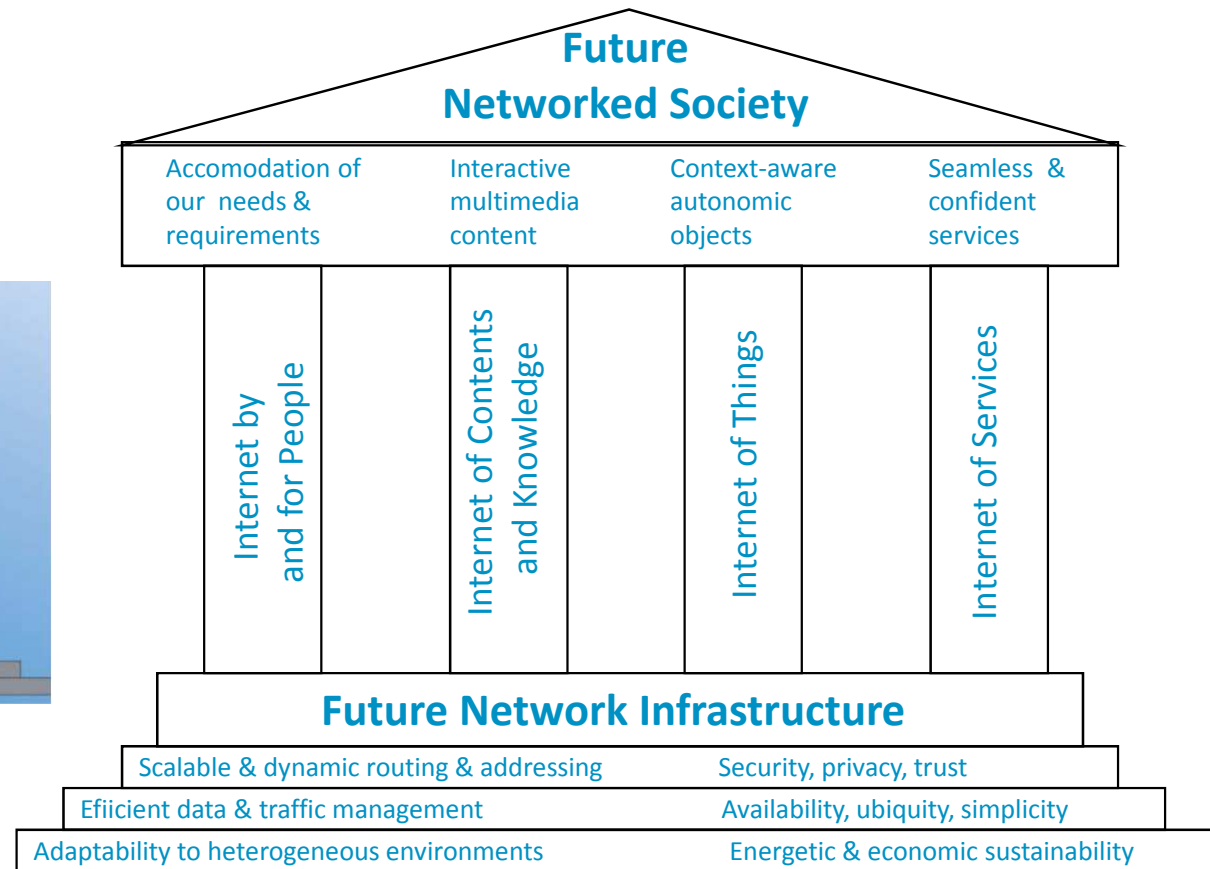
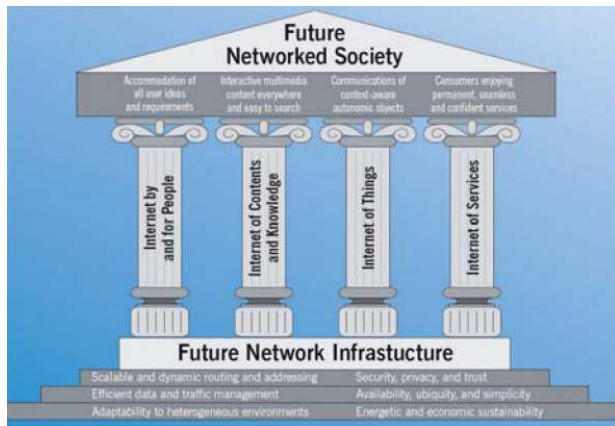




The Network of the Future



European Commission - Information Society and Media

DEIB-Politecnico di Milano

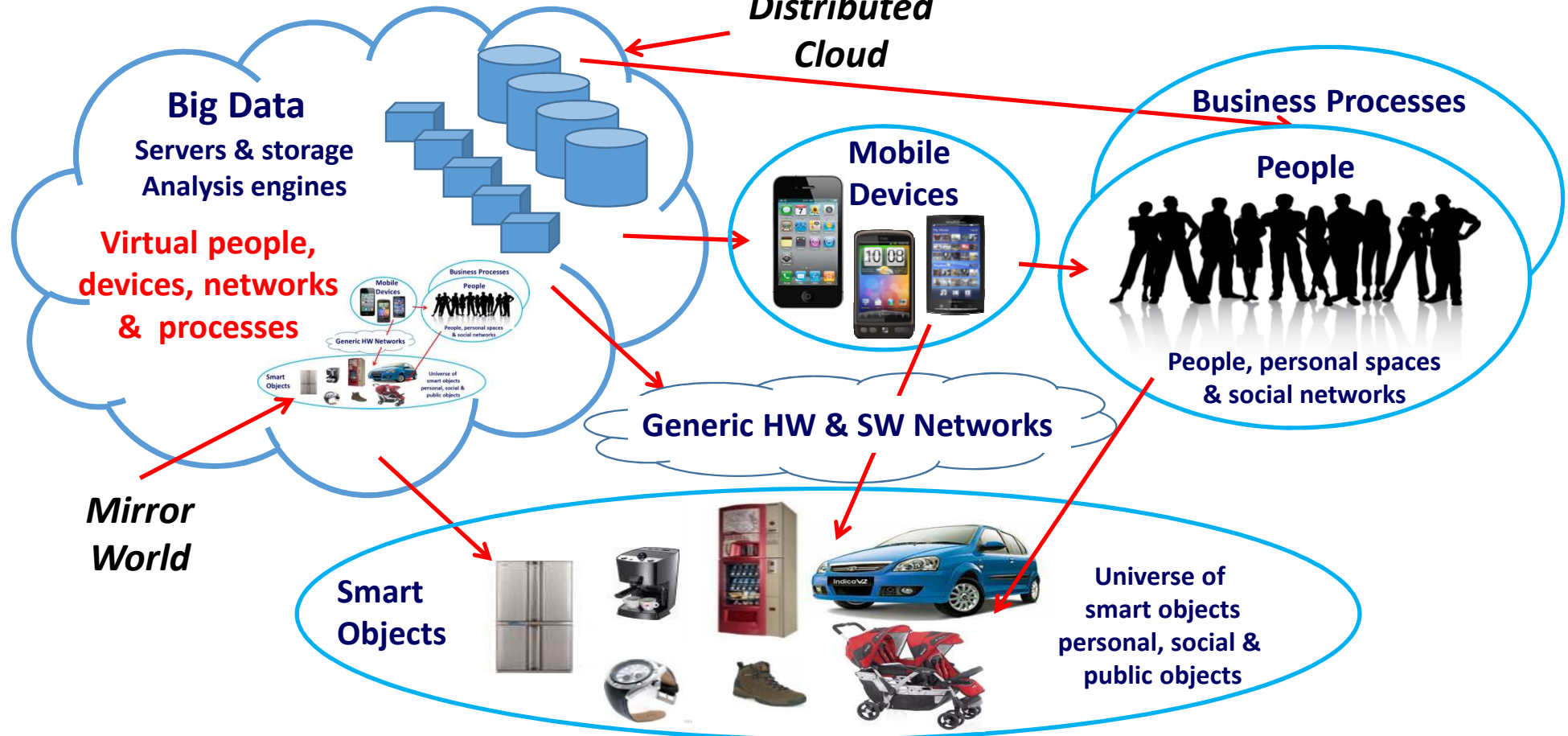
Maurizio Dècina, ICT Technologies, Handimatica 2014, Bologna, November 28th, 2014



Data, Devices, People, Networks & Processes

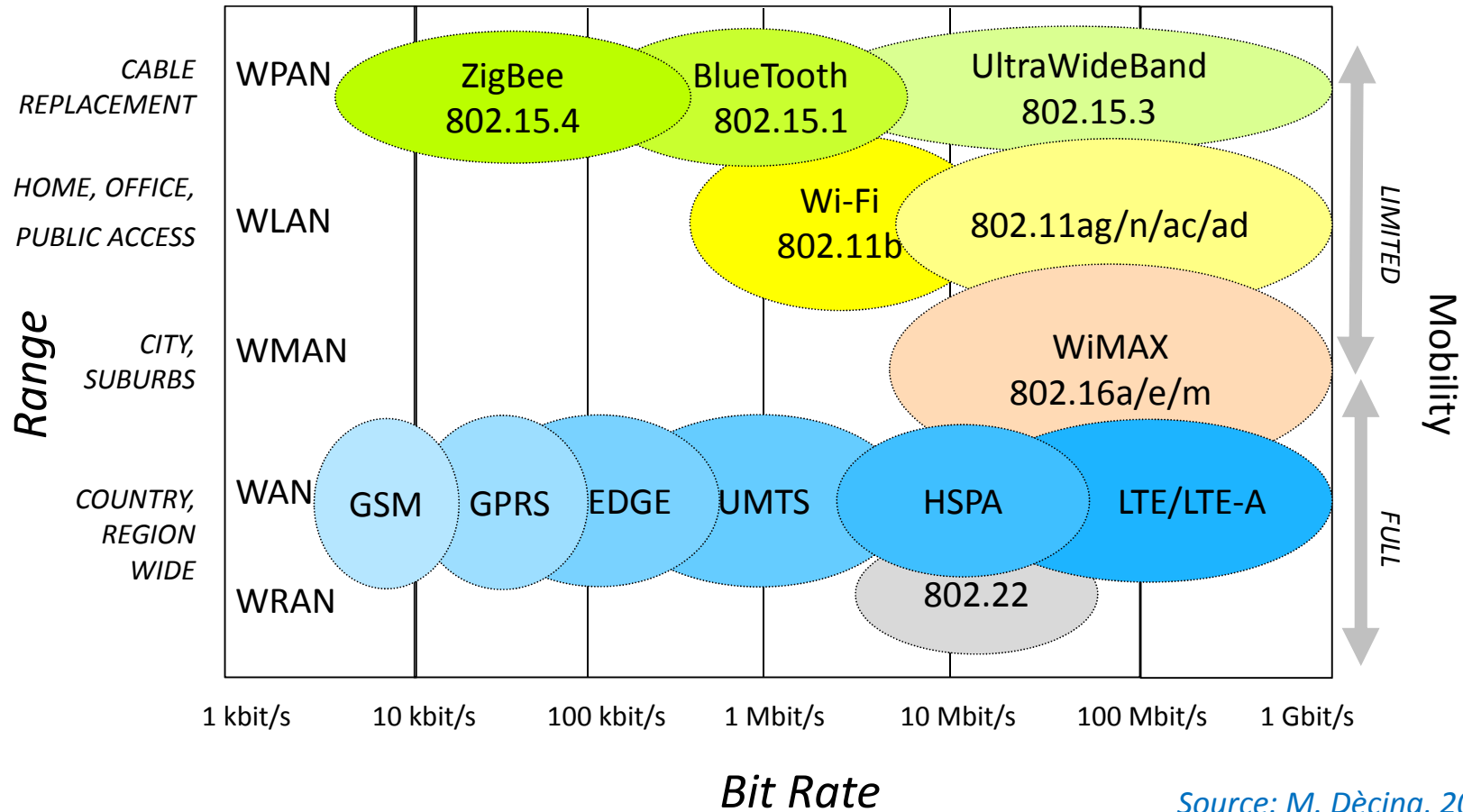
Cloud & Virtualization

**Distributed
Cloud**





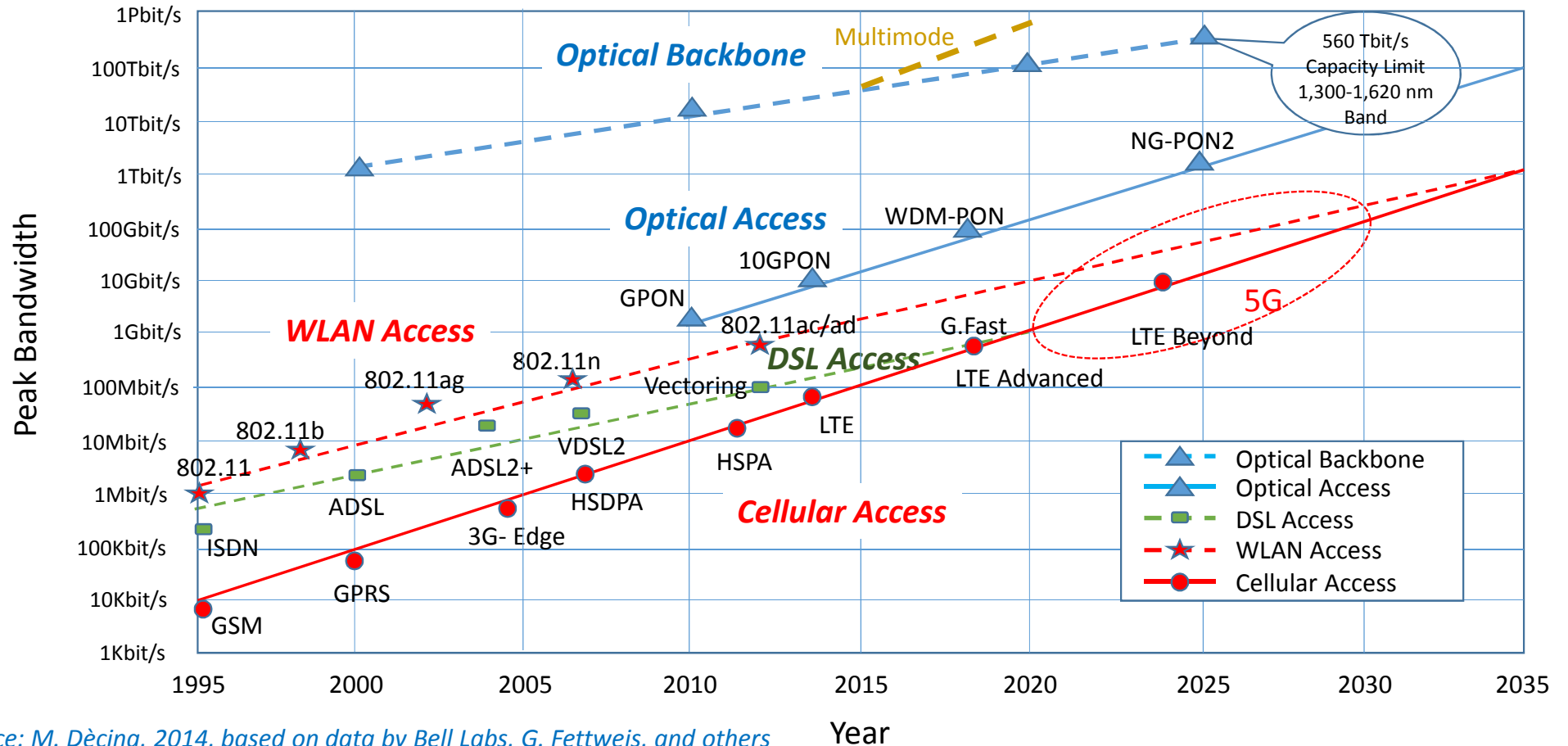
Wireless Access Towards the Gbit/s



Source: M. Dècina, 2010



Market Entry Benchmark of Wired and Wireless Technologies with Projections

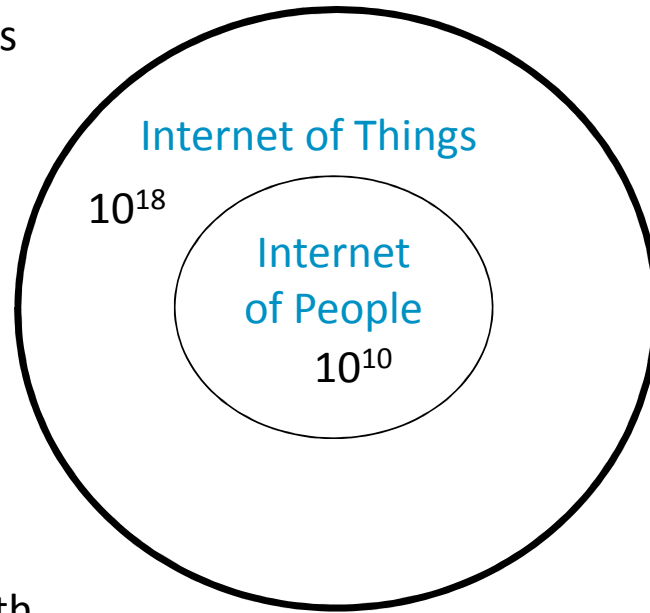


Source: M. Dècina, 2014, based on data by Bell Labs, G. Fettweis, and others

Year



Internet of Things



Smart Cities



Smart Buildings & Homes



Smart Meters



Industrial Plants



e-Health



Personal Sensors



Environment Monitoring & Control



Storage & Logistics



Vehicles & Transportation



Mobile Services



Sensing Applications

Internet + Internet of Things = Wisdom of the Earth



Evolutionary Roadmap for Key Functional Elements

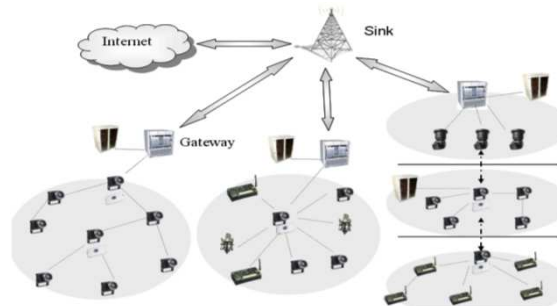
M2M



Key elements

- Separated applications
- Ad-hoc designed modules
- Ubiquitous connectivity
- SIM management
- International agreements
- Embedded SIM

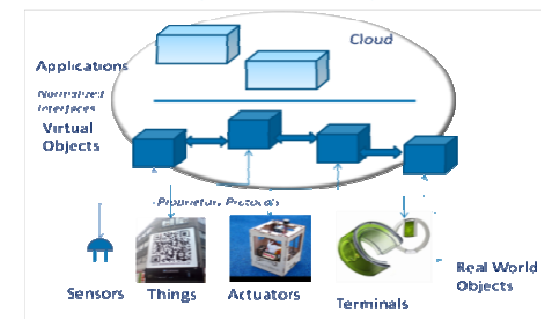
IoT



Key elements

- Low-cost standard sensors
- Short range communication
- Capillary and macro network
- Horizontal Services
- Data aggregation in cloud
- Third party development

IwT/WoT/IoE

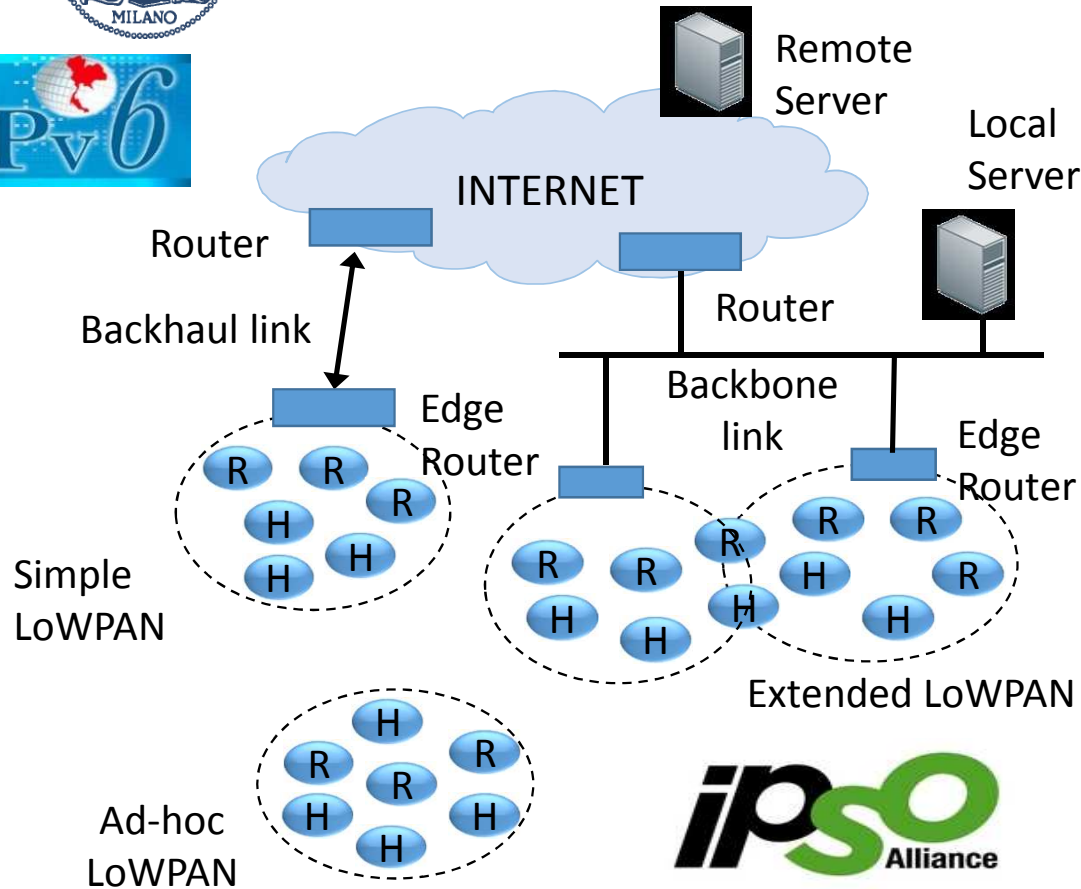


Key elements

- “Virtual Objects”
- Mirroring Things in cloud
- Object Semantics
- Data integration, federation and portability
- Cloud as dev. platform



6LoWPAN & RPL



IPv6 over Low power Wireless Personal Area Networks

IPv6	
Ethernet MAC	LoWPAN Adaptation
	IEEE 802.15.4 MAC
Ethernet PHY	IEEE 802.15.4 PHY

IPv6-LoWPAN Router Stack

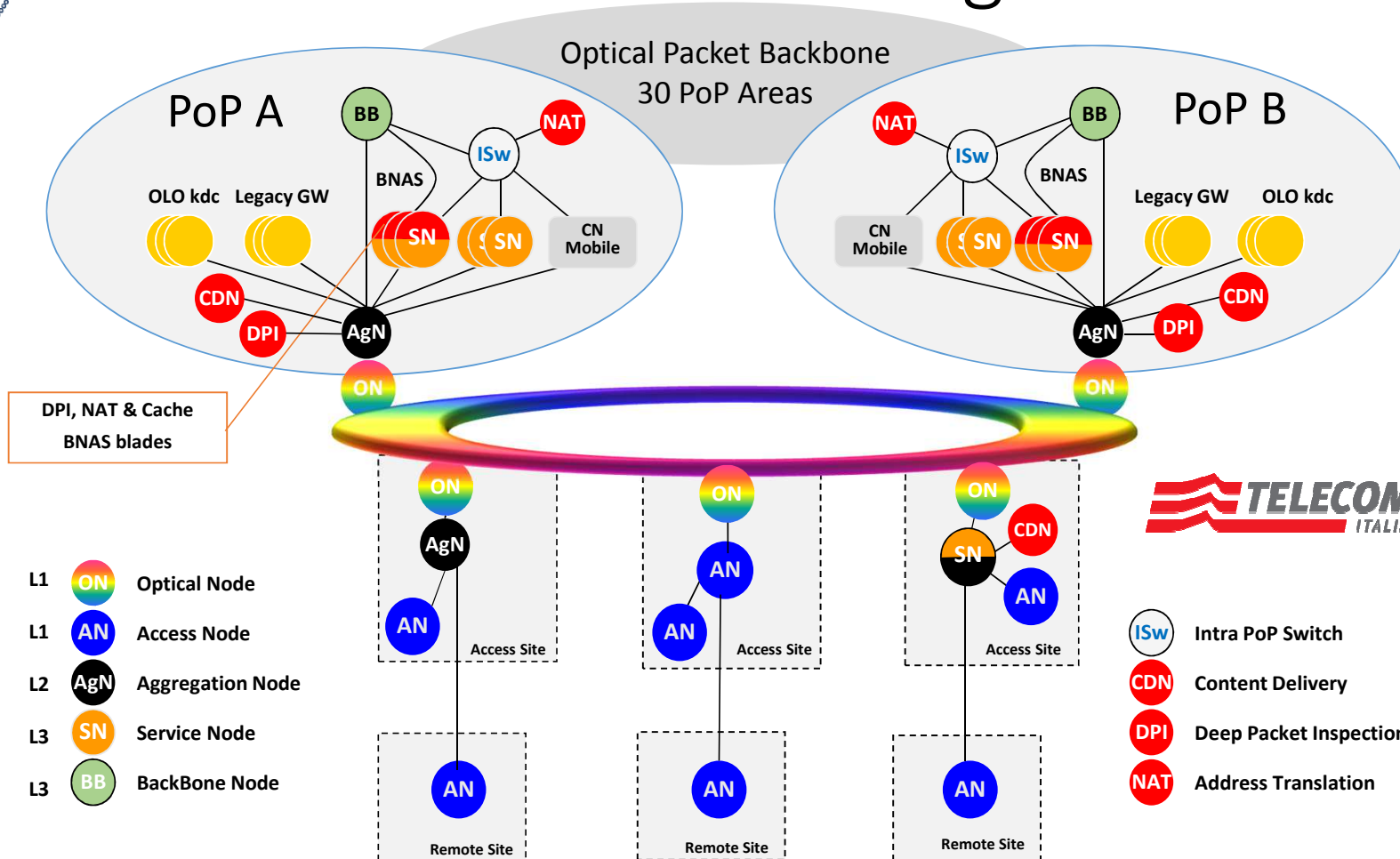
RPL "Ripple" Protocol (IPv6 Routing Protocol for Low-Power and Lossy Networks)
Standard routing algorithm for embedded applications

Application specific requirements

- Home automation
- Commercial building automation
- Industrial automation
- Urban environment

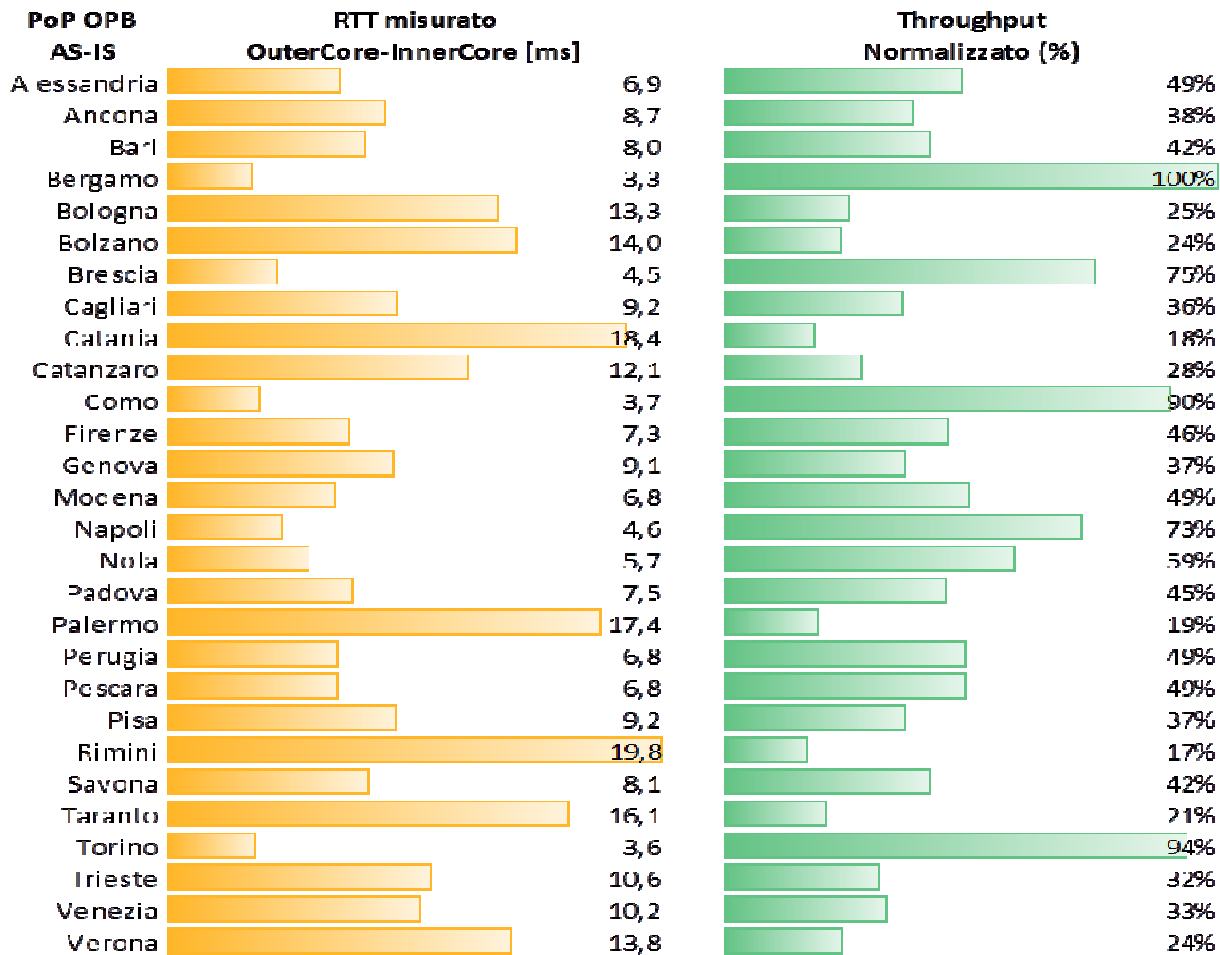


Cloud Centric Networking



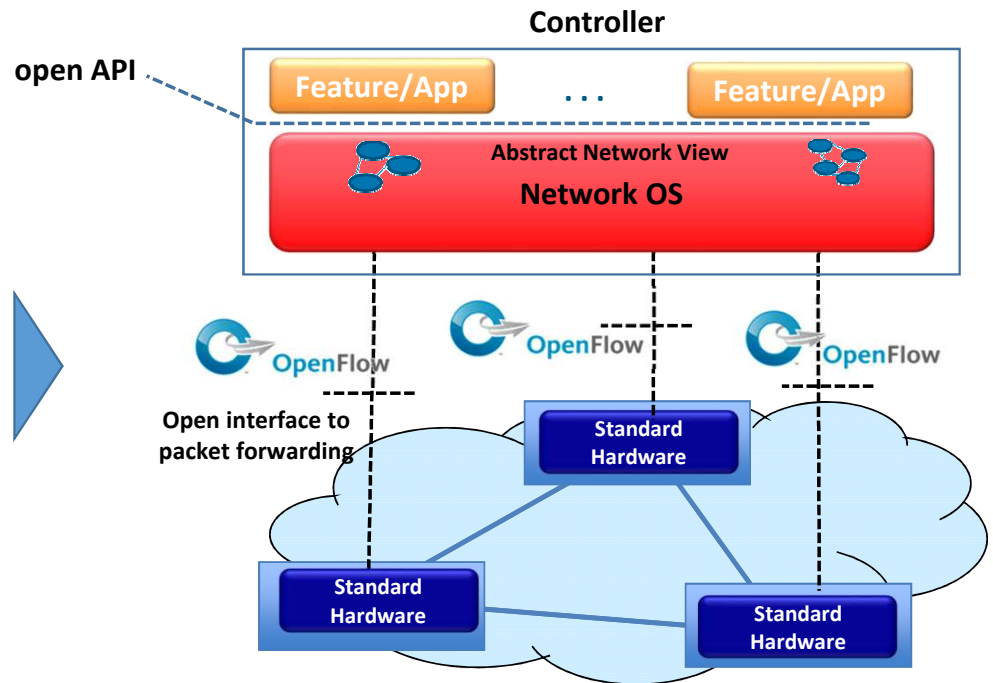
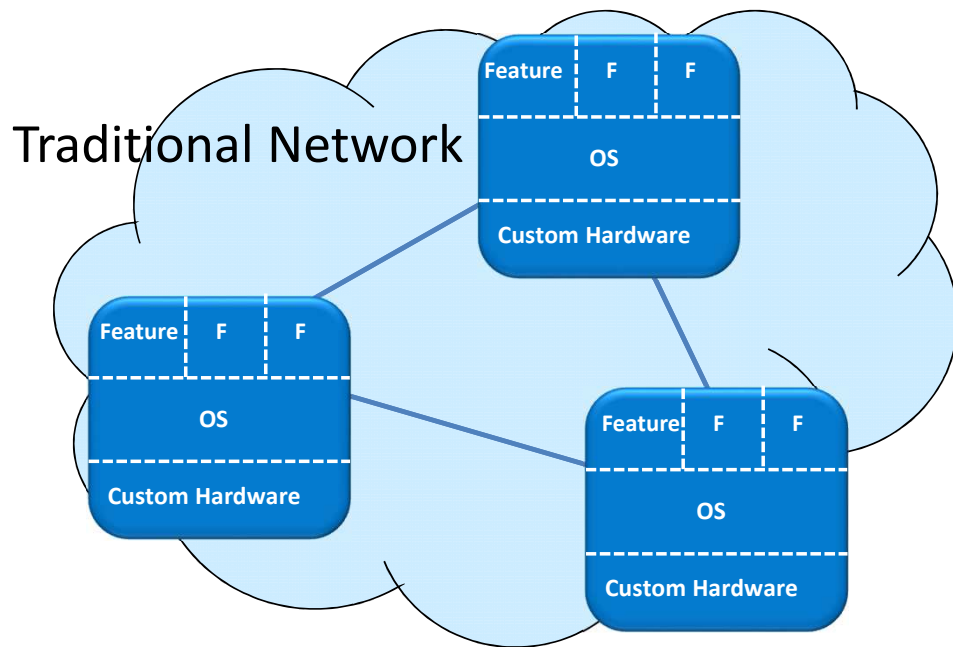


Lean PoP DCs & FTP Throughput





Software Defined Networks





Network Function Virtualization

