

SMART VILLAGES AND DIGITAL CONNECTIVITY IN THE ALPS

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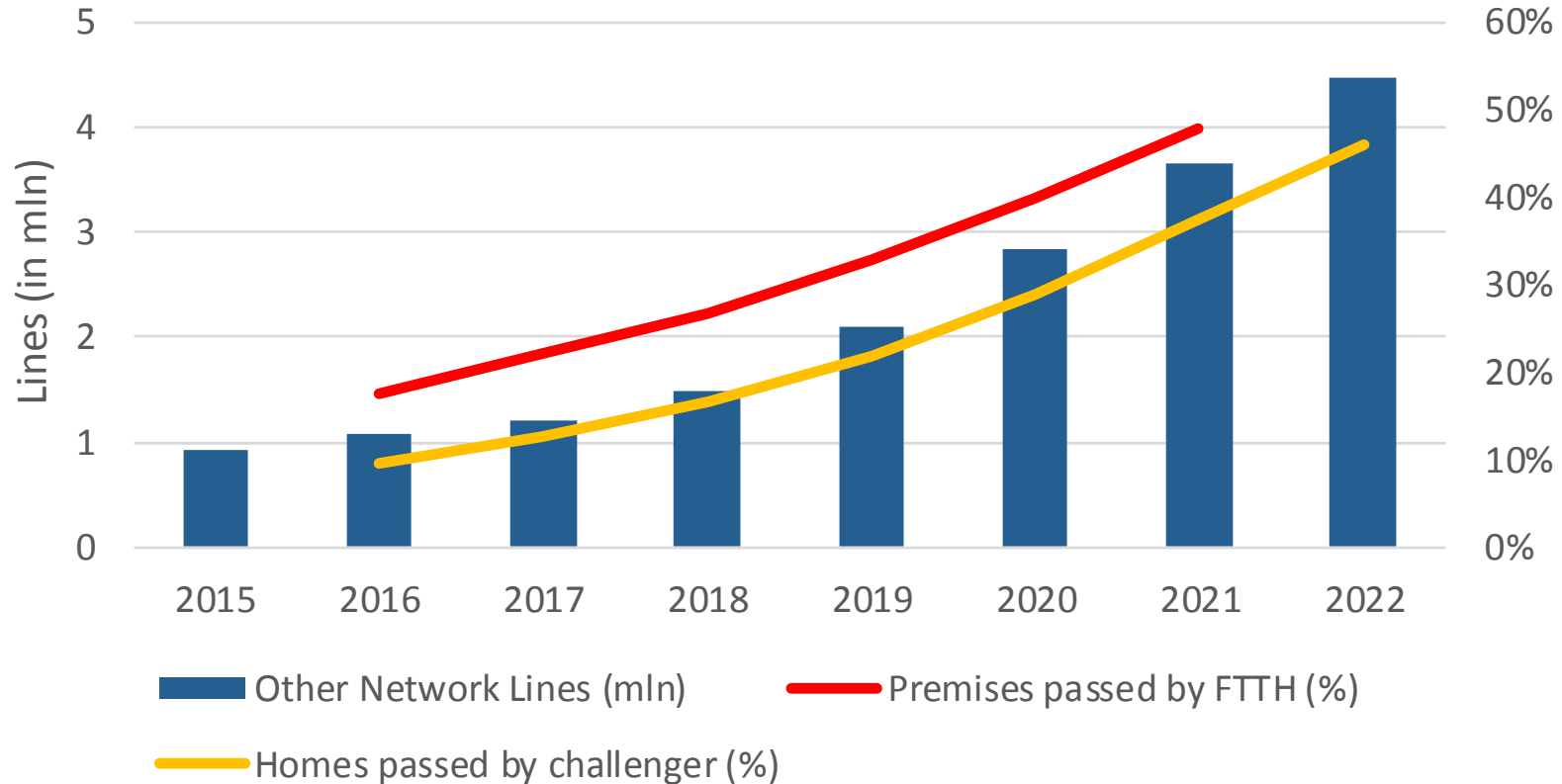
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Bard, June 8th 2018



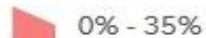
Région Autonome
Vallée d'Aoste
Regione Autonoma
Valle d'Aosta

Italy Broadband Connectivity Forecast

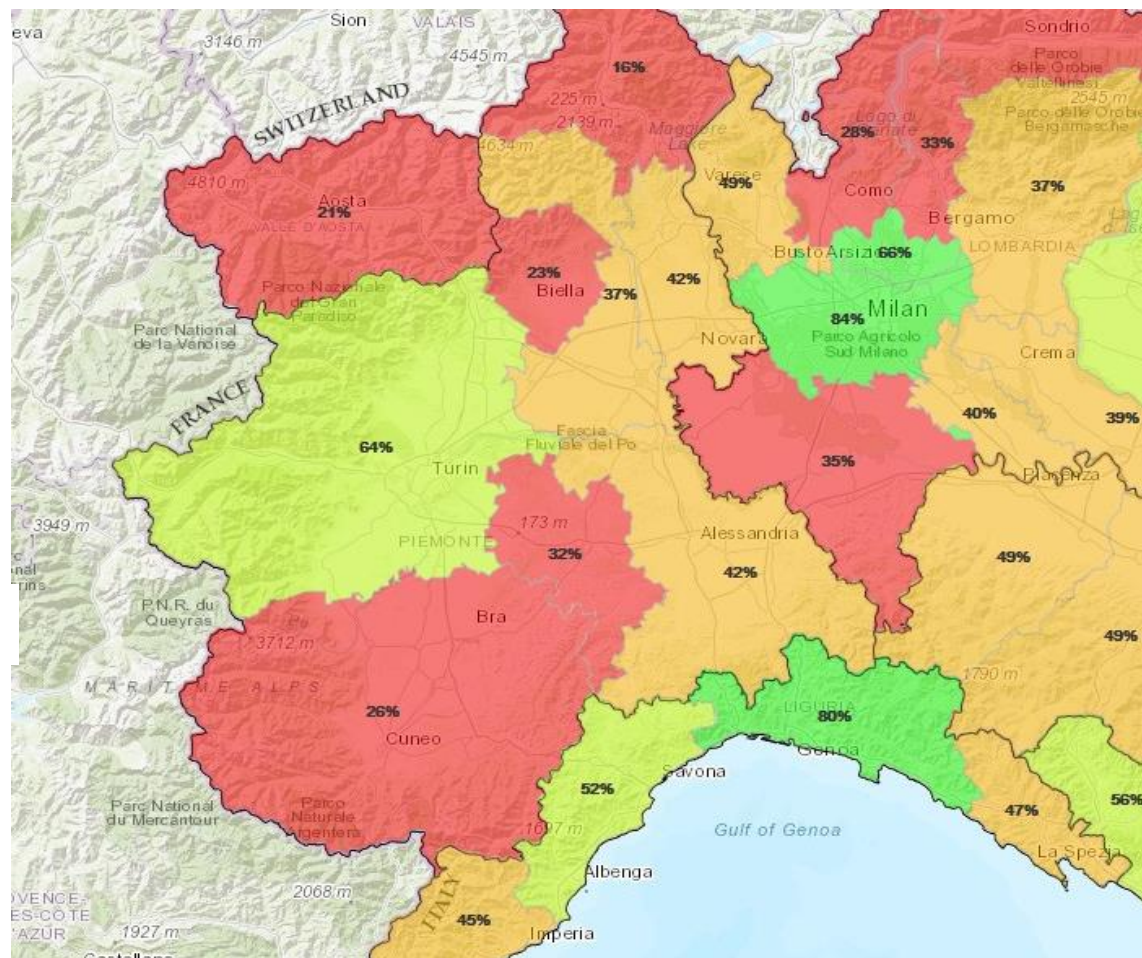


Source: Credit Suisse Forecast, 2017

Market for Ultra-Broadband provided by alternative operators expected **to grow 3 to 4-times until 2021** (Credit Suisse Forecast)



Source: AGCOM, 2017





| The Company

NON PROFIT
CONSORTIUM

MISSION

/ MANAGE **IX** IN THE NORTH-WEST OF ITALY
/ BOOST “**INNOVATION**” & GENERATE LOCAL
IMPACT BY LEVERAGING INFRASTRUCTURE
/**NEUTRALITY**



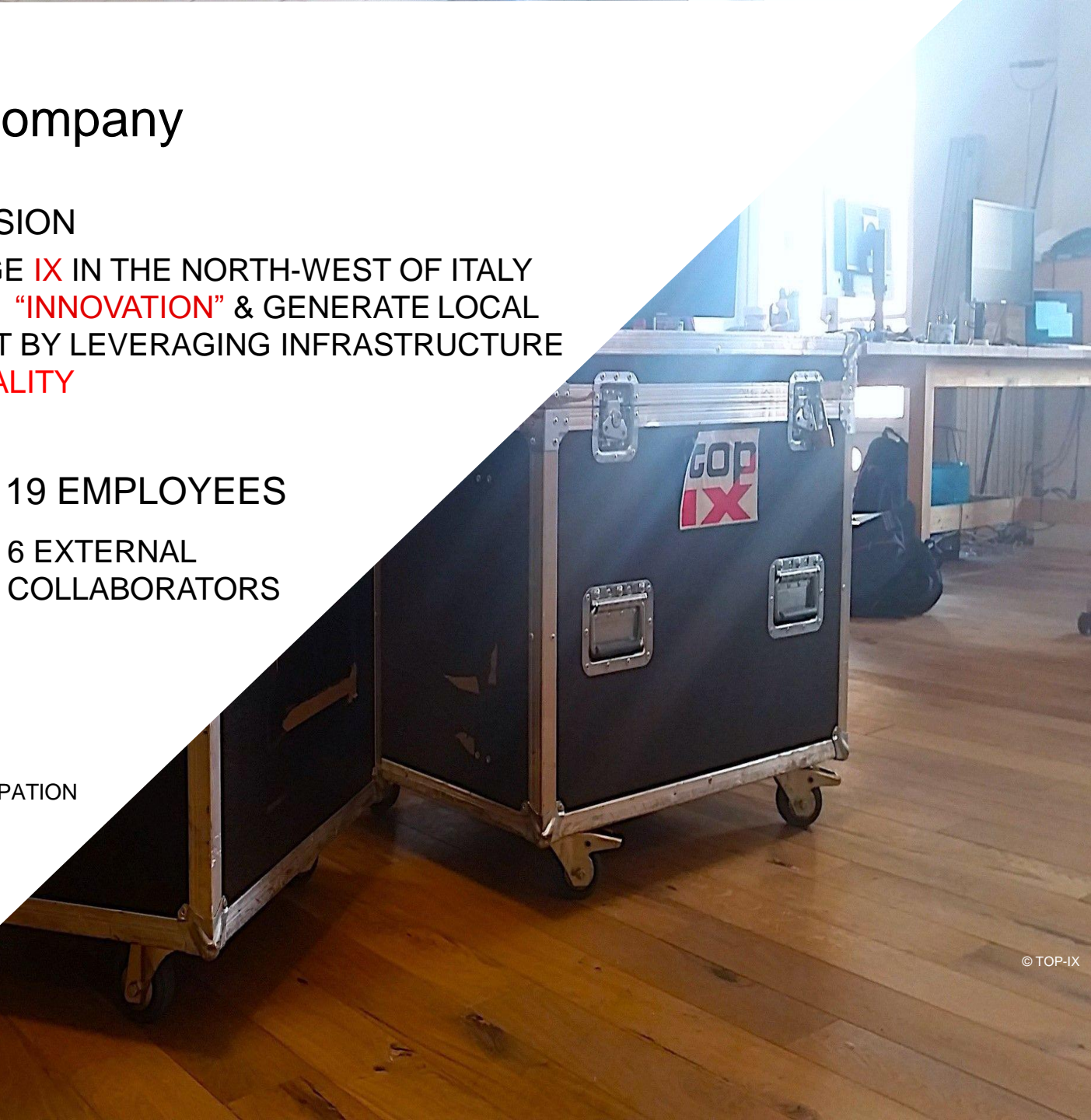
19 EMPLOYEES

6 EXTERNAL
COLLABORATORS



86 MEMBERS

PUBLIC AND **PRIVATE** PARTICIPATION





720 km Optical Fibres
150.000 Connected Users

Coverage:

Piemonte

Vald'Aosta

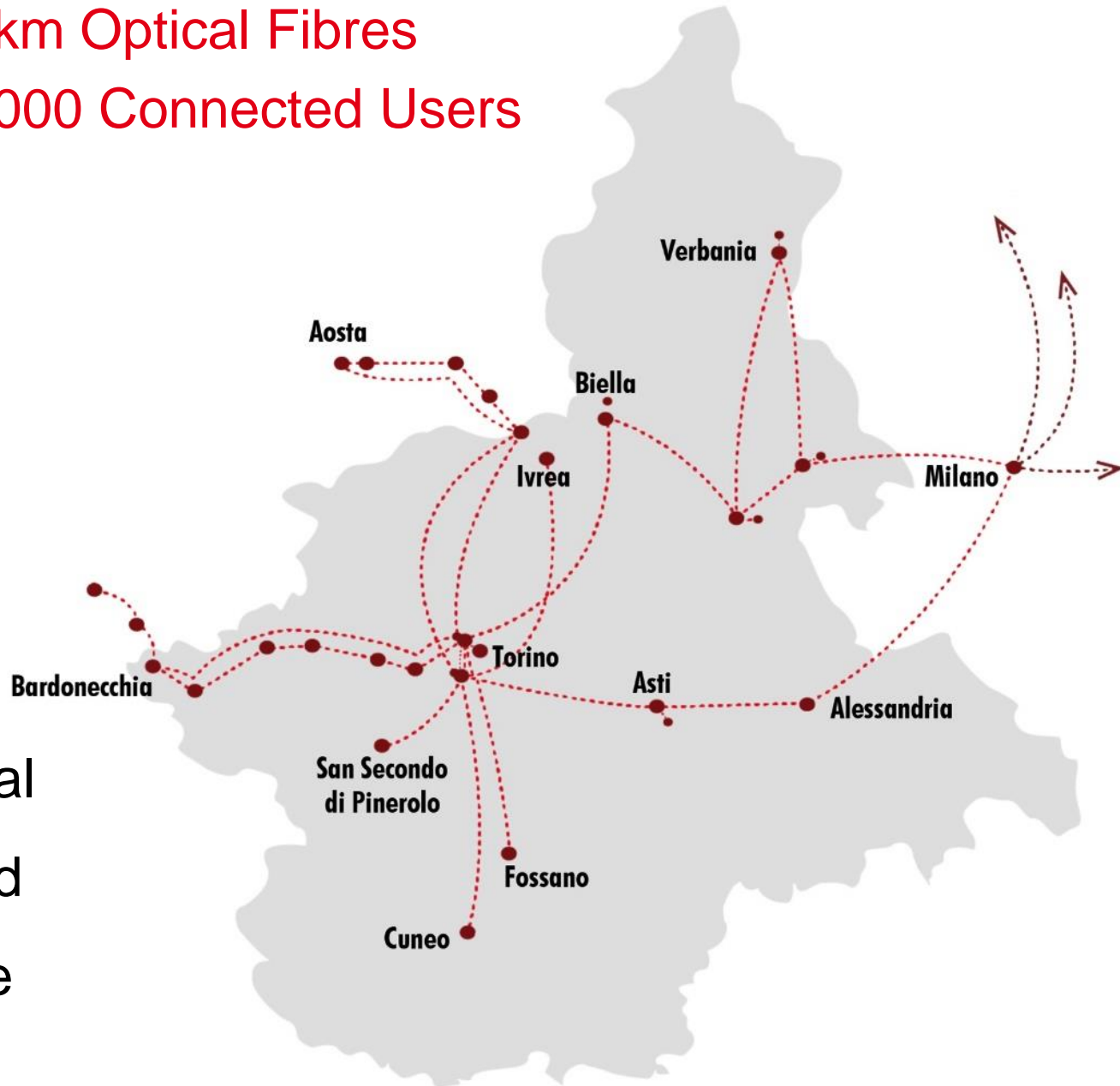
Milano

Non Profit / Neutral

Open / Distributed

Internet Exchange

Digital Innovation





KEY BENEFITS FOR THE TERRITORY

SHARING INFRASTRUCTURE

- / interconnection with local public administration
- / support for local SMEs & WISPs
- / partnership with universities and research institutes
- / connection with other IXs & international players

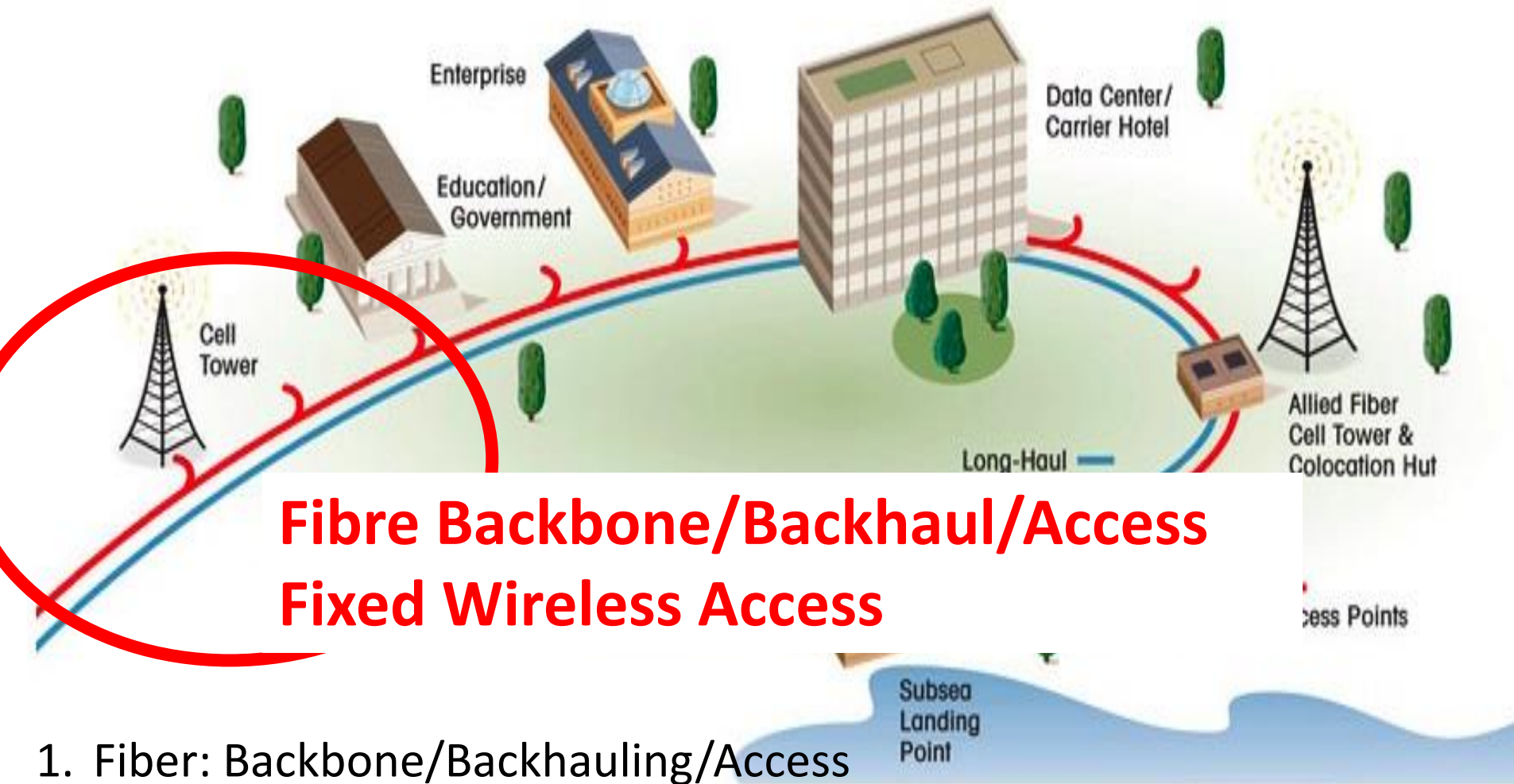
LOWERING INFRASTRUCTURE COST BARRIER

- / unlocking added values
- / repairing communities fragmentation





1. Connectivity (Fiber/Fixed Radio)
2. Data Center
3. Internet Exchange



Fibre Backbone/Backhaul/Access Fixed Wireless Access

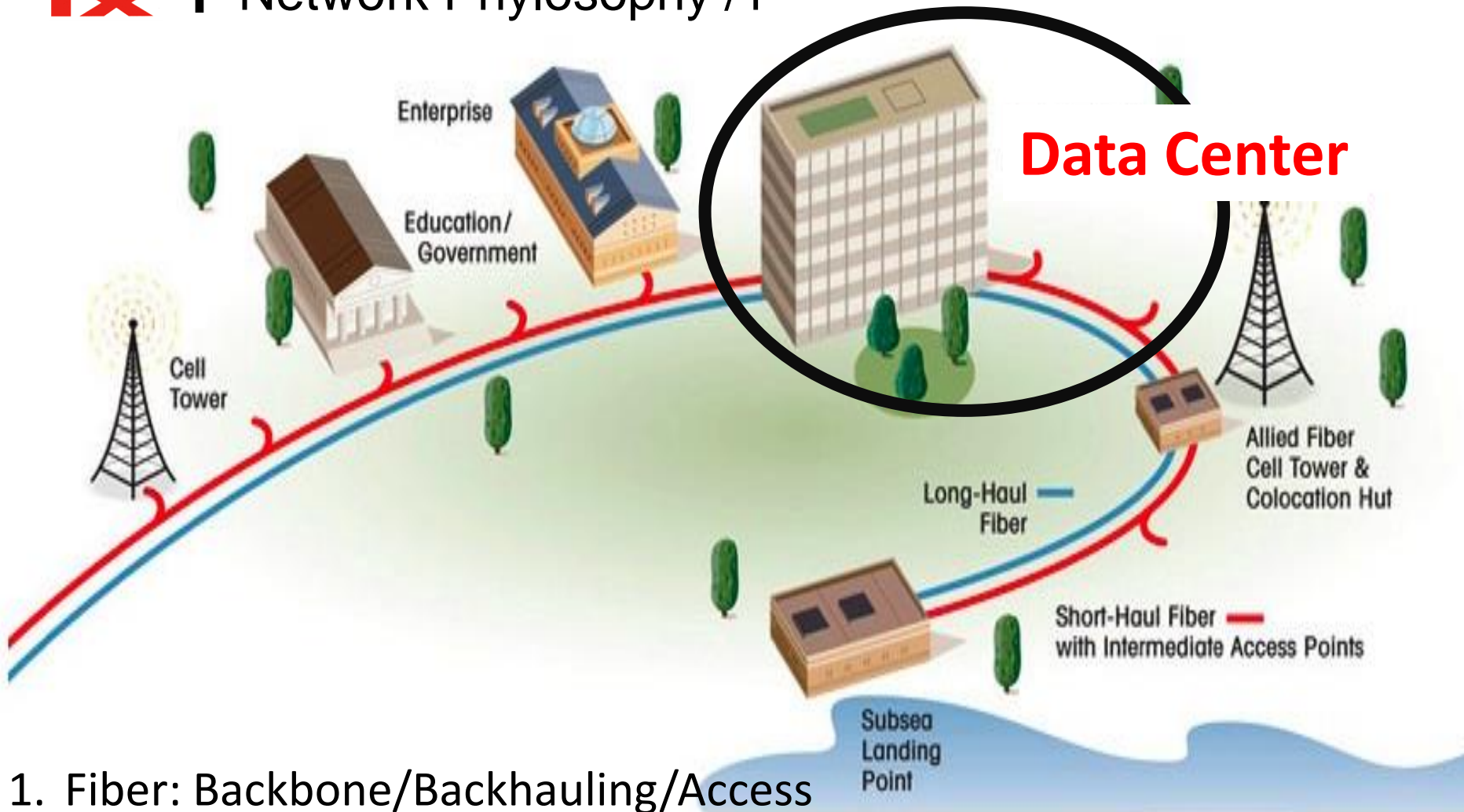
1. Fiber: Backbone/Backhauling/Access
2. Fixed Wireless Access
3. Data Center
4. Internet Exchange

MOUNTAIN AREAS DIGITAL DIVIDE





- ✓ **A fibre backbone is fundamental** (VdA has a backbone!)
- ✓ It is important to have redundant fibre hauls
(more difficult if the fibre is in a single valley: relevance of cross-border backbones)
- ✓ In mountain areas, **Fixed Wireless Access mitigates the access to ultrabroadband connectivity**
(hybrid infrastructure: fibre + radio access)



1. Fiber: Backbone/Backhauling/Access
2. Fixed Wireless Access
3. Data Center
4. Internet Exchange



DATA CENTERS IN MOUNTAIN AREAS



Data Centers are important (also) for latency
Latency impacts the user experience:
Lower latency = more responsive = better experience

A fast download over link of high latency can take longer than a slow download over a low latency link

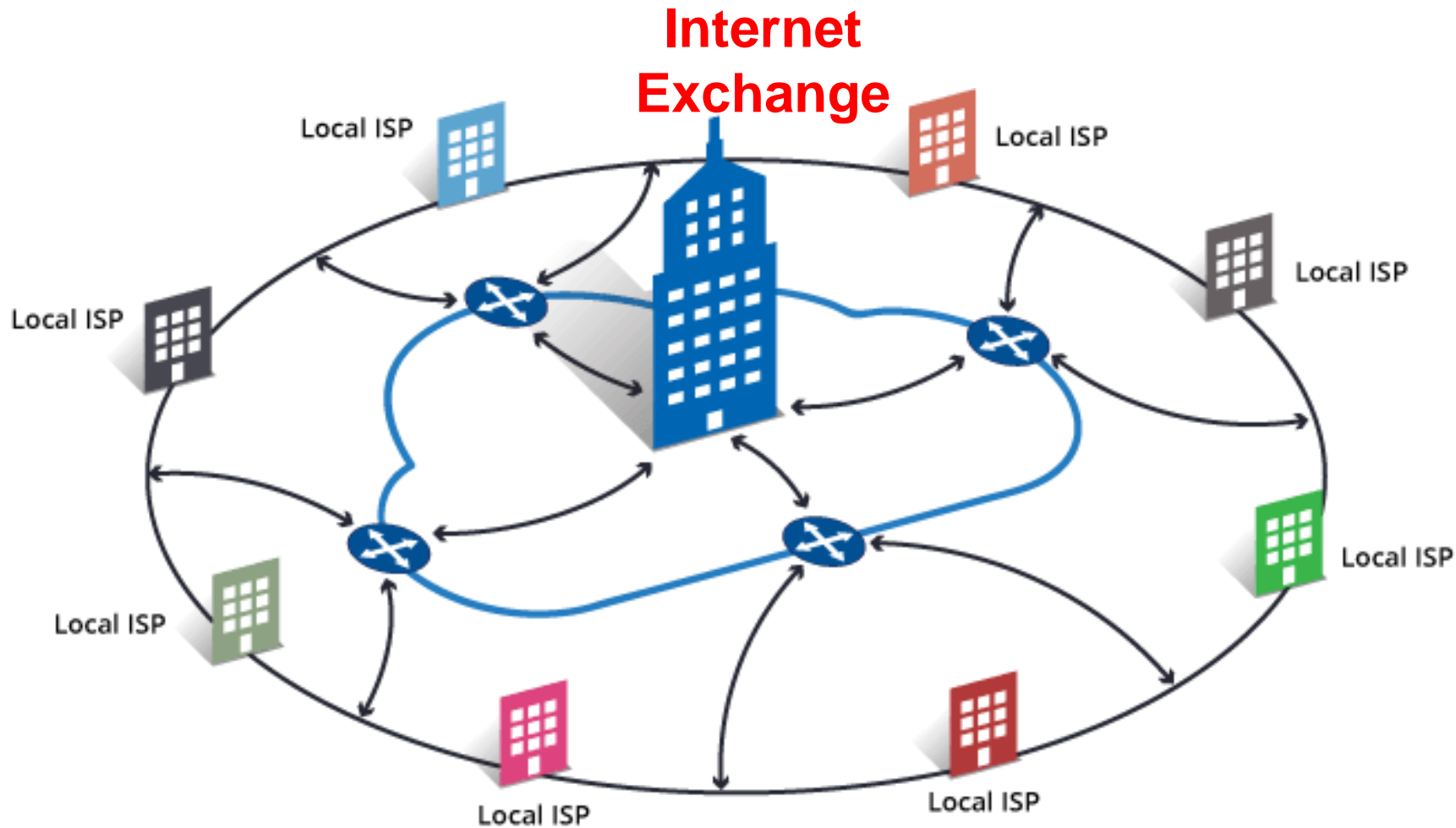
Causes of network latency

- 1. Physical limitations**
- 2. Congestion at switches, routers and servers**
- 3. Packet loss due to noise, congestion, faults**

A photograph of a server room with rows of server racks. The room is dimly lit with blue and red ambient lighting. The racks are filled with server units, and some have glowing blue lights. The perspective is looking down a long aisle between the racks.

Data Centers allows to Move content/service closer to your users:

- **Make good use of local caches**
- **Content Delivery Networks**
- **Host geographically closely**
- **Host at locations with low latency links**
- **.....**
- **Peering**



- The Internet Exchange allows to multiple providers to exchange their contents
- IX improves the effectiveness of the network, accelerates providers' business,
- IX empowers the offer to the users and market prices

A QUICK REMINDER

What is net neutrality?

All traffic on the internet should be treated equally.

NO BLOCKING

Your internet access provider (IAP) cannot block you from accessing legal content of your choice.

NO THROTTLING

Your IAP cannot intentionally throttle legal internet traffic to slower speeds than other traffic.

NO PAID PRIORITIZATION

Your IAP cannot sell 'fast lane' service to content providers who can pay more than others.

Connectivity in Mountain areas presents different technical issues but:

1. Tech Development produced good means for Digital Divide Mitigation
(e.g. Fixed Wireless Access)
2. A good policy of infrastructures (fibre backbone) is fundamental to guarantee the starting point of a successful scale up of connectivity
3. Data Centers also in Mountain areas is to be seriously taken into consideration to boost the digital uptake of the regions
4. Data Centers and Internet Exchange need to be neutral
5. Redundancy today is a must (two or three independent backbone connections) and requires dedicated policie



THANKS !

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