is a long term challenge

## The deployment of fibre is accelerating…

- FTTH is closing the gap with cable;
- Network operators have entered an industrialization phase.

**Coverage of fibre and cable networks (in thousand premises)**




source: Arcep, Market Observatories

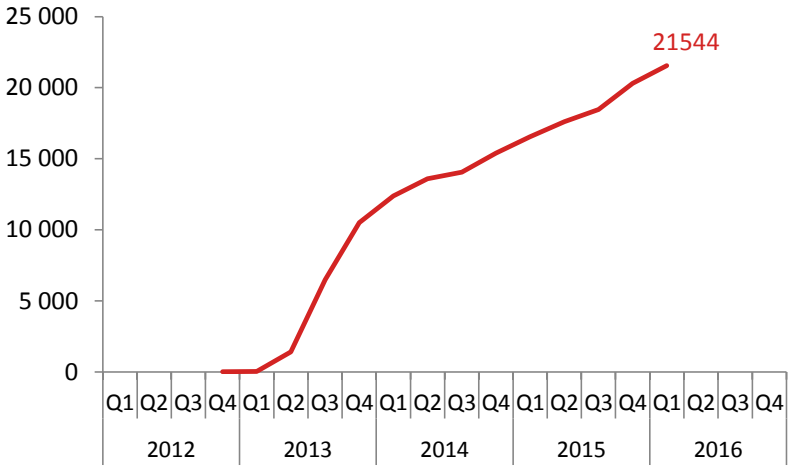
## …as well as the subscription of FTTH.

- 1.6 million subscribers at 2016 Q1;
- +53% over the last rolling year.

## After a delayed launch, 4G deployment is stepping up...

- The leading operator covers 76% of the population with 4G in July 2015;
  (source: Arcep, Market Observatories)
- Coverage is steadily and strongly progressing.

**Total number of 4G sites in service declared by operators**




source: ANFR

## …fostering penetration and usage.

- 22.0 million 4G subscribers, 31% of the total base at 2015 Q4;
- 1.3 GB per month per Internet active SIM at 2015 Q4.

# The need to invest for a boosted connectivity

## A scale up from broadband to ultra-fast broadband is necessary.

- The current connectivity in France is good with regard to broadband…
- …but it is not sufficient to support the needs of digital economy in the long run.

**Minimum investment expected for the next 3 years:**
+10,000 new 3G/4G sites deployed*
+25,000 sites upgraded to 4G

*: 65,000 sites installed today

**Minimum investment expected for the next 3 years:**
+7-8 million FTTH premises passed**
At least 2 co-investors on >80% of FTTH lines

**: 5,9 million premises passed at Q1 2016

## A dense, extended and various mobile connectivity will be needed to:

- **provide 4G coverage** and digital services **to territories**;
- **densify the 4G networks to support the increase of usages**;
- allow the development of innovative services.

## An ultra-fast broadband fixed connectivity will be needed to:

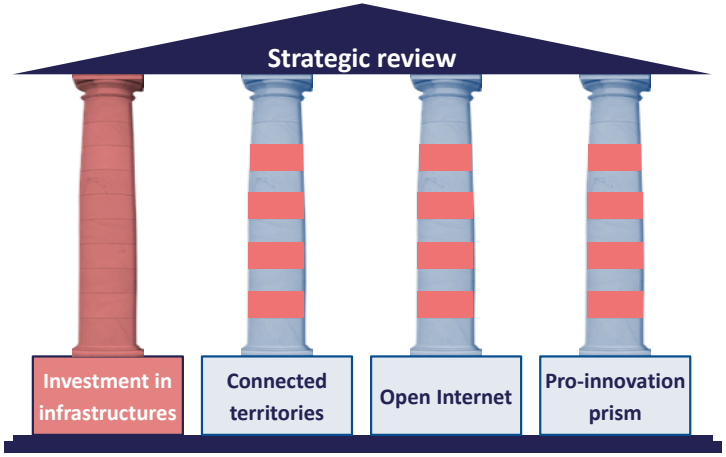
- provide ultra-fast broadband **to consumers and businesses** based mainly on FTTH;
- guarantee transport networks to new forms of communications;
- ease the implementation of smart cities' solutions.

# A pro-investment doctrine

The regulatory approach to bridge France's investment gap

# Promoting efficient investment is the cornerstone of Arcep's strategy

## The strategic review has highlighted the importance of investment.

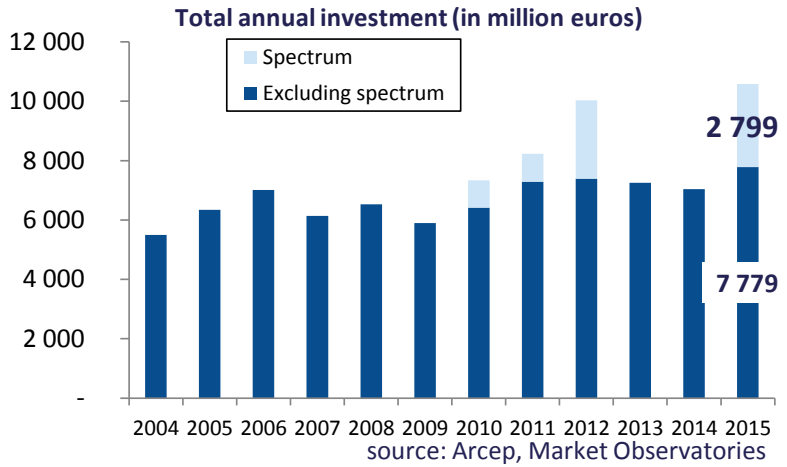



## In France, annual investment is generally between 7 and 8 billion euros.

- Year 2015 has set a record with 7.8 billion euros invested excluding spectrum.
- Spectrum on 700 MHz band was allocated in 2015 for 2.8 billion euros.

## Predictability and transparency are crucial to settle a pro-investment environment.

- Arcep is eager to make its actions foreseeable: policy documents, guidelines, consultations, regular meetings, etc.
- Ever since, Arcep has valued infrastructure competition as long as it were efficient:
  - Infrastructure competition is a key enabler to install competition in the long run;
  - However, some duplications of assets are unreasonable. In particular, passive infrastructures (ducts, poles, masts, etc.) sharing is promoted.

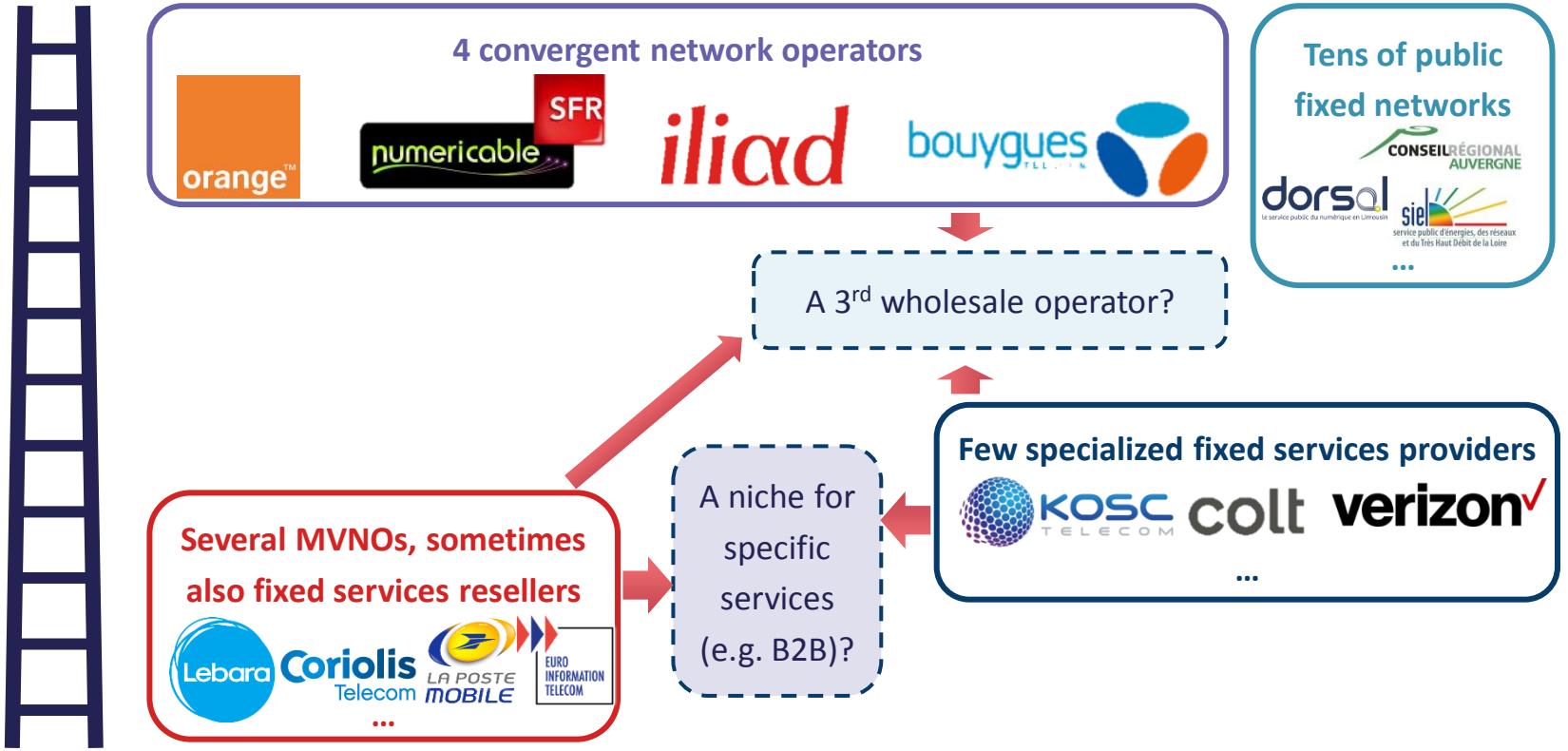


source: Arcep, Market Observatories

# An essential requirement: a competitive telco market

The previous regulation cycle has managed to develop infrastructure competition.

**Investment ladder**

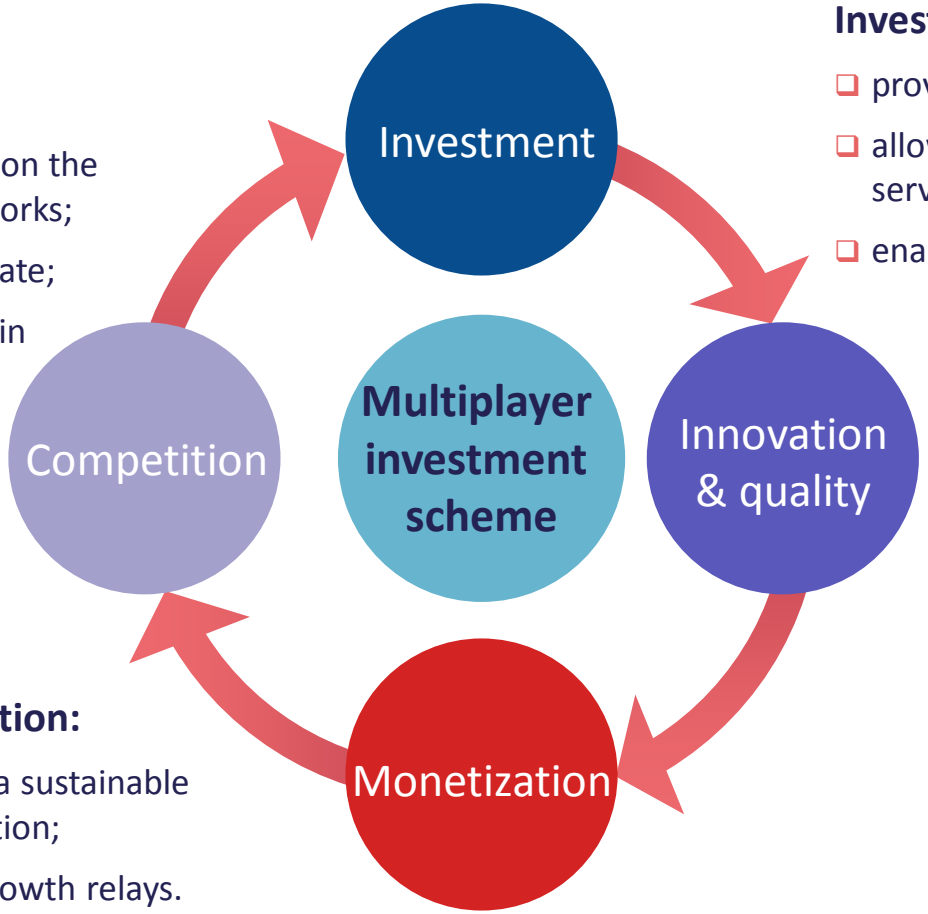



**The new challenge is to go on fostering infrastructure competition while realizing the investments required to cater for the digital economy.**

# The ultimate goal: a sustainable multiplayer investment scheme

**Competition:**

- pressures operators on the quality of their networks;
- incentivizes to innovate;
- leads to investment in the networks.




**Investment:**

- provides coverage and services;
- allows for bandwidth consuming services;
- enables innovation.

**Innovation and quality:**

- improve user experience;
- allow for monetization.

**Monetization:**

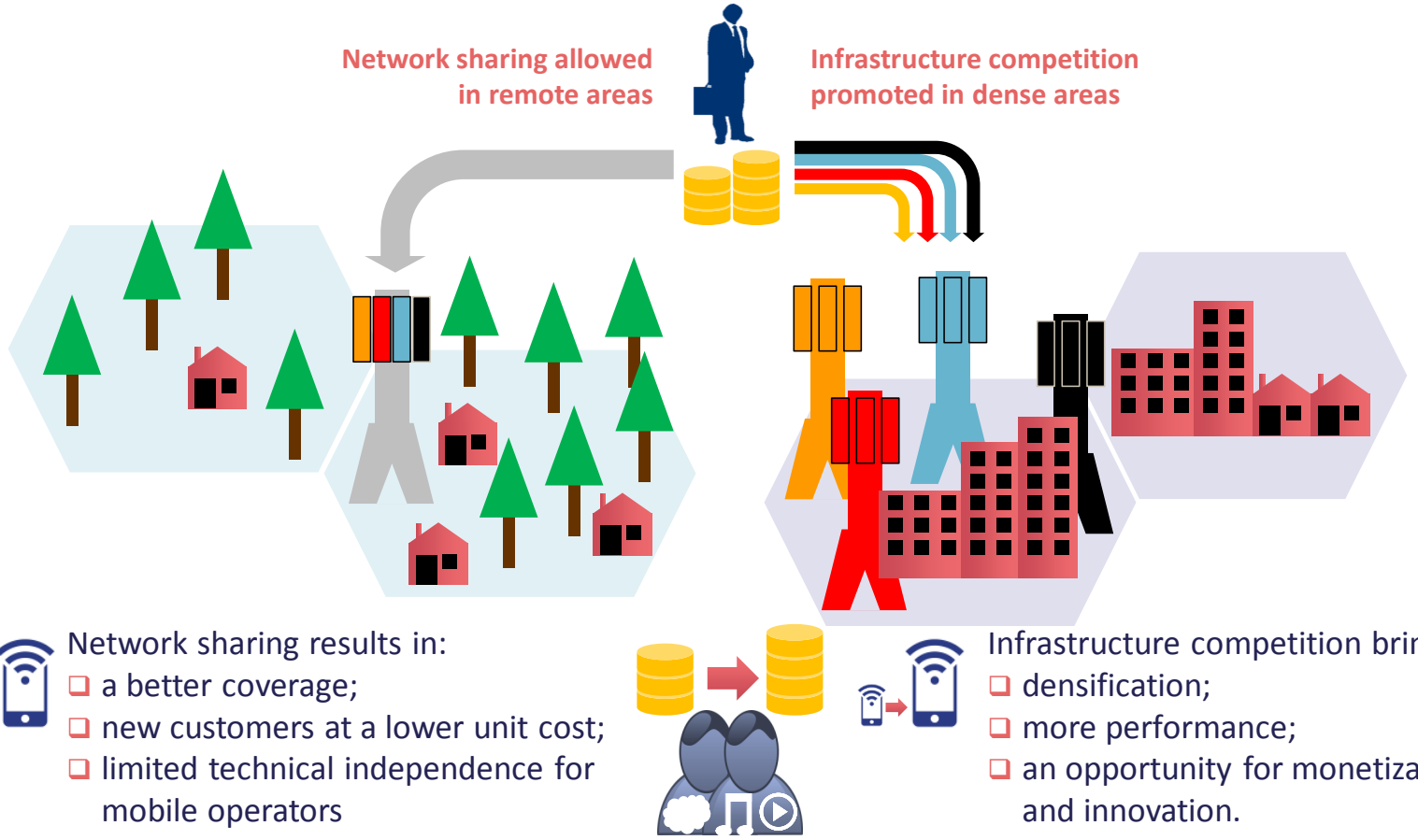
- enables a sustainable competition;
- brings growth relays.

**Competition is not an end, it is a necessary part of the whole dynamic.**

# Concrete regulatory actions

Arcep’s measures to encourage efficient investments

# Clarification of the mobile investment model to boost 4G roll-out




Network sharing results in:

- a better coverage;
- new customers at a lower unit cost;
- limited technical independence for mobile operators

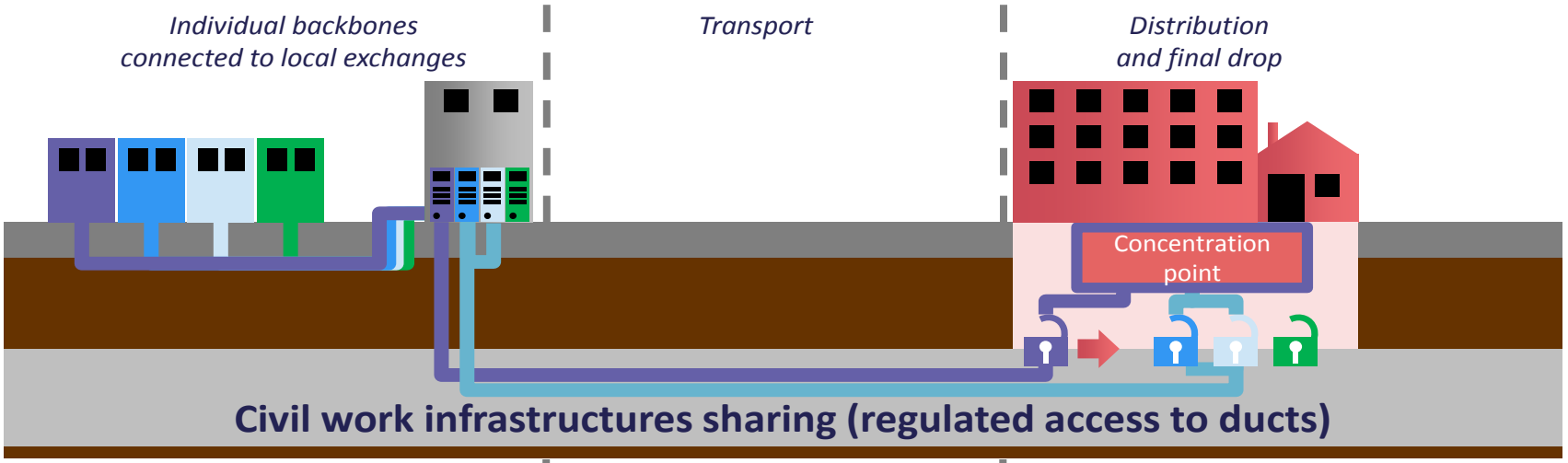
Infrastructure competition brings in:

- densification;
- more performance;
- an opportunity for monetization and innovation.

**Efficient investment in mobile networks results from a mix between infrastructure competition and network sharing.**

**Guidelines on network sharing, modified commercial agreements**

# Fibre networks: accelerating competitive deployments

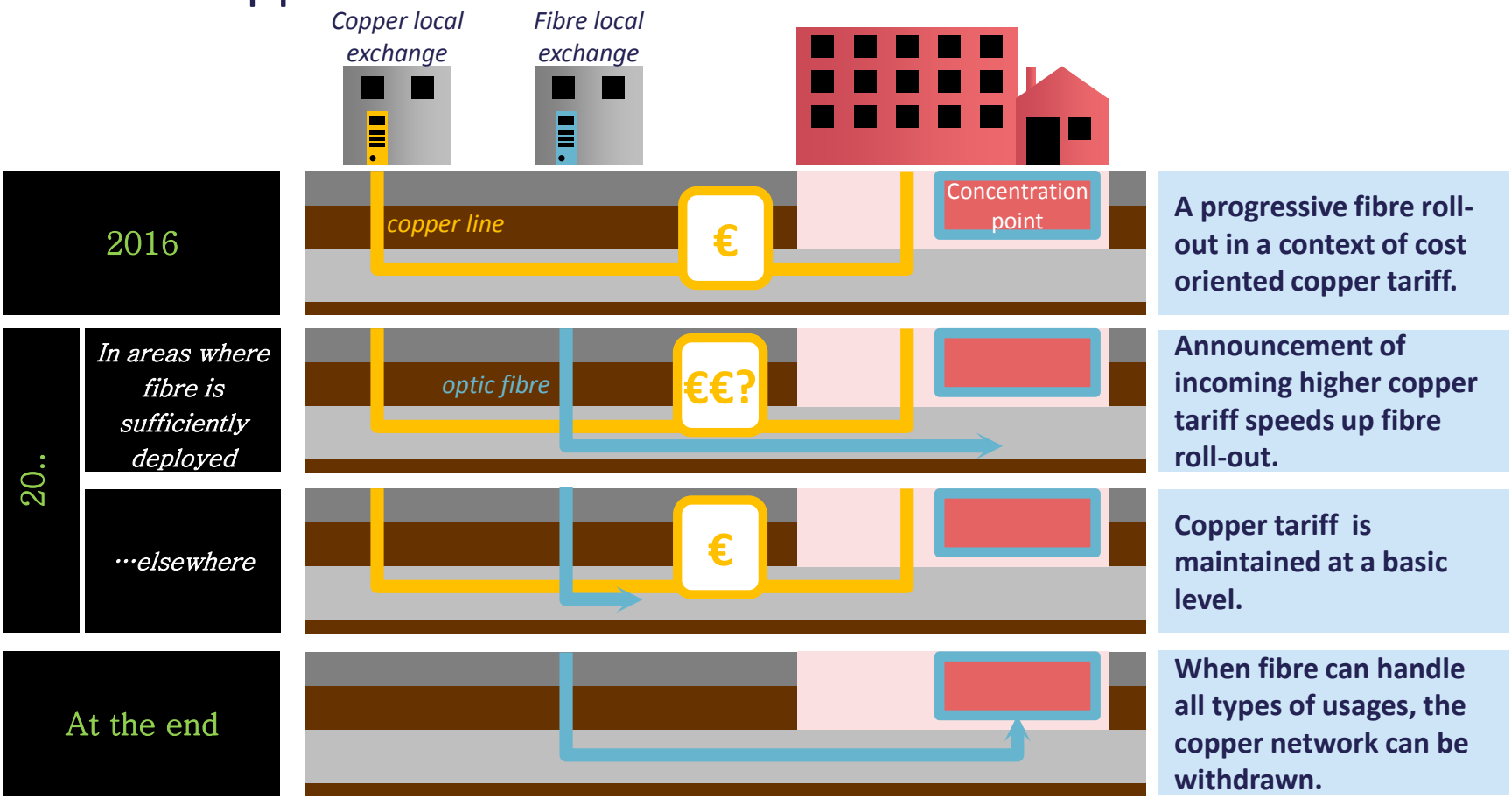



| A multiplayer infrastructure competition inherited from LLU | Possible infrastructure competition | Mostly network sharing |
|---|---|---|
| ❑ Extended footprint of LLU | ❑ *A priori* sustainable infrastructure competition | ❑ Co-investment for distribution and final drop cables |
| ❑ Investments in LLU regarded as a valuable asset: access to wholesale products related to copper maintained for fibre deployments | ❑ **Possibility in practice: operators allowed to conclude commercial agreements** | ❑ **Expected reduction of transaction costs: 1st mover invited to facilitate access to the building** |

**Efficient investment in fibre relies both on the infrastructure competition brought by LLU and network sharing agreements.**

**Market analysis consultation describing possible moves to ensure operators act on a level playing field**

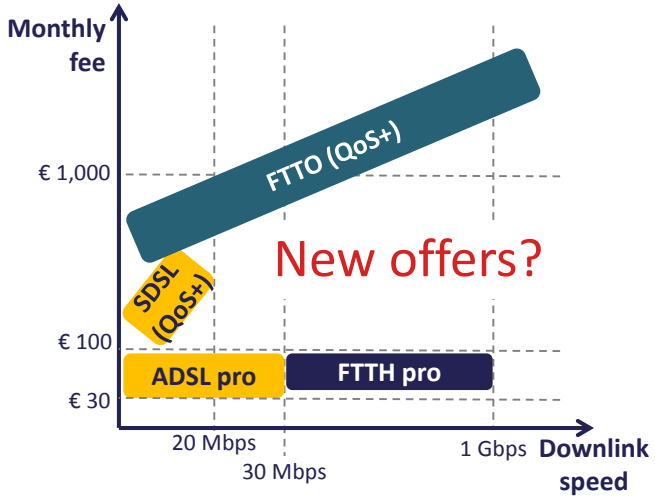
# Fibre networks: pricing signal to incentivize the migration from copper to fibre




**To accelerate the development of fibre, price caps on copper will be adjusted according to the progression of fibre networks.**

**Consultation in process**

# SMEs connectivity: a market to develop




Arcep aims at promoting an at least 3-player structure on the wholesale markets for business products.

- The current organization is closing to a duopoly.
- A challenger would be able to supply affordable multi-networks wholesale products.

The market for business users, which represents 1/3 of the telecom market, does not manage to generalize fibre.

- Tailor made products on dedicated fibre networks (FTTO) are too expensive for SMEs.
- Residential-like offers on copper or FTTH networks are cheaper, but do not provide the quality of service required by businesses.

Arcep will take the opportunity of FTTH deployment to foster the development of high quality products.

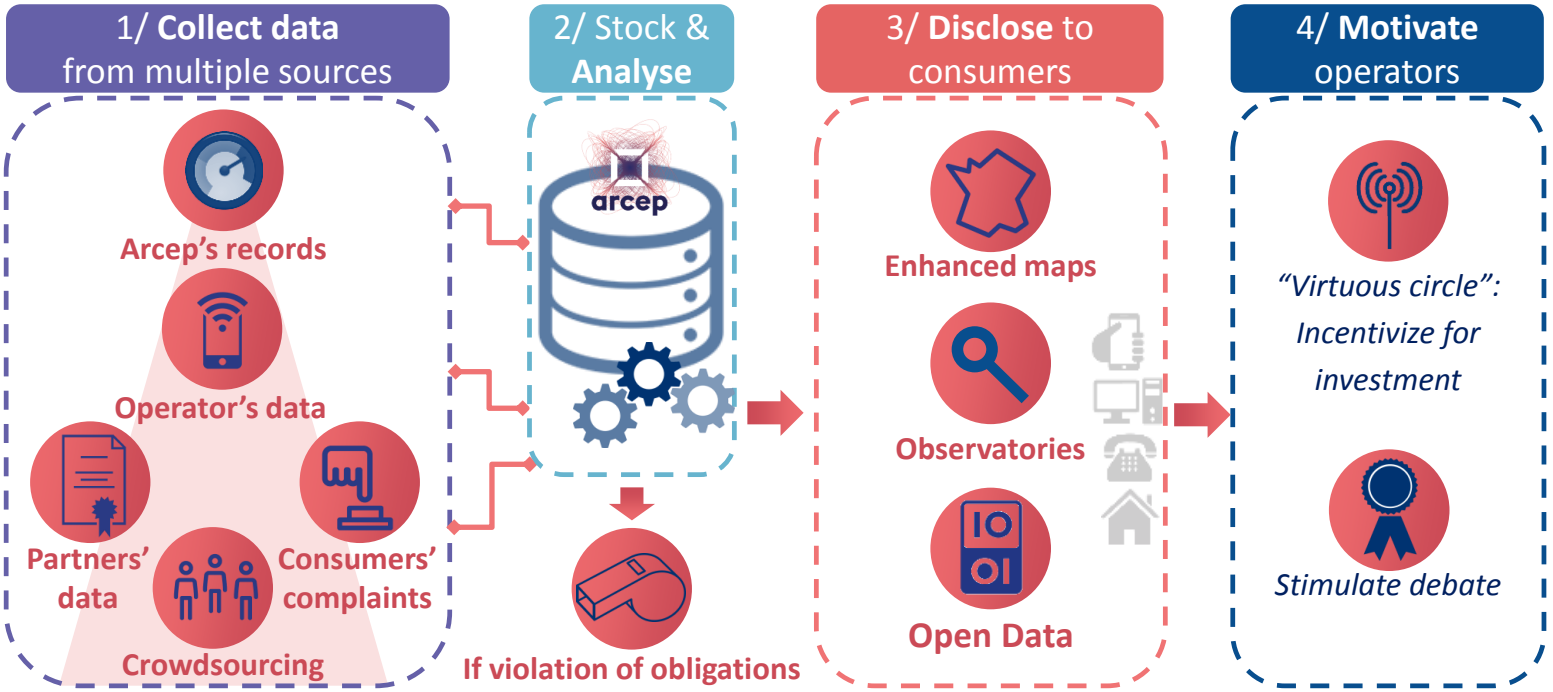

**To equip business users with fibre, product variety and competition need to be improved on wholesale markets.**

**Consultations on a policy document and a FTTE recommendation**

# Data-driven regulation: the fuel for investment growth

## The implementation of a data-driven regulation allows for monetization of quality.

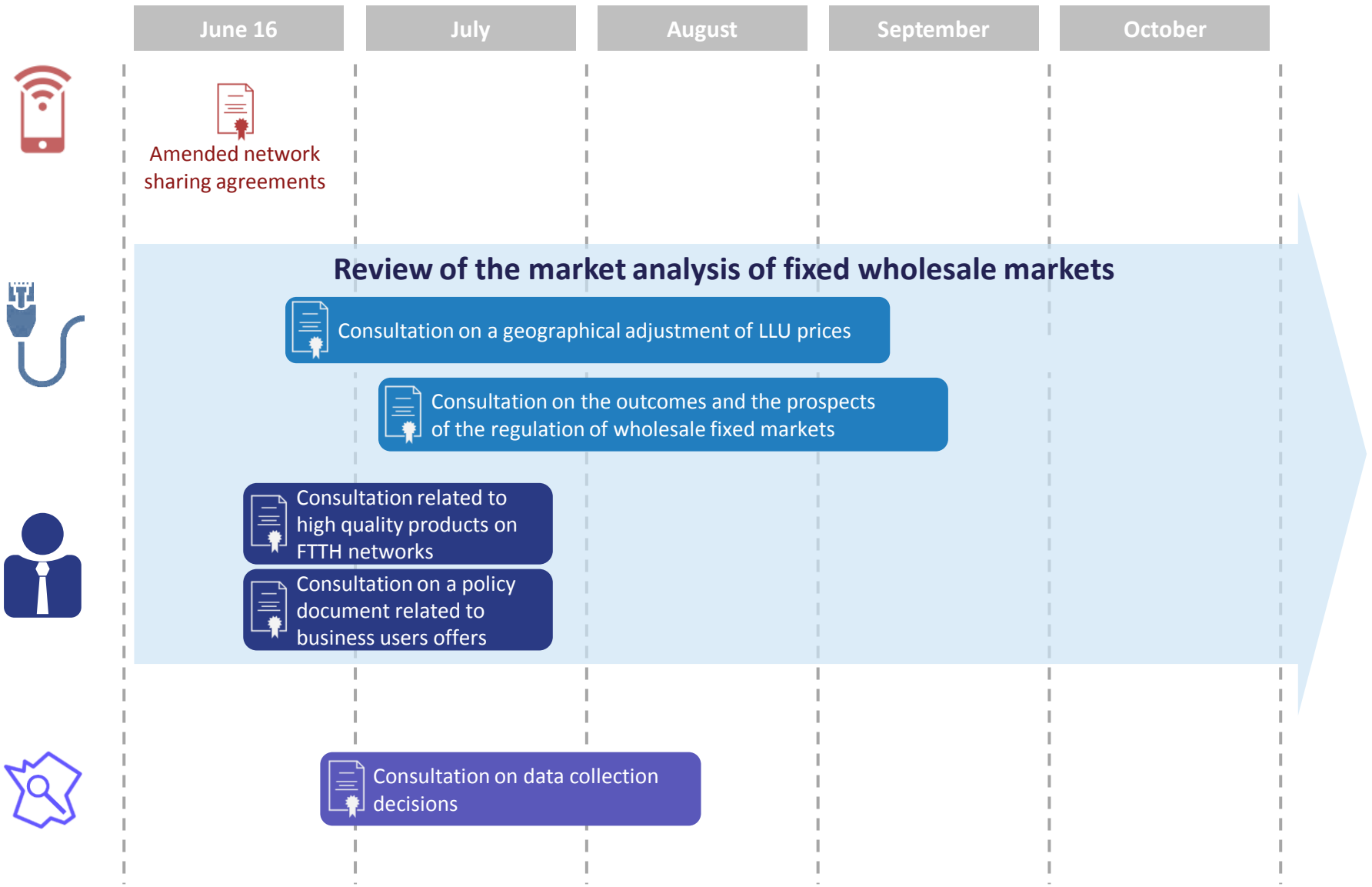
- Arcep will develop tools to provide end users with accurate information (coverage, speed,…);
- Perceived quality enables commercial segmentation and is key for monetization.




**Accurate information on quality can trigger a virtuous circle: investing is more worthy when there is a monetization outlook.**

**Specific developments tonight**

# The schedule for the upcoming months



# The preparation of the future

Arcep is involved in several projects and initiatives related to innovative services and new forms of connectivity.

### 5G technologies:

Continuous monitoring of international works on standards and easing of experimentations.

### Internet of things:

A work stream to anticipate regulatory issues and cope with the scarcity of some resources (numbering, frequencies, etc.).

### Spectrum on 3.5 GHz band:

Public consultation to identify and analyse the potential use of the frequencies available.

Thank you for your attention