

Topic 1.1:

A quality framework for digital resources:
theory, requirements, development,
management and evaluation

*DIGITAL RESOURCES FOR TOURISM: CHANNELS, QUALITY, CO-CREATION,
AND COLLABORATION*

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UNIVERSITÀ DI MACERATA

l'umanesimo che innova

Sub-topics

«A quality framework for digital resources: theory, requirements, development, management»

- *Onlife: being human in a in a Hyperconnected Era*
- What does it mean «digital information»?
- Information, data, metadata
- The *Net*: origins, technologies, versions, tendencies (Web 2.0, Semantic Web, Cloud services, Web of things)
- What is «the best quality» for digital resources?

Onlife

In 2013, a group of scholars invited by the European Commission *Onlife Initiative* released the **Onlife Manifesto: Concept Reengineering for rethinking societal concerns in the digital transition**. The speakers from the academic, non-governmental, business and policy-making organisations.

In 2015 Luciano Floridi, University of Oxford, edited the book **The Onlife Manifesto: Being Human in a Hyperconnected Era** (<https://link.springer.com/book/10.1007%2F978-3-319-04093-6>). This Open Access book collects the work of the *Onlife Initiative*. It explores how the development and widespread use of ICTs have a radical impact on the human condition.

The neologism *Onlife* refers to the **new experience of a hyperconnected reality within which it is no longer sensible to ask whether one may be online or offline**.

Onlife

The challenges brought by the new digital technologies regard the **impact that ICTs are having on human life**, and hence “how one may re-engineer key concepts—such as attention, ownership, privacy, and responsibility—that are essential in order to **gain the relevant and adequate framework within which our onlife experience may be understood and improved**”.

ICTs are not mere tools but rather environmental forces that are increasingly affecting:

1. our self-conception (who we are);
2. our mutual interactions (how we socialise);
3. our conception of reality (our metaphysics); and
4. our interactions with reality (our agency).

Onlife

The impact exercised by ICTs is due to at least **four major transformations**:

- a. the blurring of the **distinction between reality and virtuality**;
- b. the blurring of the **distinction between human, machine and nature**;
- c. the reversal **from information scarcity to information abundance**; and
- d. the shift **from the primacy of stand-alone things, properties, and binary relations**, to the **primacy of interactions, processes and networks**.

In few words: adopting ICTs requests for a **special attention** to the renewed human context where we live in, and the touristic experiences we plan to promote have to be clearly presented: real or virtual? Stand-alone “things” or interactions?

The digital divide

The **digital divide** refers to the **gap** between **those who benefit from the Digital Age** and **those who do not**.

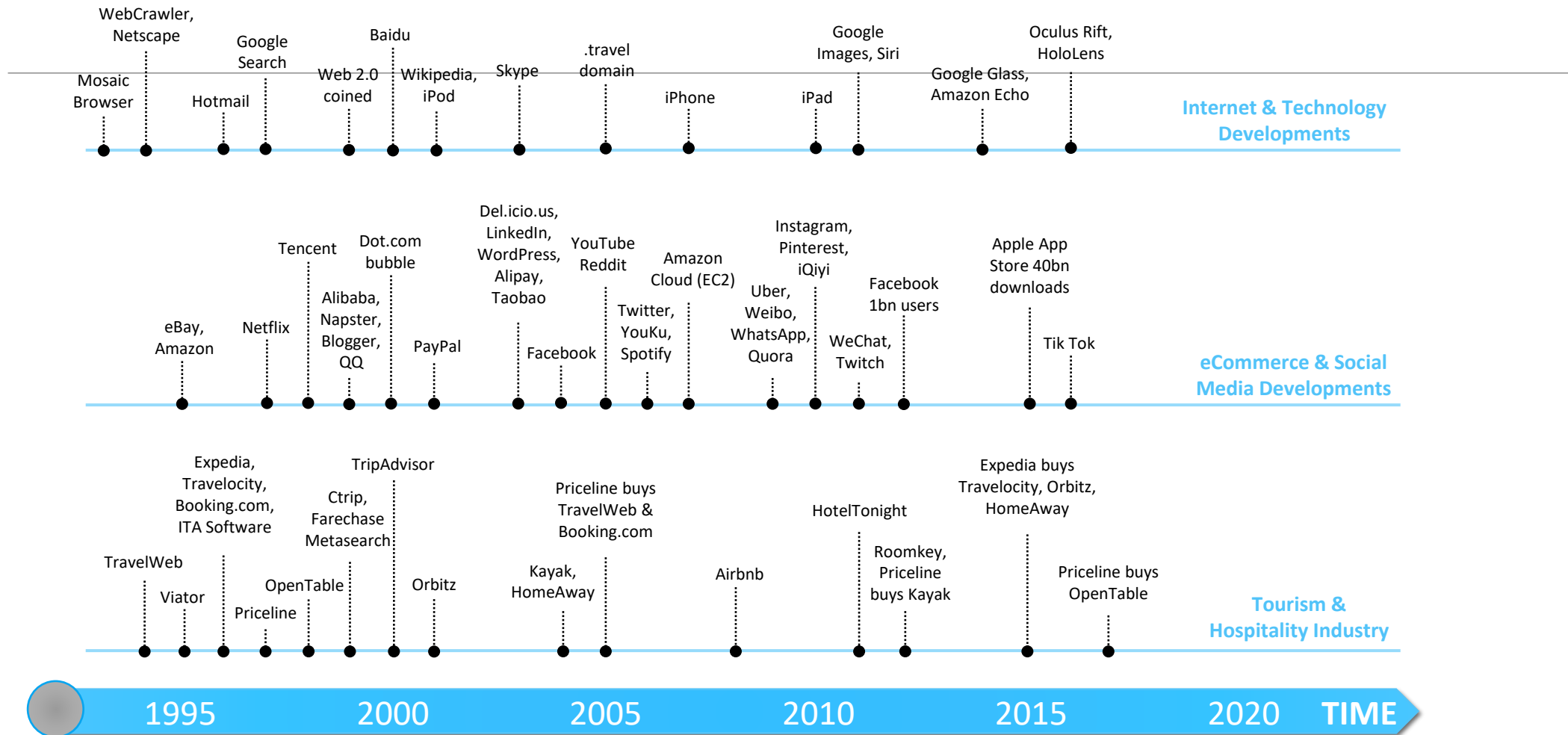
People **without access** to the Internet (or **capability to use** Internet content and services) are put at a socio-economic disadvantage, as they are unable or less able to obtain digital information, shop online, participate democratically, or learn and offer skills. In Italy 82% of the population are active Internet users, a higher percentage than 59% average in the world, but we have to consider also that 18% (10M people).

Let's discuss together these two concepts:

- Onlife
- Digital divide



Important Developments on the Internet

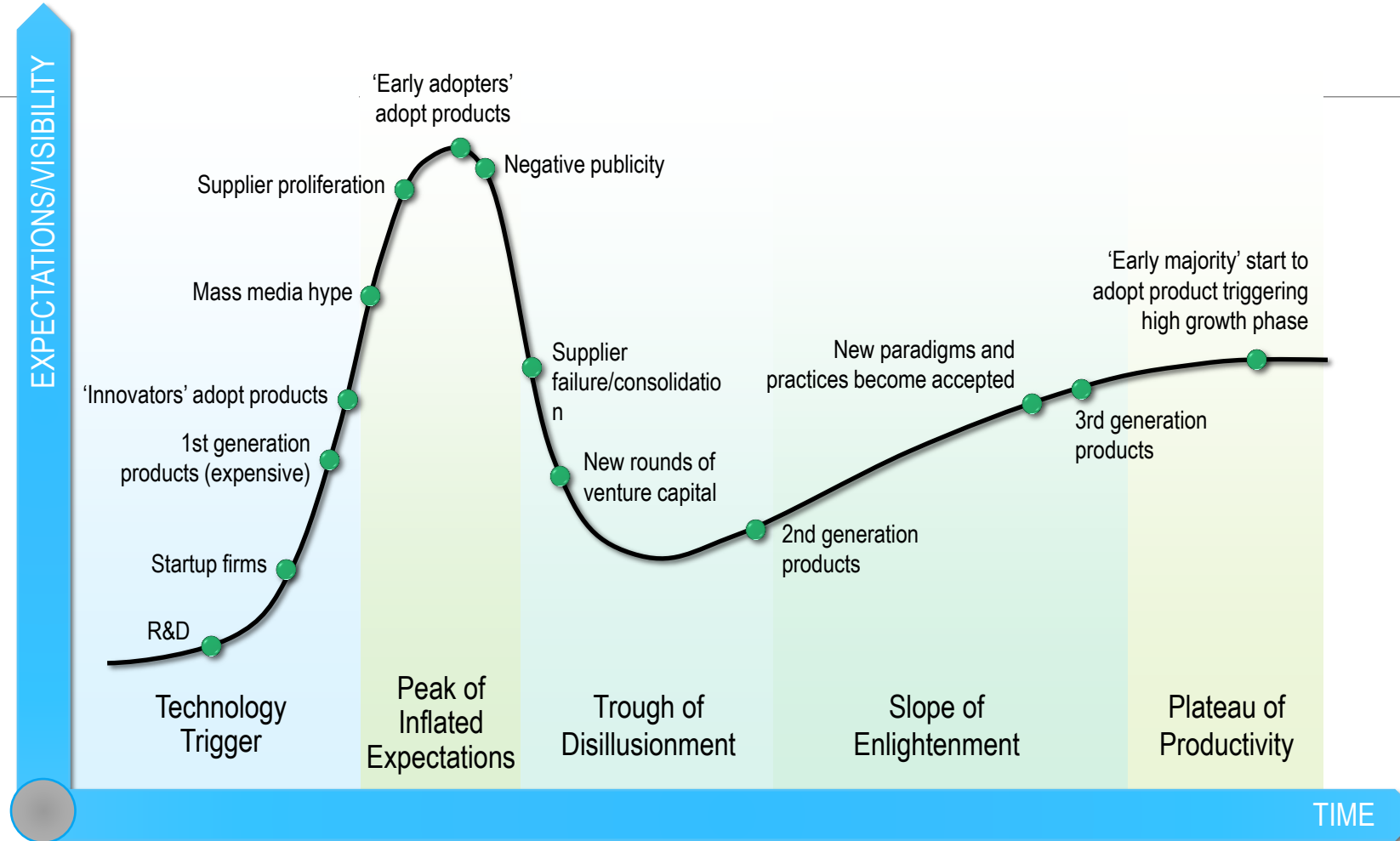


Adapted from Xiang et al, 2015

Diffusion of Innovations (Theory)

- ❑ **Innovators:** eager to try new ideas and prepared to take risks such as adopting technologies that may fail.
- ❑ **Early adopters:** opinion leaders who embrace change but are not as obsessive as innovators.
- ❑ **Early majority:** tend to adopt new innovations before the average person but will thoroughly research a new innovation before deciding to adopt.
- ❑ **Late majority:** will only adopt an innovation after the majority have tried it and adoption may be the result of economic necessity or social pressure.
- ❑ **Laggards:** traditionalists and are the last to adopt an innovation because they are skeptical of change.

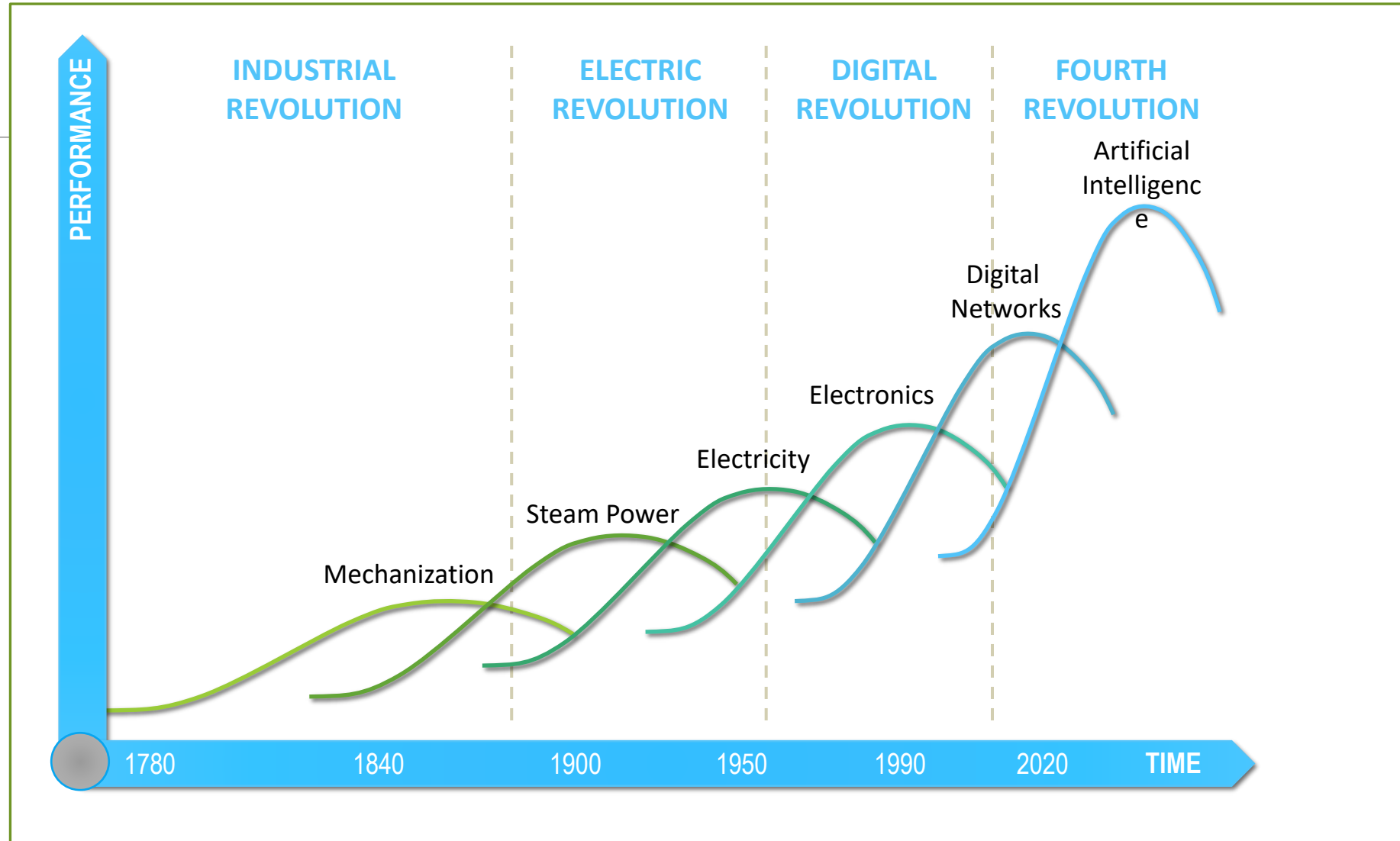
The life-cycle of innovations



Gartner Hype Cycle

Adapted from Tarkovskiy (2013)

Waves of ICT adoption



Source:
Schumpeter
(1934), Perez
(2002)

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DIGITAL AROUND THE WORLD

ESSENTIAL HEADLINES FOR MOBILE, INTERNET, AND SOCIAL MEDIA USE

INTERNET USER NUMBERS NO LONGER INCLUDE DATA SOURCED FROM SOCIAL MEDIA PLATFORMS, SO VALUES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS

TOTAL
POPULATION



7.83
BILLION

URBANISATION:

56.4%

UNIQUE MOBILE
PHONE USERS



5.22
BILLION

vs. POPULATION:

66.6%

INTERNET
USERS*



4.66
BILLION

vs. POPULATION:

59.5%

ACTIVE SOCIAL
MEDIA USERS*



4.20
BILLION

vs. POPULATION:

53.6%

8

SOURCES: THE U.N.; LOCAL GOVERNMENT BODIES; GSMA INTELLIGENCE; ITU; GWI; EUROSTAT; CNNIC; APJIL; SOCIAL MEDIA PLATFORMS' SELF-SERVICE ADVERTISING TOOLS; COMPANY EARNINGS REPORTS; MEDIASCOPE. ***ADVISORIES:** INTERNET USER NUMBERS NO LONGER INCLUDE DATA SOURCED FROM SOCIAL MEDIA PLATFORMS, SO VALUES ARE **NOT COMPARABLE** TO DATA PUBLISHED IN PREVIOUS REPORTS. SOCIAL MEDIA USER NUMBERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. ♦ **COMPARABILITY ADVISORY:** SOURCE AND BASE CHANGES.

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ITALY

ESSENTIAL HEADLINES FOR MOBILE, INTERNET, AND SOCIAL MEDIA USE

⚠ CHANGES TO DATA SOURCES FOR INTERNET USERS AND SOCIAL MEDIA USERS MEAN THAT VALUES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS



ITALY

TOTAL
POPULATION



60.41
MILLION

URBANISATION:

71.2%

MOBILE
CONNECTIONS



77.71
MILLION

vs. POPULATION:

128.6%

INTERNET
USERS



50.54
MILLION

vs. POPULATION:

83.7%

ACTIVE SOCIAL
MEDIA USERS



41.00
MILLION

vs. POPULATION:

67.9%



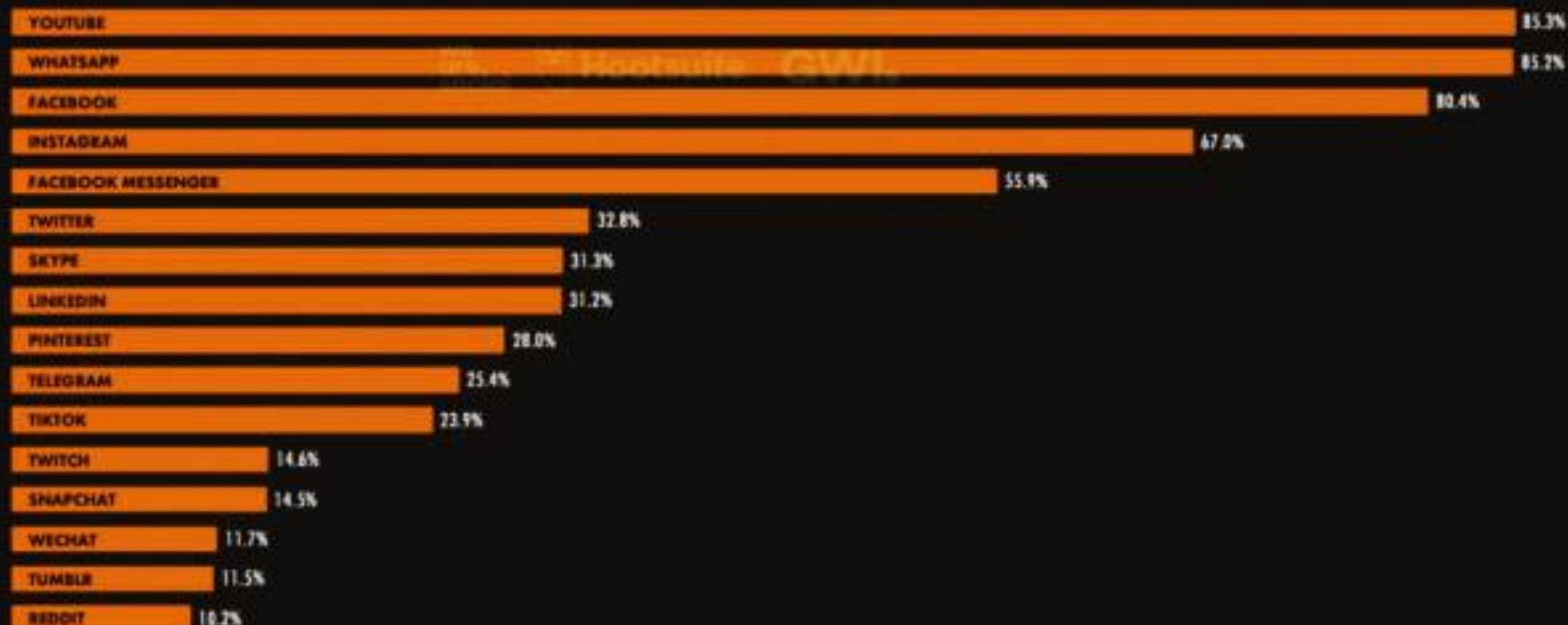
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MOST-USED SOCIAL MEDIA PLATFORMS

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 THAT HAS USED EACH PLATFORM IN THE PAST MONTH



ITALY



47

SOURCE: THIS 2021 FIGURE REPRESENTS THE FINDINGS OF A REPRESENTATIVE SURVEY OF INTERNET-USEY AGED 16 TO 64, BY [ISTAT](https://www.istat.it/en) FOR MORE DETAILS.
NOTE: FIGURE ON THIS CHART REPRESENTS INTERNET-USEY, SELF-REPORTED SOCIAL MEDIA OWNERSHIP, AND MAY NOT CORRELATE WITH THE FOLLOWING LISTED SUPPLIERS IN THIS REPORT FOR EACH PLATFORM'S ADVERTISING AUDIENCE BECAUSE OF THE ACTIVE USER FIGURES PUBLISHED BY INDIVIDUAL SOCIAL MEDIA PLATFORMS.

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ECOMMERCE PURCHASES BY AGE GROUP

PERCENTAGE OF **INTERNET USERS** IN EACH AGE GROUP THAT MADE AN ONLINE PURCHASE IN THE PAST MONTH VIA ANY DEVICE



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PURCHASED A PRODUCT
ONLINE IN THE PAST
MONTH: **16-24 YEARS OLD**



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79.8%

PURCHASED A PRODUCT
ONLINE IN THE PAST
MONTH: **25-34 YEARS OLD**



GW.

81.0%

PURCHASED A PRODUCT
ONLINE IN THE PAST
MONTH: **35-44 YEARS OLD**



78.5%

PURCHASED A PRODUCT
ONLINE IN THE PAST
MONTH: **45-54 YEARS OLD**



GW.

80.8%

PURCHASED A PRODUCT
ONLINE IN THE PAST
MONTH: **55-64 YEARS OLD**



78.2%

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ECOMMERCE SPEND BY CATEGORY

THE TOTAL AMOUNT SPENT IN CONSUMER ECOMMERCE CATEGORIES IN 2020, IN U.S. DOLLARS

 CHANGES TO CATEGORY DEFINITIONS AND REVISIONS TO HISTORICAL DATA MEAN VALUES ARE NOT COMPARABLE WITH PREVIOUS REPORTS



ITALY

TRAVEL, MOBILITY, &
ACCOMMODATION*



\$9.80
BILLION

statista

FASHION
& BEAUTY



\$5.74
BILLION



ELECTRONICS &
PHYSICAL MEDIA



\$5.70
BILLION

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FOOD &
PERSONAL CARE



\$2.91
BILLION

FURNITURE &
APPLIANCES



\$2.96
BILLION



TOYS, DIY
& HOBBIES



\$3.32
BILLION

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DIGITAL
MUSIC



\$362.5
MILLION

statista

VIDEO
GAMES



\$1.71
BILLION



How do I live my *Onlife*?

Let's discuss **our perception and our openness about digital innovation.**

- What about our **daily use** of ICTs? How long? How deeply?
- What ICTs **services** do I usually adopt?
- Do I experiment with **innovative ICTs**?
- What do you feel to be? **Innovator, Early adopter, Late majority or a Laggard?**
- Quote 2-3 **Artificial Intelligence diffused tools**



One step back: what does it mean «digital»?

Digital is information represented as a string of discrete symbols each of which can take on **one of only a finite number of values** from some alphabet, such as **letters** or **digits**.

The form of digital data in modern information systems is **binary data**, which is represented by a string of **binary digits (bits)** each of which **can have one of two values, either 0 or 1**.

The word digital comes from the same source as the words **digit** (number) and **digitus** (the Latin word for finger).

Digital data can be contrasted with **analog data**, which is represented by a **value from a continuous range of real numbers**. Analog data is **transmitted by an analog signal**, which not only takes on **continuous values**, but **can vary continuously with time**. An example is the air pressure variation in a sound wave.

One step back: what does it mean «digital»?

Anyway, we should not forget that:

information is always **carried by** or **transmitted on** or **stored in** or **contained** in *something* that **IT IS NOT INFORMATION**, so information is available only if the **support** (that something) is accessible.

The relationship between information and supports (media) is complex and **the set of rules of this relationship is one of the foundations of a language**:

- CODING is the operation of **transmitting / fixing information on a medium**
- DECODING is the **retrieval / reading of information** from a medium

One step back: digital file formats

A **file format** is a standard way that **information is encoded for storage in a computer file**.

It specifies **how bits are used to encode information in a digital storage medium**. File formats may be either **proprietary** or **free**.

File formats are designed for **particular types of data**:

- PNG files, for example, store bitmapped images using lossless data compression.
- Other file formats are designed for storage of several different types of data: the Ogg format can act as a container for different types of multimedia including any combination of audio and video, with or without text (such as subtitles), and metadata.
- A text file can contain any stream of characters, including possible control characters, and is encoded in one of various character encoding schemes. Some file formats, such as HTML, scalable vector graphics, and the source code of computer software are text files with defined syntaxes that allow them to be used for specific purposes.

https://en.wikipedia.org/wiki/File_format

The origins of WWW

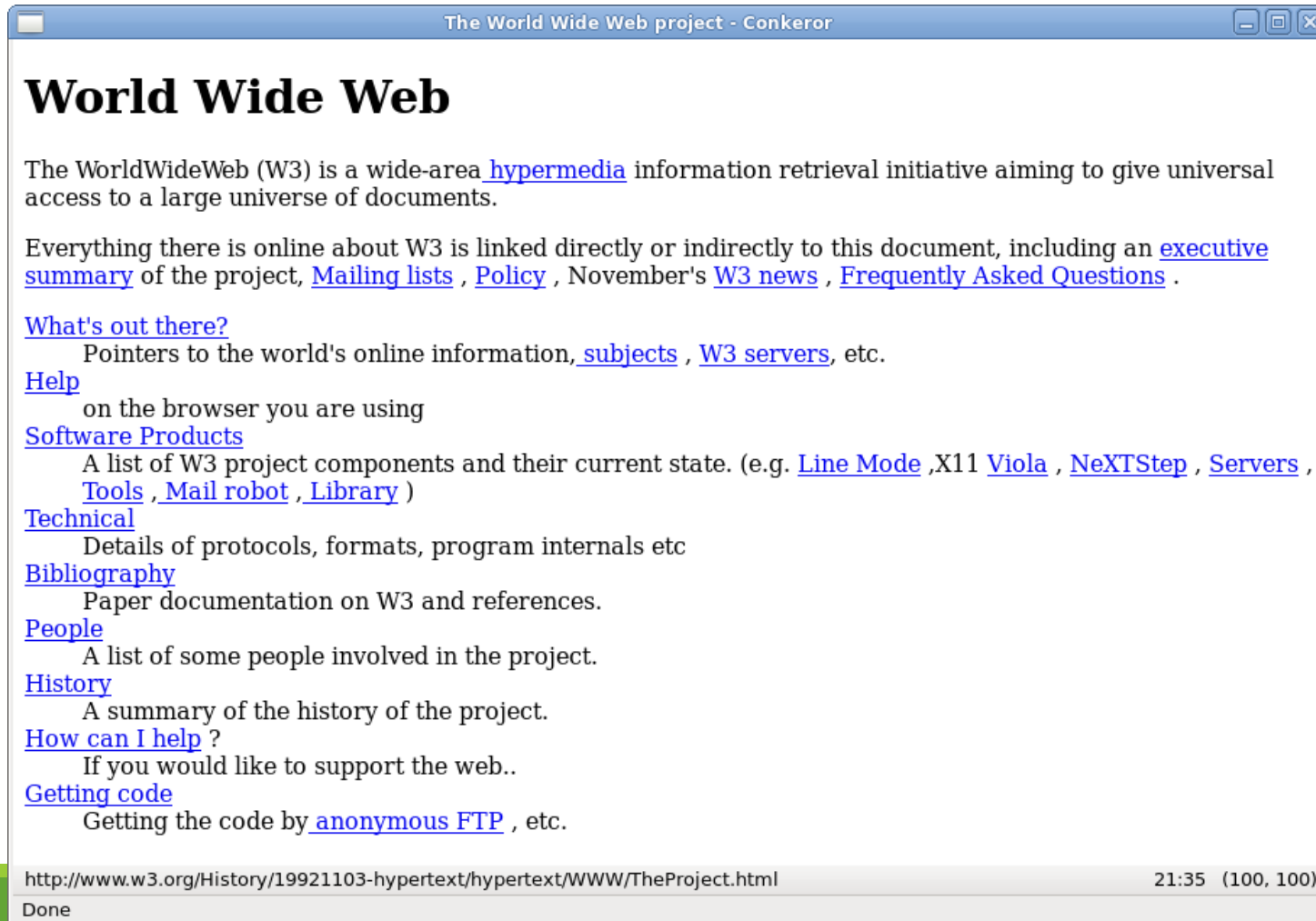
The **World Wide Web (WWW)**, commonly known as **the Web** or **the Net**, is an information system where documents and other web resources are identified by **Uniform Resource Locators** (URLs, such as <https://example.com/file.html>), which may be interlinked by hyperlinks, and are accessible over the Internet by users by a software application called a **web browser**, and are published by a software application called a **web server**.

The information resources of the Web are transferred via the **Hypertext Transfer Protocol** (HTTP) or secure (HTTPS). The World Wide Web is built on top of the Internet, which pre-dated the Web by over two decades (1970s).

English scientist **Tim Berners-Lee** co-invented the World Wide Web **in 1989** along with Robert Cailliau. He wrote the first web browser in 1990 while employed at CERN, Switzerland. The browser was released outside CERN to other research institutions starting in January 1991, and then to the general public in August 1991.

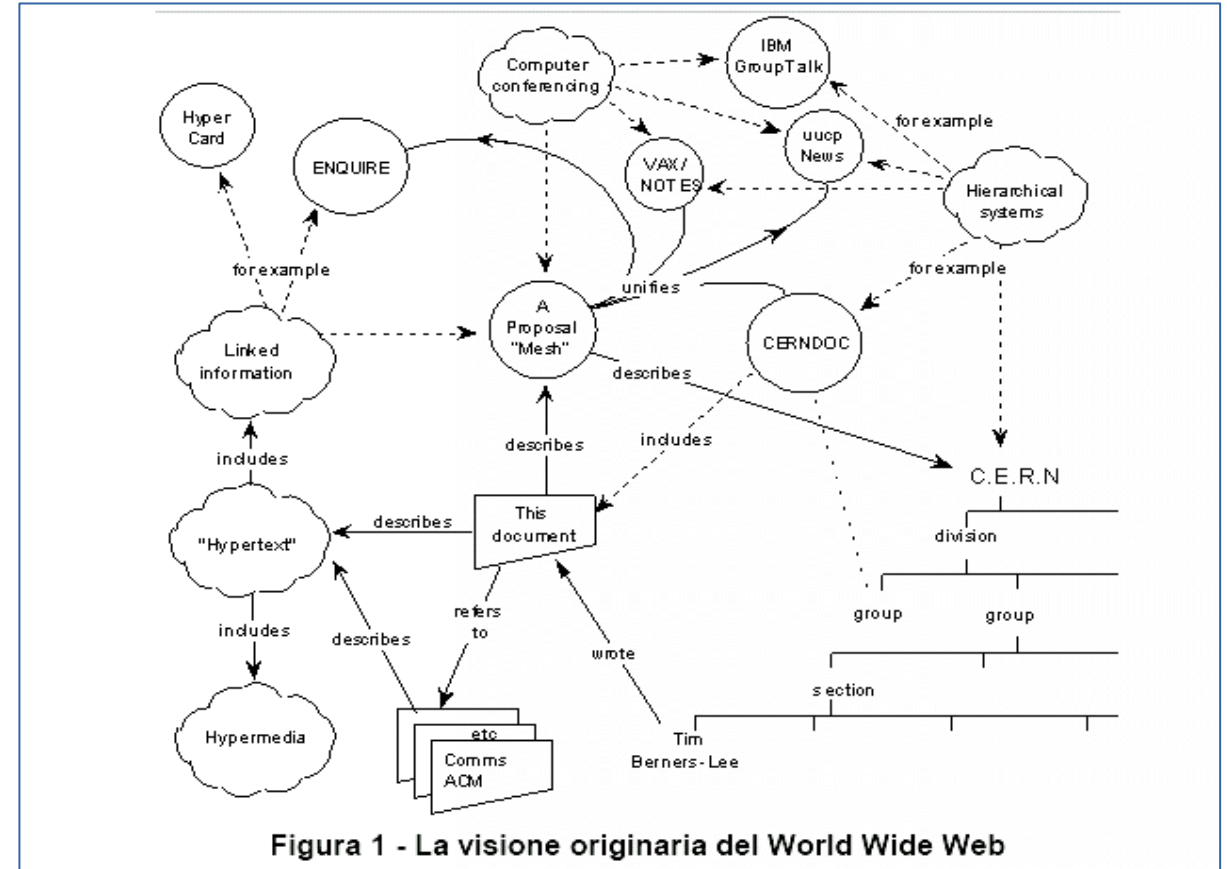
The Web began to enter everyday use in 1993–1994, when websites for general use started to become available and an open source browser, Mosaic, was released.

The very first Website



Home page of the very first website in History, published by Tim Berners Lee at CERN on 1990, December 20 here:
<http://info.cern.ch/hypertext/WWW/TheProject.html>

The first image **OF** **THE** Web (1989)

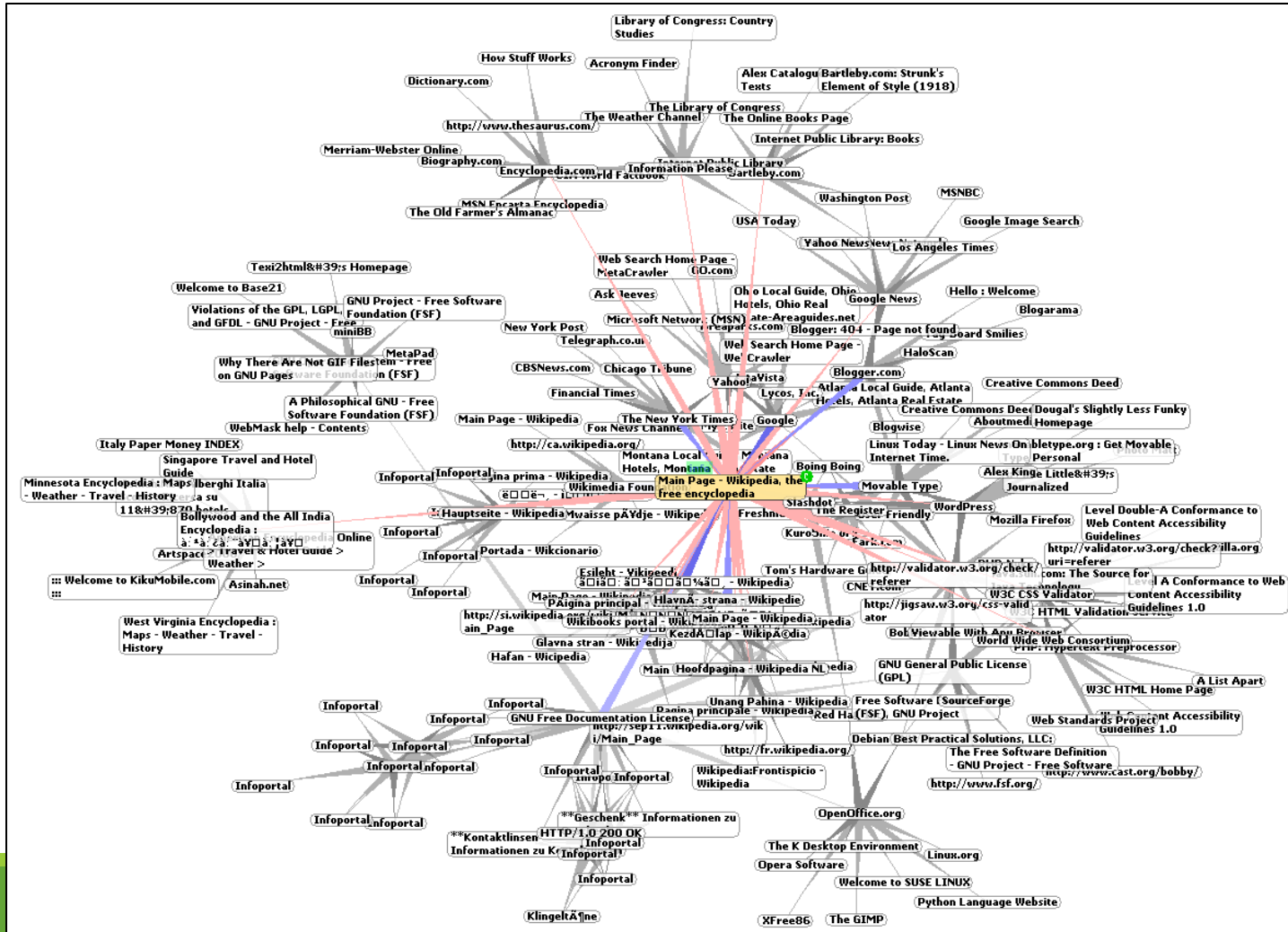


Les Horribles Cernettes



The first image **ON** **THE** Web (1992)

The WWW as a logical network



The WWW is an **Information Network**, where every website is a sort of island (called *Home*) and every «room» can be connected with infinite other rooms on other islands. The hyper-connections are **non qualified** and are **mono-directional arrows**

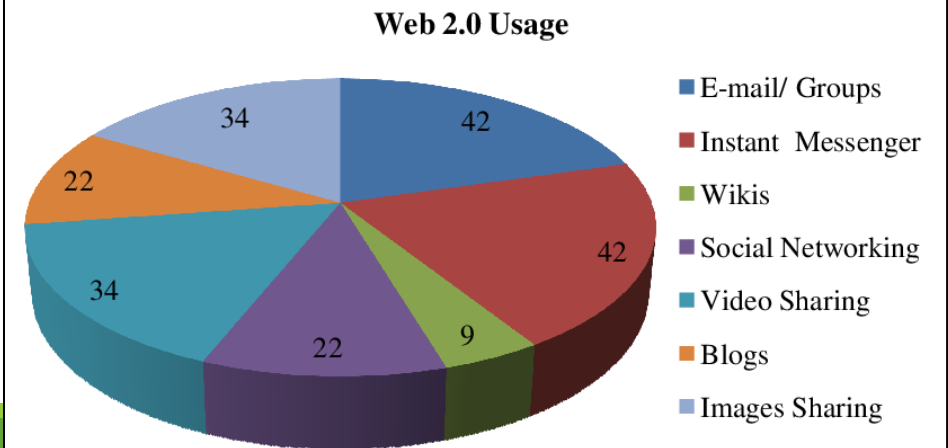
The Web 2.0

Web 2.0 (also known as **participative (or participatory) web** and **social web**) refers to websites that **emphasize user-generated content, ease of use, participatory culture and interoperability** (i.e., compatibility with other products, systems, and devices) for **end users**.

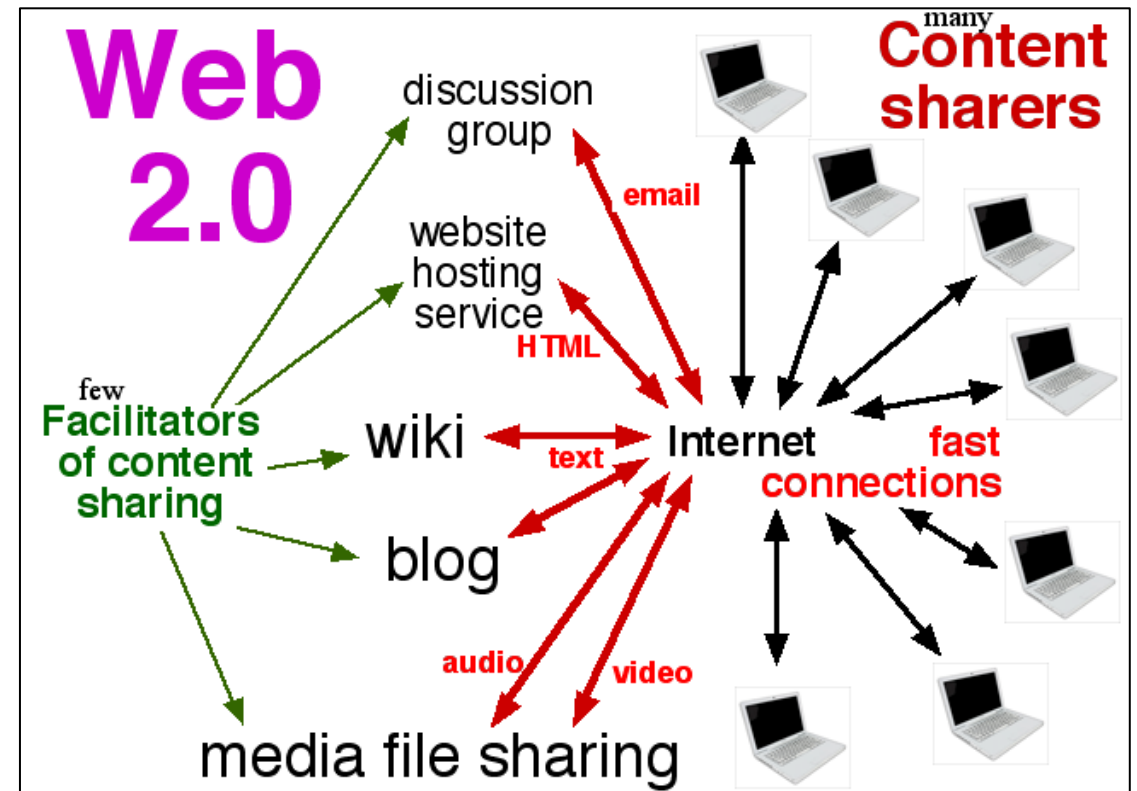
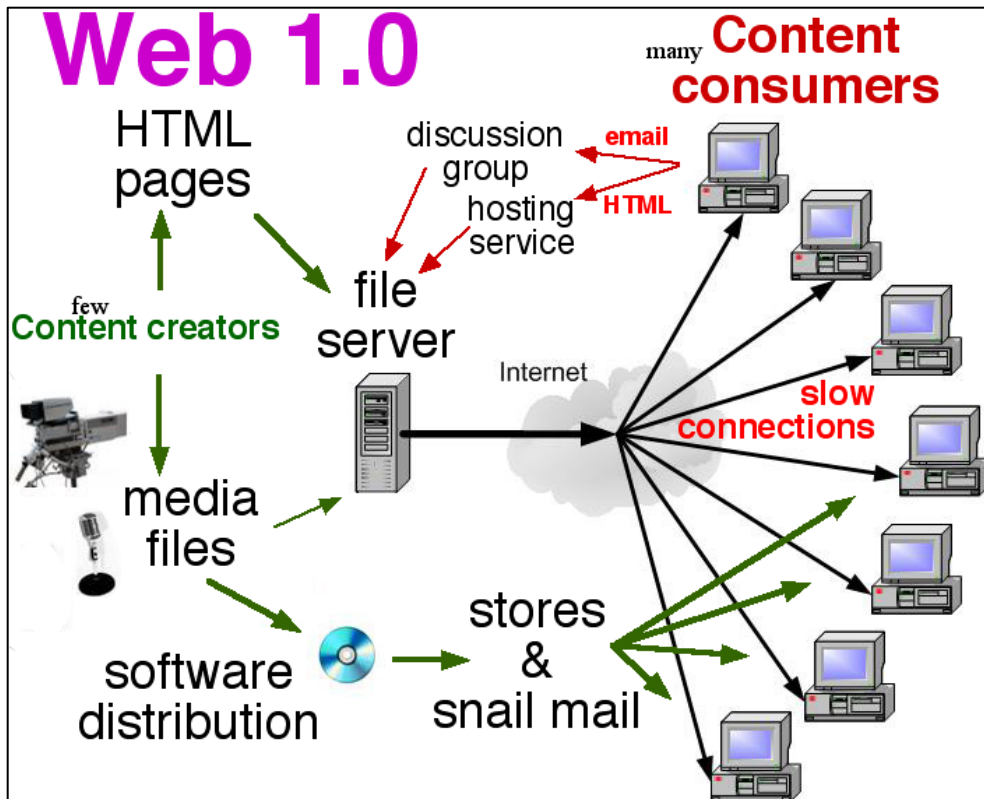
The term was coined **in 1999** and popularized by Tim O'Reilly and Dale Dougherty at the first O'Reilly Media Web 2.0 Conference **in 2004**.

Although the term mimics the numbering of software versions, **it does not denote a formal change in the nature of the World Wide Web**, but merely describes a general **change that occurred as interactive websites proliferated and came to overshadow the older, more static websites of the original Web**.

<i>Web 2.0 Application</i>	<i>Total</i>	<i>Percentage</i>
E-mail/ Groups	42	100%
Instant Messenger	42	100%
Wikis	9	21.43%
Social Networking	22	52.38%
Video Sharing	34	80.95%
Blogs	22	52.38%
Images Sharing	34	80.95%



Web 1.0 vs. Web 2.0



Information, data, metadata

Information: facts or details about somebody/something (produced and comprehensible by humans); *or* An assemblage of data intended for communication either through space or across time (InterPares Glossary).

Information Science: the study of processes for storing and obtaining information

Information technology: the study or use of electronic equipment, especially computers, for storing, accessing, analysing and sending information

Data: n.pl. (datum, n.): information that is stored by a computer *or* facts or information, especially when examined and used to find out things or to make decisions *or* The smallest meaningful units of information

Information, data, metadata

Metadata: information that describes other information in order to help you understand or use it *or* Information that characterizes another information resource, especially for purposes of documenting, describing, preserving or managing that resource.

Metadata could be, according to their nature and function:

- descriptive,
- structural,
- administrative,
- preservation,
- technical...

Metadata are for files like water for humans

The Web 3.0

The **Semantic Web**, sometimes known as **Web 3.0**, is an extension of the World Wide Web through standards set by the World Wide Web Consortium (W3C). The goal of the Semantic Web is to **make Internet data machine-readable**.

According to the W3C, "The Semantic Web provides a common framework that allows data to be **shared and reused across application, enterprise, and community boundaries**."

The technologies adopted (Resource Description Framework (RDF) and Web Ontology Language (OWL)) are used to formally **represent metadata**. For example, **ontology can describe concepts, relationships between entities, and categories of things**. No more characters and words, but concepts expressed in a processable format for specific software.

The result is the so called **Web of data**, parallel to the **Web of information**, where Web intelligent agents (machines) could understand data, select them better and exclude absurd combinations and assertions. The big web players are working since years on new search engines with such capabilities.

Legend

Cross Domain

Geography

Government

Life Sciences

Linguistics

Media

Publications

Social Networking

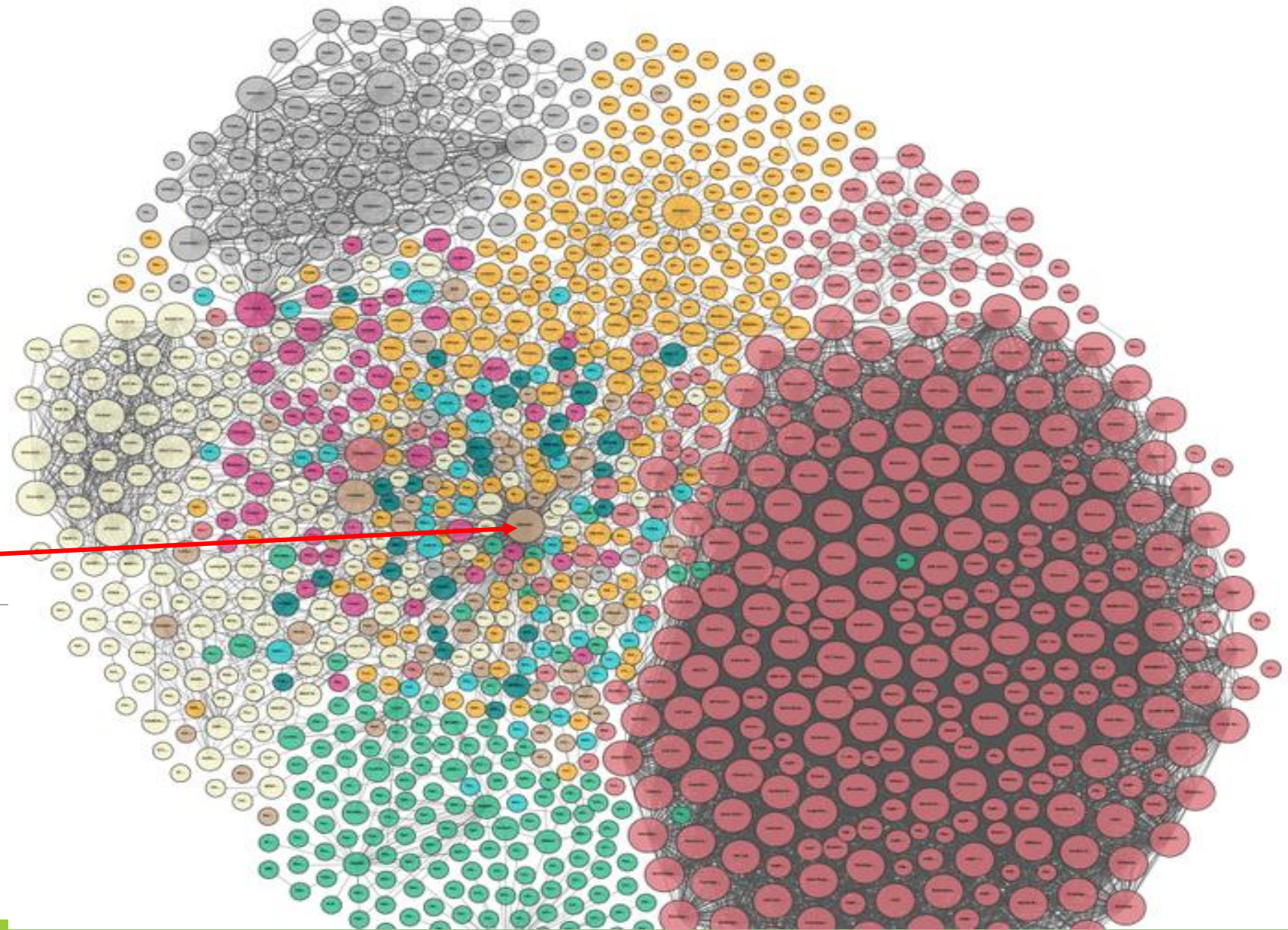
User Generated

Incoming Links

Outgoing Links

Wikipedia

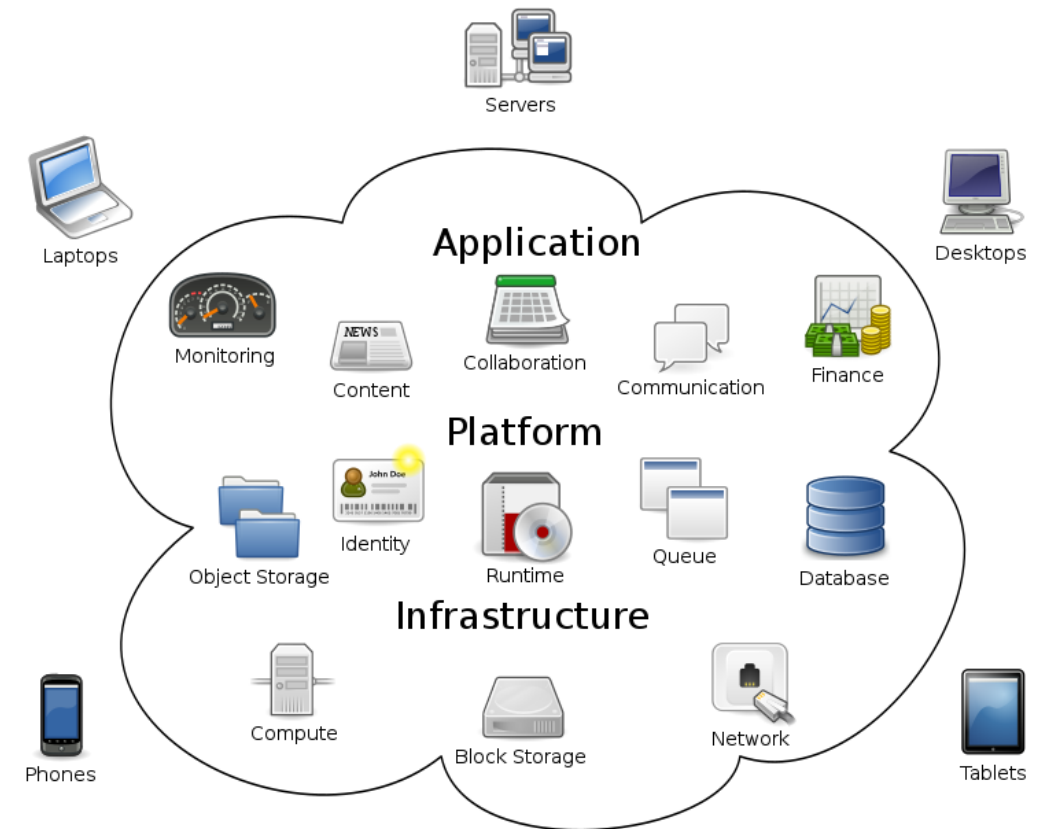
THE WEB OF DATA



Cloud computing

Cloud computing is the **on-demand availability of computer system resources**, especially **data storage** (cloud storage) and **computing power**, without direct active management by the user and out of local devices. Large clouds often have functions distributed over multiple locations, each location being a data center.

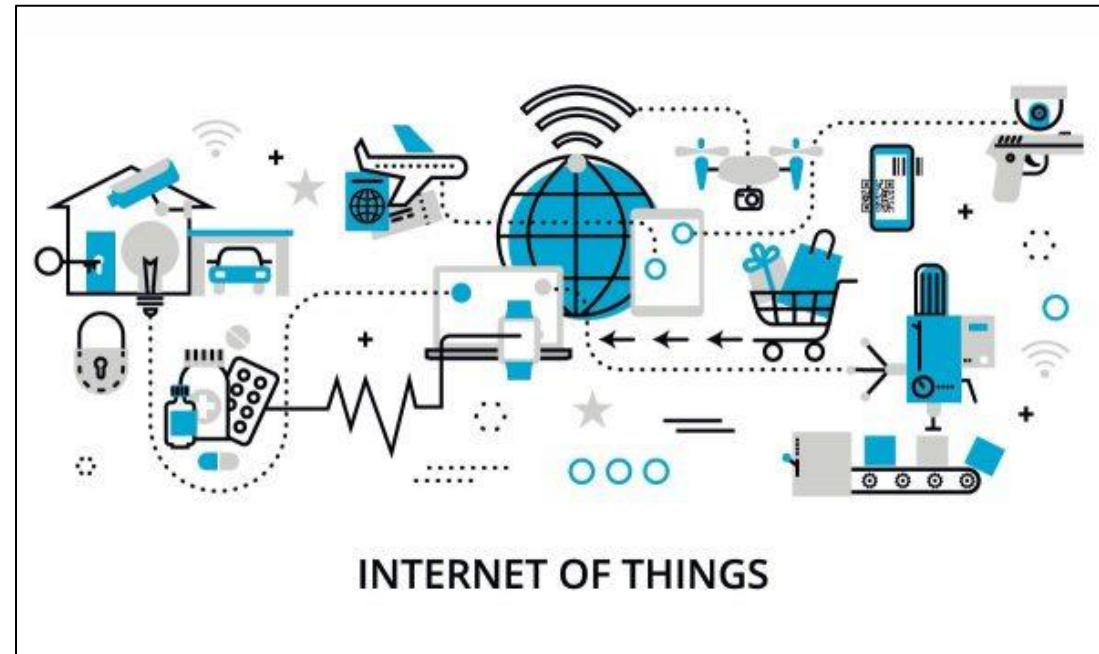
The origins are in the first 2000s, with the release of Amazon Web and Google App services. Now most of companies prefer to adopt Cloud computing instead of maintaining their own server farms.



Web of Things and Internet of Things

Web of Things (WoT) describes a set of standards by the World Wide Web Consortium (W3C) for the interoperability of different **Internet of things (IoT)** platforms and application domains. We refer to the digital connection among sensors, servers, softwares, devices.

Someone wrote in 2005 that with IoT ‘the offline world is going online’. “The digital transition projects us into a world where nature is pervasively intertwined with sensors, information devices and machines; we thus increasingly experience a reactive and talkative nature, an animated nature, where it becomes more and more difficult to distinguish between what is “given” and what is fabricated”. (Onlife Manifesto)



Best quality?

Projects which create digital resources **must** consider the value in creating a fully documented **high-quality ‘digital master’** from which all other versions (e.g. compressed versions for access via the Web) can be derived. This will help with the periodic migration of data and with the development of new products and resources.

Quality has **not to be intended only in a technical sense** (e.g. for an image, number of pixels, colour depth, etc.) but depends also on the **sustainability of resources in time**, i.e. their **management and preservation**.

Preservation is not just about choosing suitable file formats or media types. Instead, it should be seen as a fundamental management responsibility for those who own and manage digital information content, ensuring its long-term use and re-use. This depends upon a variety of factors that are outside of the digitization project itself, e.g. things like institutional stability, continued funding and the ownership of intellectual property rights.

Best quality?

Technical and management quality depends obviously on the context: type of digital content (text, documents, image, sound, video,), resources available (human, ICTs, financial), goals to achieve, web channels adopted, target users/customers,

Anyway, a general rule to follow could be:

- **Open standard formats** should be used when creating digital resources in order to maximise access and will help with interoperability, ensuring that resources are reusable and can be created and modified by a variety of applications. It will also help to avoid dependency on a particular supplier.
- Organisations **should** create their digital resources at the highest technical quality that is both **affordable** and **practical given the intended uses** of the resources, internally and to build up digital services.

Being aware IN the Net



Let's discuss our **personal perception of the Web**, its characters and tendencies, and about **digital resources quality**:

- How do we usually **access and use** the digital information? What apps, channels, sites, search engines....
- How we **produce and manage our digital resources** (pictures, documents, videos...)? What criteria we adopt, where we store them, how do we search for them, how do we manage them?