Web Information System Design
## No.2 History of the Web

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Invention of Web

- **When**
  - 1989 – 1990
- **Where**
  - CERN (European Organization for Nuclear Research) at Geneva, Switzerland
  - http://www.cern.ch/
- **Who**
  - Tim Berners-Lee (British, Computer Engineer)
- **For what**
  - In order to answer:
    - Where is this module used?
    - Who wrote this code? Where does he work?
    - What documents exist about that concept?
    - Which laboratories are included in that project?
    - Which systems depend on this device?
    - What documents refer to this one?
- **How**
  - Web = Hypertext + Internet

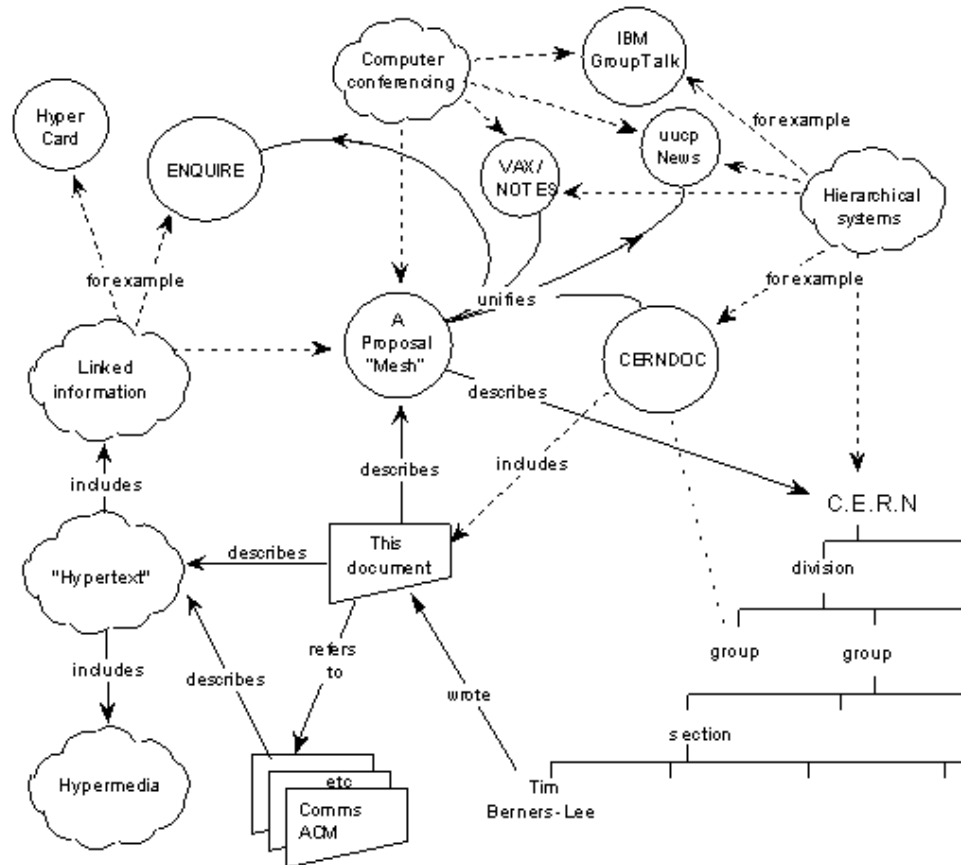# CERN (European Organization for Nuclear Research)

Google map

Google map

Pictures from http://public.web.cern.ch/public/
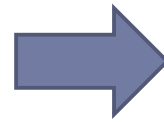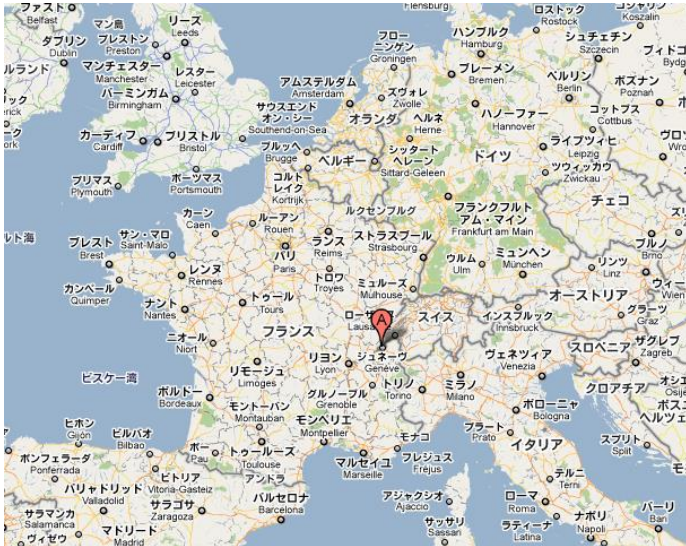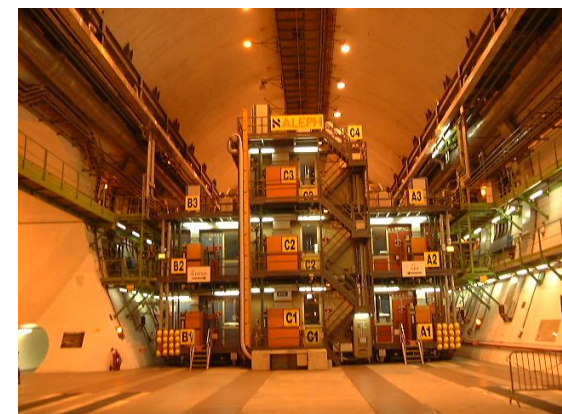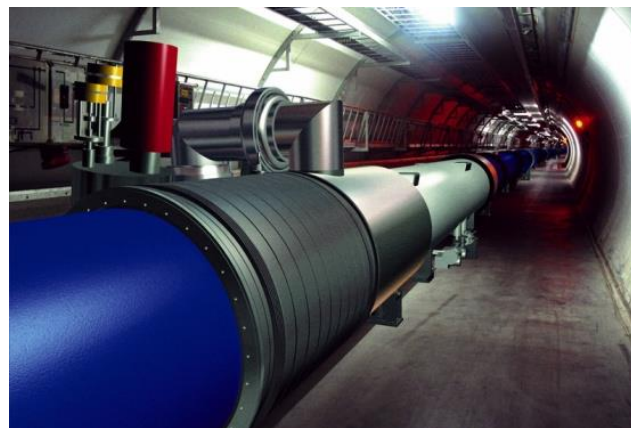
Proposal of Web by Tim Berners-Lee

▸ Information Management: A Proposal

http://www.w3.org/History/1989/proposal.html

Compare Three Methods

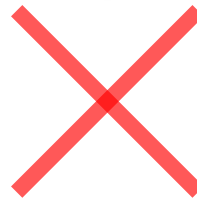| Trees | Keywords | Hypertext |

Easy to manage.
Do not reflect
complicated reality.

Fast to search.
Assign keywords
beforehand.
Users do not know
keywords.

Can express any
structure.
Keywords can be
nodes.

WEB

What is Web?

Web = Internet + Hypertext

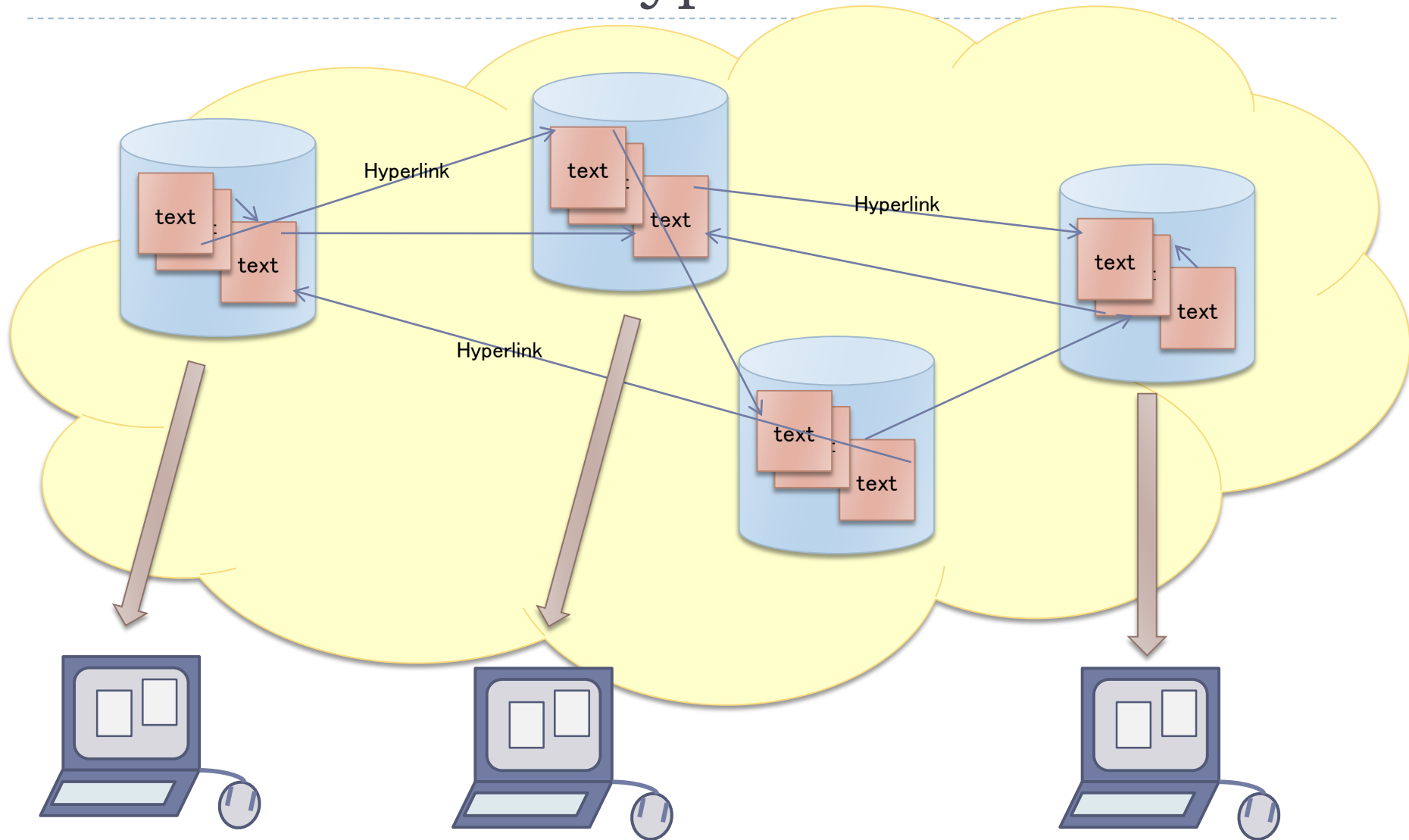▶ Internet
  ▶ Local networks are connected together.
  ▶ Using TCP/IP
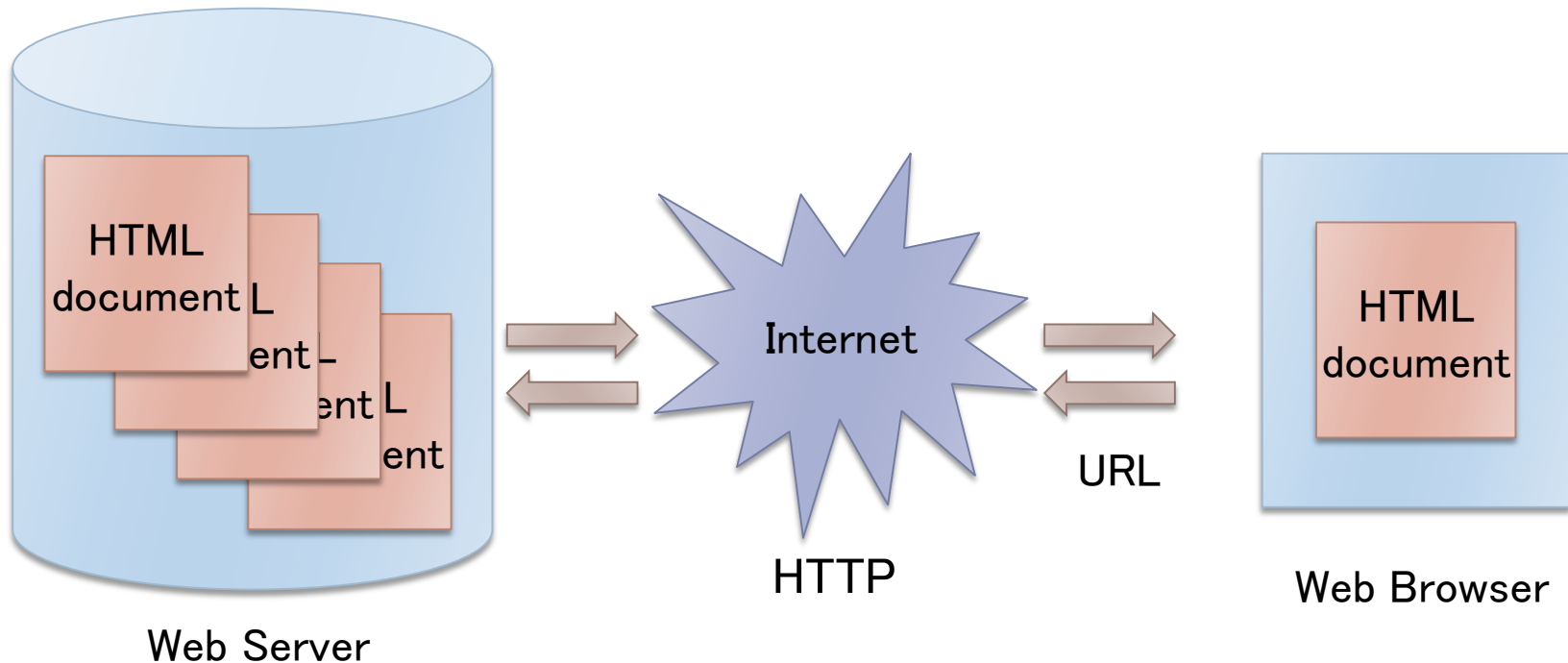
▶ Hypertext
  ▶ Text with references (hyperlinks) to other text
  ▶ Nonlinear text
  ▶ Coined by Ted Nelson in 1963

Web = Internet + Hypertext

# Web Basic Components

▶ Prepare documents using <u>HTML</u> and <u>CSS</u>

▶ Get documents from server using <u>HTTP</u>

▶ Address documents by <u>URL</u>

HTML
document

ent

ent

ent

Internet

HTML
document

URL

HTTP

Web Server

Web Browser

First Important Inventions of Web

- HTML + CSS
  - Web page description language
  - HTML: Hypertext Markup Language
    - Describe the content
  - CSS: Cascading Style Sheet
    - Describe the style
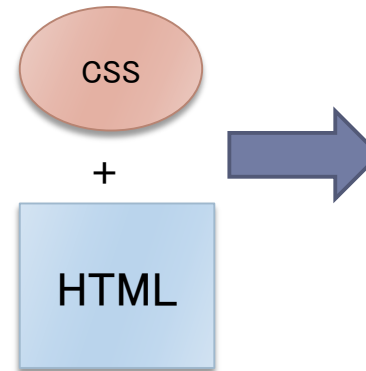
- HTTP: Hypertext Transfer Protocol
  - Protocol for transferring Web page
  - Simplification of anonymous FTP
  - Handle multimedia
  - Language negotiation

- URL: Uniform Resource Locator
  - Address of Web page

CSS

+

HTML

HTTP 0.8 → HTTP 1.0 → HTTP 1.1

URL → URI → IRI

First Web Server and Web Browser

‣ **Implemented on NeXT computer**

‣ **Browser can also edit documents**

  ‣ HyperMedia Browser/Editor

http://info.cern.ch/default.html
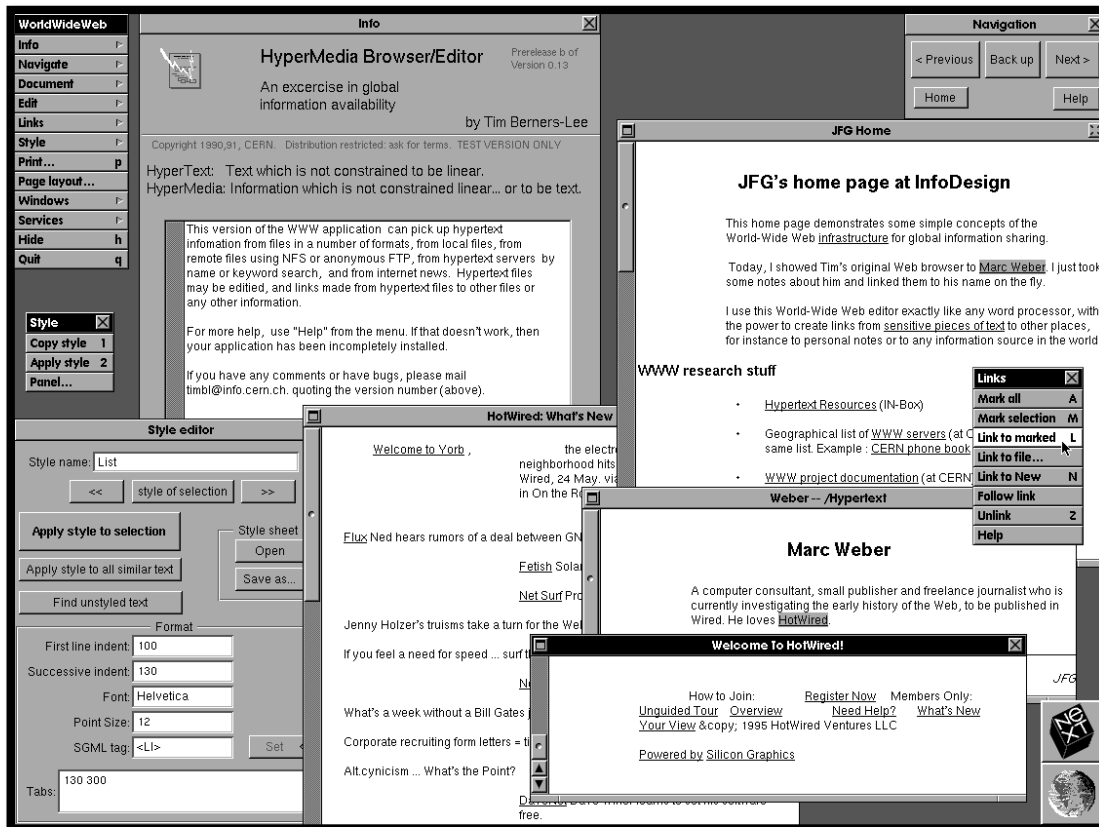
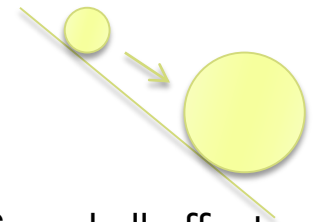# Why Web Becomes Popular?

▶ **Free**
  ▶ Gopher has license problem (free for academic use only)

▶ **Open system**
  ▶ Anybody can join
  ▶ Search engine automatically collect documents

Snow ball effect

▶ **Not strict**
  ▶ Broken links (404 Not Found)
  ▶ HTML grammar error
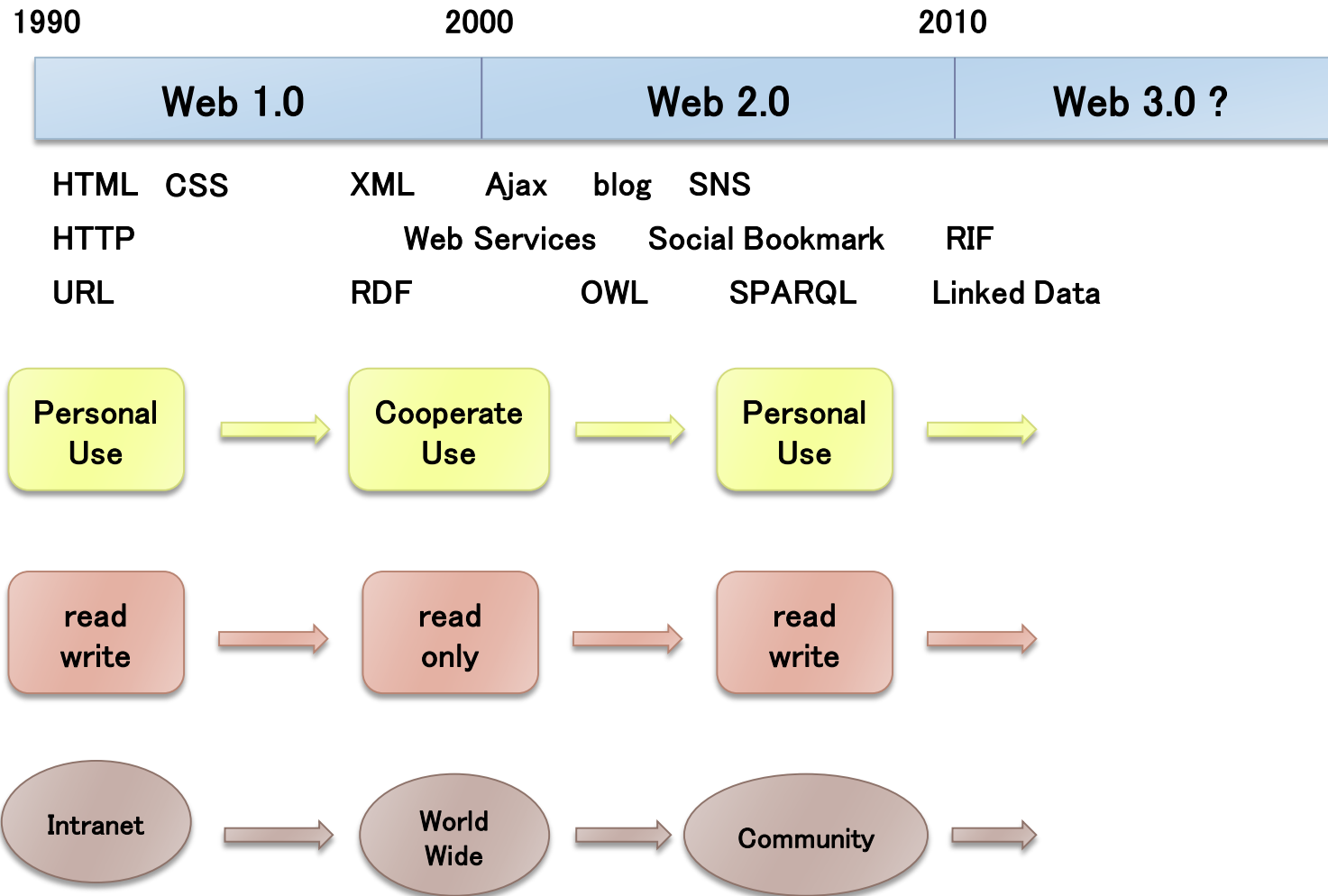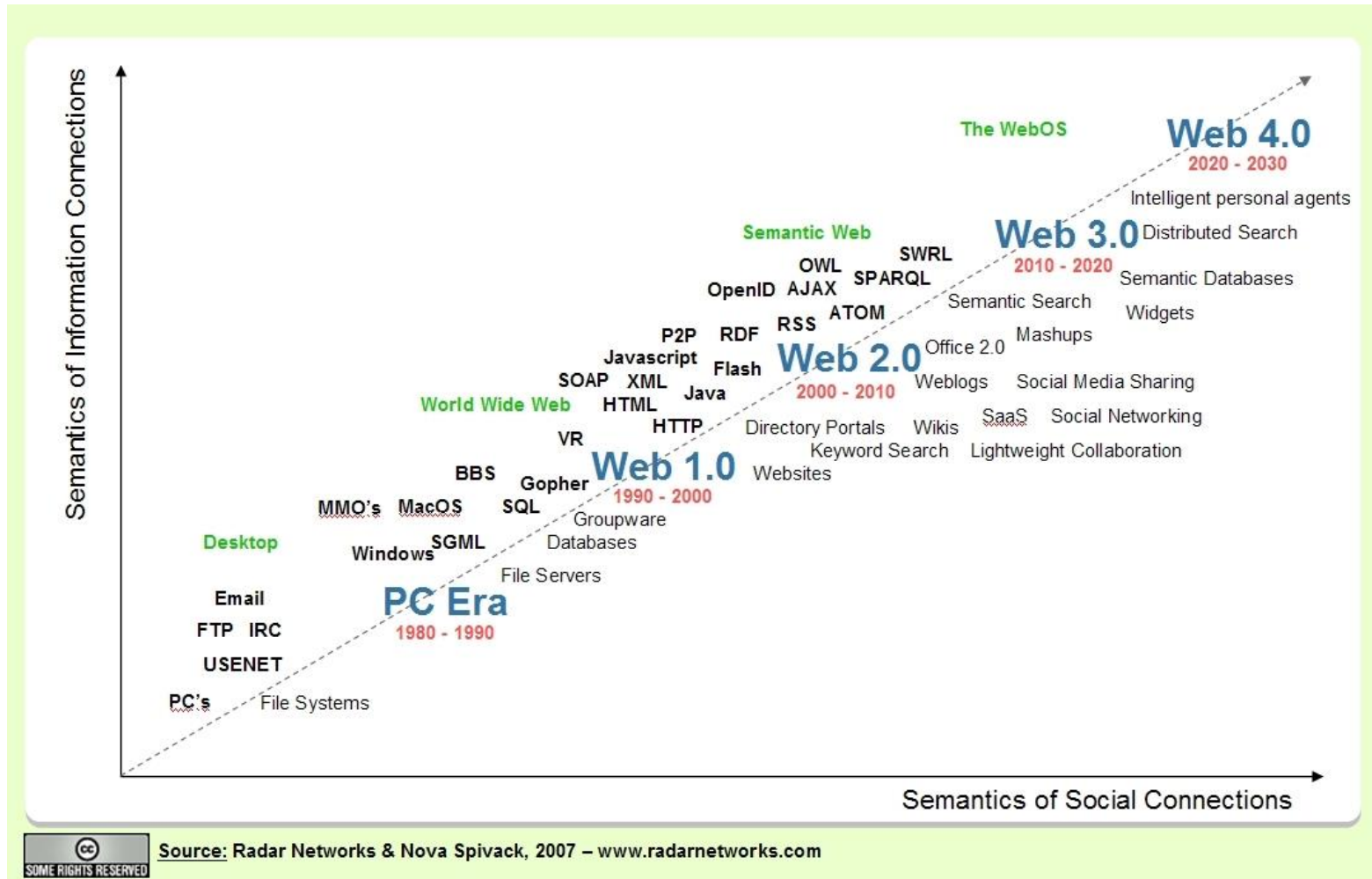
Not perfect as hypertext system

▶ **Standardization**
  ▶ IETF
  ▶ World Wide Web Consortium

From Web 1.0 to Web 2.0 and Beyond

1990   2000   2010

Web 1.0	Web 2.0	Web 3.0 ?

HTML   CSS   XML   Ajax   blog   SNS
HTTP   Web Services   Social Bookmark   RIF
URL   RDF   OWL   SPARQL   Linked Data

Personal Use	→	Cooperate Use	→	Personal Use	→

read write	→	read only	→	read write	→

Intranet	→	World Wide	→	Community	→

Prediction of Web Development 4.0

Source: Radar Networks & Nova Spivack, 2007 – www.radarnetworks.com

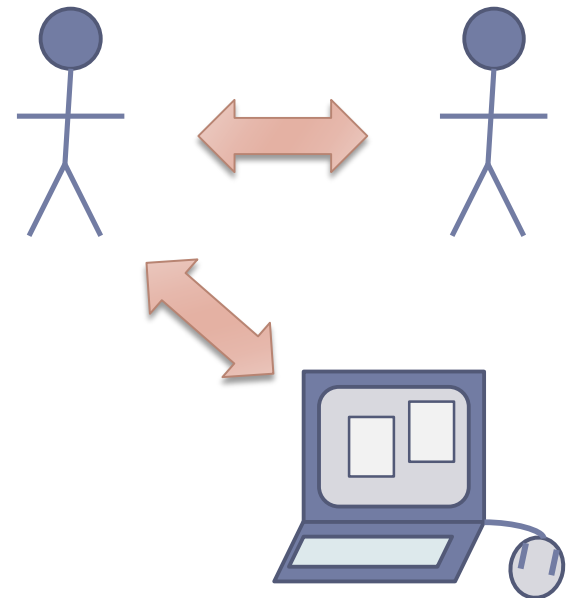http://www.popxpop.com/archives/2007/02/web40.html

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What is Web for?

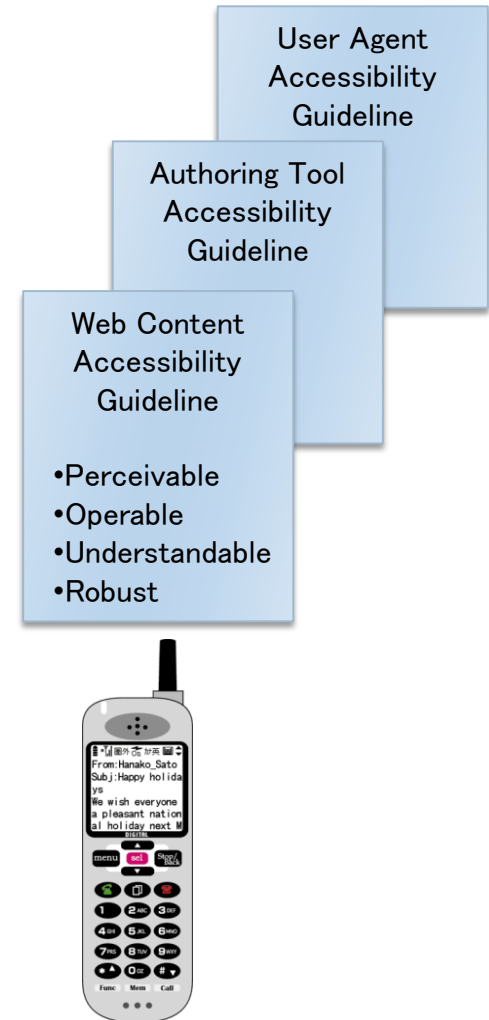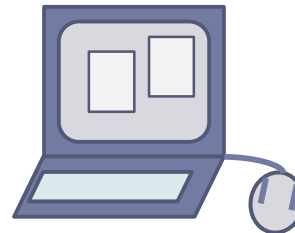▸ **Web is the killer application of the Internet.**

  ▸ Become social infrastructure

  ▸ Use Web to find information

  ▸ Use Web to get service

▸ **Two purposes of Web**

  ▸ Human to human communication

    ▸ for anybody

    ▸ from anywhere

  ▸ Human to machine communication

    ▸ to solve problems
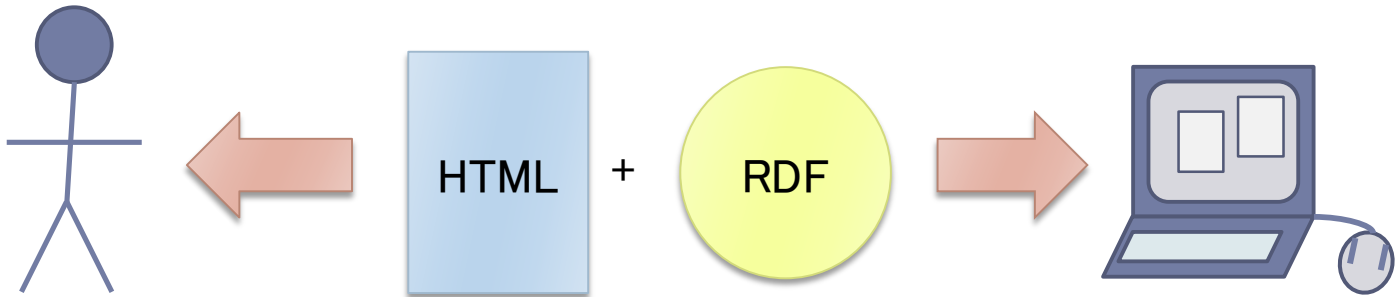
Help Human to Human Communication

▶ **Anybody can use:**
  ▶ Text format
    ▶ No need for special software
  ▶ Internationalization
    ▶ Can show any natural language
    ▶ Ruby
    ▶ Vertical writing
  ▶ Accessibility
    ▶ Handicapped people
    ▶ Separation of content and presentation
    ▶ Voice browser

▶ **Use from anywhere:**
  ▶ Independent from OS
  ▶ Independent from device
    ▶ PC, TV, mobile phone

User Agent
Accessibility
Guideline

Authoring Tool
Accessibility
Guideline

Web Content
Accessibility
Guideline

•Perceivable
•Operable
•Understandable
•Robust

Help Human to Machine Communication

▸ **Problem solving using Web:**

  ▸ Search engine can find only pages

  ▸ No general application available

  ▸ HTML documents are for human to read.

▸ **Semantic Web:**

  ▸ Prepare data for machines to process

  ▸ Agents collect data to solve problems.

HTML + RDF

Summary

▸ **History of the Web**

  ▸ Invention of Web

    ▸ HTML and CSS

    ▸ HTTP

    ▸ URL

  ▸ From Web 1.0 to Web 3.0

  ▸ Purpose of Web

    ▸ Human to human communication

    ▸ Human to machine communication