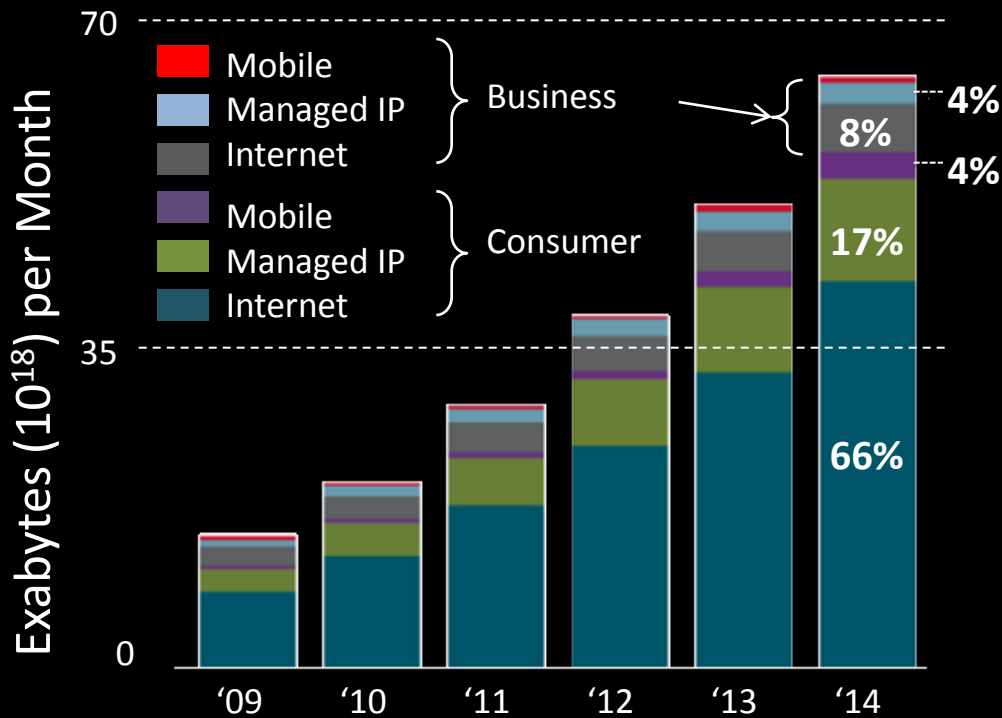




# Internet Traffic Growth

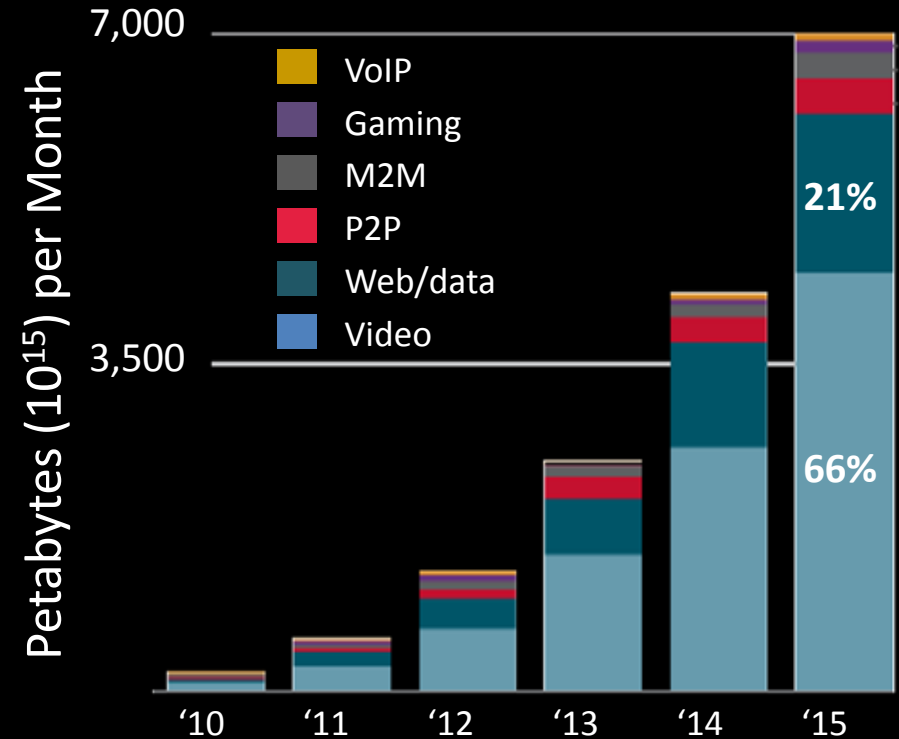
## Internet traffic trend

34% CAGR 2009-2014



## Mobile internet traffic

92% CAGR 2010-2015

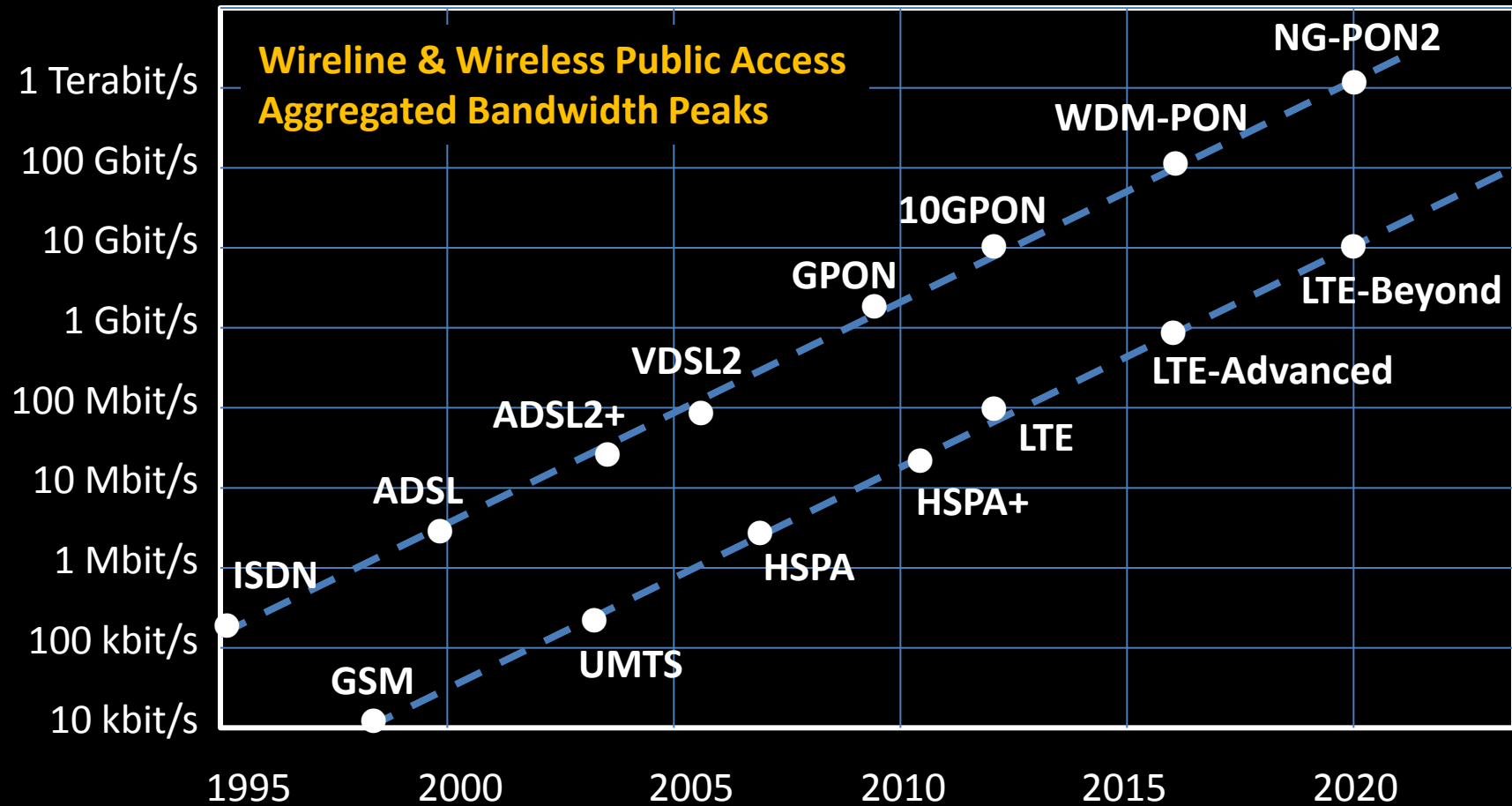


2015 VoIP traffic = 1.5% mobile traffic & 0.4% total traffic

Source: Cisco Visual Networking Index, 2010 & Mobile 2011

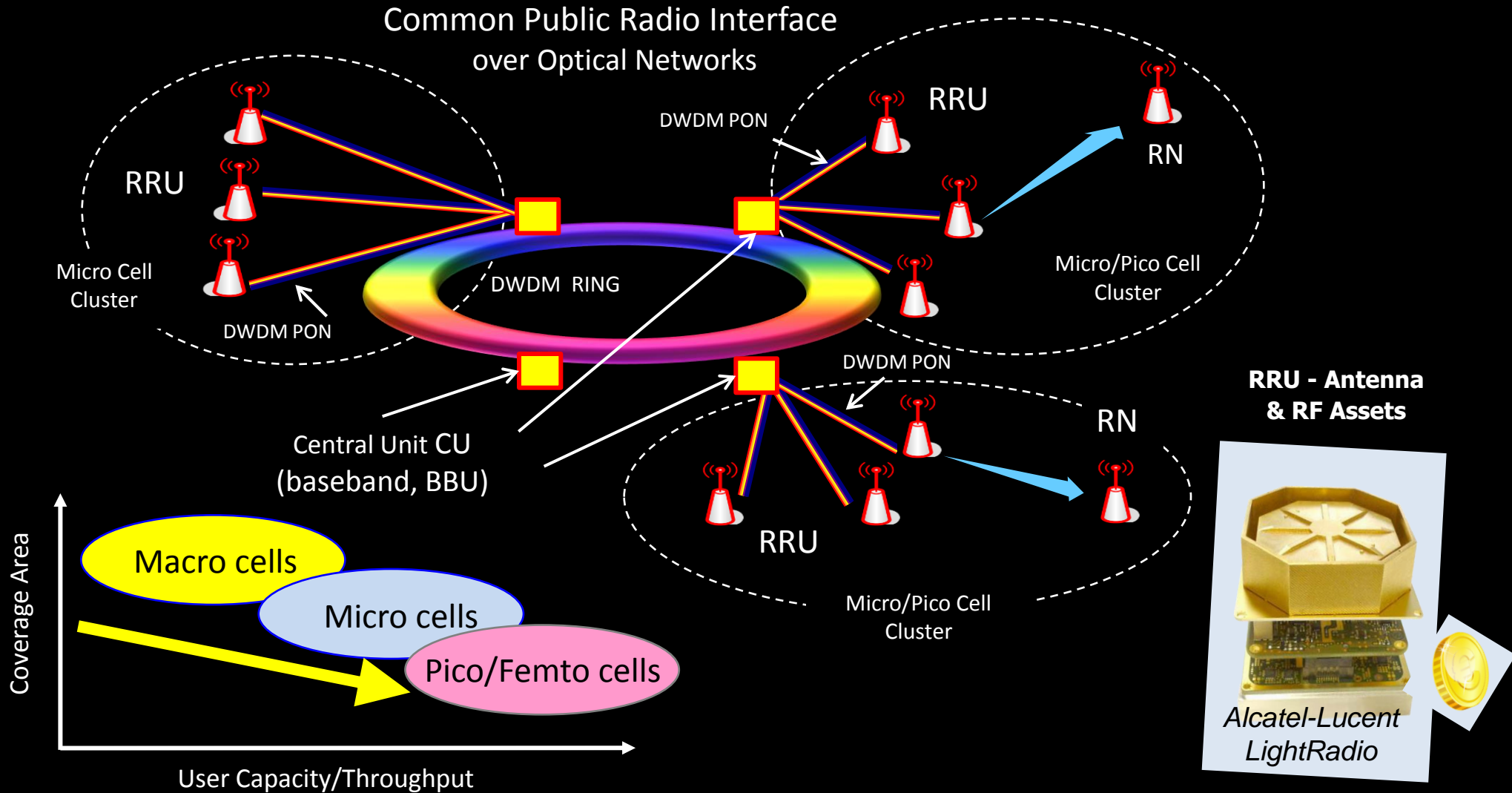


# Wireline vs. Wireless Peak Access Bandwidth



Source: M. Dècina, 2011

# Reti «convergenti» fisse e mobili





# Internet Value Chain

1,927 US \$b

Over The Top providers

Telecom providers

Interface providers



**Content rights**

**MEDIA RIGHTS OWNERS**

- Video
- Audio
- Books
- Gaming
- Adult content
- Editorial control

**EM I** **BBC** **Time Warner** **Harper Collins**

**UGC**

- Text, images, voice
- Video

**Online services**

**Communications**

Vonage, Hotmail, facebook, msn, skype

**General content**

YAHOO!, FT.com, match.com

**Search**

Google!, Ask.com, bing, Baidu

**Entertainment**

YouTube, XBOX LIVE, iTunes, lost.fm

**Transactions**

amazon, ebay, boursorama, Expedia.com

**Enabling technology services**

**Support Tech.**

- WEB hosting
- Content mgmt
- Web design/dev.

NTT/VERIO, Lighthouse, Akamai

**Billing & payments**

- Online billing & payments SP

CHASE, Paymentech, PayPal, Google Checkout, FirstData.

**Advertising**

- Online adv.
- Agencies/Networks
- Ratings/analytics

WPP, razorfish, double click, nielsen

**Connectivity**

**Core network**

at&t, BT, NTT, france telecom

**Interchange**

xo, Level 3

**Retail Internet Access**

at&t, SingTel, tiscali, NTT, ROAD RUNNER, vodafone

**User interface**

**Applications**

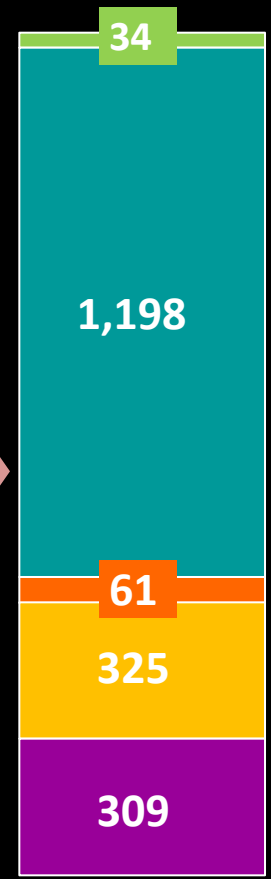
- Software
- Media players
- Internet browsers

McAfee, symantec., real

**Devices**

- PCs
- Smart phones
- Games consoles
- Other Internet Access HW
- Operating Systems

Apple, Microsoft, NOKIA, Nintendo, Dell



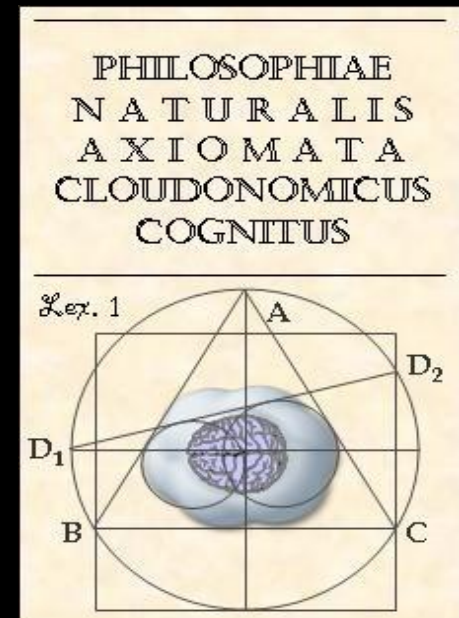
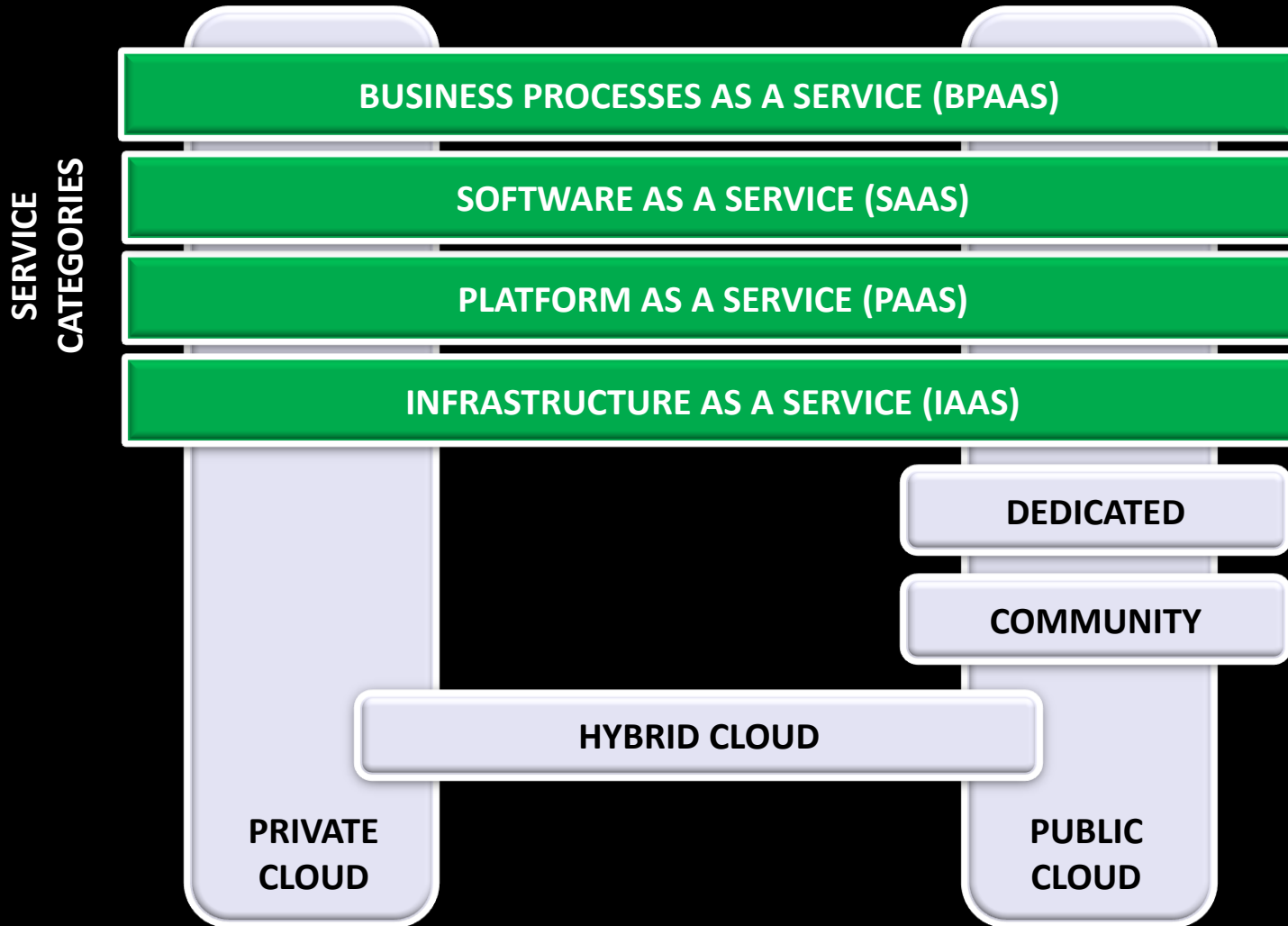
2008 Revenues

- 62% revenues from online services, 17% from connectivity
- 62% revenues from business users, 38% from consumers
- 80% business revenues from online services

Source: AT Kearney, 2010. (Year 2008 data)



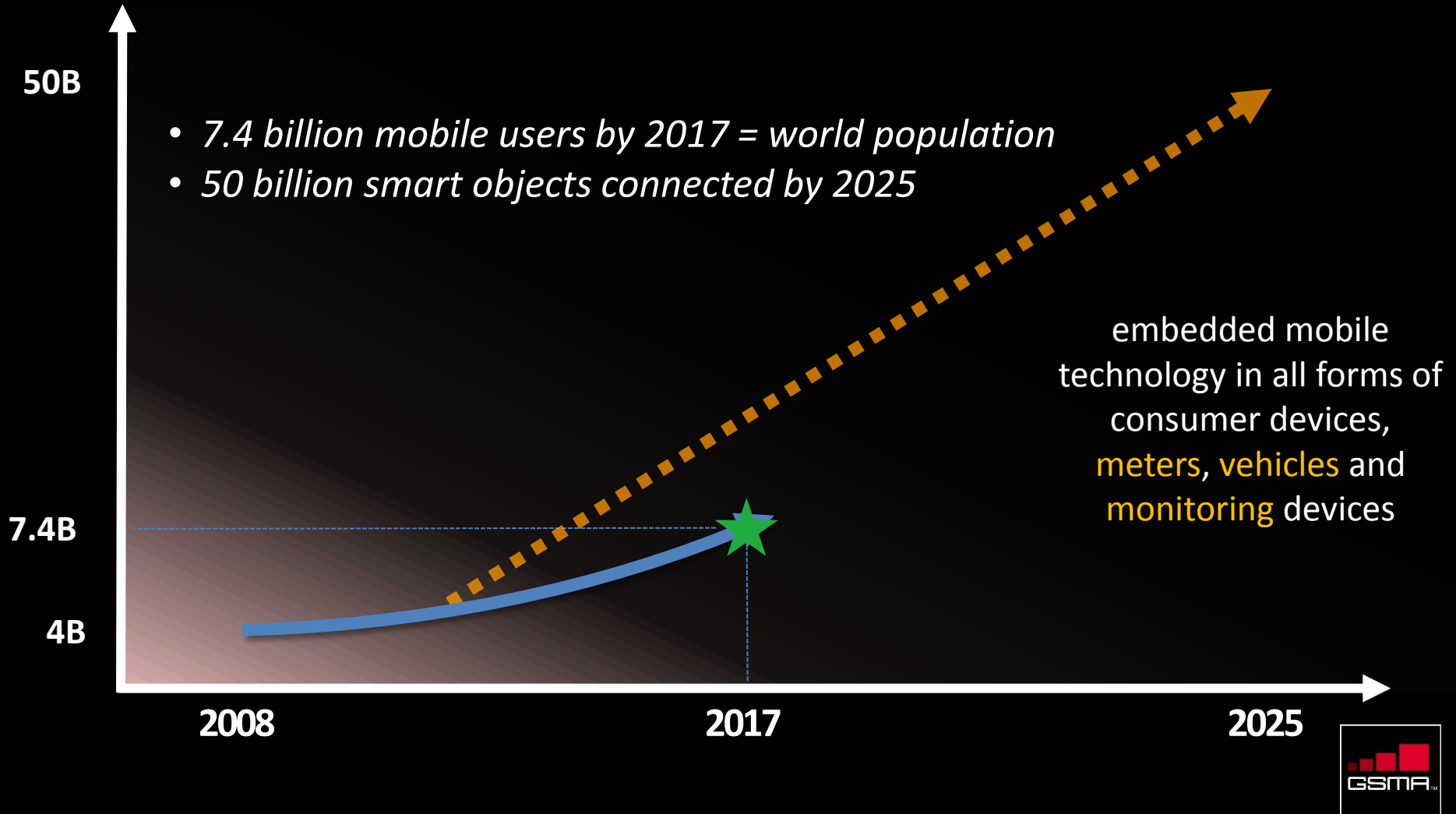
# Cloud Computing Taxonomy



Behavioral Cludonomics  
by Joe Weinman, 2010

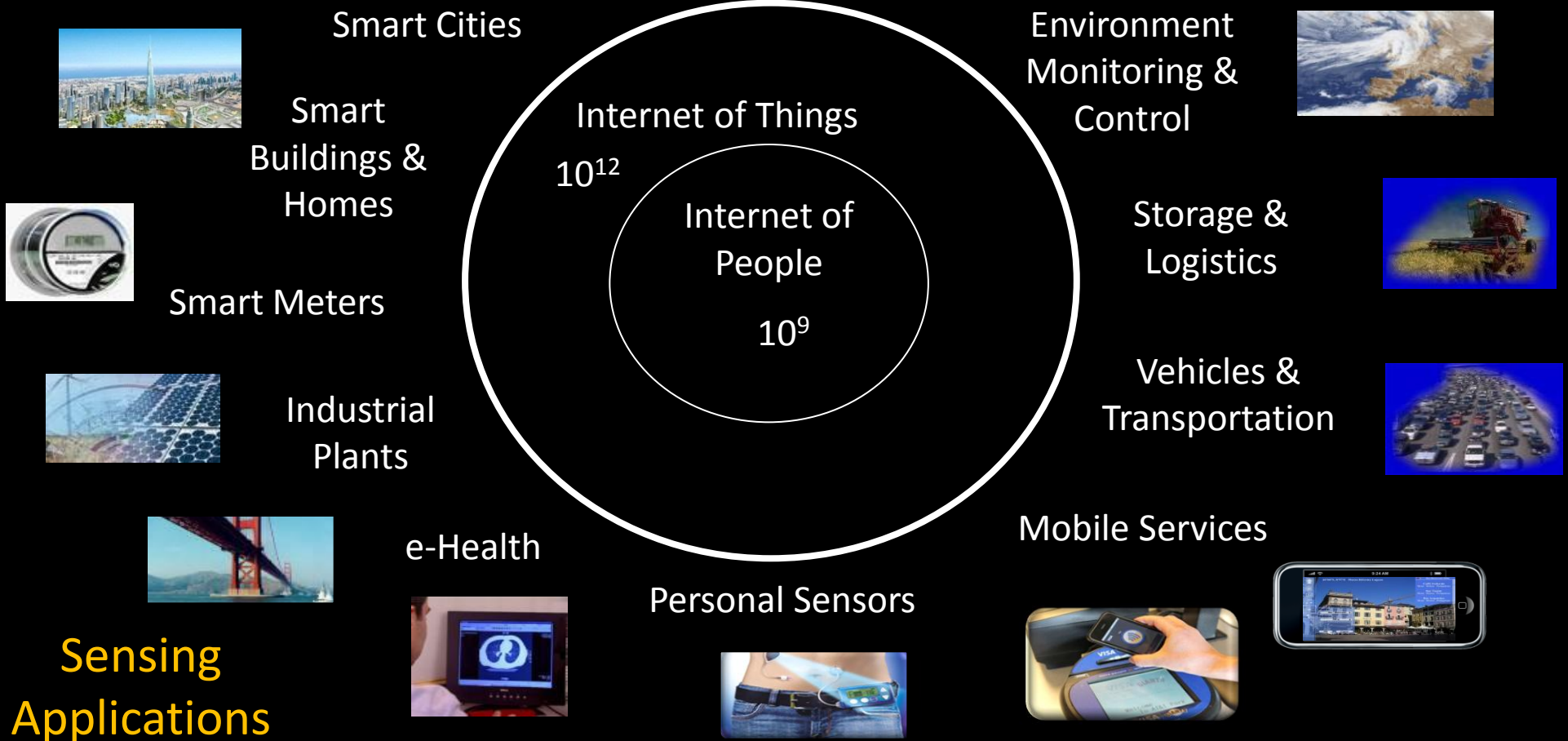


# Connected People and Smart Objects





# Internet with Things



Internet + Internet of Things = Wisdom of the Earth





# ICT-enabled Emission Reduction

Total ICT-enabled Reduction : 7.8 GtCO<sub>2</sub>e  
 35% of Global 21.7 GtCO<sub>2</sub>e Reduction

The Climate Group, SMART2020

## Transport 28%

28%

- Smart logistics
- Private transport optim.
- Dematerialization (telecom)
- Efficient vehicles
- Traffic control

## Industry 14%

14%

- Smart motors
- Industrial process autom.
- Dematerialization (less waste production)

## Buildings 31%

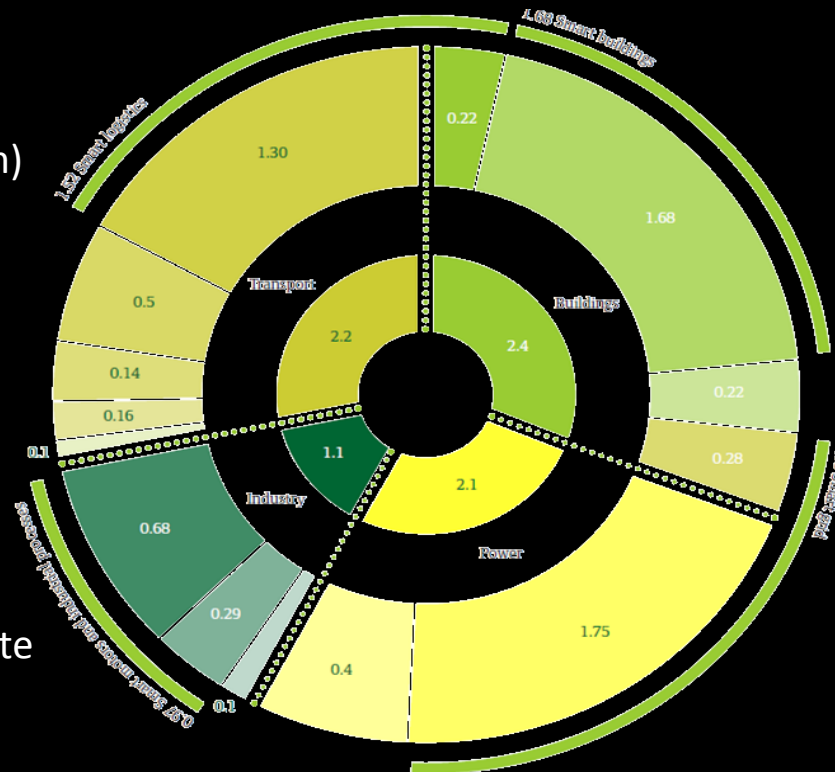
31%

- Smart logistics
- Smart buildings
- Dematerialization (telecom)
- Smart grid

## Energy 27%

27%

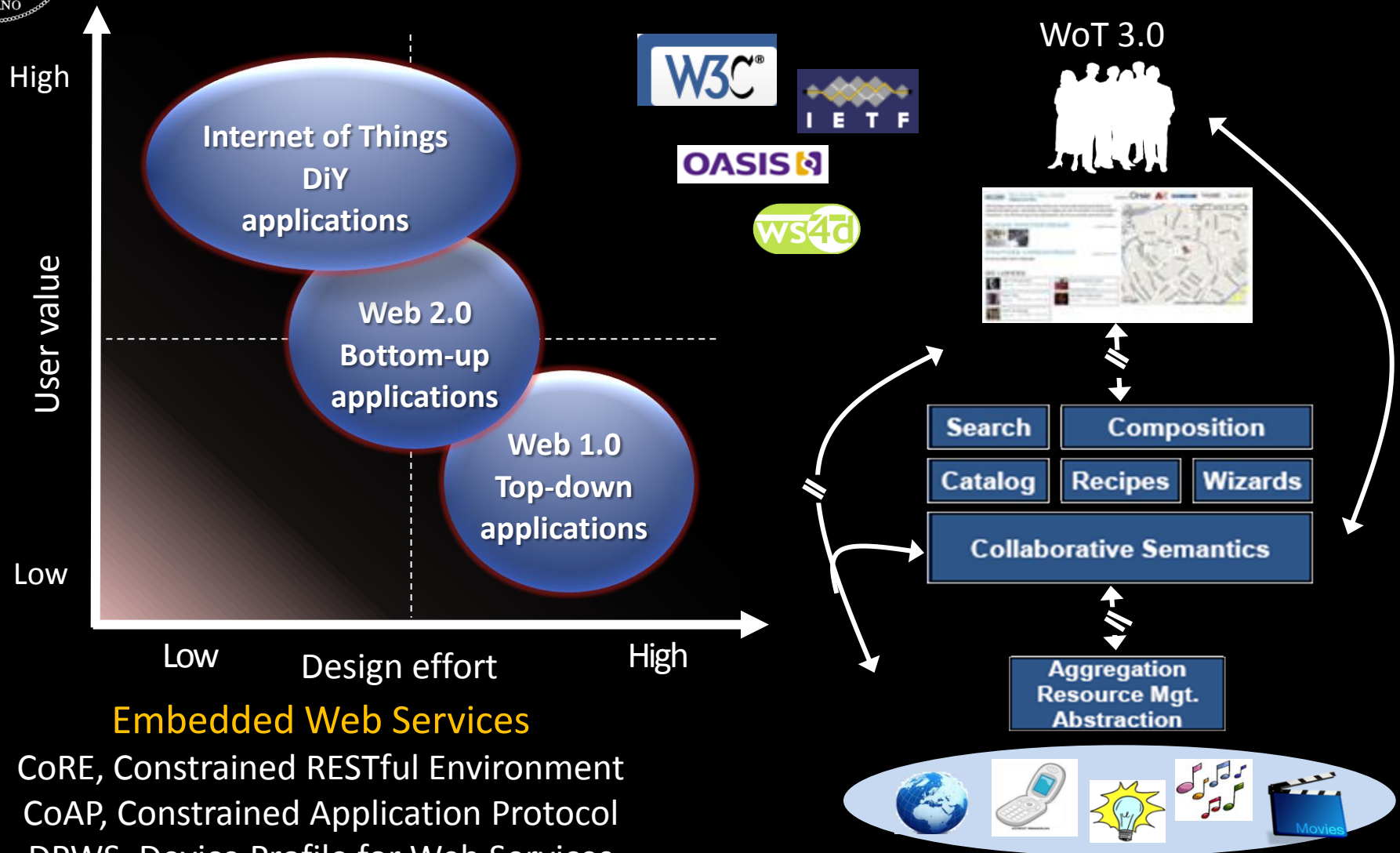
- Smart grid
- Efficient generation of power, combined heat and power (CHP)







# Programming the Web of Things



## Embedded Web Services

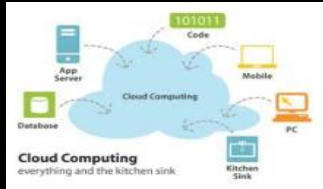
- CoRE, Constrained RESTful Environment
- CoAP, Constrained Application Protocol
- DPWS, Device Profile for Web Services

Source: Lieven Trappeniers, 2009



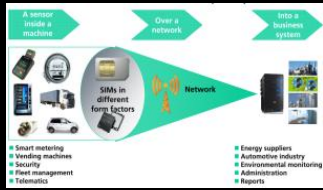
# Managed Internet Services (QoS)

## Cloud Computing



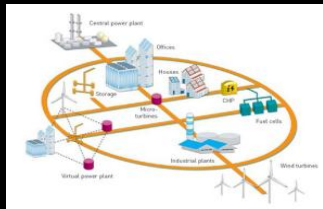
The evolution to on-demand service models, enabled by virtualization and communication networks, offers the opportunity to further advanced scenarios of "utility computing "

## Internet of Things



The spread of cheap and pervasive computing capacity and sensors opens the way for automation applications and mass market Web applications involving personal and public smart objects

## Smart Grid



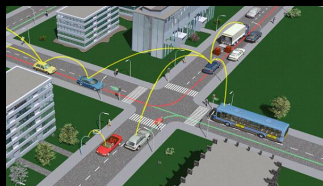
The transformation of the energy sector (especially electricity) is based on a substantial supply of ICT infrastructure components able to "activate" the energy transport network

## e-Health



The emerging need for health and social care (also associated with the growth of population life expectancy) finds in ICT a chance to increase effectiveness and efficiency

## Intelligent Vehicle Transportation



ICT offers opportunities to support the growing need of security, safety and efficiency in the transportation sector, in particular for vehicles traffic automation and control



# Mobile NFC Applications



Source: NFC Forum, 2008

## Card Emulation Mode

### Transaction:

Mobile payments, Ticketing, Access control, Transit, Top-ups, Toll gate

## Peer to peer Communications

### Connectivity:

Data transfer: fast, easy & convenient device association, setup & configuration

## Reader Mode

### Service Discovery:

Content distribution, Information access, Smart advertising



Tata Docomo, Active Poster



Wave & Pay



m-Health

Alcatel-Lucent Wallet Phone



# Future Mobile Device

## SENSING

Local content & service discovery

## SEEING

Augmented reality UI  
Map, 3D, in building navigation

## INTERACTING

Connection manager



## KNOWS

You and what is around you

## LEARNS

What you like

## DISCOVERS

Things relevant to you

## FILTERS

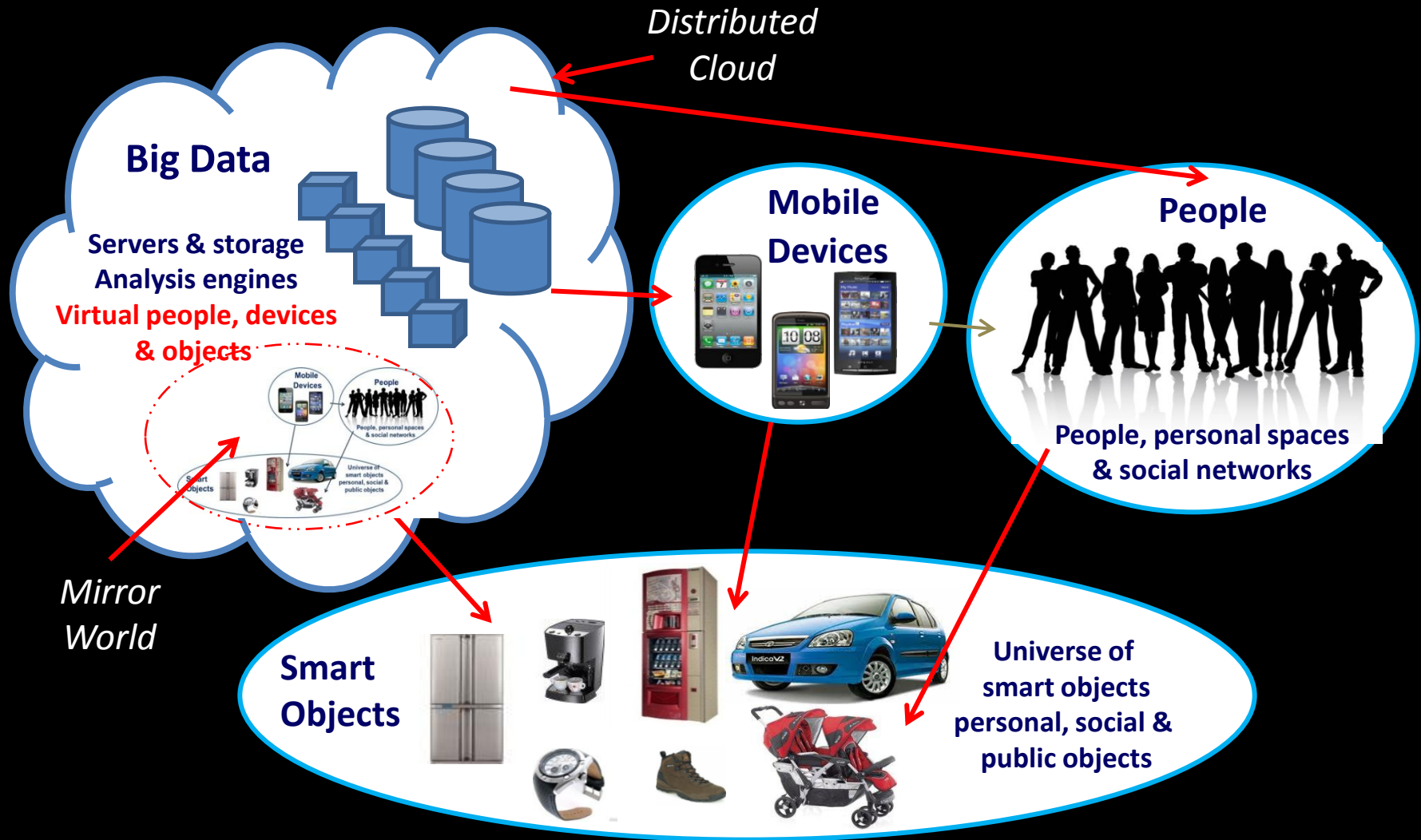
Out the irrelevant

Massive scale computations (billions of simultaneous transactions) needed to mash up personal data, preferences, real world data, and device capability

Sources: from Qualcomm, USI, 2010

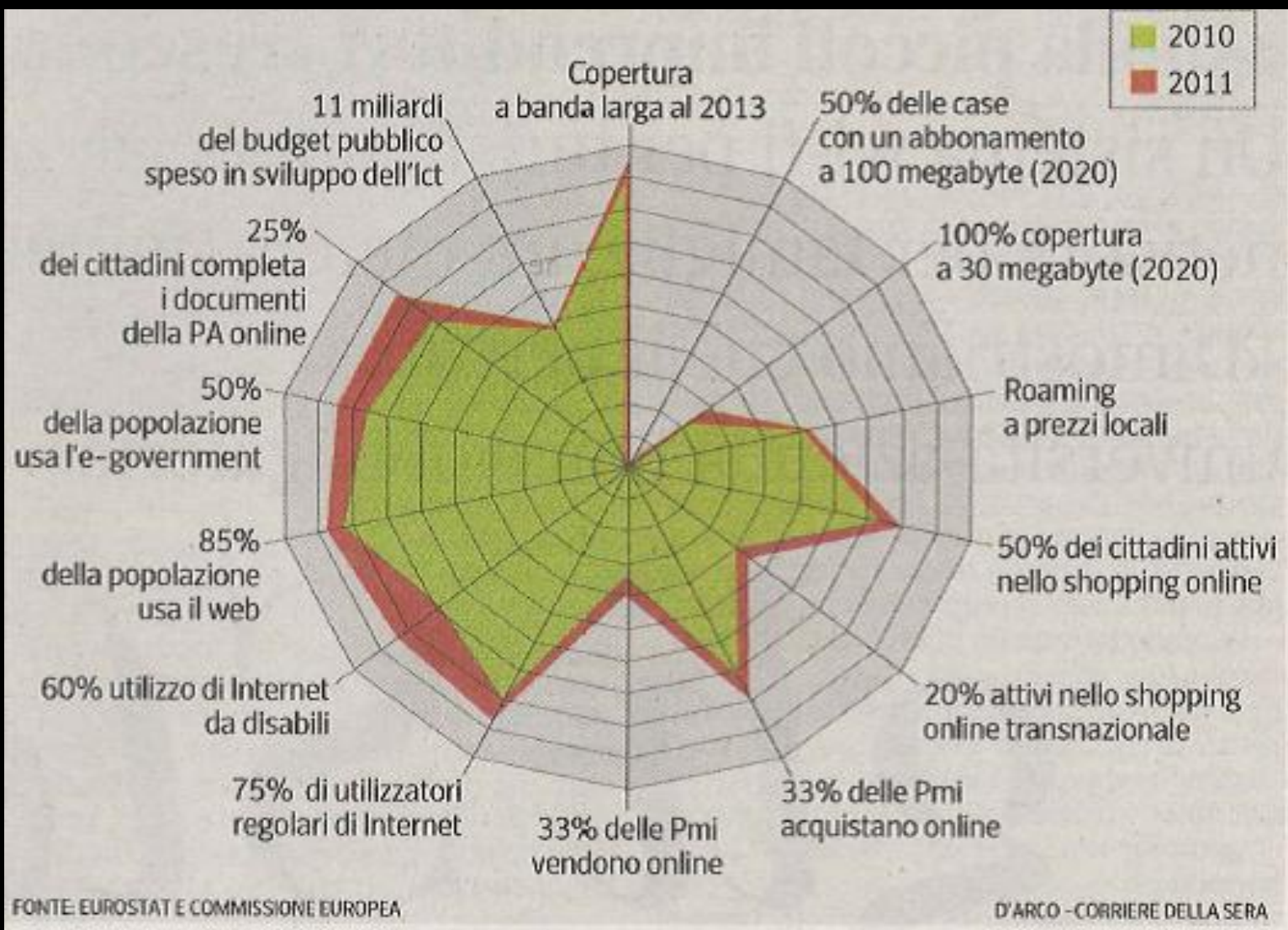


# Internet of Things, Big Data & Collective Intelligence





# Agenda Digitale Italia 2020

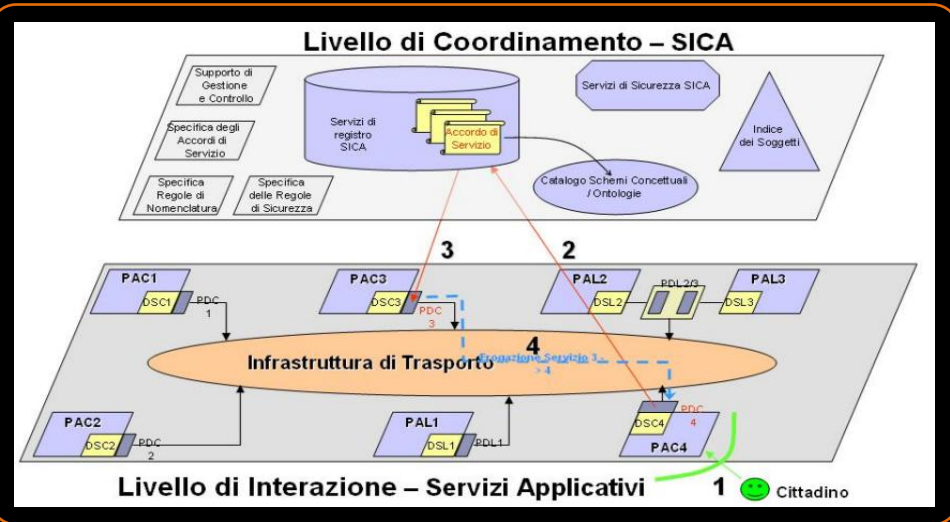




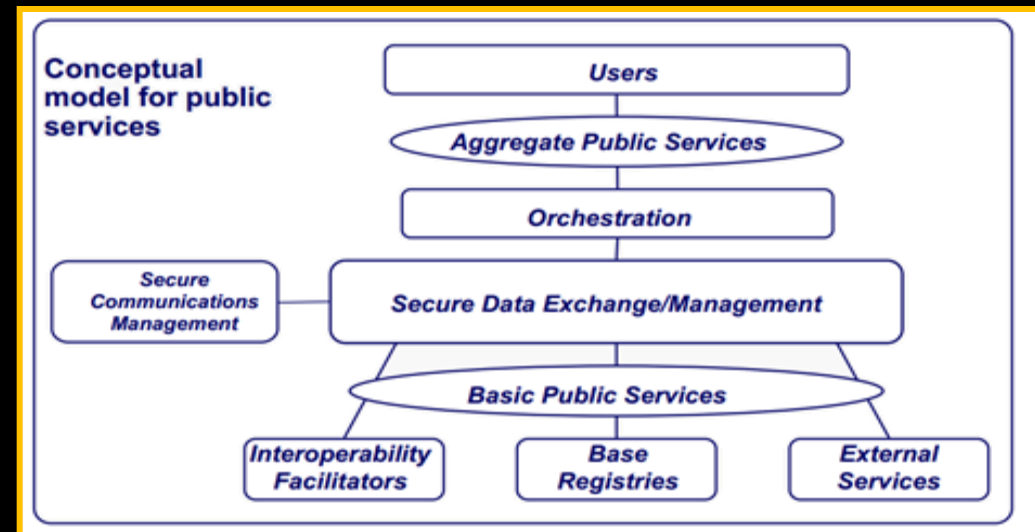
# Interoperabilità e cooperazione

SPC – Sistema Pubblico di Connettività - 2005

EIF (European Interoperability Framework) - 2011



EIF

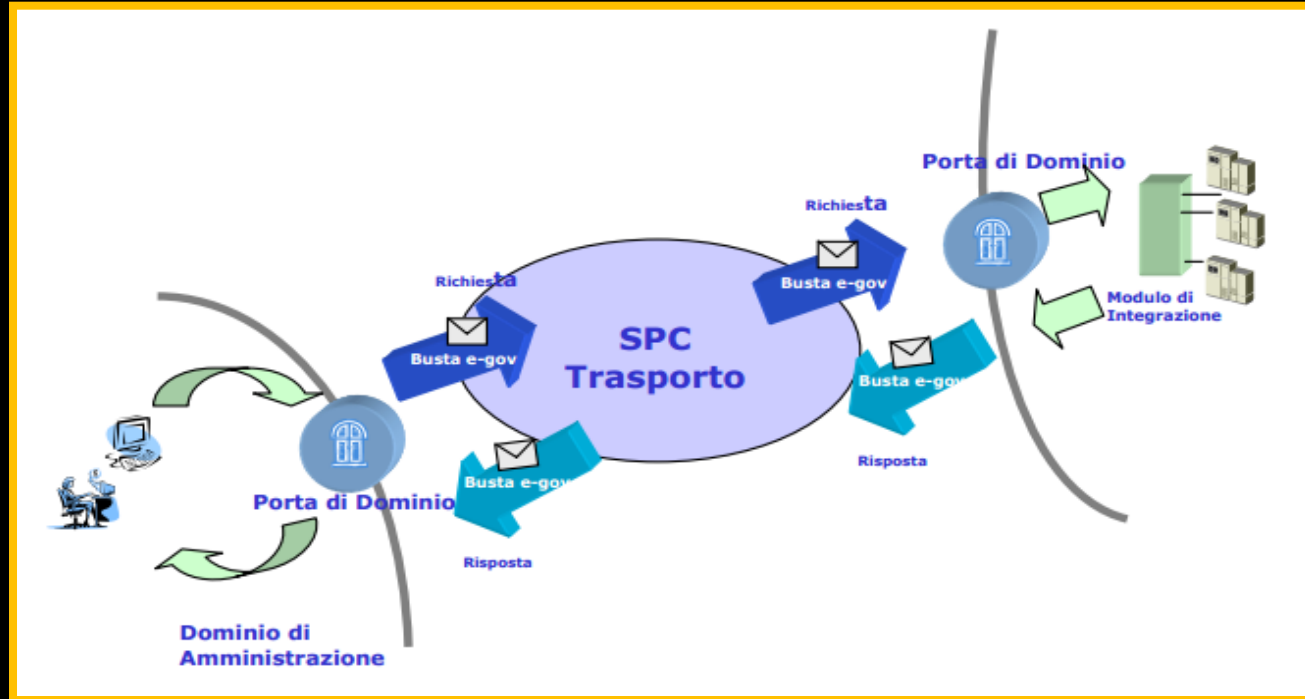


SPC



# Interoperabilità e cooperazione

*porta di dominio e busta di e-gov*



Nel Decreto Digitalia ci sono una serie di lodevoli iniziative (dal fascicolo sanitario, all'anagrafe unica, alla PEC come domicilio del cittadino, alla carta d'identità elettronica come porta per l'accesso autenticato dei servizi di e-government), ma mancano le azioni infrastrutturali (leggi **SPC e Cooperazione Applicativa** che negli altri Stati Europei è un diktat) per garantire la piena interoperabilità dei dati e dei sistemi nel rispetto della **sicurezza ICT** (tuttora assente nel Decreto)



# Agenda Digitale Italia 2020

## Alfabetizzazione digitale

- Comunicazione, informatica nelle scuole, didattica multimediale, assistenza analfabeti anziani, servizio pubblico RAI (non è mai troppo tardi), ecc.

## Reti di nuova generazione

- **Colmare il Digital divide**
- **Aumentare l'uso di wi-fi nei luoghi pubblici**
- **Misure per Ngn: operatore di edificio, deducibilità fiscale rete di edificio, autorizzazioni scavi al costo amministrativo, semplificazione disciplina infrastrutture di rete, accesso altre infrastrutture, catasto infrastrutture di rete, ecc.**

## Politiche per lo spettro radio

- Valorizzazione delle risorse radio come bene pubblico per la crescita del Paese, e piani di uso dello spettro radio verso il 2020

## Transazioni on-line, pagamenti elettronici ed e-commerce

- **Senza costi ulteriori, cloud nella PA, identità elettronica, cartella sanitaria elettronica, ecc.**
- **POS/NFC, semplificazioni, raccomandate/PEC, IVA, ecc.**

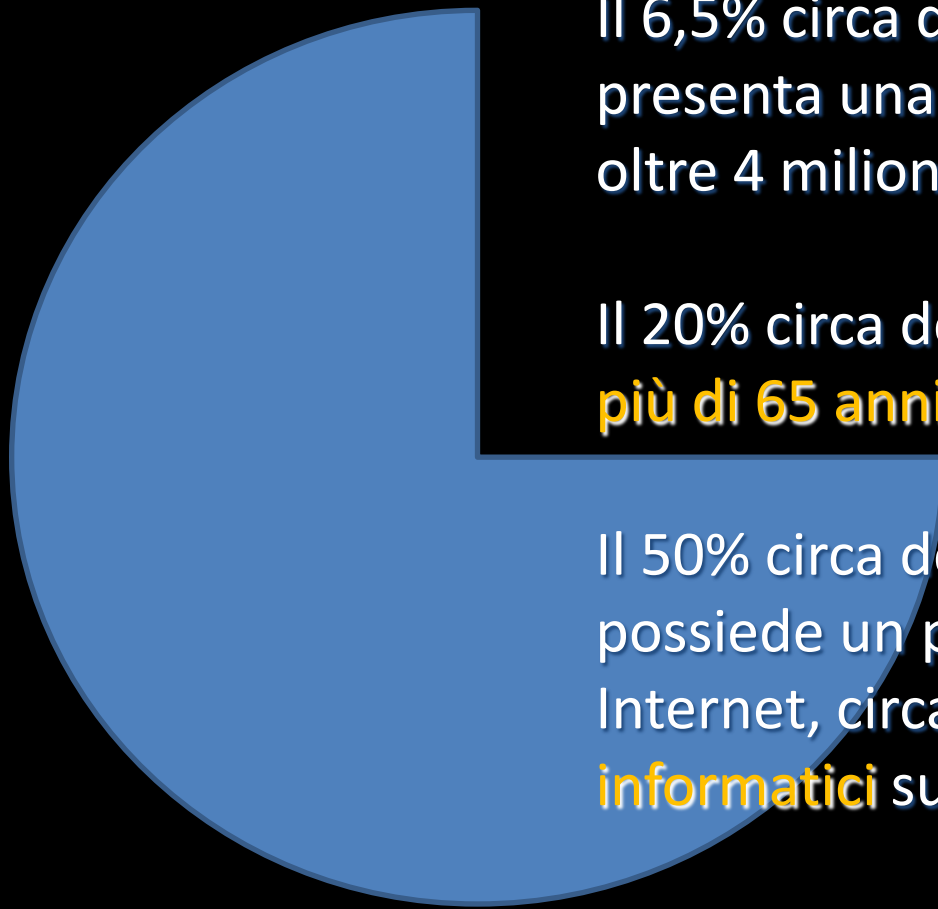
## Contenuti digitali e Servizi sociali digitali

- **Aumentare la circolazione dei contenuti su tutte le piattaforme digitali, rilevazioni sulla diffusione multiplatforma dei contenuti**
- **Incentivi e obblighi per la PA riguardo i servizi digitali orientati alla collettività**
  - **Telelavoro**
  - **Telemedicina**
  - **Gestione intelligente del traffico e della mobilità**
  - **Energia intelligente (smart grid)**
  - **Città intelligenti (smart cities)**

## Ricerca, innovazione



# Sfide a Internet - disabili, anziani e analfabeti informatici



Il 6,5% circa della popolazione nazionale presenta una **disabilita' fisica o mentale**, oltre 4 milioni di persone

Il 20% circa della popolazione nazionale ha **più di 65 anni**, 12 milioni di persone

Il 50% circa delle famiglie italiane non possiede un pc e non è connessa a Internet, circa 25 milioni di **analfabeti informatici** su 60 milioni di persone



# Iniziative per l'innovazione digitale

- Interventi normativi ed organizzativi
- Acquisti e finanziamenti pubblici
- Informazione
- Cultura e formazione
- Iniziative progettuali

