



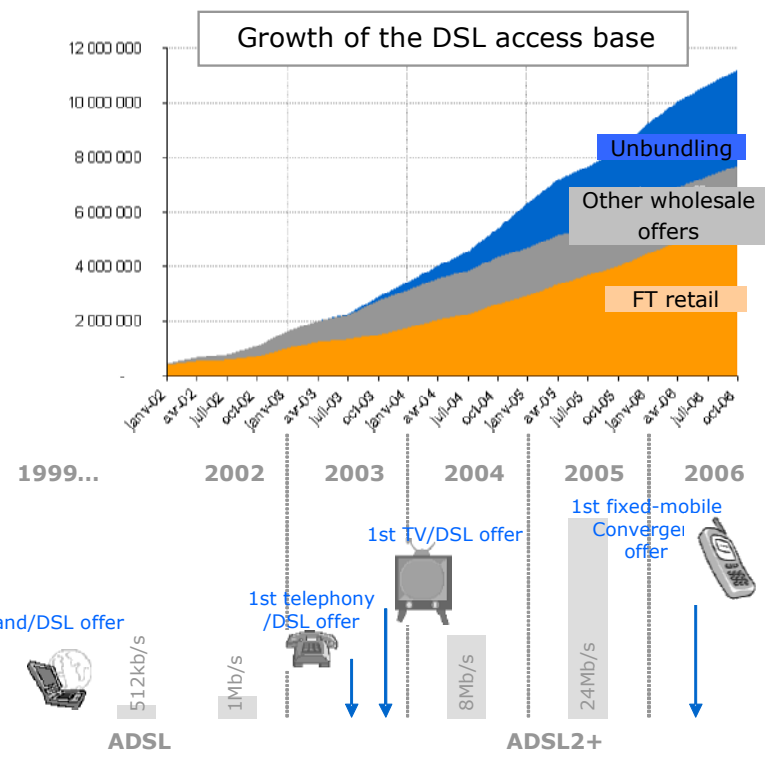
Very high-speed Points of reference and outlook

Press points, 10 November 2006

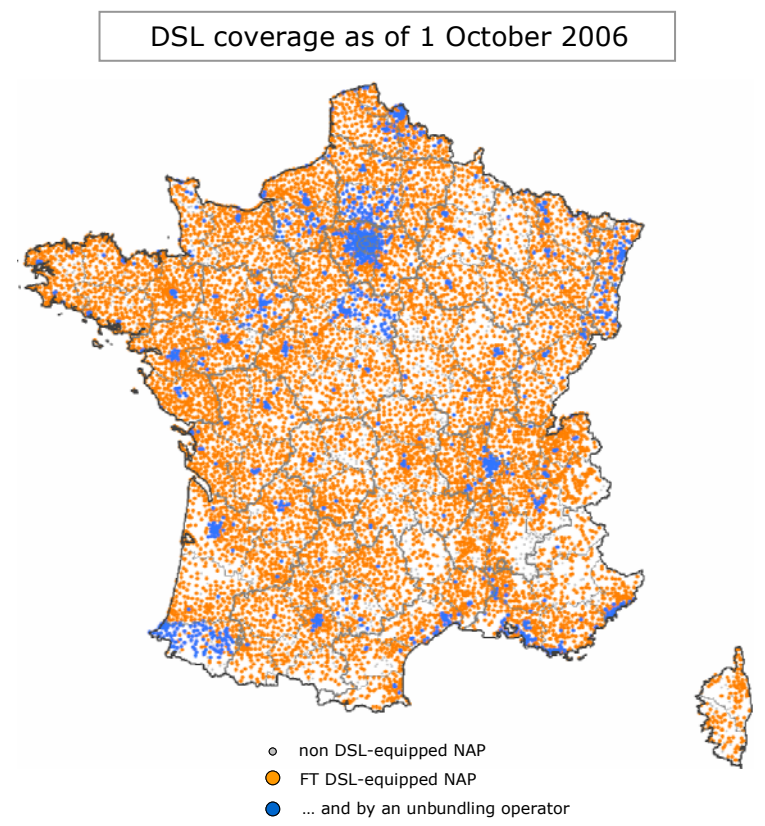


Contextual elements

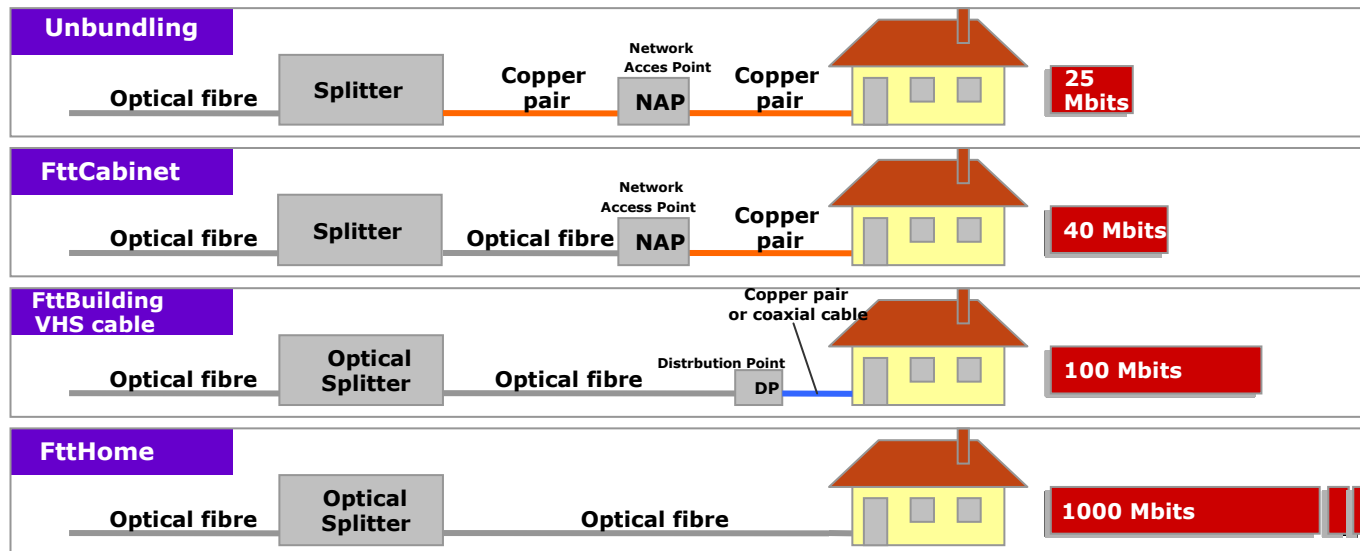
Dynamic French broadband market



Evolution of DSL technologies and services



Fibre will be indispensable for supplying higher bitrates



The development of triple play offers (Internet, VoIP, TV) revealed households' appetite for multimedia content.

Ever-increasing file exchange needs, the growing ubiquity of broadband, asynchronous consumption modes (downloading, video on demand) are making fibre-based networks' development inevitable in the medium and long term.

Trial rollouts in business parks

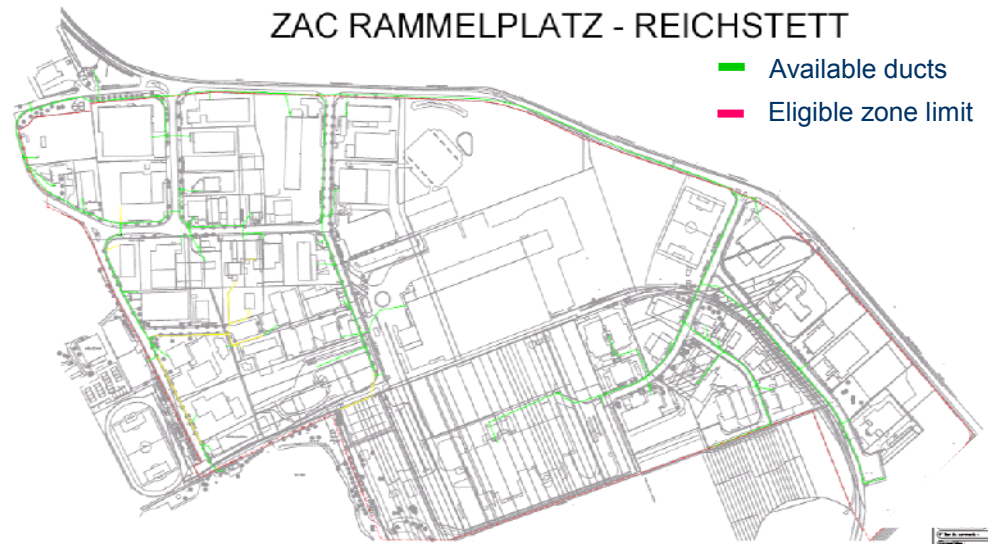
One of Arcep's priorities for 2006 is equipping business parks with very high-speed. Initiatives are moving in that direction, and all of the conditions needed for operators to invest massively in providing very high-speed services to businesses, at attractive prices, are coming together. This represents a major stake in French businesses' ability to compete in the medium term.

- Points of reference for equipping business parks with very high-speed (March 2006)
- France Telecom's duct rental offer for business parks (March 2006)
- Business park property developers' guide (October 2006)
- Feedback on and optimisation of the "LGC-ZAC" infrastructure link-business park duct rental offer (underway in Alsace)
- Very high-speed business park label (underway)

France Telecom has indicated that it will be equipping 1,000+ business parks with optical fibre.

Projects instigated by local authorities and alternative operators will help equip 500 business parks.

Some 1,000 additional parks will be connected to several operators' networks, including public initiative, and therefore be eligible for fibre equipment thanks to the "LGC-ZAC" infrastructure-link-business park offer.

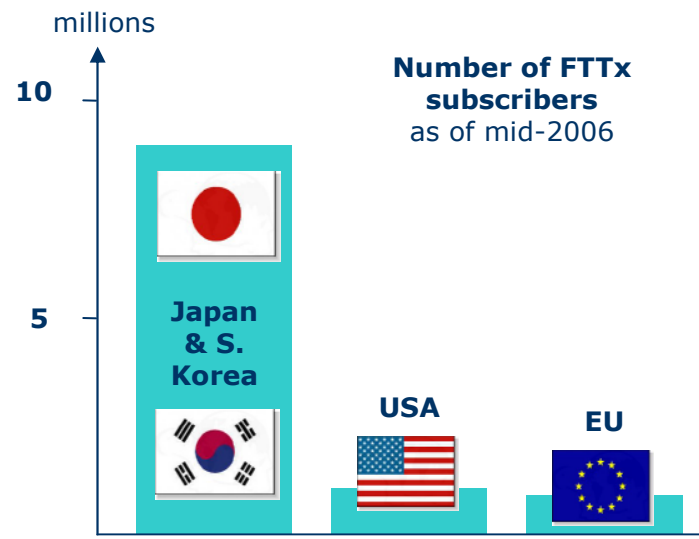


Residential offers still in the early stages...

The first residential fibre network rollouts are underway around the globe.

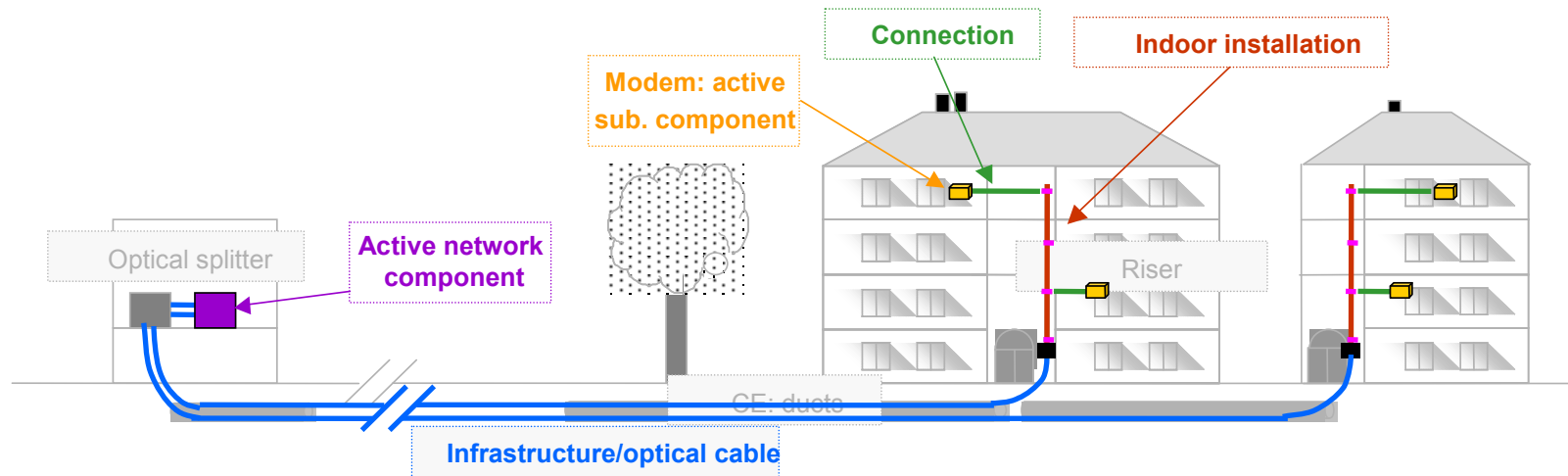
Asia (Japan, South Korea), is the pioneer here, coming up on 10 million subscribers. China is promoting fibre optic installations in new builds.

Leading telcos in the US have some 1 million subscribers passed for fibre.



In Europe, the main FTTH rollouts have been public initiatives (Sweden, Milan, Denmark), with the more recent projects initiated by local authorities (Amsterdam, Hauts de Seine). The Free-Iliad project is the first privately financed, large-scale initiative.

... but rollouts feared (too) costly



Example of a city with 20,000 inhabitants/km² for an operator connecting 25% of households.

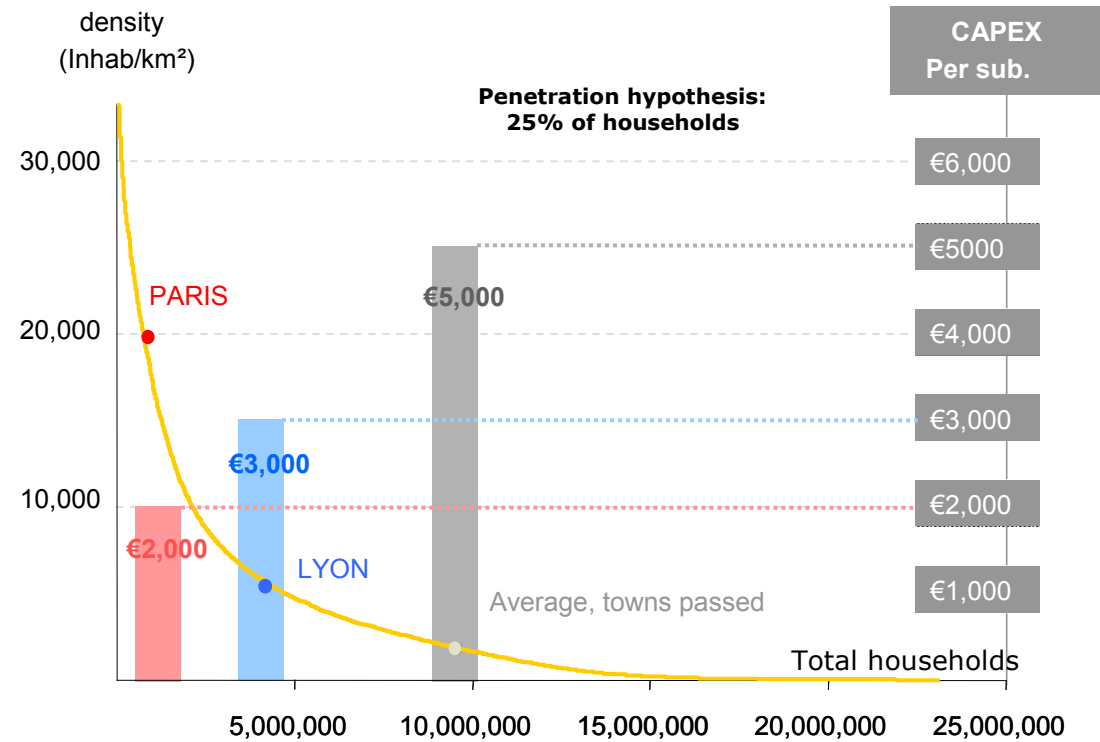
The two highest cost items are civil engineering (trenches in the public domain up to inside customer premises) and indoor wiring.

| CapEx per subscriber | |
|------------------------------|---------------|
| Infrastructure & buildings | €1,000 |
| Optical cable | €50 |
| Indoor installations | €350 |
| Connection | €100 |
| Active network components | €300 |
| Active subscriber components | €200 |
| total | €2,000 |



Infrastructure sharing

Civil engineering: largest cost item



Civil engineering (digging trenches and installing subsoil ducts up to buildings) is the single largest cost item in an FTTH network deployment. In Paris, where the population density is 20,000 inhab/km², infrastructure reconstruction costs would total €1,000 per subscribing household (given that reconstruction would not be necessary thanks to the sewer system open to visitors).

The cost of engineering works, per subscriber, is inversely proportionate to urban density. Paris has two times the density of Lyon, three times that of Marseille, and six times that of Brest. Outside the major cities, trench reconstruction costs are prohibitive, and so likely to compromise, or severely limit, FTTH network deployments in France.

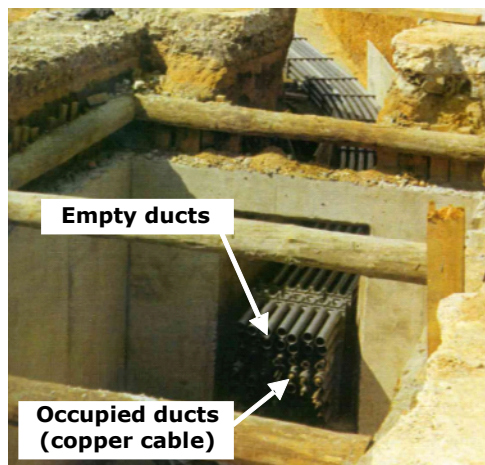
Existing infrastructures must be utilised...



Open access sewers, where optical cables can be easily installed, are found only in a few cities in France: Paris, a portion of its immediate vicinity, and the city centres of Lyon and Marseille.

In other cities, operators will have to access existing ducts (bottom picture) to achieve manageable deployment costs. In the first analysis, the main duct owners or managers could be:

- France Telecom
- Local authorities' cable PSD (under public service agreements)
- The other public networks (electrical, lighting, signalling networks, etc.)



Arcep is already engaged in two types of project:

A project aimed at evaluating a possible future duct rental offer from France Telecom (resource availability, technical feasibility, guidelines for eventual national and local regulation).

Experience sharing between local authorities, as part of the Public Initiative Networks Committee's ongoing work. Certain local authorities, such as the town of Nancy, have already begun a process for identifying and renting their ducts which could be transposed to other regions.

... and local authorities coordinate their projects

Local authorities' main competences



Trench sharing

- Coordination of road work
- Incentives for sharing
- The Lyon example



Ambitious development policy

- Installing reserve ducts
- Concessive cable networks
- Inventory, management, maps
- Adapted tariffs and fees
- The Nancy example



Project L. 1425-1

- Well-prepared for collection networks
- Not stabilised for FTTx networks

Local authorities have a critical role to play in encouraging operators to share their networks when receiving occupation requests for their public domain.

In practice, however, this power is somewhat difficult to enact since operators are reluctant to divulge their networks' location and occupation status. Furthermore, the current framework is not entirely explicit regarding local authorities' power to demand the installation of reserve capacity, particularly on public thoroughfares.

Local authorities who so desire can already begin putting into place a coordinated and ambitious development policy for ducts (level 2 in the diagram to the left), and will be able to refer to the Public Initiative Networks Committee's guidelines, to be published in 2007.

A review of the regulatory framework to increase local authorities' powers in public domain management and over ensuing operator obligations, would be a positive step in view of future FTTH rollouts, enabling them to require operators to:

- supply domain occupation maps
- provide information on duct availability
- install reserve capacity
- and the ability to oblige operators share their resources

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Sharing indoor wiring



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Arcep involved in indoor wiring projects...



The second major cost item when deploying FTTH networks is wiring inside customer premises: between €300 and €500 per subscriber.

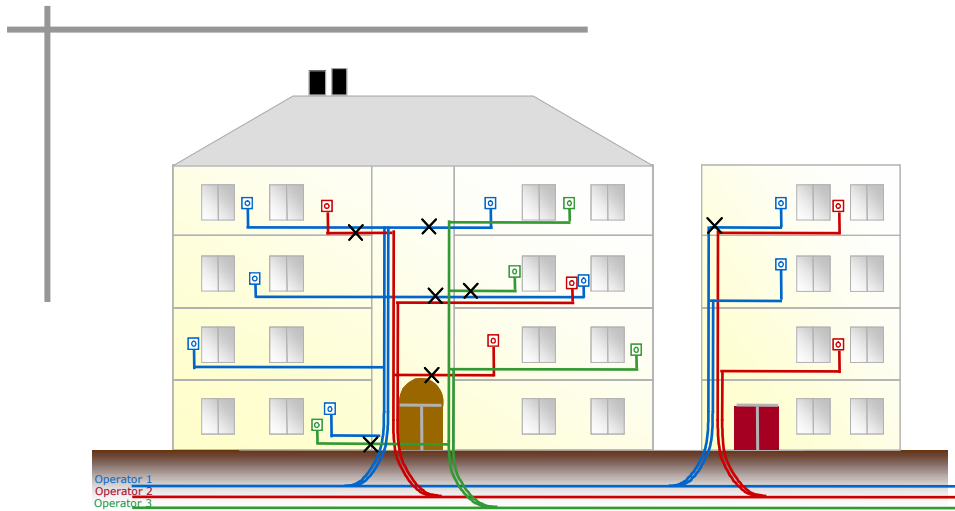
The cost can be high, and the time needed to negotiate installations in common areas lengthy, particularly when deliberation by a board of co-property owners is involved.

It is unlikely that property-owners will allow several operators to install their equipment, which means that a local micro-monopoly structure could emerge (one operator per building), such as is already partially the case in Japan.

A working group was created by the Ministry in charge of Industry and the Ministry of Housing, with operator and property management representatives. ARCEP is involved in the work they are doing (incentive-based at this stage) to encourage pre-equipment in greenfield projects.

The next stage will no doubt involve an examination of the rules for accessing older buildings, for operators wanting to install fibre networks in them.

... and working to facilitate talks between operators



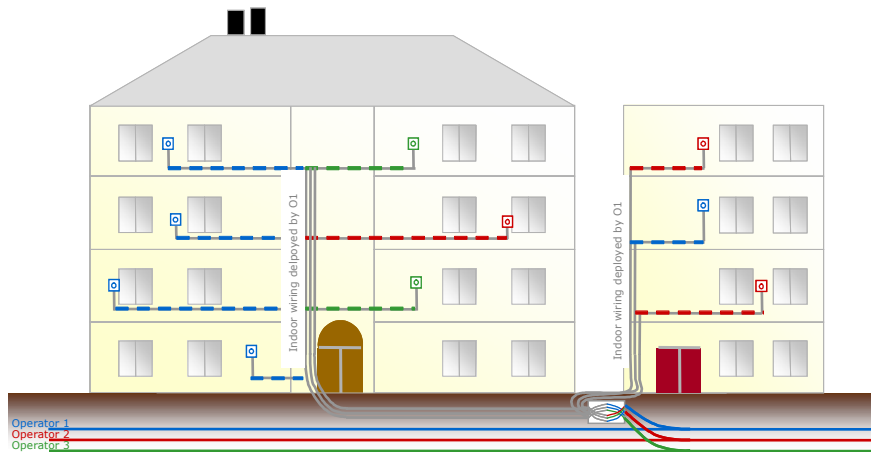
Sharing indoor wiring appears a critical step to avoid the situation depicted in the diagram to the left from happening.

Here, three operators (red, blue, green) have each installed their network equipment in the stairwell and in the apartments of customers subscribing to their offer.

This means that each operator has shouldered full wiring costs, and the tenants have put up with work in common areas three times.

Depending on how the situation evolves – switching operators, moving, relocation... – optical outlets in the housing units will multiply (one per operator).

Before the end of the year, the Authority will be holding talks on a system for indoor network sharing, with interested operators (lower diagram).





Accessing content



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A winning relationship between content and FTTH



Deploying very high-speed networks is only justified if they support new applications, new service offerings, new access to content. From an economic standpoint, content-related services will provide one of the main incentives for deploying fibre optic networks on a large scale.

Potential demand amongst households appears high. With close to 1.5 million subscribers, TV over DSL is currently pay-TV's chief driving force. Fibre opens up further prospects: high definition programming, simultaneous broadcast of several channels, virtually instantaneous VoD downloads.

As it stands, however, the relationship between operators, distributors and rights holders is not up to the challenge:

- content-related ARPU is under €3 per subscriber, per month for DSL operators, whereas households' total spending on pay-TV, video, music and film is ten times that;

- their VoD catalogue is limited to several hundred films, and often priced higher than the cost of renting a DVD from a shop.

So the current relationship between content publishers and networks will need to change to spur the development of FTTH – providing the audiovisual sector with a growth outlet and an opportunity to expand the financing base for creative endeavours in France.



Conclusions

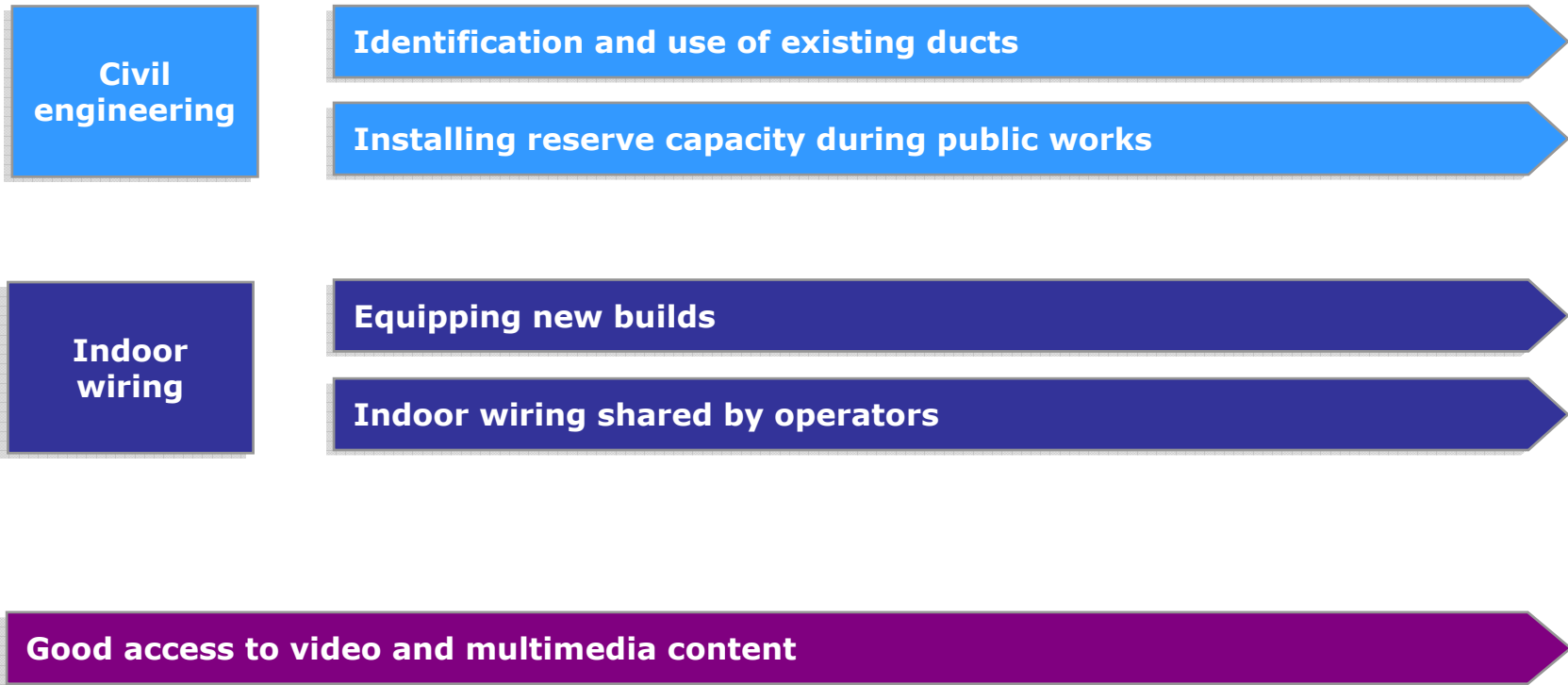


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Chief factors for successful very high-speed rollouts



Rollout timeline

