

# Digital innovation and Industrial Design

Scuola di Ingegneria  
Industrial Design - A.A. 2015-16



## organizzazione del modulo Digital Innovation

- obiettivi didattici
  - Innovazione e innovazioni digitali per la competitività
  - Impatto strategico delle innovazioni digitali
- materiale didattico
  - Lucidi delle lezioni
  - Varie letture indicate negli stessi lucidi
- calendario lezioni
  - mer 02.03 (9-13), mer 09.03 (9-13),
- consegna PW: maggio 2015 (giorno: tbd)



**Innovation and Digital innovations**  
The Strategic impact of Digital innovations  
Usability of multimedia products  
Feasibility studies for Information Systems

## **Innovation and Digital innovations**



## **Digital innovation technology issues**



Industrial Design 2015-16 - A.Ravarini - Digital Innovation

5

## Digital innovations



## References

- [2015 12 08 HBR - 8 Tech Trends to Watch in 2016](#)
- [2015 Accenture – Technology Vision 2015](#)
- [2016 02 Forbes - Gartner's Top 10 Technology Trends for 2016](#)
- [2016 DUP - Deloitte TechTrends2016](#)

## Innovation and IT: more than Digital innovations

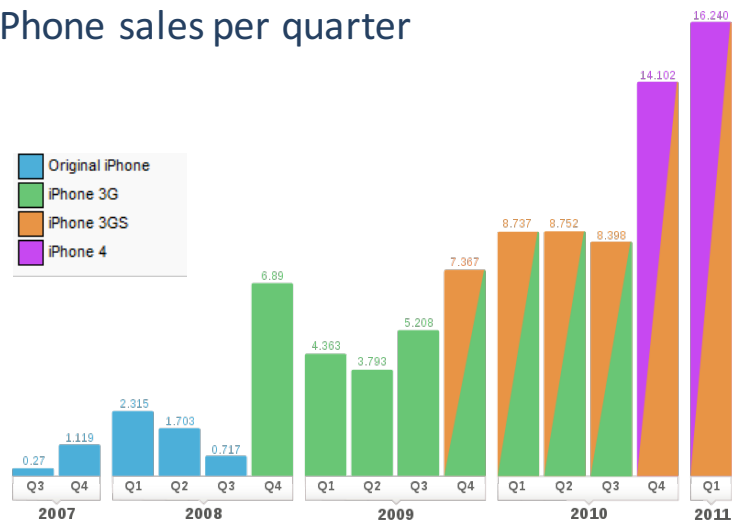
- **Digital innovations:** innovation **within** IT..
  - .. in IT as a product
  - .. in IT as a (new) component of a product
- innovation **supported by** IT
  - .. IT automates the innovation process: IT improves
    - the R&D business process
- innovation **through** IT
  - .. IT automates the management of information in any other business process (\*MS)
- innovation **enabled by** IT
  - .. IT automates the innovation process: IT improves
    - the project management process (PM systems)
    - the business process reengineering process (BPMS, SOA)

## Digital innovations



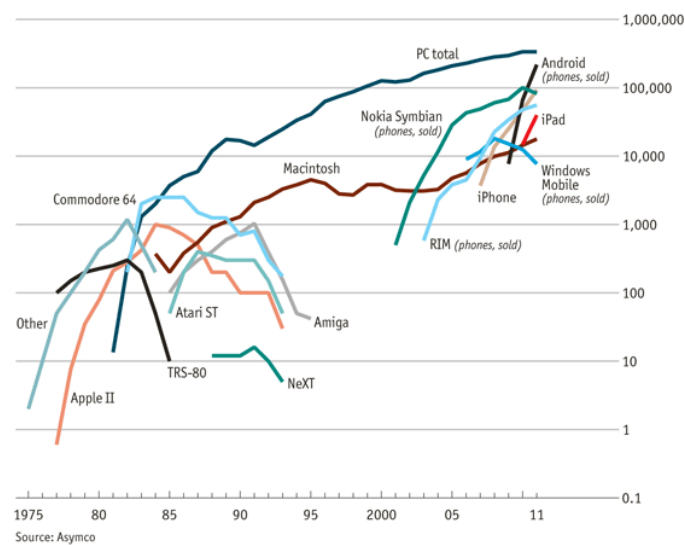
## How old is the “old” original iPhone?

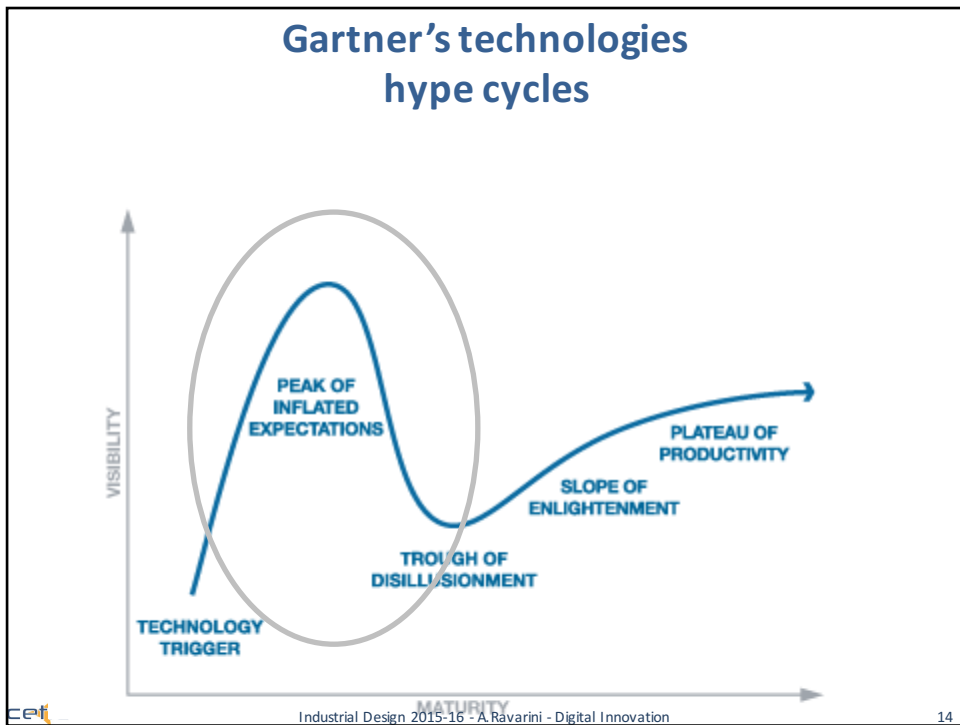
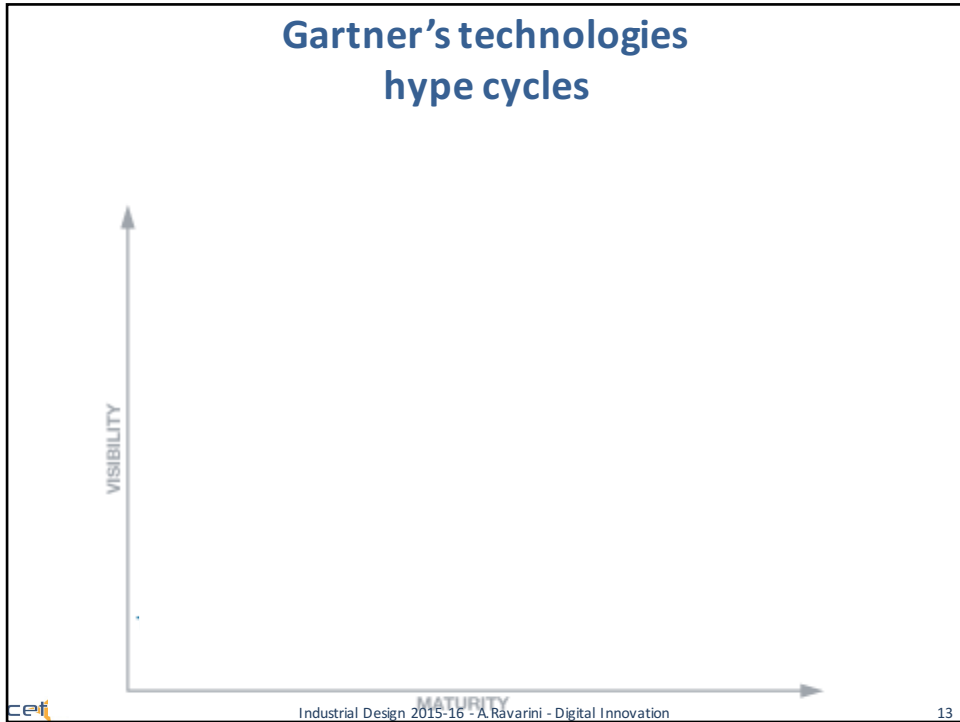
- iPhone sales per quarter

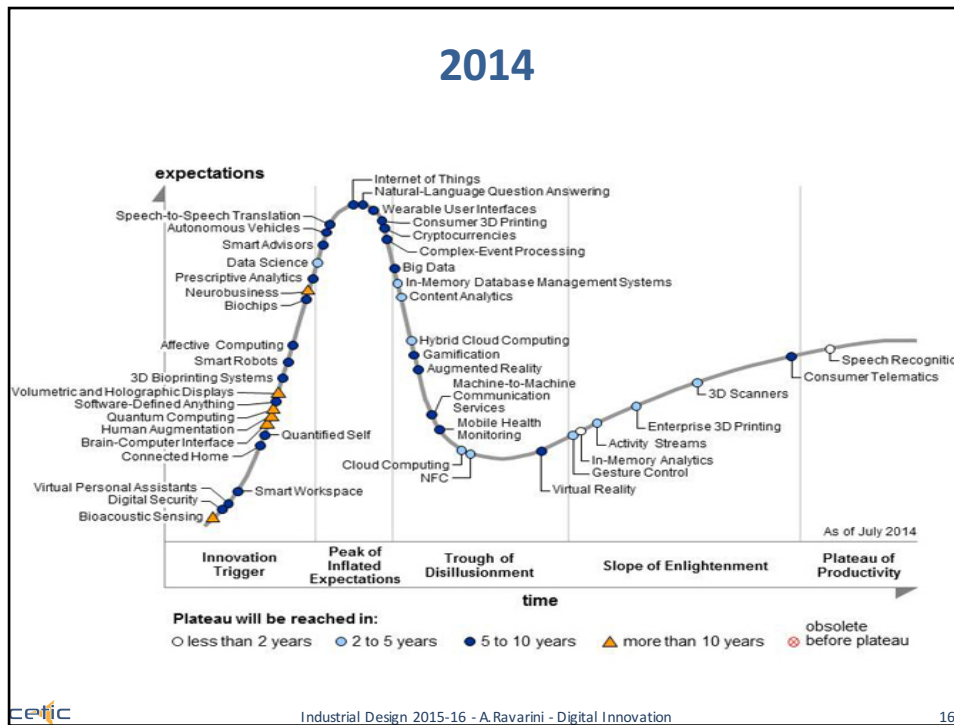
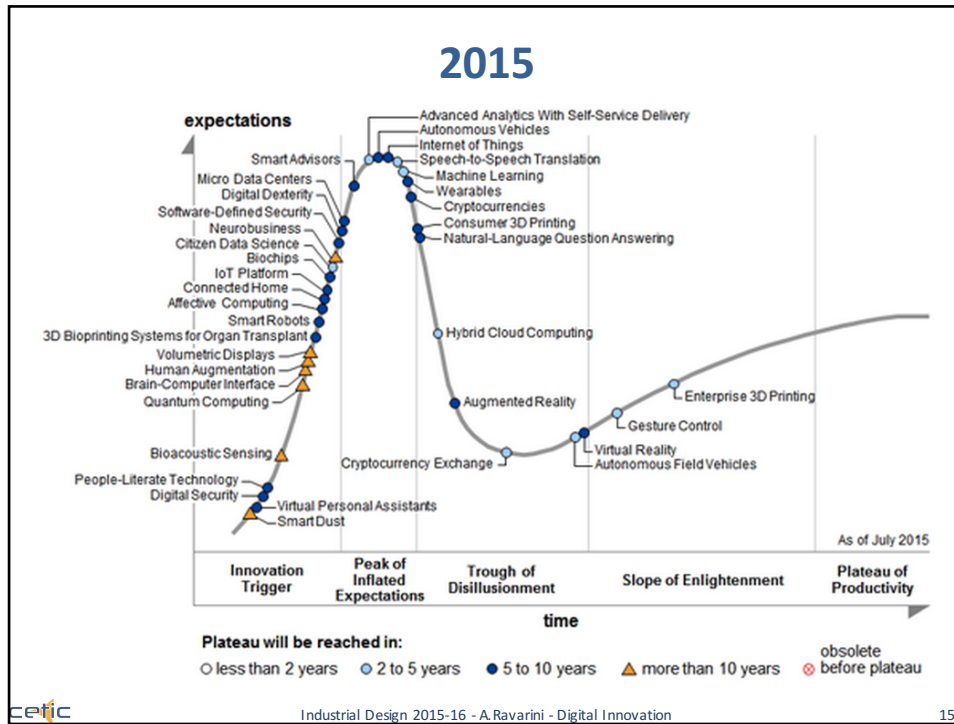


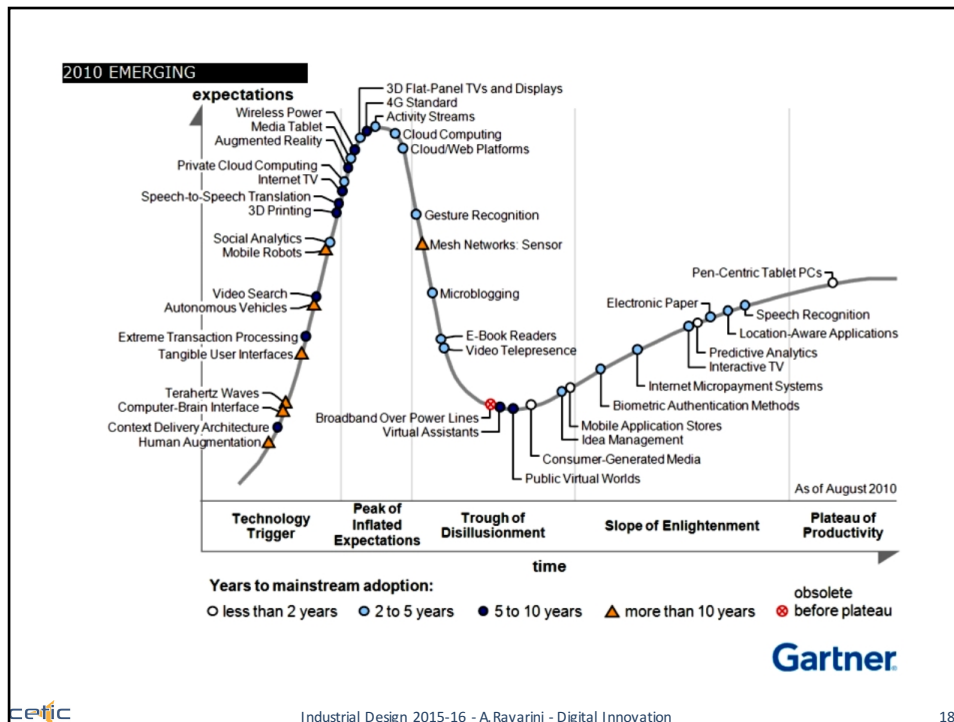
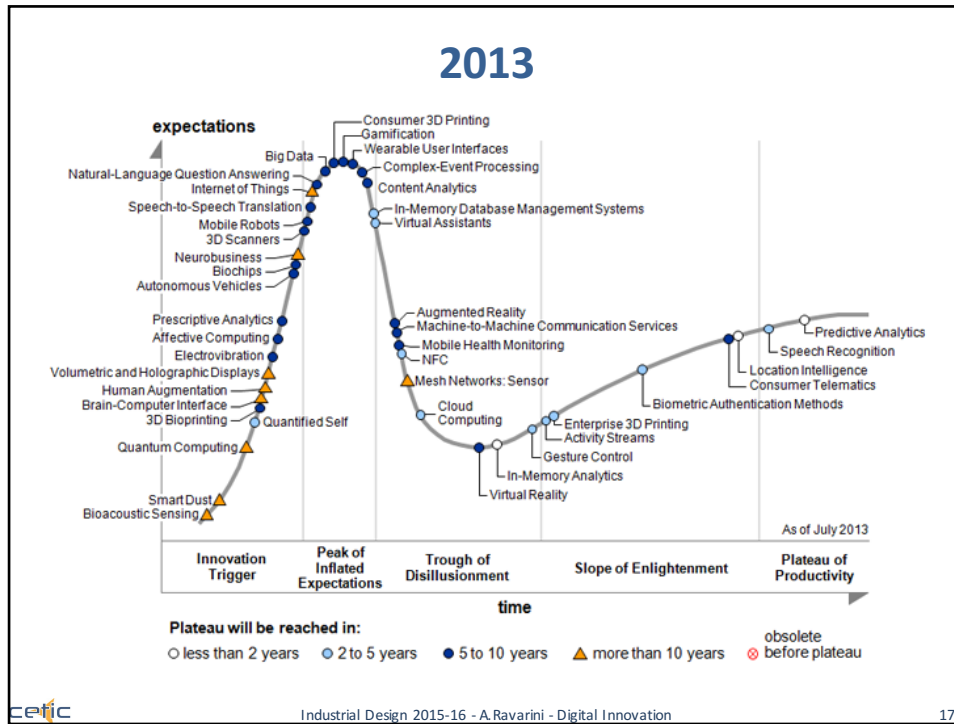
## Platforms war

**Personal computing**  
Units shipped, '000, log scale



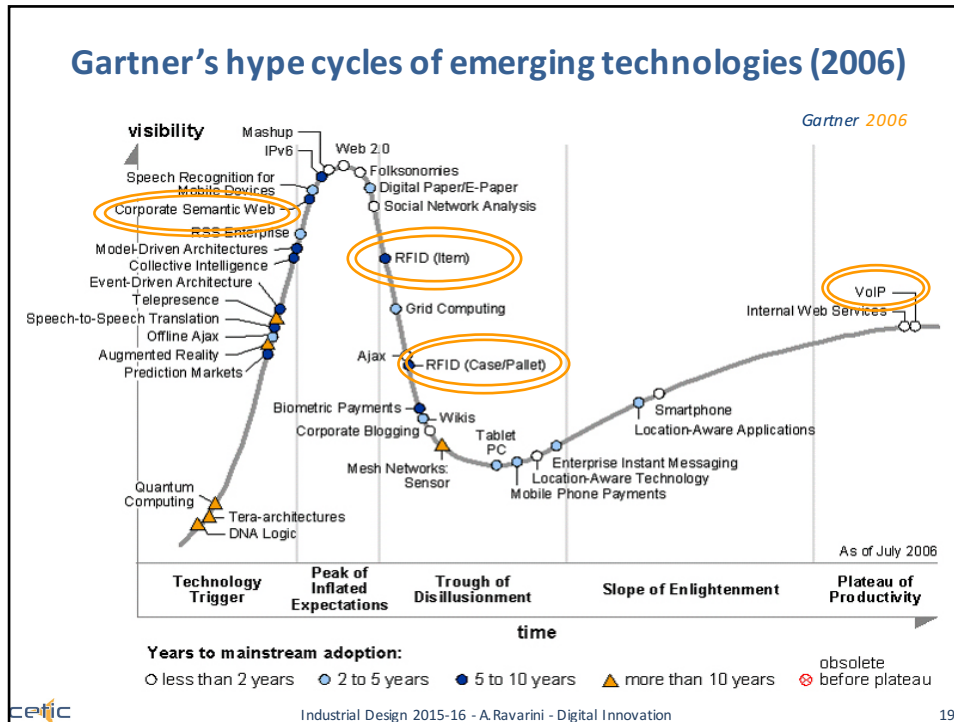




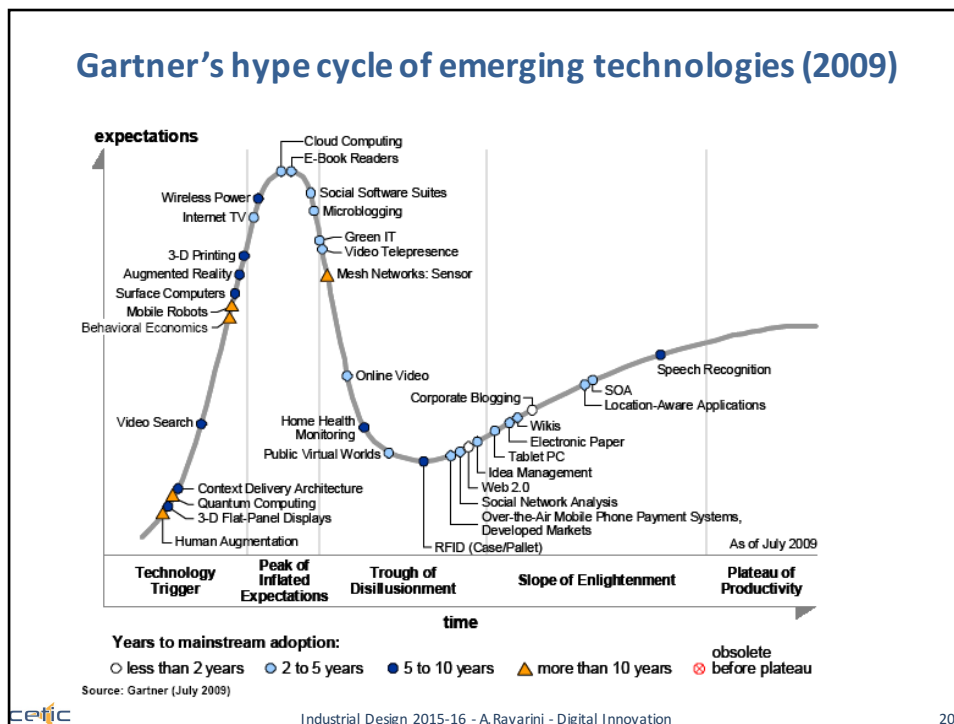




### Gartner's hype cycles of emerging technologies (2006)

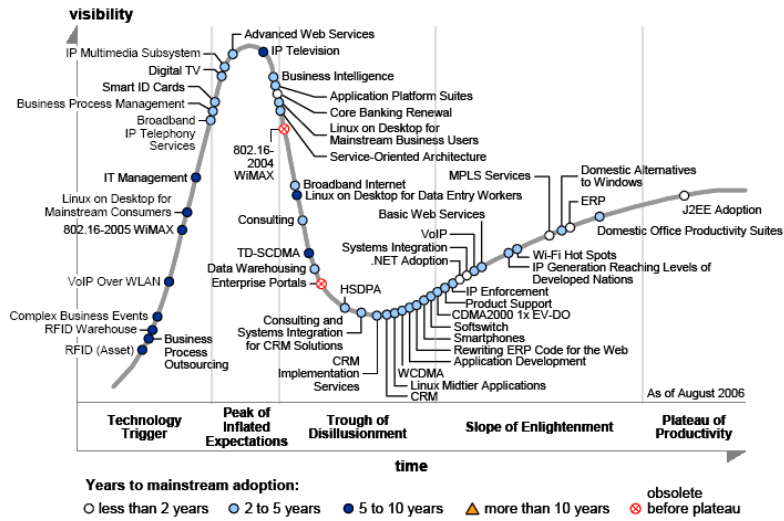


### Gartner's hype cycle of emerging technologies (2009)



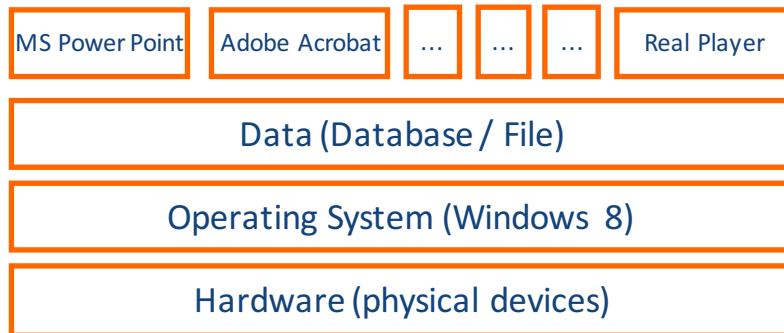
## Gartner's hype cycles (China)

Figure 1. Hype Cycle for Emerging Technologies in China, 2006

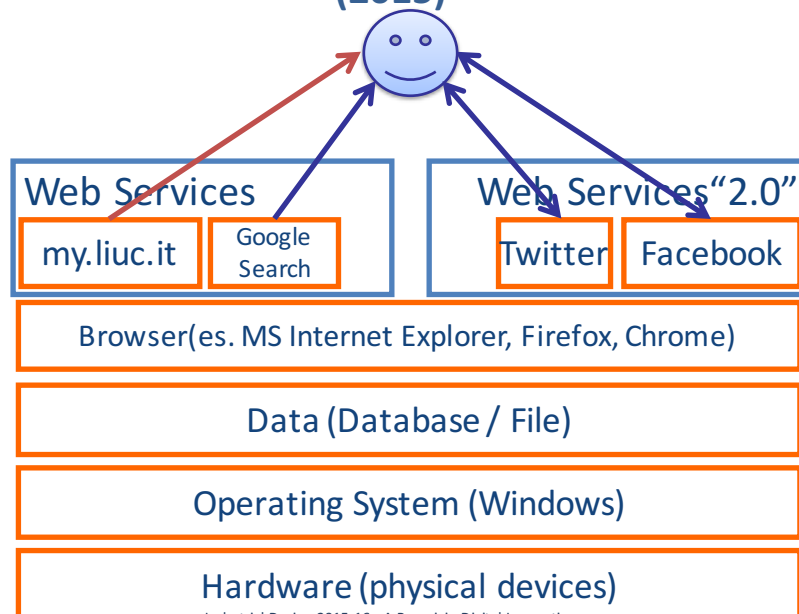


## IT roots of digital innovation

## Structure of a Computer



## Structure of a Computer "using Internet" (2015)

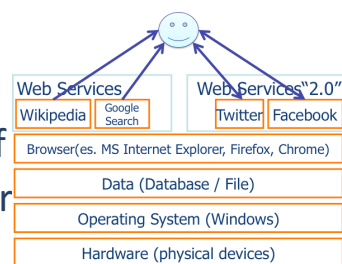


## WHAT EXACTLY IS "IT"?

### WHAT IS INTERNET (SIMPLIFIED)

## Defining Internet

- This is just \*a\* possible, simplified representation of Internet, or, more precisely, of the architecture of a computer connected to the Internet

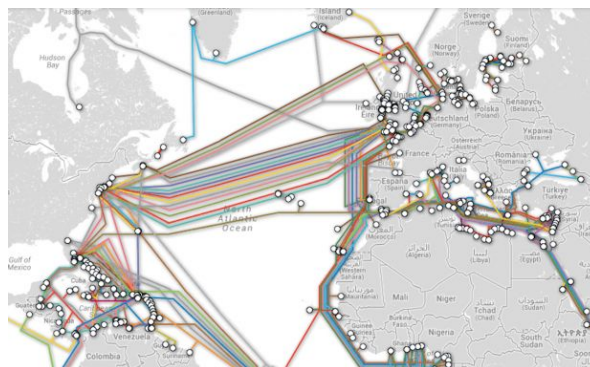


- **What** is the Internet, then?

## Internet = ?

- From an ethimological point of view
  - “Inter” = *between*
  - “Net” = A piece of open-meshed material made of twine, cord, or something similar, used typically for catching fish or other animals (Oxford Dictionary)
  - a set of **\*nodes\*** **\*interconnected\***
- Internet = metaphor to describe a set of sets of nodes interconnected
- In this metaphor, what corresponds to the nodes?

## The Internet /1 = devices and cables and wireless systems



<http://www.submarinecablemap.com/>

## The Internet /2 = Information exchanged exploiting the physical infrastructure (Internet /1)



<http://www.tweetping.net/>

## The Internet /3 = Internet users

# THE NEXT BILLION INTERNET USERS:

What Will They Look Like?



## Architecture of the Internet

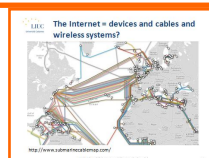
People



Applications



Physical infrastructure



## Internet

- An infrastructure upon which many services are delivered
- The worldwide, publicly accessible system of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol
- The Net (Internet)  $\neq$  the Web



## Characteristics of Internet

- Distributed ownership: Different portions of the Internet are owned by different entities.
- Multiplicity of devices: The Internet consists of millions of smaller digital networks, a collection of digital devices (nodes).
- Open standards: The agreed upon set of rules or conventions governing communication among Internet nodes are freely available to everyone.
- The Internet is rapidly evolving.
  - Network and grid computing
  - Wired and wireless connections of a range of intelligent devices

## The future of the Internet:

- universal **storage** network?
    - Dropbox.com, gDocs.com
  - universal **commercial** network?
    - Amazon.com
  - universal **communication** network?
    - Skype.com
  - universal **contents** and **participation** network?
    - Virtual spaces, e.g. *Second Life*
    - Virtual communities, e.g. Facebook, LinkedIn, Specialized communities

[http://images.businessweek.com/ss/07/11/1115\\_in\\_ingated/source/1.htm](http://images.businessweek.com/ss/07/11/1115_in_ingated/source/1.htm)
- Universal Network: Google vs Facebook



## The future of the Internet

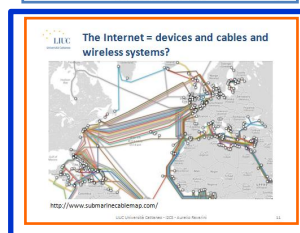
- Implications for
  - IT industry
  - Products
  - Business
  - People

**what is NEXT?**



## The next waves in IT innovation or just the new hypes?

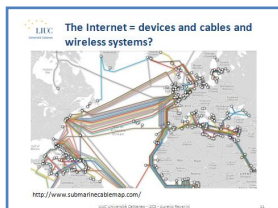
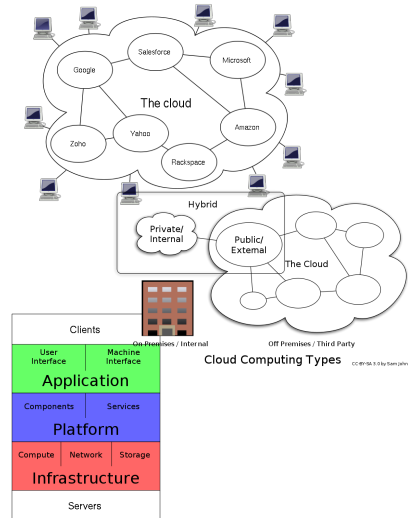
- SMAC
  - Social
  - Mobile
  - Analytics
  - Cloud
- IoT (=Internet of Things)
- BYOD (=Bring Your Own Device)
- SMART (=???)



**IT innovation**  
**Cloud Computing**

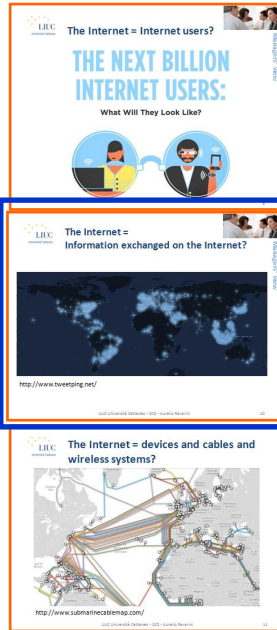
# Cloud Computing

- Def:
  - is a way of computing, via the Internet, that broadly shares computer resources instead of using software or storage on a local computer.
- Players
  - Amazon AWS
  - Google App Engine
  - Windows Azure



**IT innovation**  
Social media

Social media as  
Virtual spaces



Social media as  
Virtual communities





**IT innovation**  
big data

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**IT innovation**  
Wearable computing

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The infographic consists of three vertically stacked panels, each with the LIUC logo in the top left corner. The top panel is titled "The Internet = Internet users?" and "THE NEXT BILLION INTERNET USERS: What Will They Look Like?". It features two circular icons: one of a person in a yellow shirt and another of a person in a suit holding a smartphone. The middle panel is titled "The Internet = Information exchanged on the Internet?" and shows a dark blue globe with white clouds. The bottom panel is titled "The Internet = devices and cables and wireless systems?" and shows a map of the world with a network of orange and blue lines representing cables and wireless systems. Each panel includes a small URL at the bottom: "http://www.futuregig.net/", "http://www.futuregig.net/", and "http://www.submarinecables.com/" respectively.

## IT innovation

IoT and IOE