# **Technologies and Operations Evolution**

**STEFANO PILERI** 



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

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**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

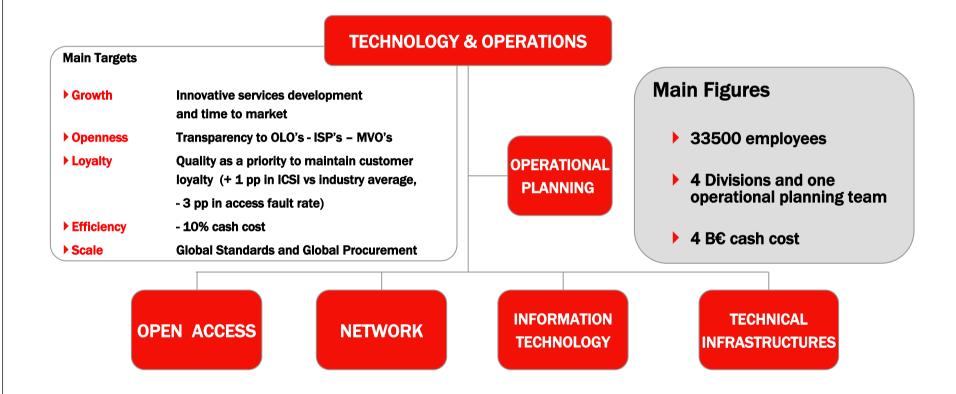
### **Agenda**

- ▶ A new "Technology & Operations" organization: rationale, objectives and benefits
- Market driven Network & IT infrastructures evolution
- ▶ Allowing TI business transformation: Convergent Services & Applications Platforms
- Improving Quality of Services
- Getting traction from efficient operations
- Conclusions



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

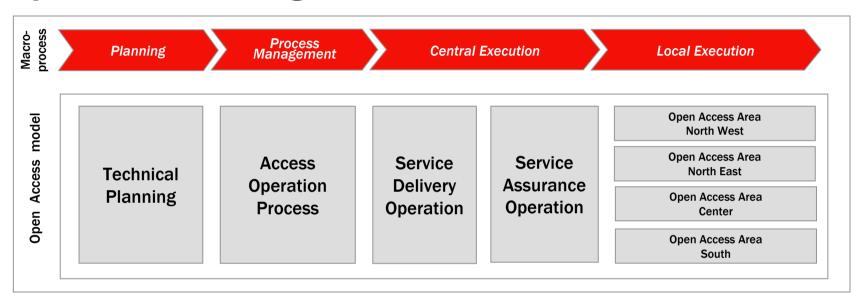
# Improving Innovation, Quality and Efficiency with a new focused and integrated organization





**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

### **Open Access New Organization**



#### **Main Figures**

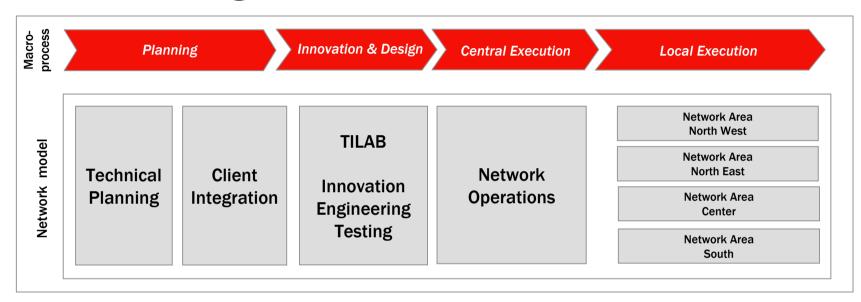
- ▶ 20300 employees + 11000 external staff
- ▶ Focus on Quality, Efficiency and Transparency
- ▶ 0,9 B€ cash cost
- ▶ 12 millions activities per year on field (activation and repair) +14 millions remote activities per year

- Improve transparency in Wholesale and Retail operations
- Quality improvement on access services (from 14.5% to 11.5% fault rate reduction by 2010)
- ▶ 10% efficiency/year in cash cost resulting in a complete re-engineering of operations



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

### **Network New Organization**



#### **Main Figures**

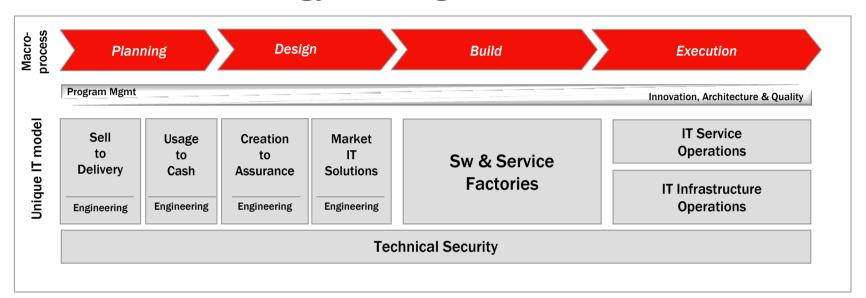
- 8350 employees
- Focus on Innovation, Quality and Efficiency
- ▶ 1,1 B€ cash cost
- ▶ 24 millions fixed lines and 30 millions mobile lines convergent network (domestic)

- Convergent NGN deployment (technologies, coverage and capacity)
- Service Platforms deployment
- ▶ 10% efficiency in capex allocation and in operations
- Service Creation Quality improvement
- Group Technology and Development Guidelines



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

### **Information Technology New Organization**



#### **Main Figures**

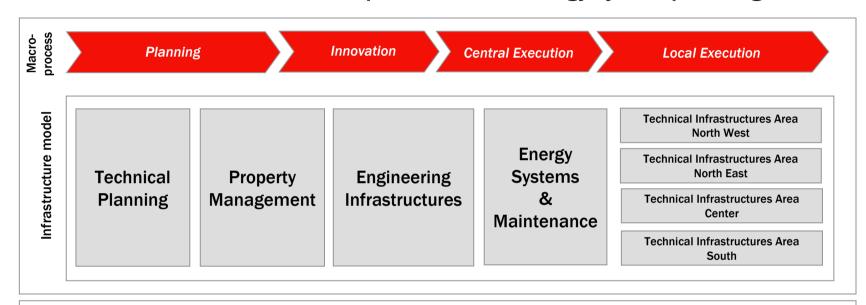
- ▶ 3800 employees, 5600 external resources
- ▶ Focus on Innovation, Quality and Efficiency
- ▶ 0,7 B€ cash cost
- ▶ 460 IT applications for the internal processes and for ICT market offering
- ▶ 12000 internal servers, 28000 CPU, 7000 MIPS Mainframe

- ► Service Creation time-to-market improvement (+ number of releases)
- Application consolidation and renewal leveraging the convergent wave (-40%)
- Server consolidation & Data Center rationalization (from 12000 to 2000 servers)
- ▶ 20 % efficiency in cash cost allocation (avg.'08-'10)



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### **Technical Infrastructures** (Real Estate and Energy Systems) New Organization



#### **Main Figures**

- ▶ 950 employees
- Focus on Quality and Efficiency
- ▶ 1,2 B€ cash cost
- 2200 Gigawatt\*hour of Energy needs
- ▶ 13000 towers, 11300 buildings, 7800000 m<sup>2</sup>

- Reduce Energy requirements
- Reduce Buildings and square meters rented
- Site sharing strategy (share the most of mobile sites)
- ► Energy Systems Quality improvement
- Sustainability and Environmental responsibility excellence



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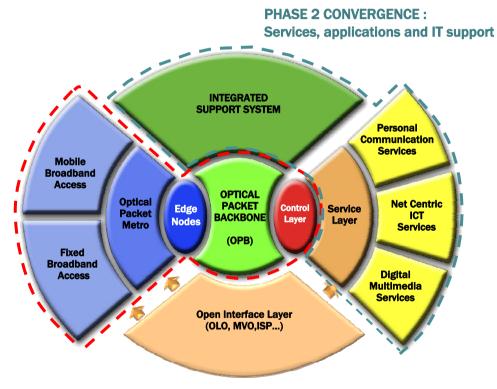
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### Our Next Generation Convergent Network & IT Model is evolving...



PHASE 1 CONVERGENCE: access, metro and backbone

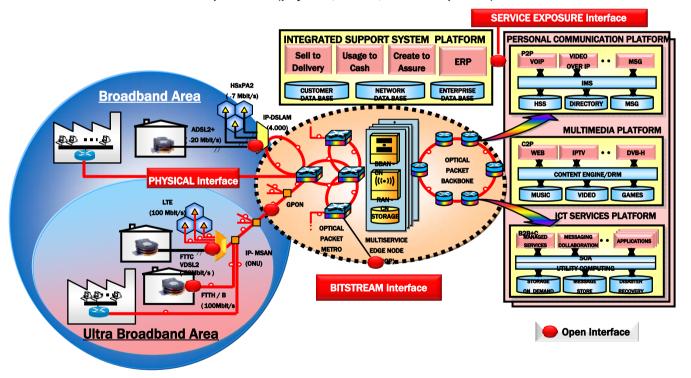
- ► Convergent: from a convergent approach in access, metro and backbone network (phase 1) to a full services, applications and integrated support systems convergence (phase 2)
- Ultra-broadband "All IP": Investing in coverage and capacity of the Broadband Internet Services (500 gigabit/s in 2007, 4000 gigabit/s in 2010 expected in the IP backbone) supporting mobile and fixed data booming
- "Quality and user friendly": Improving Quality of Services (access, backbone and services layers)
- Open: Allowing third parties to access to our
   Open Platform to offer their services to the final customers (OLO, MVO, ISP, ...)



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### We confirm the deployment of "All IP" Open NGN2 platform

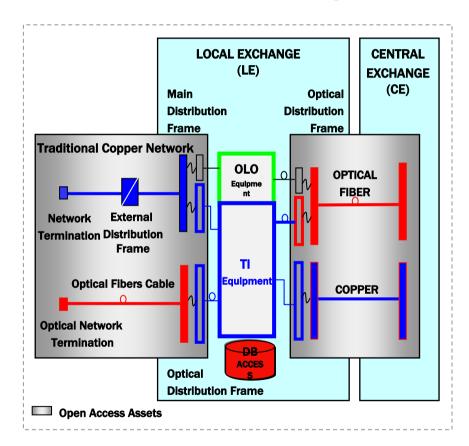
- Market driven ultra-broadband access in main metropolitan areas deploying FTTx in the fixed and LTE in the mobile
- Services and Application Layer (IT based) to allow our evolution in Digital Multimedia and Networked IT services for consumer and business market segments
- ▶ 3 different kinds of interfaces to our Open NGN² (physical, virtual, service exposure)





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# Improving our transparency and performances in the physical access with the new "Open Access" Operating Model

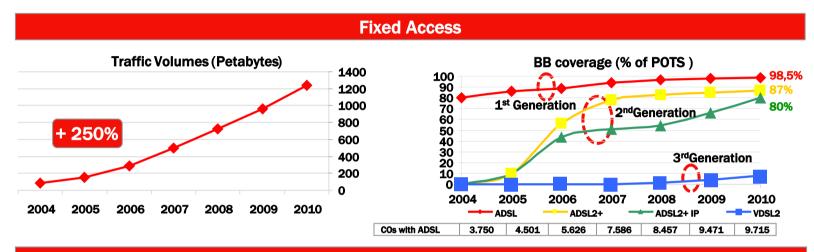


- "Open Access provides access to physical infrastructures to OLO's and TI allowing direct technical contact points
- OLO's will maintain the current interface to TI Wholesale for all the services following a "One Stop Shop" approach
- Open Access is ready to provide technical support to OLO's

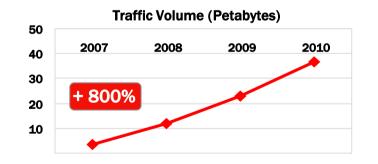


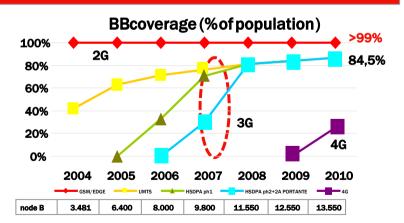
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### **Extending Coverage and Capacity in the Broadband Access**



#### **Mobile Access**







TECHNOLOGIES AND OPERATIONS EVOLUTION

### Deploying NGN2 optical fibers in the access: towards FTTH

#### **Tecnological Issues**

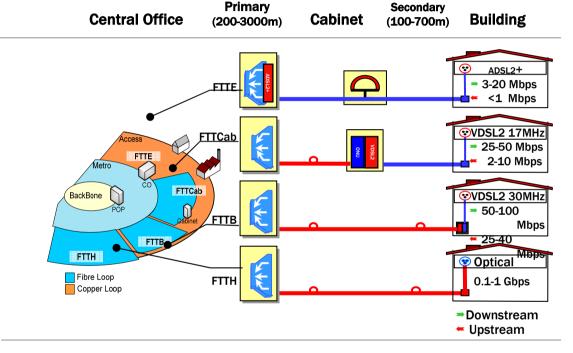
- Growth of
  - # broadband fixed services over copper
  - broadband mobile backhauling
  - bit rate

will result, in the long run, as a reduction of S/N ratio and available bandwidth

 Copper network aging and the intense use of this network for broadband will require increasing operational costs

#### Service Enhancement

Next generation High Definition video and multimedia services (telepresence, home working, remote learning, telemedicine) focused on emerging "green" business requirement and new entertainment for consumers can't be supported over copper network



#### Cash cost reduction

- Reduction of delivery and assurance / maintenance cost due to the "plug and play" approach of NGN2 services and the reduction of fault rate of a factor at least of 50 %
- Reduction of number of central office according to the new distance to the buildings that can be over 10 Km (reduction of a factor 5) and reduction of power budget per line (10W to 3 W).



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### Mobile Broadband Access Evolution: leveraging on a 3GPP path

The growing diffusion of flat rate charging schemes, while encouraging Mobile Data Traffic, increases the <u>need to reduce the End to</u>

<u>End cost per bit per Herz</u> in the path to "beyond 3G" solutions:

#### **Key Issues**

<u>Radio</u>: Higher spectral efficiency, Lower latency; More Bandwidth, Higher Speed <u>Network</u>: Fiber Connectivity, Optimized Backhauling, Simplified architecture

HSDPA HSxPA

HSUPA 1.5 - 5.8 Mbit/s HSDPA

7.2 - 14.4 Mbit/s

eHSPA

64QAM,16QAM

MIMO 2X2

UMTS 900/1800 Micro coverage

**Flat Architecture** 

RoF NGN2

Femto cells

**Terminal Availability** 

**Spectrum Refarming** 

**3GGP LTE** 

Trials since 2008/2009, Fully interoperability with 3G network (No Overlay)

**READY/ PLANNED** 

80% Italian

population

coverage

by 2008

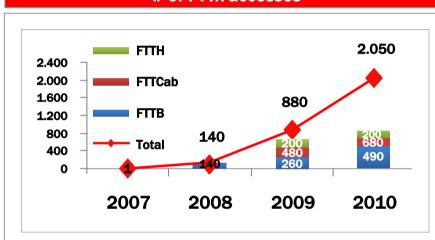
**UNDER INVESTIGATION by TI** 



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

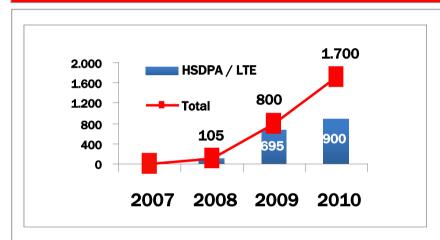
### **Open NGN2 Network Evolution - FTTx Deployment**

#### # of FTTx accesses



	2008	2009	2010
Cabinet @ building	7.200	21.200	48.000
Street cabinets	0	1.600	4.600
Total FTTx cabinets	7.200	22.800	52.600

#### # of 3G/4G fiber connected antennas



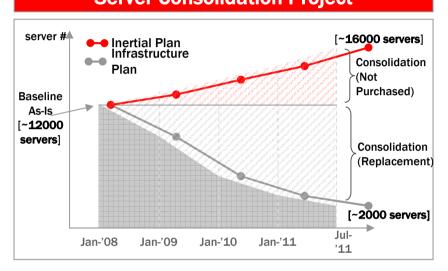
	2008	2009	2010
<b>3G/4G Coverage</b> (% of population)	0,8%	7%	17%



**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

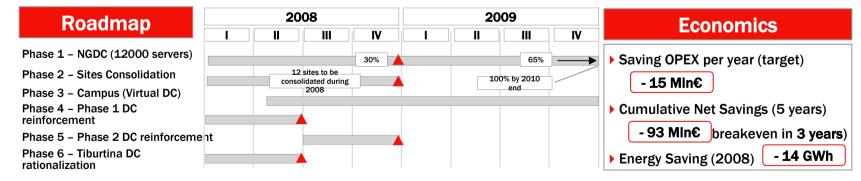
### **Next Generation Data Center**

### Server Consolidation Project



#### **Virtual Data Center (Campus Project)**







**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

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### **Designing our growth: Consumer Services Suite Evolution**

Unified Convergent Messaging

Mobile Digital Content (iTIM)

Convergent Voice in Mobile Platform

WEB 2.0 (ugc, community)

Meb & Mobile Advertising

M - Payment

#### **Broadband Convergent Internet**

- ▶ Web Browsing
- ▶ Mobile Browsing



#### **Assistance plus**

- ▶ Help Desk, on site assistance
- **SLA**
- **▶** Security Management



**Broadband Connectivity (xDSL2 - HSxPA2 - GPON)** 

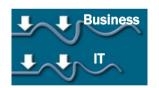
**TECHNOLOGIES AND OPERATIONS EVOLUTION** 

### **Designing our growth: Consumer Services Suite Evolution**

High Definition Telepresence	SaaS : Document Management	Infomobility
Unified Convergent Messaging	SaaS : CRM & ERP	eHealth
Fixed-Mobile Virtual Network	Back up, Disaster Recovery	Machine to Machine (Z-SIM)
Voip (IPPBX, IP Call Center)	Net Computing	Wireless Sensor Networks

#### **Broadband VPN**

- ▶ Web + Intranet + Collaboration
- **▶** Mobile Office



#### **Assistance plus**

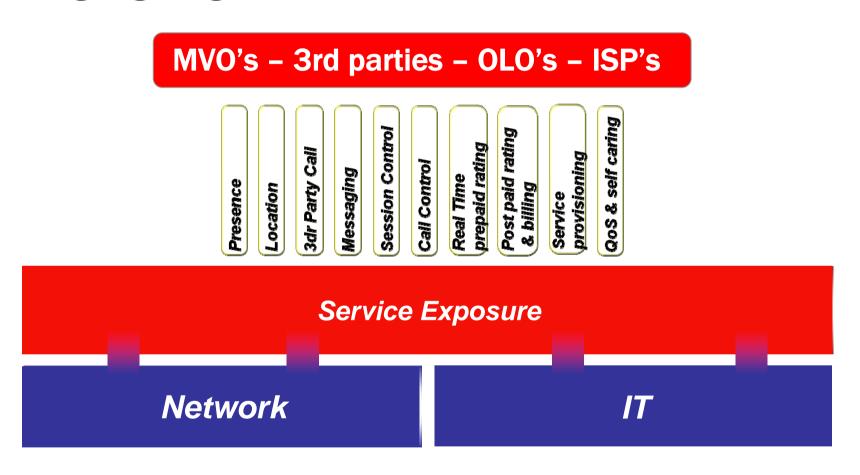
- ▶ Help Desk, on site assistance, SLA
- **▶** Device Management
- **▶** Security Management



**Broadband Connectivity (xDSL2 - HSxPA2 - GBE)** 

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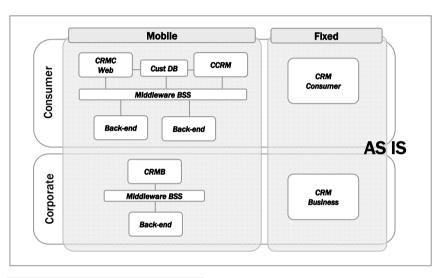
### Designing our growth: a new Wholesale and B2C Services Suite

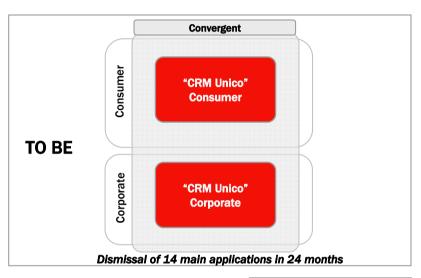


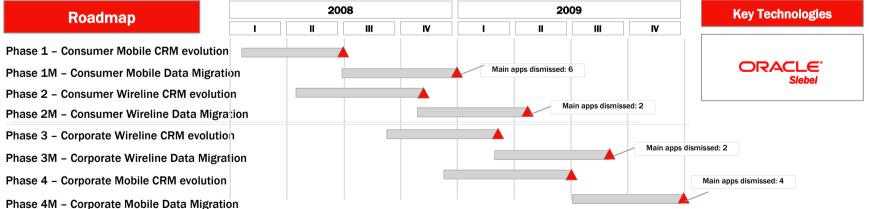


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### Enabling our Business transformation: Convergent "Sell-to-Delivery (CRM)" IT application



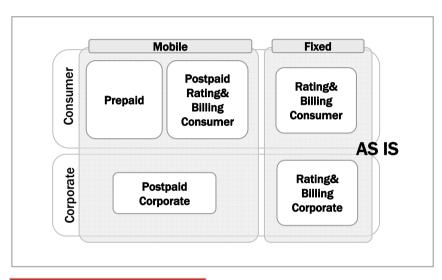


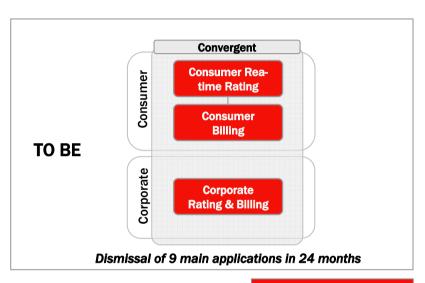




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#### **Enabling our Business transformation: Convergent "Usage-to-Cash (Billing)" IT application**





#### **Key Technologies** 2008 2009 Roadmap Ш I۷ Ш IV COMVERSE Phase 0 - Upgrade prepaid Mobile ORACLE' Main apps dismissed: 1 Phase 1 - Upgrade Billing Consumer - Wireline Main apps dismissed: 3 Orga Systems. Phase 2 - Billing Consumer - Mobile Main apps dismissed: 1 Phase 3 - Billing Corporate - Wireline Main apps dismissed: 4 Phase 4 - Billing Corporate - Mobile



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### **Agenda**

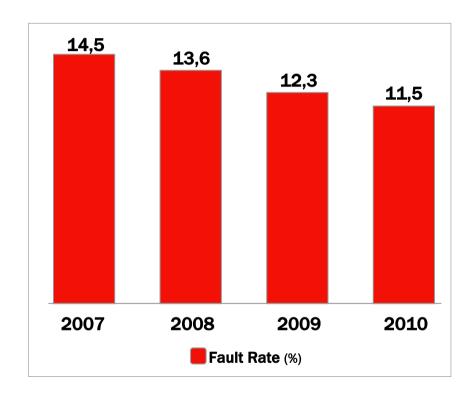
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### **Quality of Service KPI improvement: Access**

- ▶ 100 M€ / year Investment Plan in preventive maintenance of physical access network
- Open Access commitment on reactive and proactive maintenance and partnership plan with other access network installers
- Improvement of Diagnosis and Dispatching processes by sophisticated Information Systems
- Best practice sharing with Telefonica and start up of a main reengineering process program



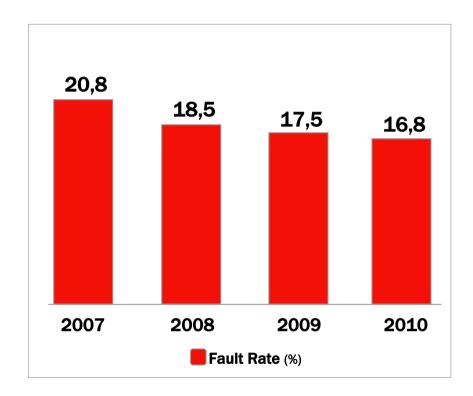
Fault Rate (%) = 
# Trouble Ticket with field reparation for POTS lines (Business+Consumer)
# avg POTS (Business+Consumer) lines per year



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### **Quality of Service KPI improvement: Fixed Broadband**

- Improve stability and performance of broadband network ( tuning of broadband parameter)
- Improve MTTR using enhanced diagnosis and testing tools
- Reduce network saturation phenomena investing in capacity before customer complaints
- Improve stability and performance of the Access Gateway



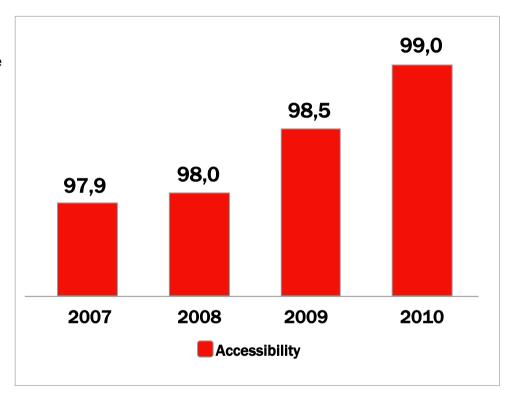
Fault Rate (%) = 
# Trouble Ticket with field reparation for BB lines (Business+Consumer)
# avg BB lines (Business+Consumer) per year



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### **Quality of Service KPI improvement: Mobile Broadband**

- Capacity adjustment in access and core IP mobile gateway (GGSN)
- Backhauling redundancy increase and path diversification
- ► Reduce node B Mean Time To Repair (MTTR)
- **▶** Network Surveillance System Enhancement



(Broadband Data)



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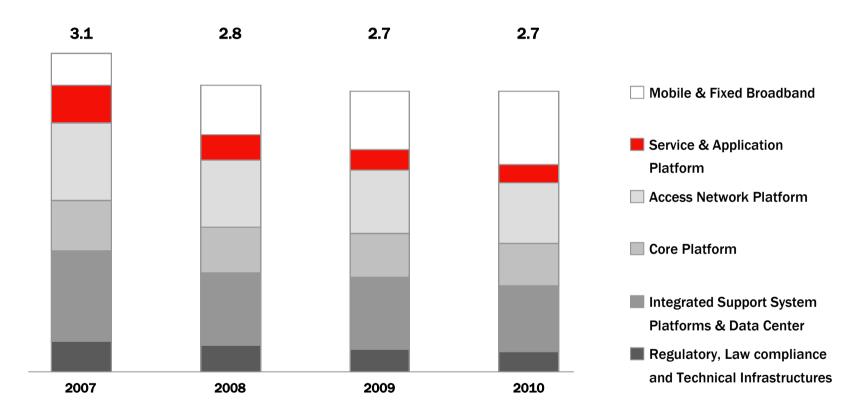
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### **Improving efficiency: CAPEX evolution**

BIn €

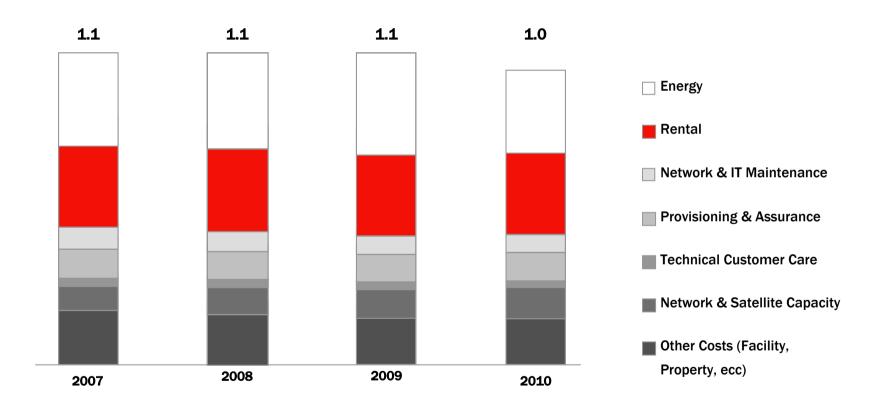




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### **Improving efficiencies: OPEX evolution**

BIn €





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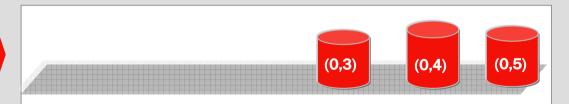
### **Efficiency plan summary**

2008 – 2010 Efficiency results

Technology & Operations 2008-2010 Plan

В€	2007	2008	2009	2010
CAPEX	3,1	2,8	2,7	2,7
OPEX	1,1	1,1	1,1	1,0
Total CASH COST	4,2	3,9	3,8	3,7

Technology & Operations
2008-2010 Efficiency
Plan vs 2007



1,2 B€

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### Efficiency plan per areas (2008-2010)

### **Cash Cost reduction 2008–2010: 1.2 Bn €**

► Access 0.3 B€

• IT 0.55 B €

Network 0.15 B€

▶ Technical Infrastructures 0.2 B€



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