

UNIVERSIDAD
NACIONAL
DE COLOMBIA

**Cátedra
Pedro Nel Gómez:**
Mindset innovador a
prueba de futuro

PROYECTO CULTURAL, CIENTÍFICO Y COLECTIVO DE NACIÓN



Cátedra
Pedro Nel Gómez:
Mindset innovador a
prueba de futuro

Docente:

Ingeniero administrador
Juan David Correa Toro

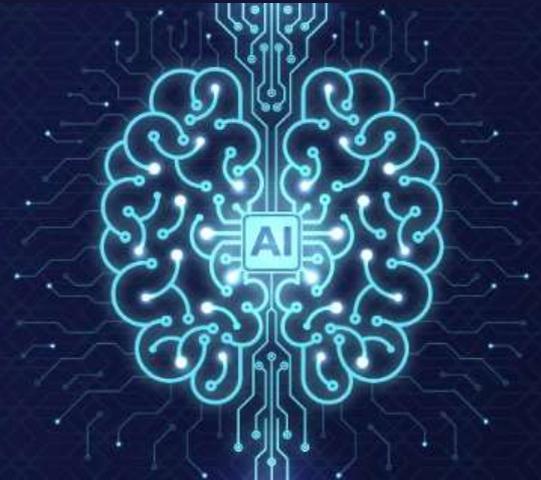


Código: 3011073 - asignatura de Libre Elección de 3 créditos

Sacándole provecho a las **tecnologías exponenciales** parte 3:

Internet: la gran maravilla de nuestros tiempos: **Internet moderno**

**Cátedra
Pedro Nel Gómez:
Mindset innovador a
prueba de futuro**



Agenda

- Por qué nace el internet moderno.
- Contexto.
- El problema.
- Los precursores.
- Por qué funciona la web.
- Qué es la world wide web (www).
- Protocolo de transferencia de hipertexto.
- Lenguaje de marcas de hipertexto.
- El primer servidor web.
- La primera página web.
- Los resultados.



WHY

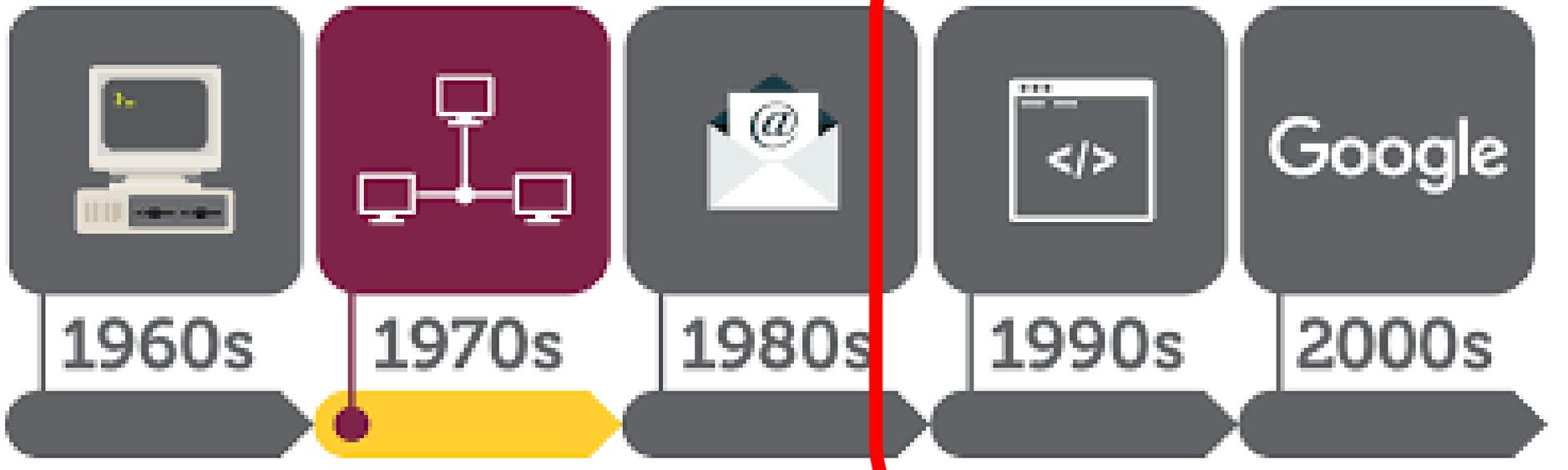
HOW

WHAT

¿Por qué nace el Internet moderno?



Internet moderno





Contexto

ComputerLand Newspaper Insert from 1989

I saved this from the trash when I was throwing away old stuff.
[All 8 pages in a 4.5MB PDF](#)

Season's greetings from ComputerLand

SAVE

Apple Macintosh Plus
 List \$2,295 Only **\$999***
 *AFTER \$200 REBATE WITH PURCHASE OF APPLE ADD-ONS.1
 The powerful, entry-level system is easy to learn and use.
 ■ 800 KHz expandable to 4MHz
 ■ Keyboard and mouse included
 ■ 100K 3.5" diskette drive
 ■ Macintosh Plus II

HP LaserJet IIP Printer
 List \$1,495 Only **\$999**
 11" Form factor for desktop use
 ■ 300 dpi resolution
 ■ 4 pages per minute print speed
 ■ Small - fits on your desk
 ■ 112K RAM expandable to 4.5MB

IBM Free-For-All
FREE Software \$525 Value!
 All five of these software programs are FREE with the purchase of any IBM PS/2 Model 25, Model 30, Model 50Z or Model 55. (2.1 and DOS or OS/2) with Microsoft® Word for you get word processing, spreadsheets, databases and communications all in one package. You'll get your household finances in order with Andrew Talar's "Managing Your Money" and Andrew Talar's "See-Go! Andrew's Budget Games" and "King's Quest" will provide hours of fun. Many! Available while supplies last.

IBM PS/2 Model 25
 List \$1,695 Only **\$1,249**
 Start smart with this compact and affordable PS/2 - great for offices, schools and homes.
 ■ 8088 processor at 5MHz
 ■ 128K RAM expandable to 500K
 ■ 17" MCGA color monitor with 340 x 480 resolution
 ■ 700K 3.5" diskette drive

ComputerLand

Apple Macintosh Portable
 List \$5,799 **NEW**
 Apple today is out the new Macintosh Portable. It's a fully functional Macintosh with 6-10 hours of rechargeable battery life.
 ■ 6MHz 68000 processor
 ■ Crisp, high-resolution LCD screen
 ■ Keyboard and mouse
 ■ Built-in trackball and keyboard
 Limited availability

Apple Macintosh SE/30
 List \$4,399 Only **\$2,849***
 *AFTER \$200 REBATE WITH PURCHASE OF APPLE ADD-ONS. See box.
 It's the fastest Macintosh: 4 times faster than the Macintosh SE.
 ■ 32-MHz 68030 processor
 ■ 1MB RAM expandable to 4MB
 ■ 3.5" SuperDisk™ disk system and with DOS, OS/2, ProDOS™ and Macintosh formats.
 Keyboard extra.

Apple LaserWriter IINT
 List \$4,999 Only **\$3,499**
 REBATE OFFER WITH PURCHASE OF QUALIFYING SYSTEM. See box.
 This remarkable laser printer has 35 built-in typefaces. For presentations, memos, newsletters and more.
 ■ 300 dpi
 ■ 2MB RAM, 4MB expandable
 ■ 1200x 600 dpi processor

Apple Macintosh IIcx
 List \$4,699 Only **\$2,999***
 *AFTER \$200 REBATE WITH PURCHASE OF APPLE ADD-ONS. See box.
 Combines speed, power and expandability.
 ■ 32-MHz 68030 processor
 ■ 1MB RAM expandable to 4MB
 ■ Small footprint, 483 expansion slots
 ■ 1.44MB 3.5" SuperDisk™
 Keyboard, monitor and video adapter extra.

Apple Macintosh SE FDHD
 List \$3,499 Only **\$2,149***
 *AFTER \$200 REBATE WITH PURCHASE OF APPLE ADD-ONS. See box.
 This office workstation handles tough business assignments with ease.
 ■ 16MB hard drive
 ■ 2.5" SuperDisk lets you read and write DOS, OS/2, ProDOS and Macintosh formats.
 Keyboard extra.

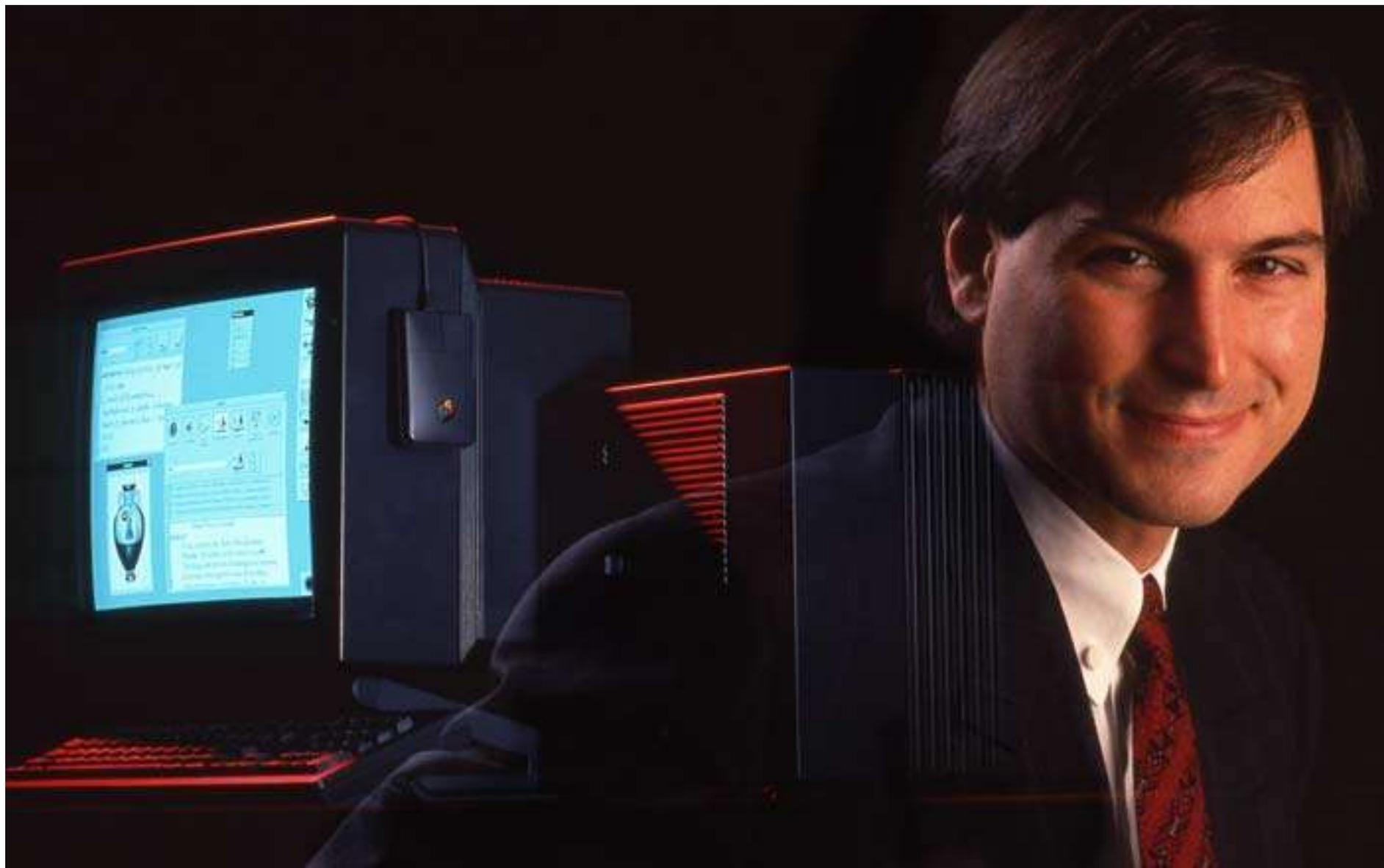
Apple ImageWriter II
 List \$329 **Call for Price**
 REBATE OFFER WITH PURCHASE OF QUALIFYING SYSTEM. See box.
 For affordable, near letter-quality performance. Great for letters, reports and graphics.

MacDraw II & MacWrite II
 List \$199 Only **\$349**
 List \$299 Only **\$279**
 Fast, flexible and powerful desktop graphics and professional Macintosh word processing.
MacWrite II & FileMaker II
 The essential Macintosh word processing and database software.
 Macintosh database management.

ComputerLand

Save up to \$300 on add-ons when you buy an Apple now...
 Get \$200 to \$300 cash back from Apple on selected Apple peripherals when you purchase a qualifying system before December 31, 1989. At the Apple Cash Back offer end here's how it works:
 Buy a qualifying system with any level Macintosh box with Apple video card and monitor, Apple keyboard, Macintosh Plus, Macintosh SE, or Macintosh SE/30 and get a rebate of up to \$300 on a qualifying add-on. (Qualifying add-ons include: External Hard Disk 200K, AppleCD 5C, Apple Scanner and more.)
 ... Or take an Apple for a Trial Run. If you want to try a new Apple product, call us about Apple's free trial run offer. You can try any qualifying system free, until December 31, 1989. If you don't love it, return it at no charge by January 15, 1990. See store for details.

<http://cisx1.uma.maine.edu/~wbackman/ComputerLand/>



<https://www.youtube.com/watch?v=haLr63GA3r4>

“...you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something — your gut, destiny, life, karma, whatever...it has made all the difference in my life.”

— Steve Jobs





“Creativity is just connecting things.”
- Steve Jobs



Vamos a cambiar un poco el
escenario

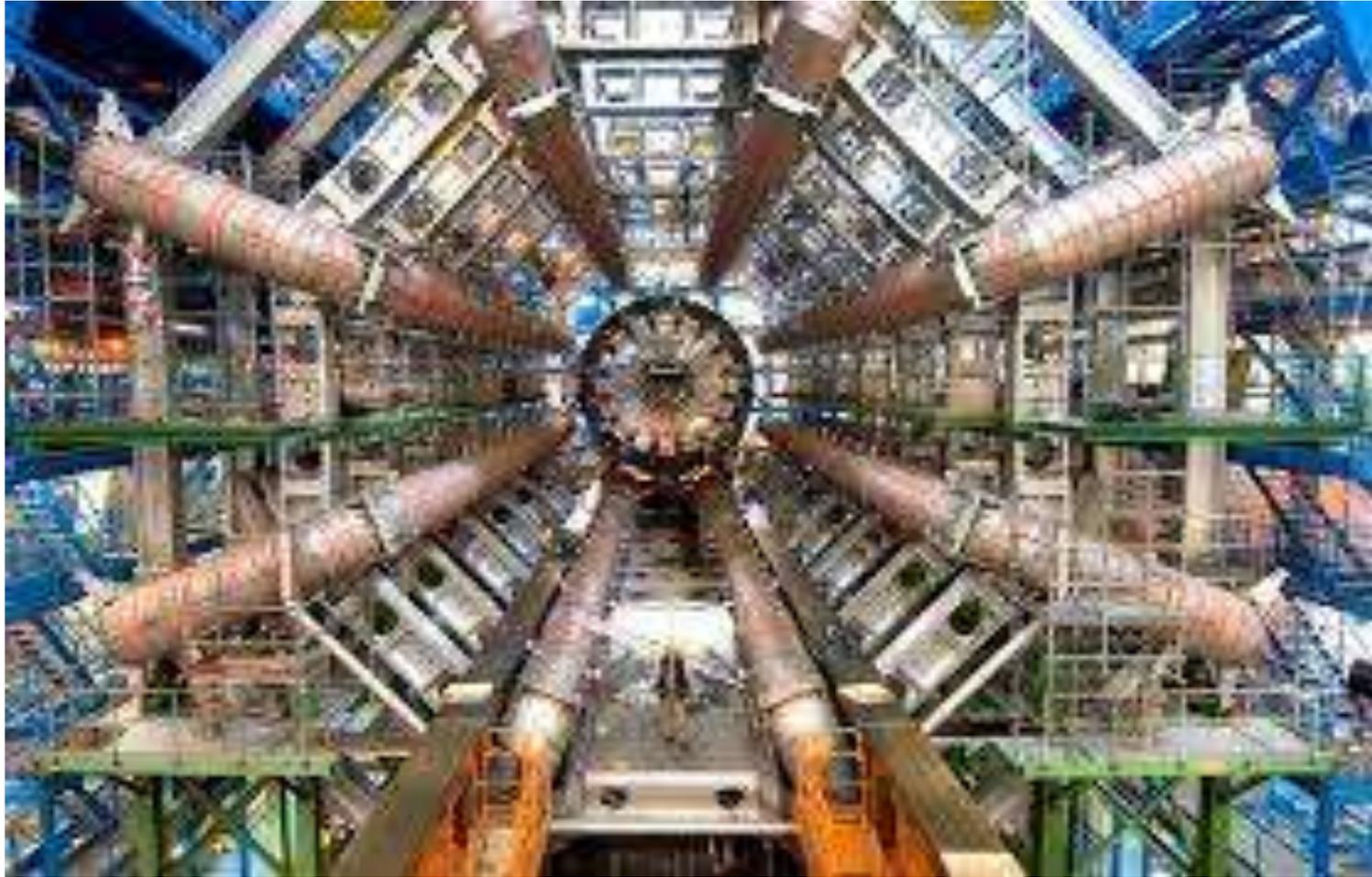


Berlín 1989



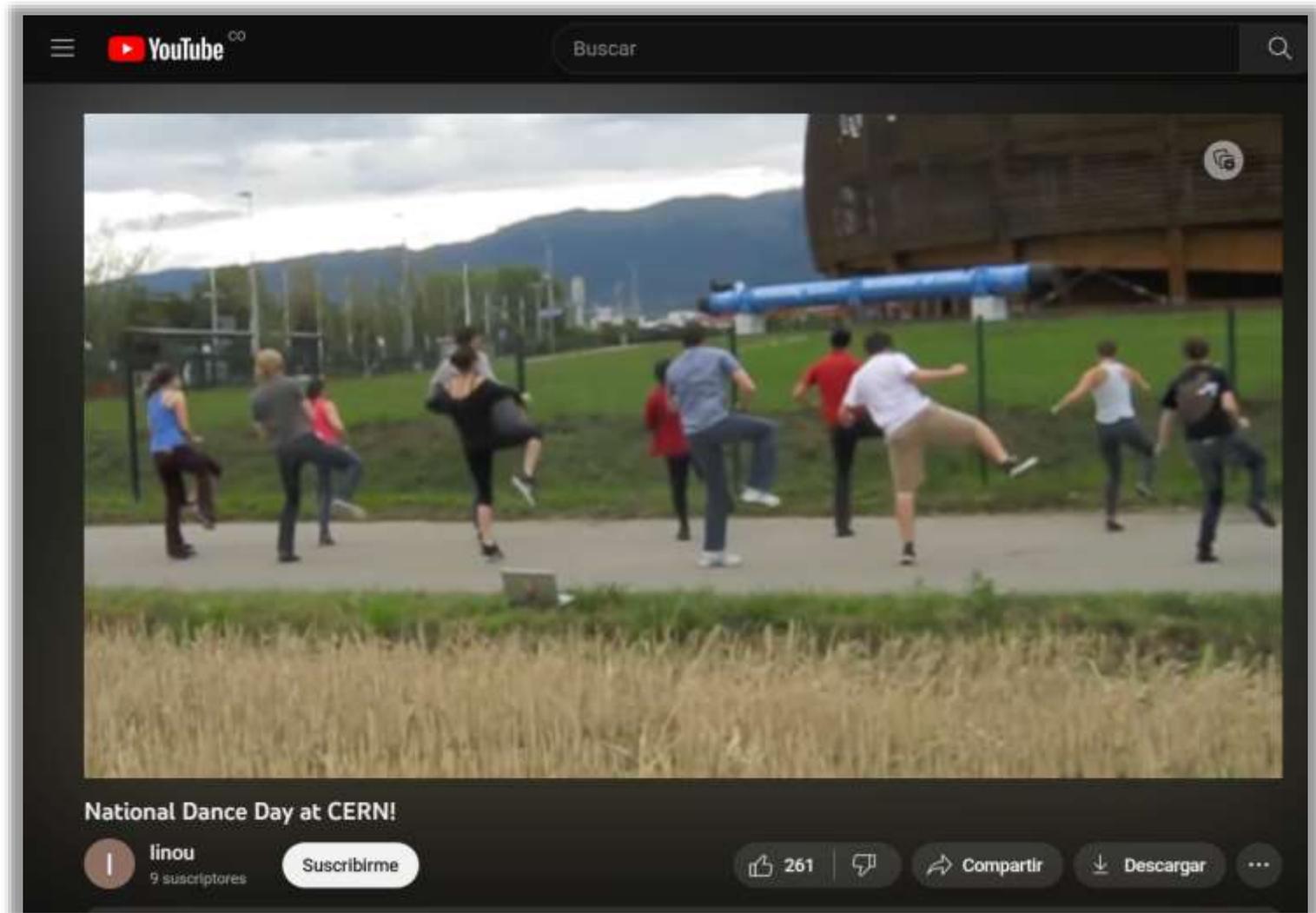


Organización Europea para la **Investigación** Nuclear



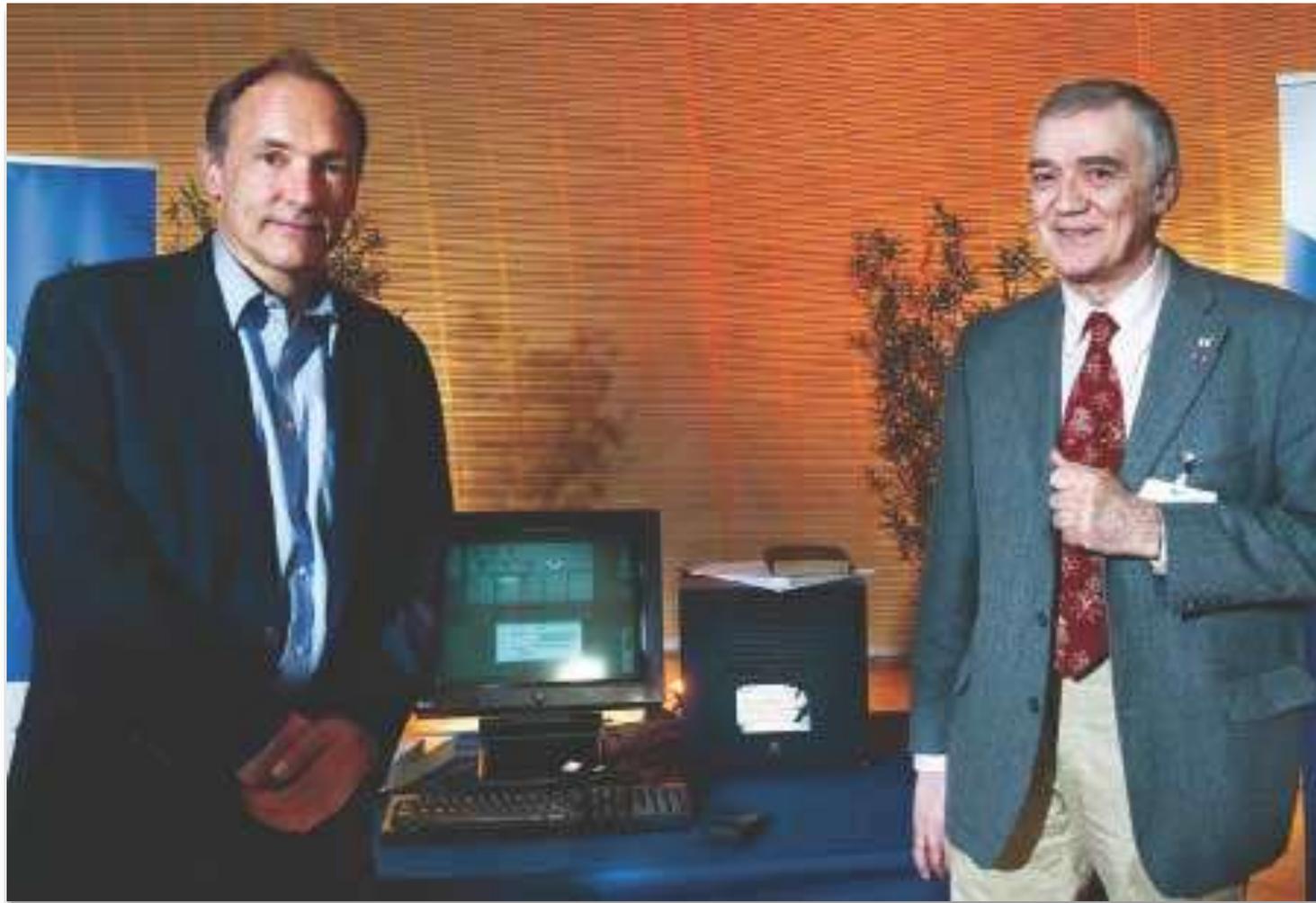


<http://en.wikipedia.org/wiki/CERN>



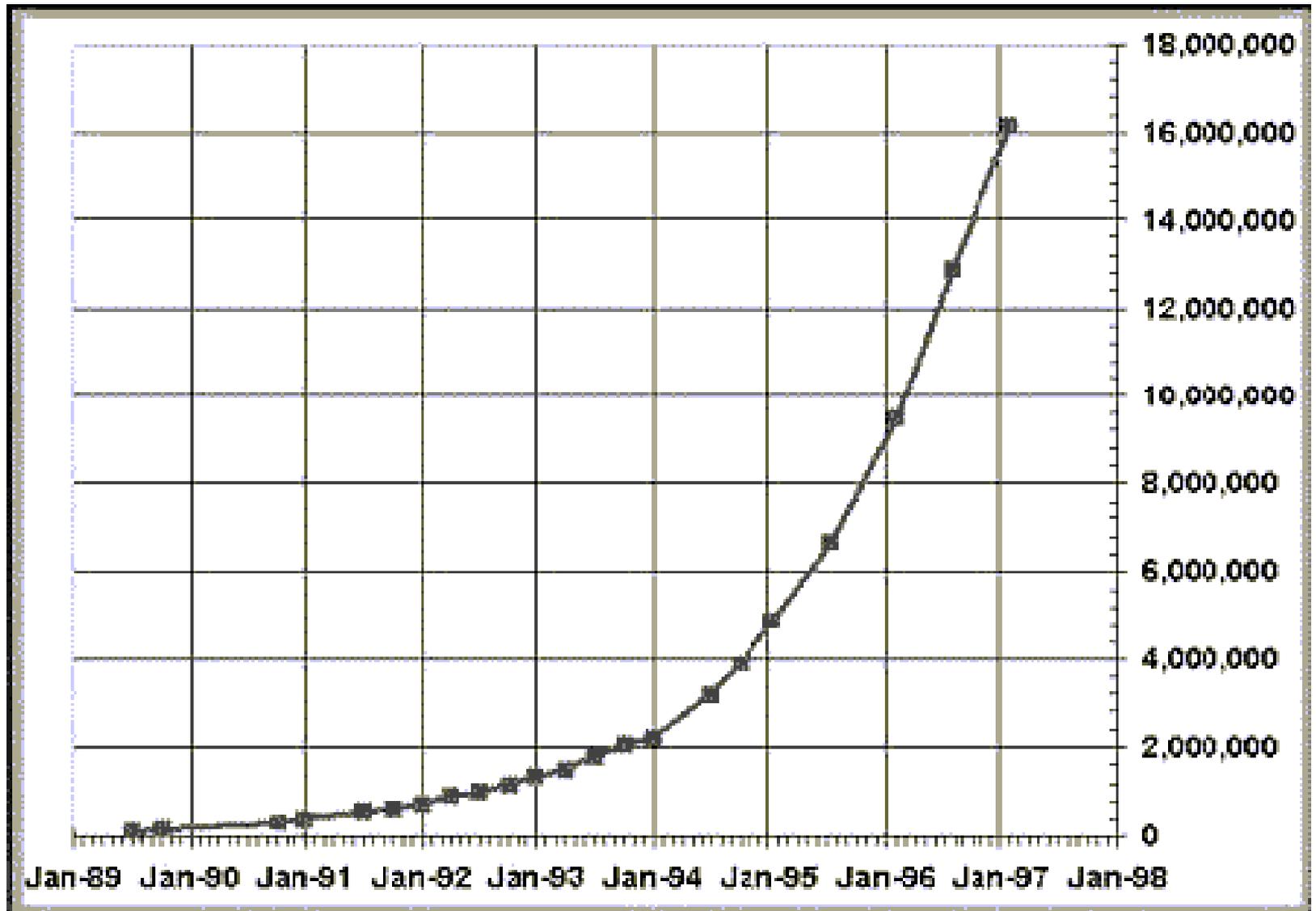
Creatividad

<http://youtu.be/7C-6SUiDno>

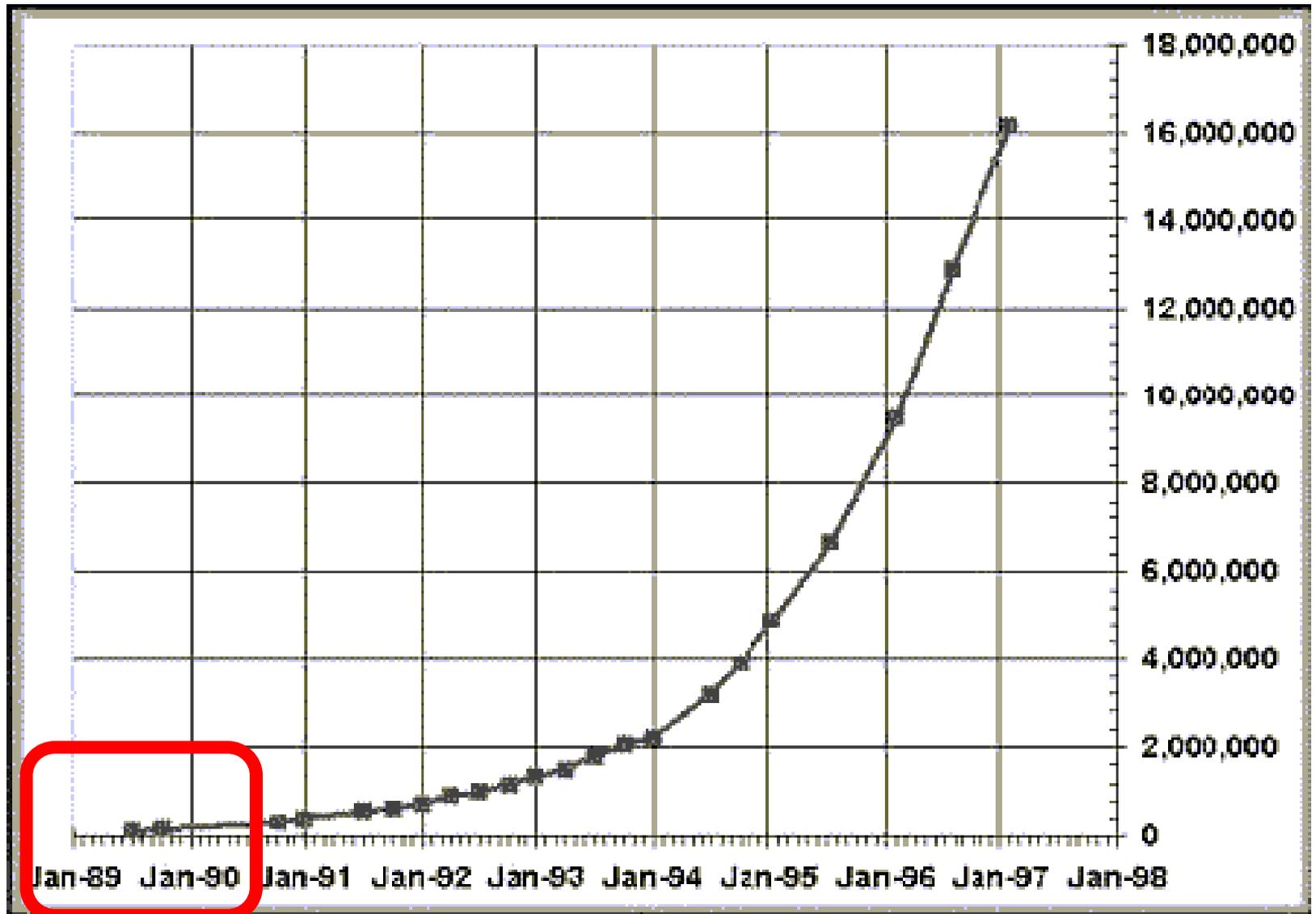


Tim Berners-Lee - Robert Cailliau

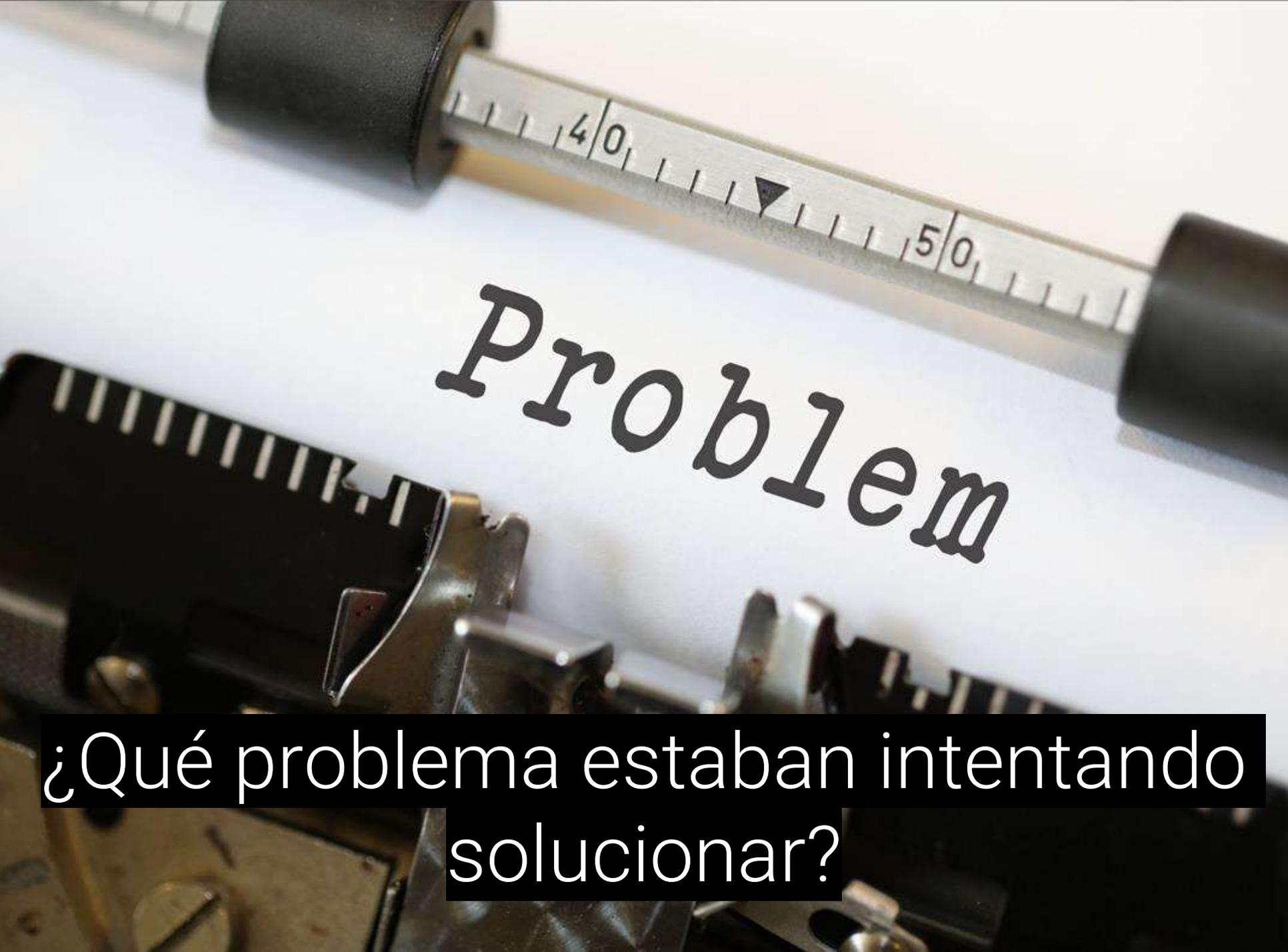




Servidores conectados a Internet



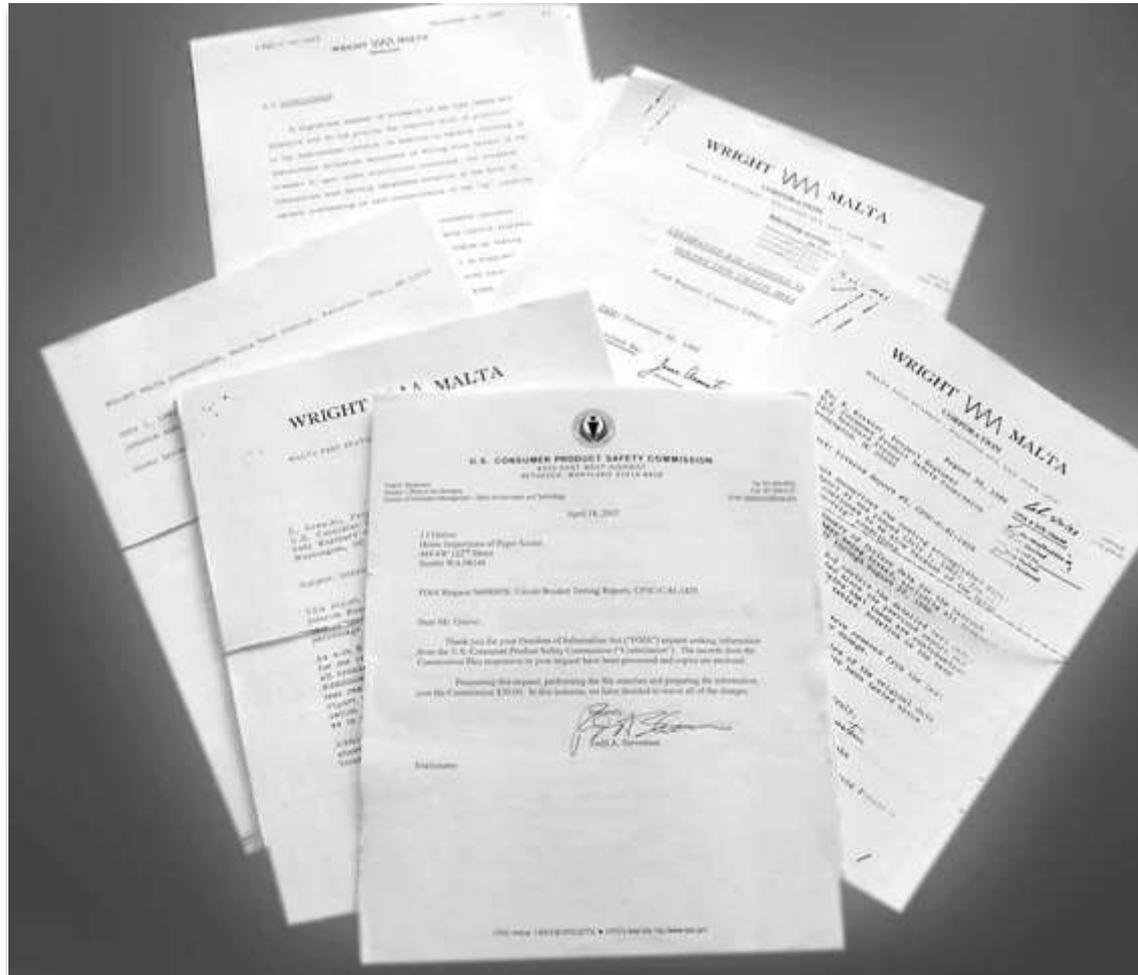
Servidores conectados a Internet



Problem

¿Qué problema estaban intentando solucionar?

Documentación Científica



Documentación Científica



Difícil de ordenar, de relacionar

A close-up photograph of a person's face, focusing on the eyes which are closed. The skin is fair and has a soft, natural texture. The lighting is warm and even, highlighting the contours of the face. A solid black rectangular box is positioned horizontally across the middle of the image, containing the text "Los precursores" in a clean, white, sans-serif font.

Los precursores

Timothy John "Tim" Berners-Lee



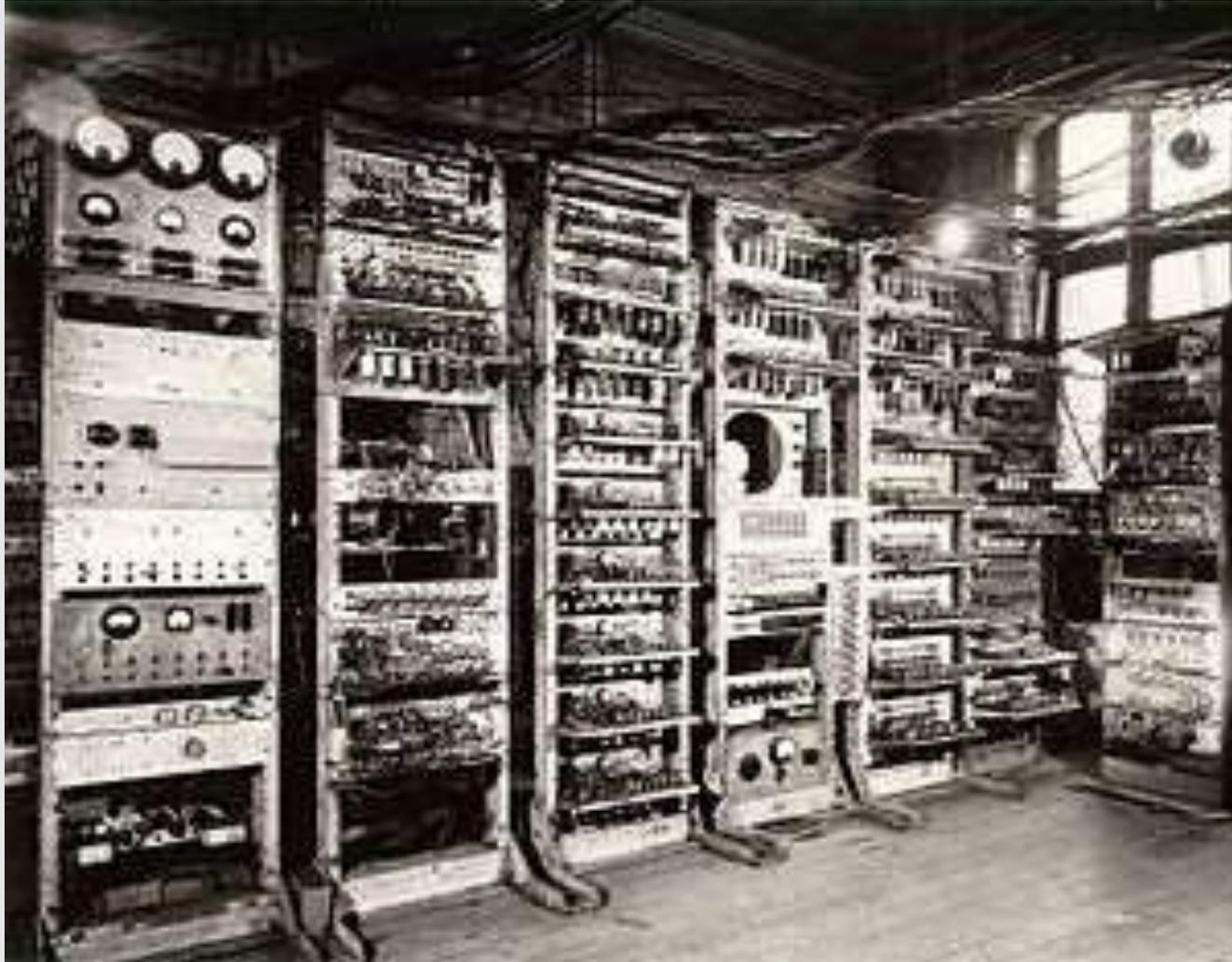
8 de junio de 1955



Conway Berners-Lee - Mary Lee Woods

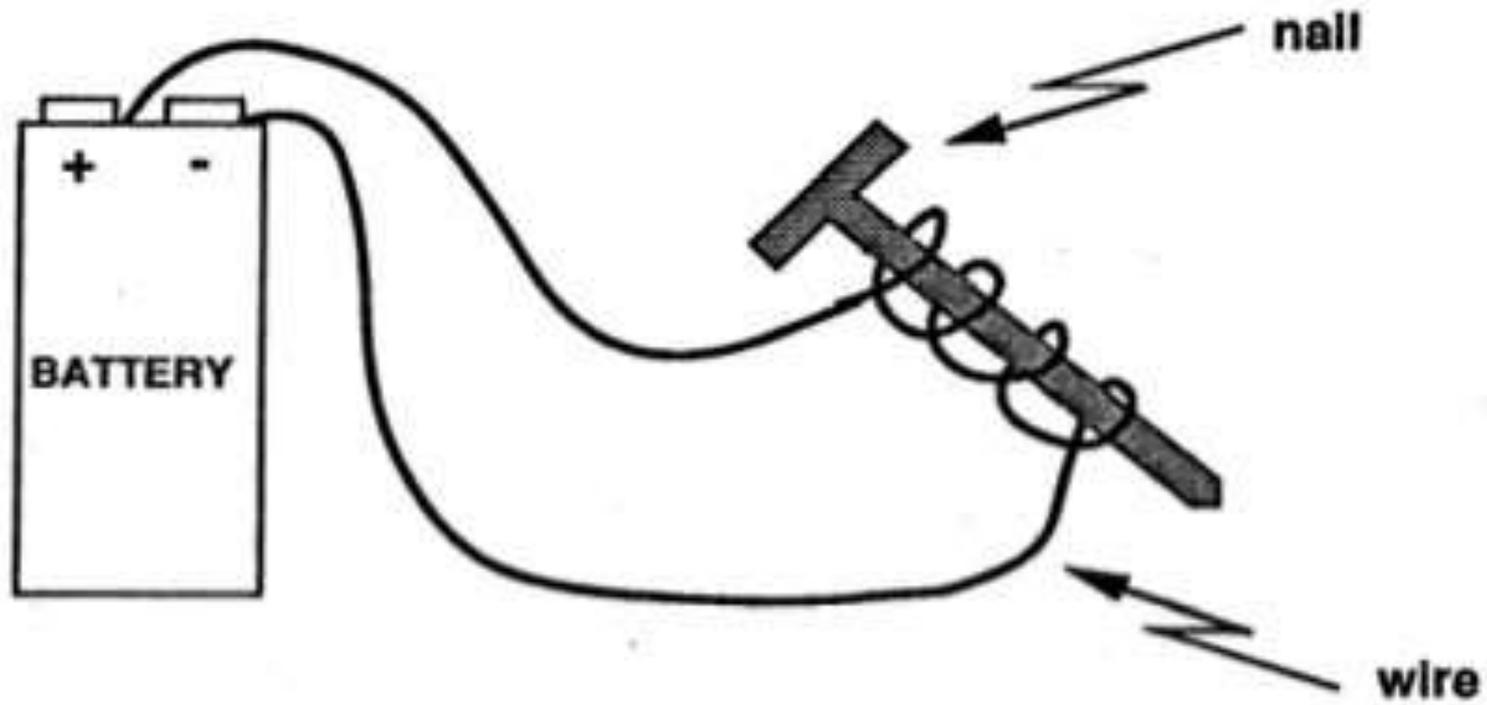


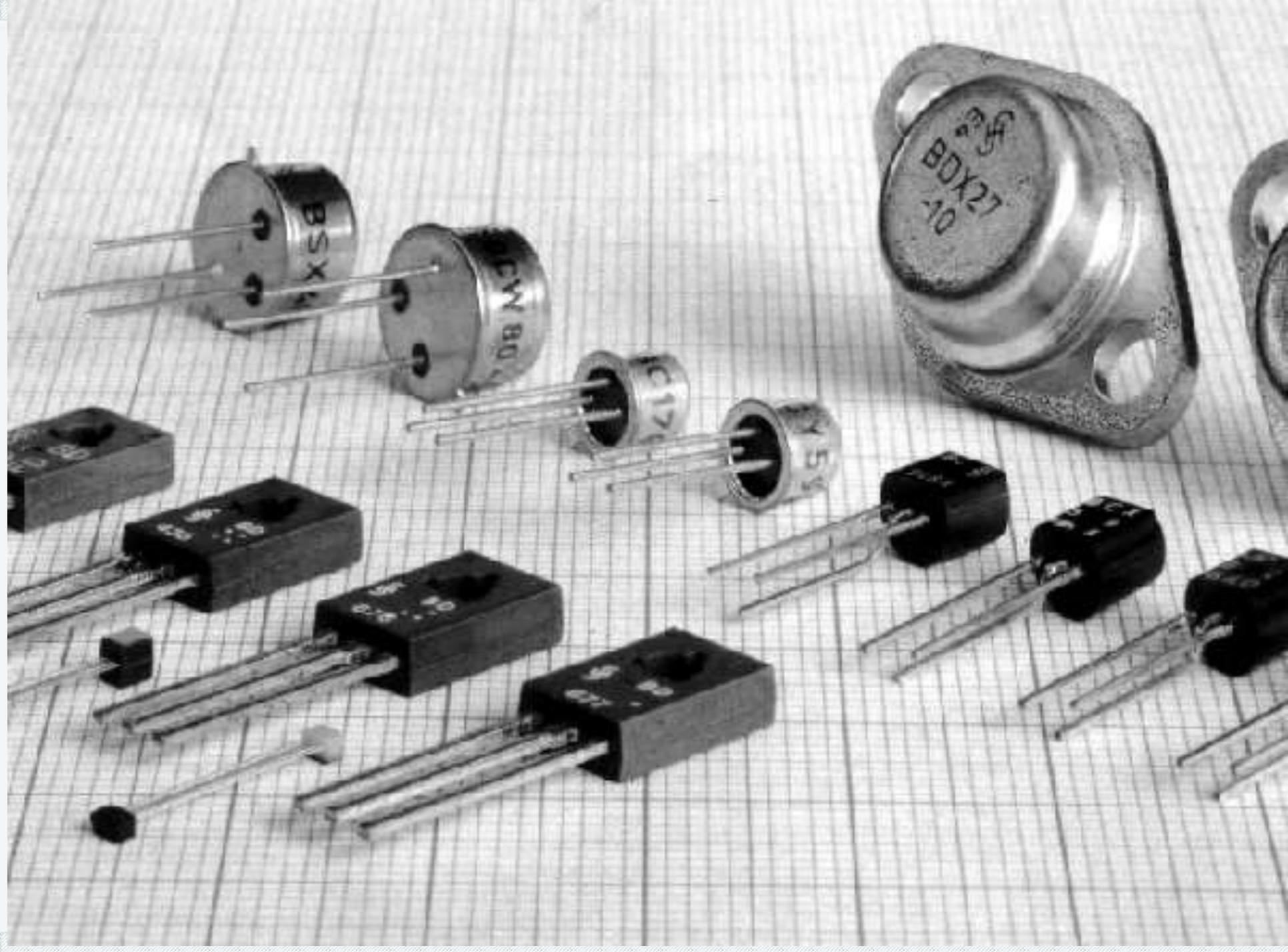
Manchester Mark I



Ferranti Mark I







De tal palo, tal astilla



Queen's College, Oxford - 1976



1980



ENQUIRE

Documentation of the RPC project (concept)

Most of the documentation is available on VMS, with the two principle manuals being stored in the CERNDoc system.

- 1) includes: The VAX/NOTES conference VXCERN::RPC
- 2) includes: Test and Example suite
- 3) includes: RPC BUG LISTS
- 4) includes: RPC System: Implementation Guide
Information for maintenance, porting, etc.
- 5) includes: Suggested Development Strategy for RPC Applications
- 6) includes: "Notes on RPC", Draft 1, 20 feb 86
- 7) includes: "Notes on Proposed RPC Development" 18 Feb 86
- 8) includes: RPC User Manual
How to build and run a distributed system.
- 9) includes: Draft Specifications and Implementation Notes
- 10) includes: The RPC HELP facility
- 11) describes: THE REMOTE PROCEDURE CALL PROJECT in DD/OC

Help Display Select Back Quit Mark Goto_mark Link Add Edit

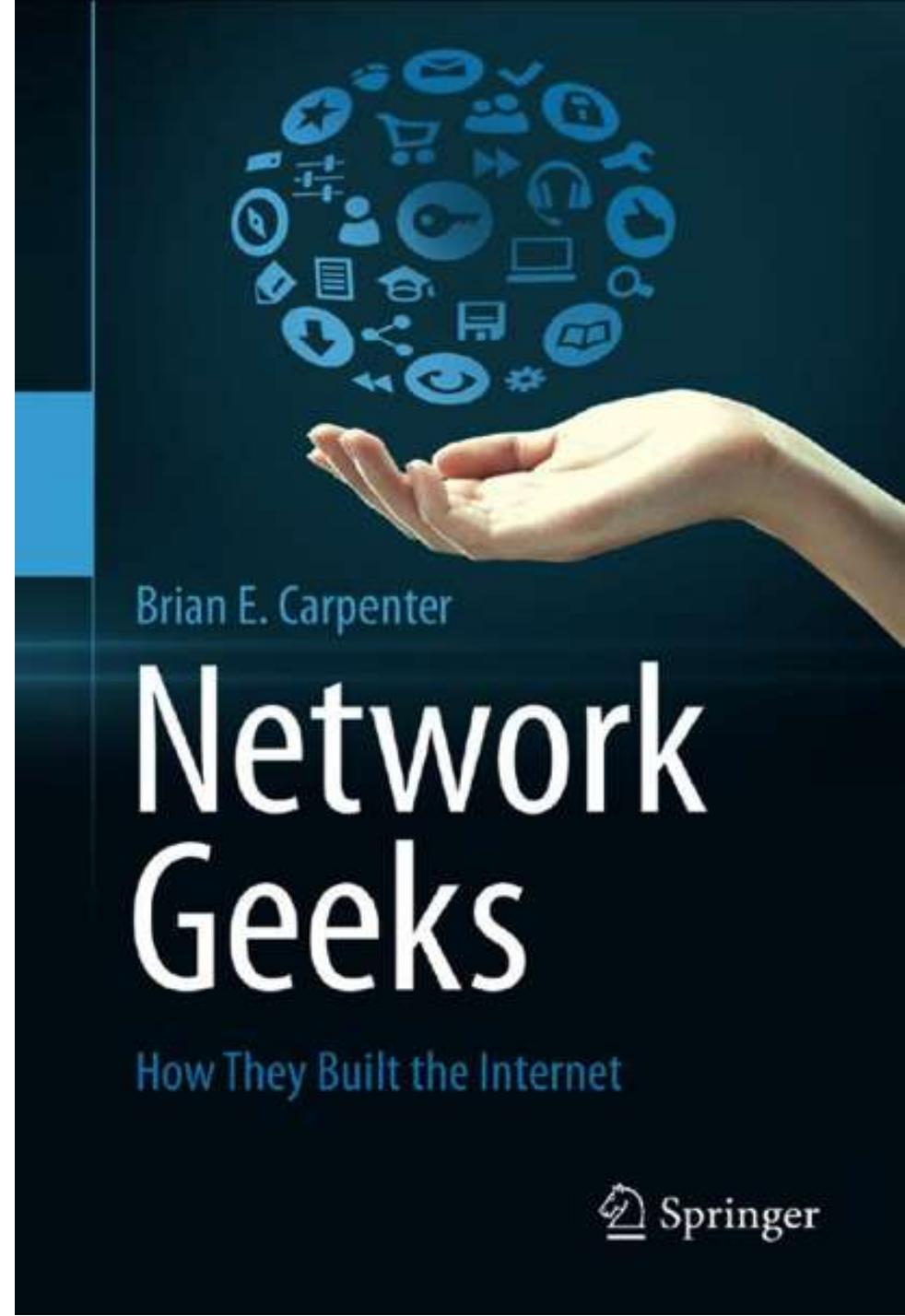
A screen in an ENQUIRE scheme.^[1]

1984 - 1989





+



Brian E. Carpenter

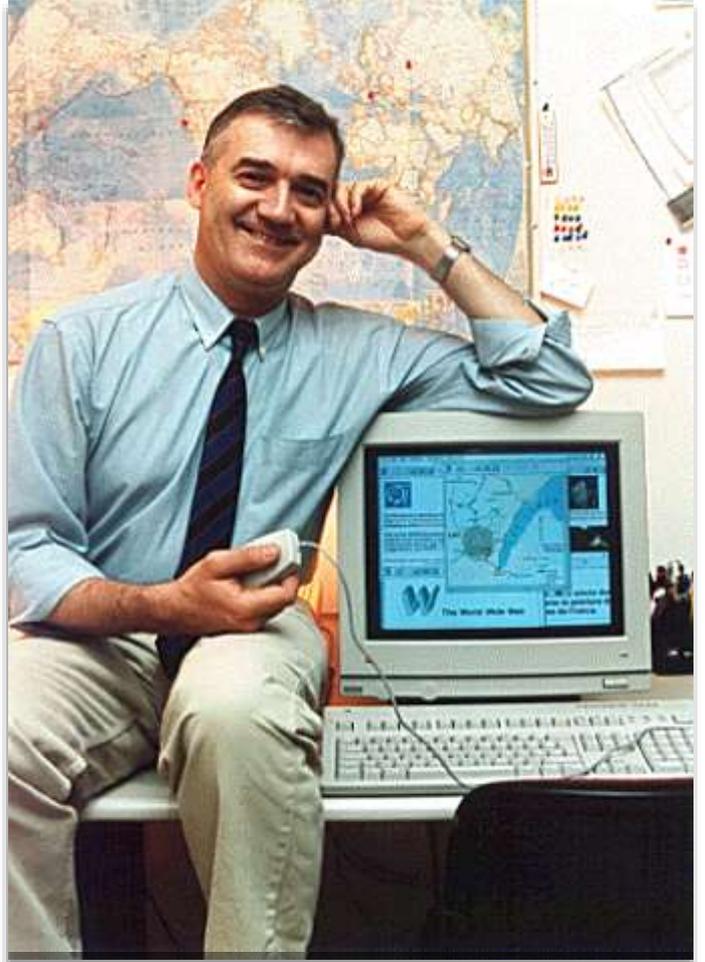
Network Geeks

How They Built the Internet

 Springer



+





Cuando creas algo grande, se requiere de un
diseño técnico y de un diseño social

¿Por qué funciona la web?





Psicológicamente hablando, a la gente **le gusta ser leída**, por eso es muy útil establecer **vínculos** con otro **contenido útil**



La web funciona como una gran **red de revisiones críticas**, a través de su mecanismo de **hipertexto**



La web funciona gracias a **la gente** y el **diseño social** que propone

Es un **sistema social** mediado por **tecnología**





Facilidad

network
RESOURCE- and
ENERGY EFFICIENCY



Eficiencia

Internet es simplemente
un **motor de conveniencia**



Ev Williams

¿Qué es la World Wide Web?



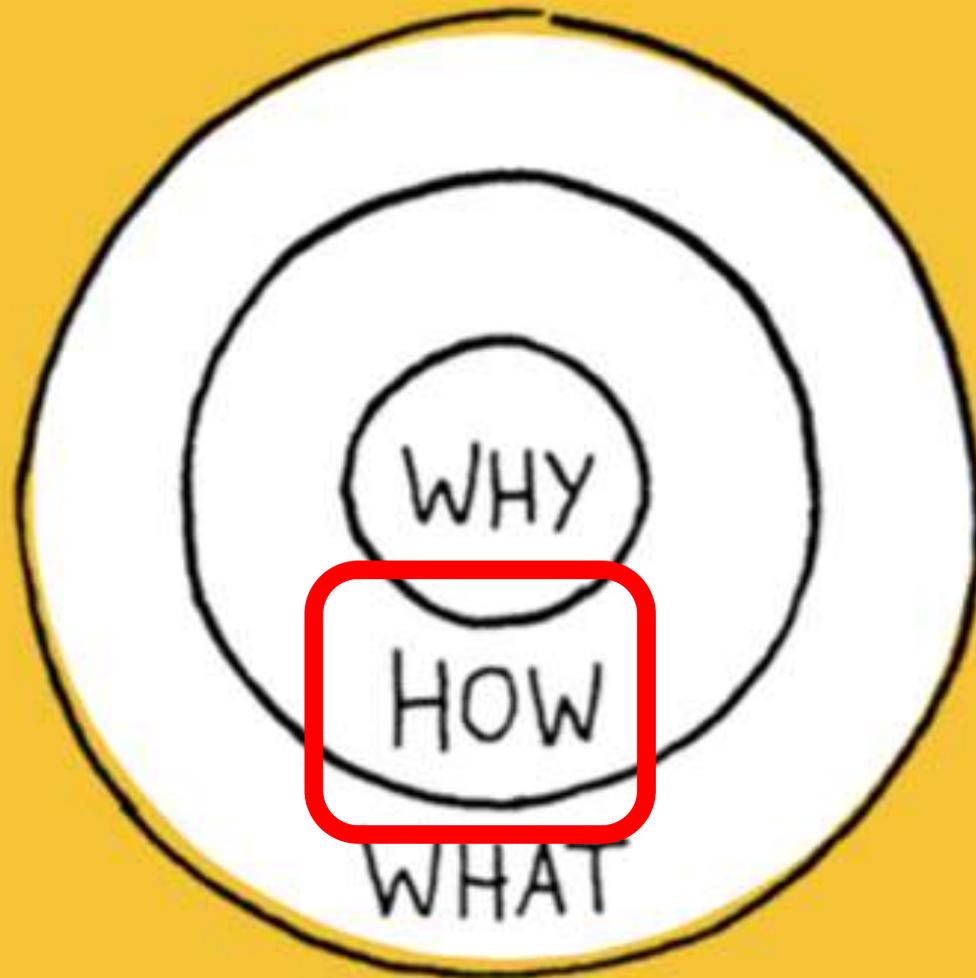


**WELCOME
TO THE
WORLD WIDE WEB**





¿Cómo nace el **internet moderno**?

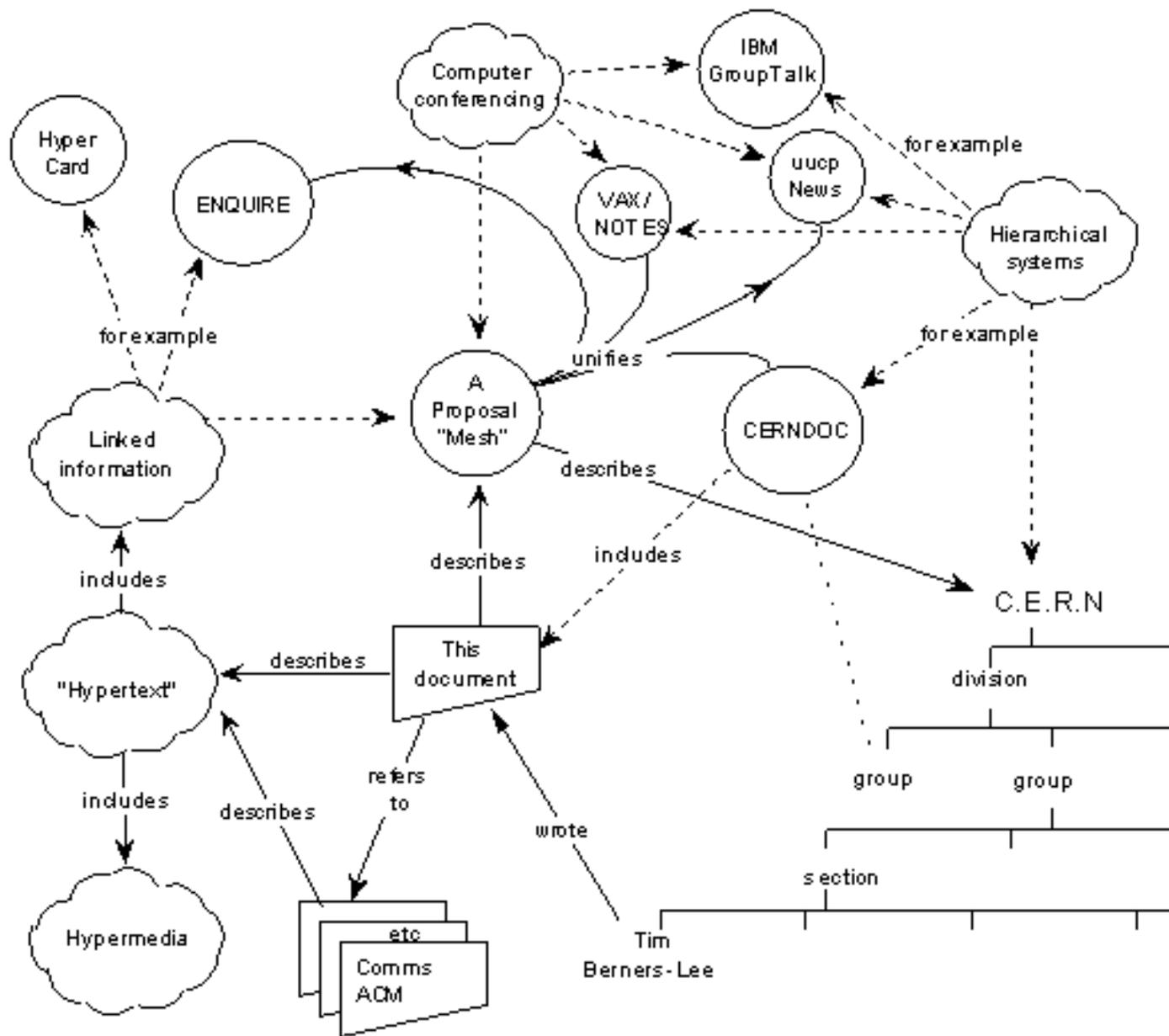


A close-up photograph of a typewriter key. The key is positioned vertically and features a question mark symbol. The key is slightly out of focus, with the background showing other keys in a blurred state. A black horizontal bar is overlaid across the middle of the image, containing the text "La primera propuesta" in white.

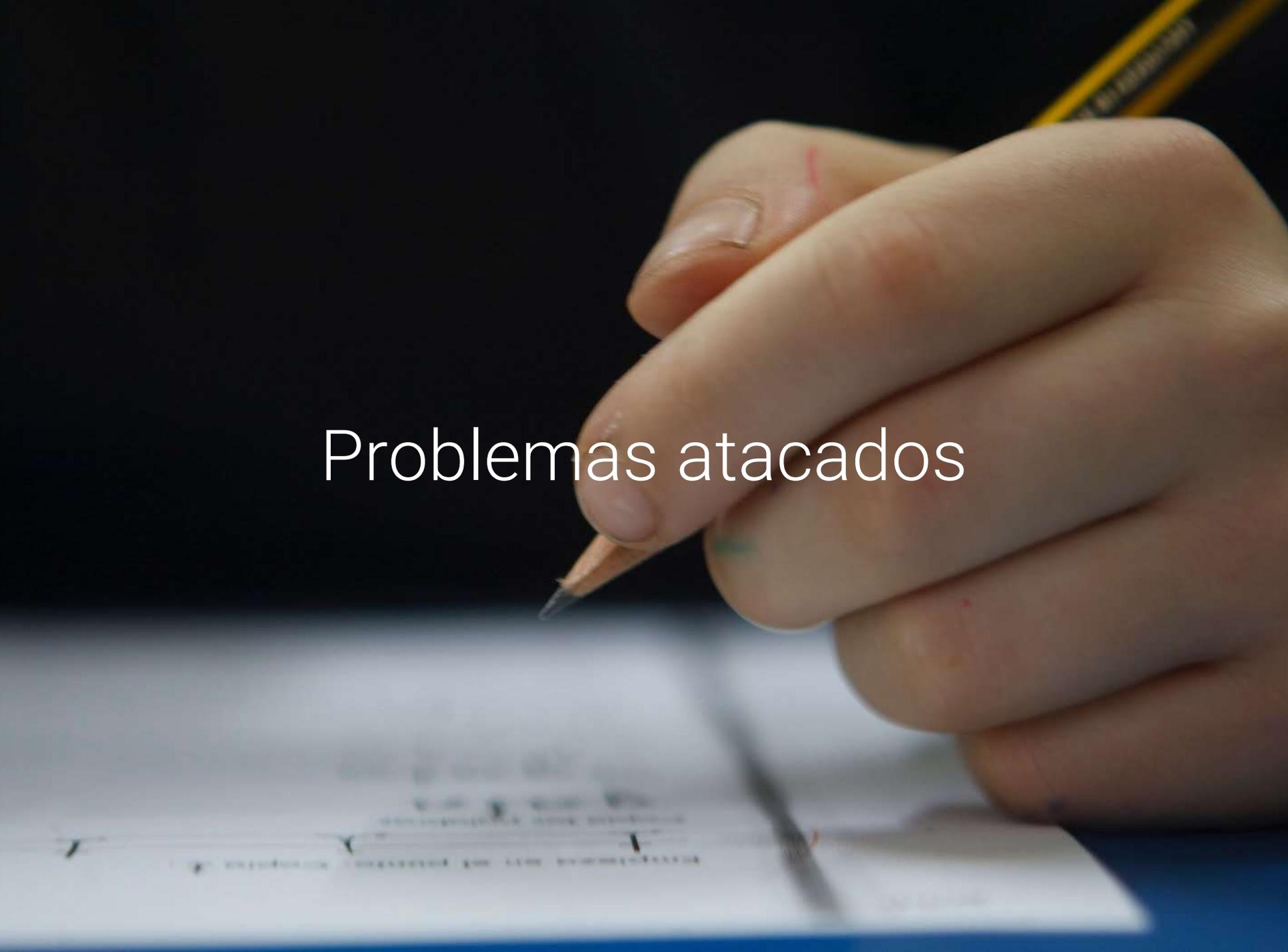
La primera propuesta

Gestión de la información: una propuesta (1989)





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

A close-up photograph of a hand holding a yellow pencil, poised to write on a document. The document is out of focus, showing some faint text and lines. The background is dark. The text "Problemas atacados" is overlaid in white on the hand and pencil.

Problemas atacados



Pérdida de información



Árboles de información de difícil acceso

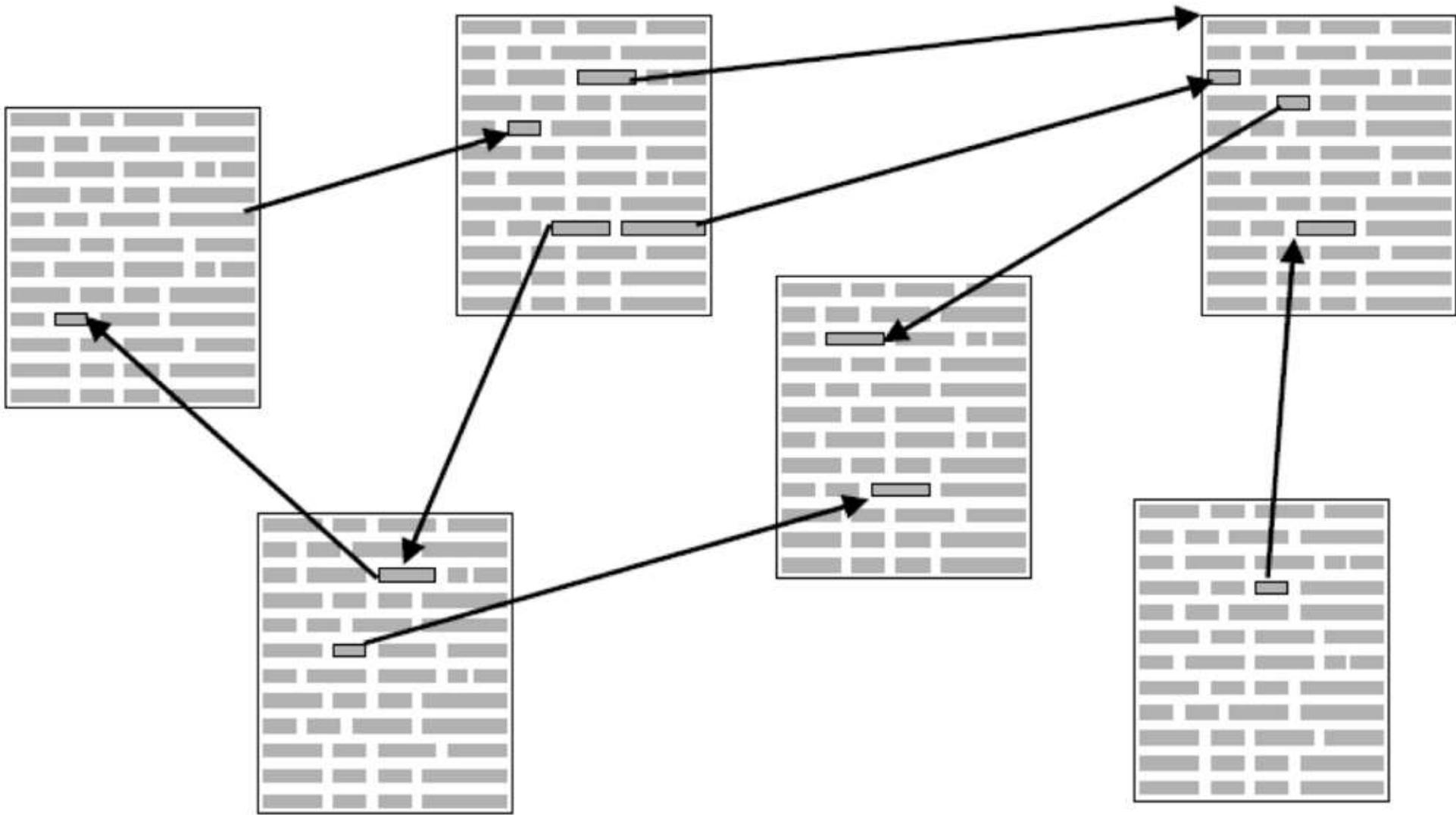


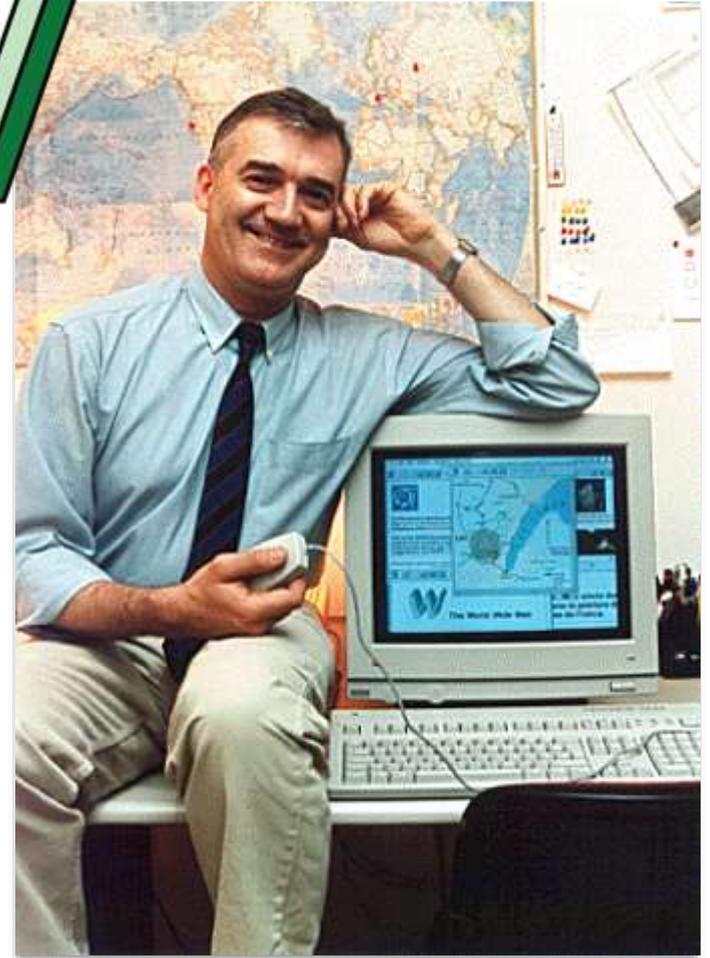
Sistema de palabras clave poco usable

La solución



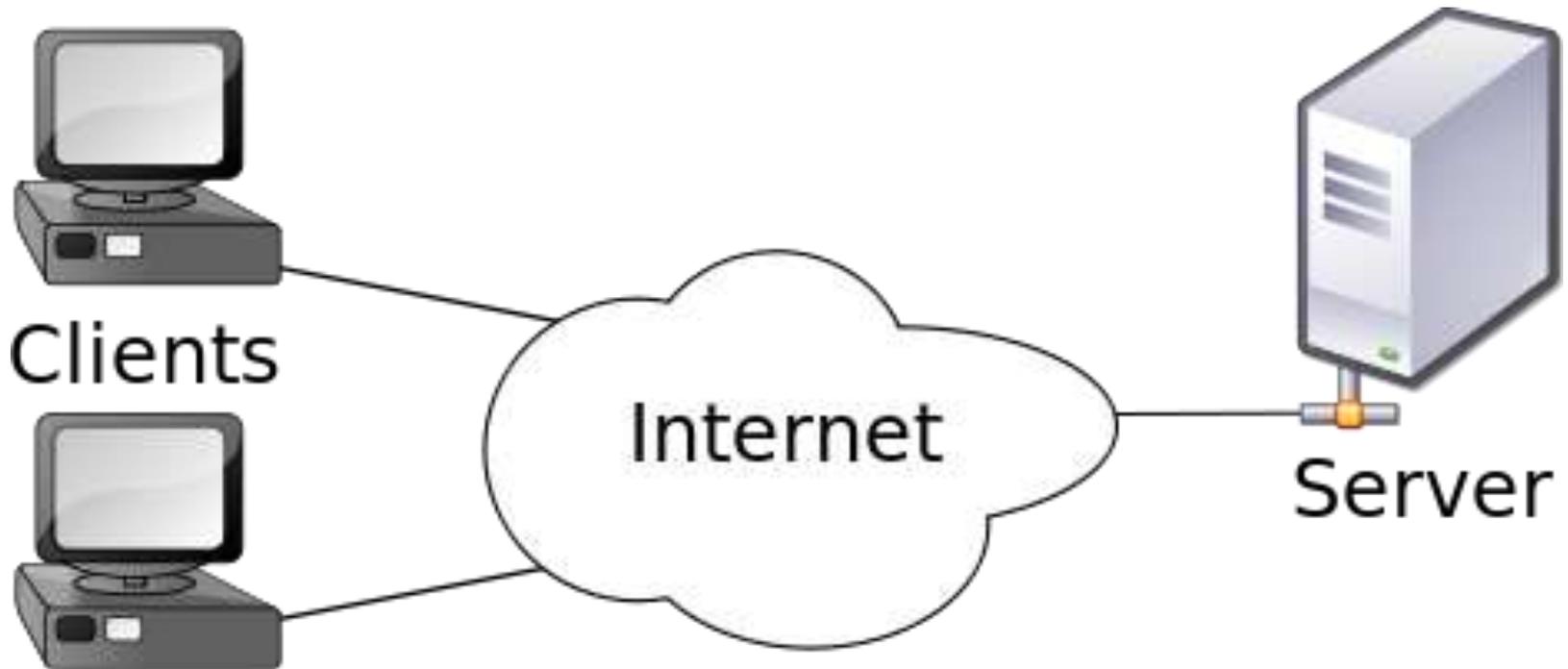
El HyperTexto

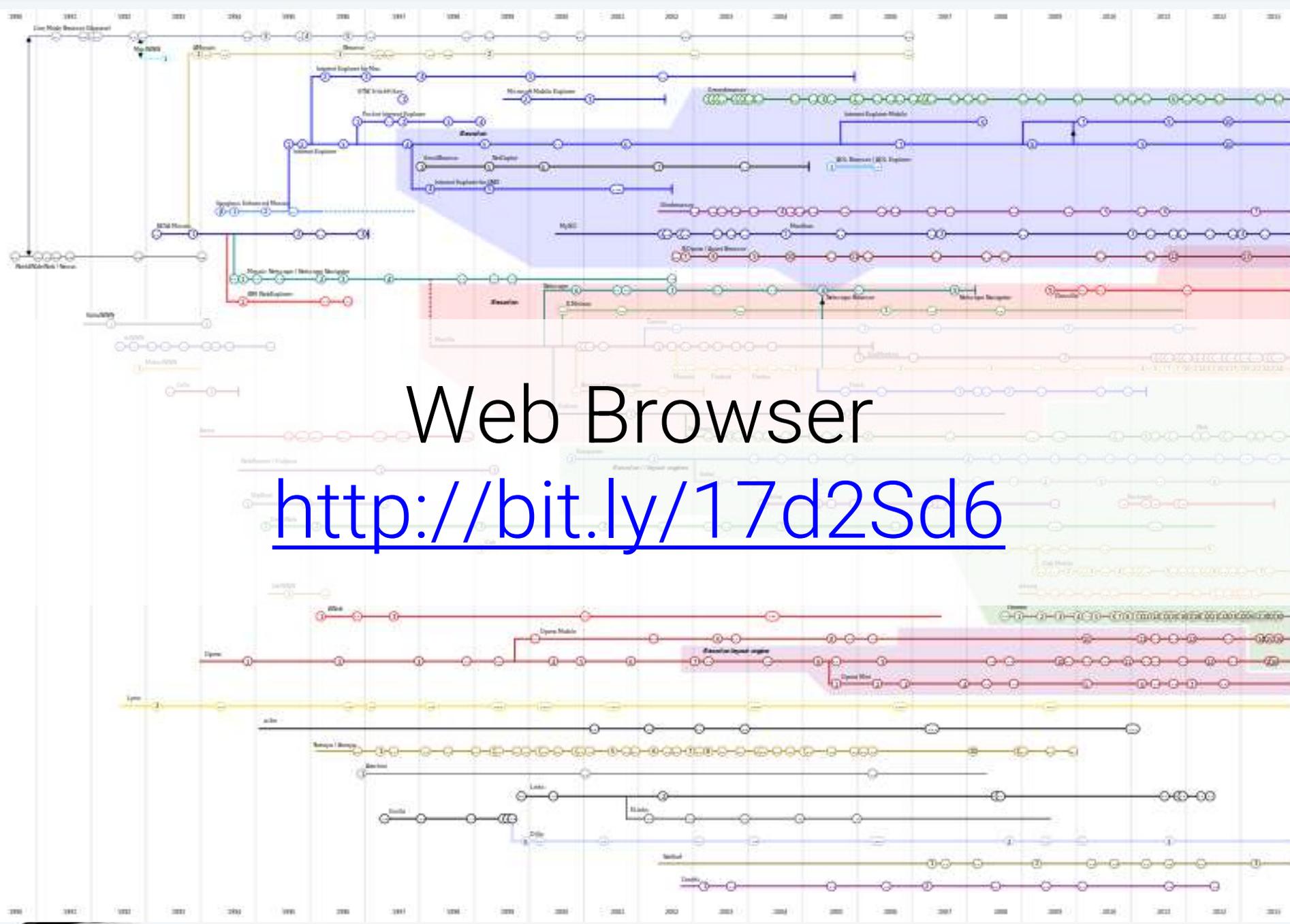




1990: Proyecto de HyperTexto:
WorldWideWeb (W3)

Arquitectura cliente - servidor





Web Browser

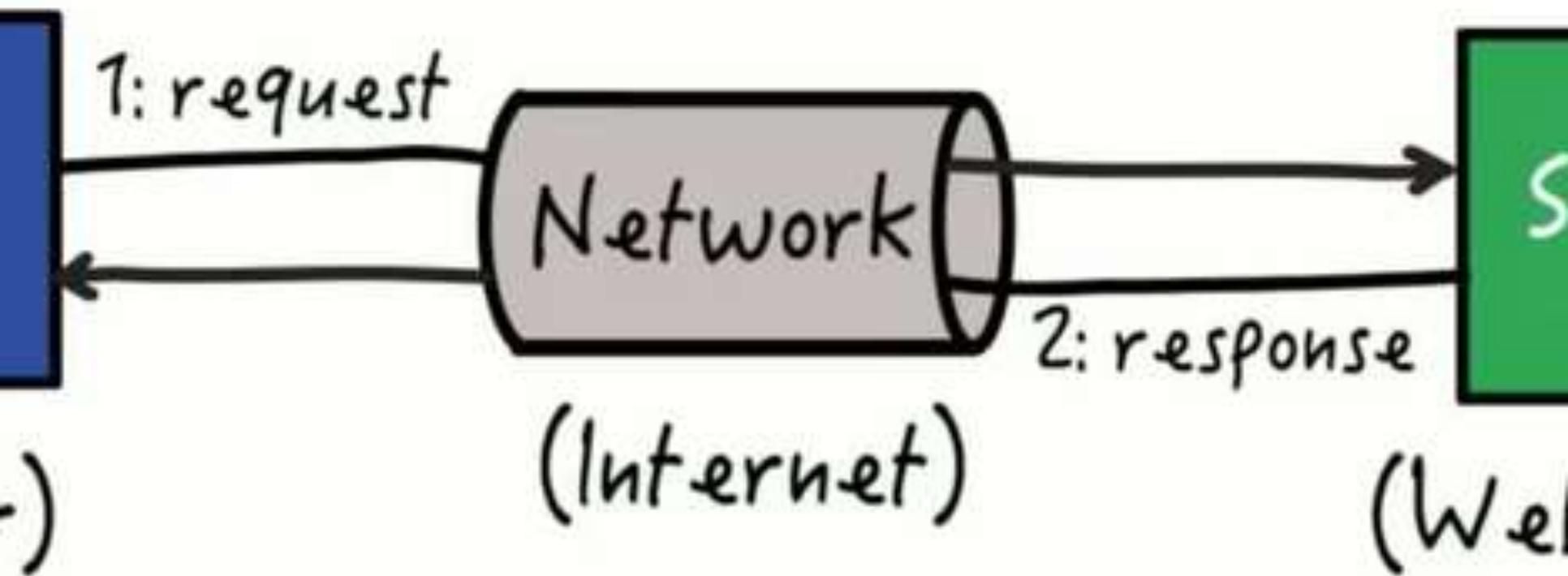
<http://bit.ly/17d2Sd6>



Protocolo de transferencia de
hipertexto

http://

Hypertext Transfer Protocol (HTTP)



1991

<http://www.w3.org/Protocols/HTTP/AsImplemented.html>

gopher.quux.org/1/Software/Gopher

THE GOPHER PROJECT

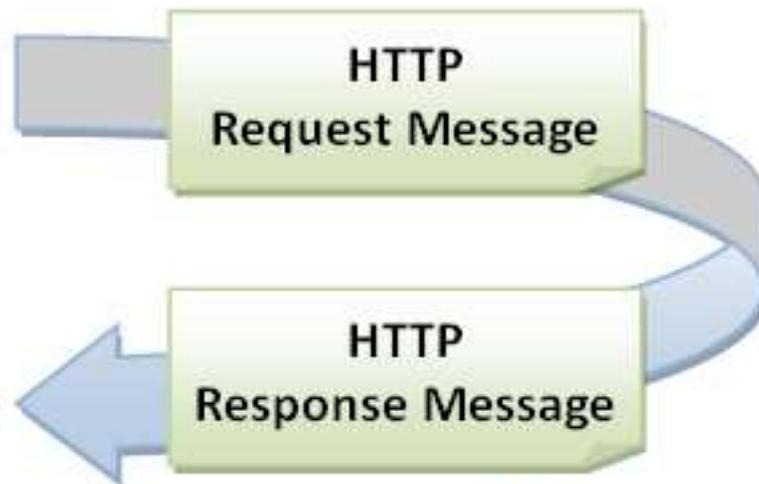
Welcome to GOPHER! Gopher is a slim, powerful, and fast way to present information in a hierarchial catalog online. Gopher actually predates the Web -- although most web browsers make excellent gopher browsers too.

Good places to start are the "Why Gopher?" and "Using Gopher" areas!

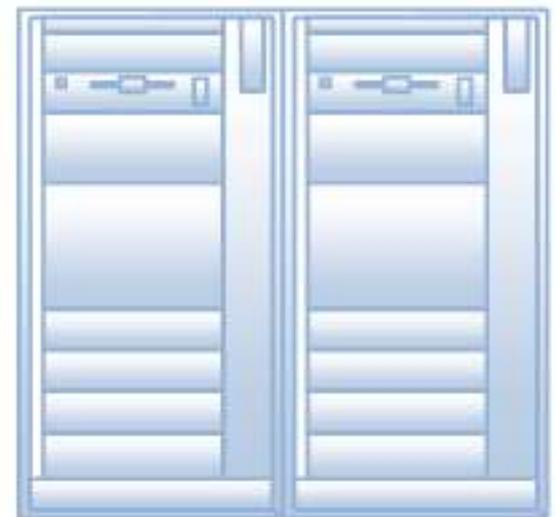
-  [*** GOPHER TURNS 10 / GOPHER 3.0 \(FurryTerror\) RELEASED ***](#)
-  [*** GOPHER TURNS 10 / GOPHER 3.0 \(FurryTerror\) RELEASED *** \[html\]](#)
-  [A Brief Introduction to Gopherspace](#)
-  [Clients, Servers, and Downloads](#)
-  [Mailing List](#)
-  [Mailing List Archives](#)
-  [Major Gopher Servers](#)
-  [Screenshots](#)
-  [Standards and Specs](#)
-  [Start Browsing Here!](#)
-  [Using Gopher](#)
-  [Why Gopher?](#)



HTTP Clients
(Web Browser)



HTTP over TCP/IP



HTTP Server (Web Server)

(1) User issues URL from a browser
http://host:port/path/file



(5) Browser formats the response
and displays

Client (Browser)

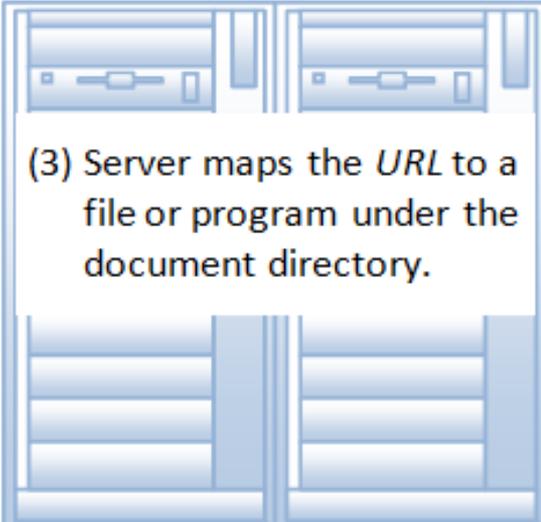
(2) Browser sends a request message

GET *URL* HTTP/1.1
Host: *host:port*
.....
.....

(4) Server returns a response message

HTTP/1.1 200 OK
.....
.....
.....

HTTP (Over TCP/IP)



(3) Server maps the *URL* to a
file or program under the
document directory.

Server (@ host:port)

```
GET /doc/test.html HTTP/1.1
```

```
Host: www.test101.com
```

```
Accept: image/gif, image/jpeg, */*
```

```
Accept-Language: en-us
```

```
Accept-Encoding: gzip, deflate
```

```
User-Agent: Mozilla/4.0
```

```
Content-Length: 35
```

```
bookId=12345&author=Tan+Ah+Teck
```

Request Line

Request Headers

Request
Message
Header

A blank line separates header & body

Request Message Body



HTTP/1.1 200 OK

Date: Sun, 08 Feb xxxx 01:11:12 GMT

Server: Apache/1.3.29 (Win32)

Last-Modified: Sat, 07 Feb xxxx

ETag: "0-23-4024c3a5"

Accept-Ranges: bytes

Content-Length: 35

Connection: close

Content-Type: text/html

<h1>My Home page</h1>

Status Line

Response Headers

Response
Message
Header

A blank line separates header & body

Response Message Body





Lenguaje de marcas de hipertexto

```
<html>
```

```
<head>
```

```
<title>Use actions to control c
```

```
<link rel="stylesheet" href="he
```

```
<script language="JavaScript">
```

```
var previous = "tutorial6.htm
```

```
var next = "tutorial8.html";
```

```
function matchContentFile
```

```
if ((parent.left) && parent
```

```
== -1 && parent.left.location
```

```
parent.left.location.pathname
```

```
parent.left.location.protocol
```

HTML

HTML

*HyperText
Markup
Languaje*



Lenguaje de marcas



29 de octubre de 1991

Re: status. Re: X11 BROWSER for WWW

Tim Berners-Lee ([timbl](#))

Tue, 29 Oct 91 10:03:11 GMT+0100

- Messages sorted by: [\[date \]](#) [\[thread \]](#) [\[subject \]](#) [\[author \]](#)
- Next message: [Tim Berners-Lee: "Telnet access to W3 information server"](#)
- Previous message: [Steve Dieringer: "add www-talk"](#)

Date: Tue, 29 Oct 91 10:03:11 GMT+0100
From: timbl (Tim Berners-Lee)
Message-Id: <9110290903.AA07413@ nxoc01.cern.ch >
To: connolly@pixel.convex.com, www-talk
Subject: Re: status. Re: X11 BROWSER for WWW

Dan,

> I've made some tangible progress on the X11 browser, so I though
> I'd let you know.
> ...
> This code is not in any shape to distribute, or even show anybody.
> But it works, and it's pretty speedy. That's enough to encourage me
> to polish it off.

Sounds like great progress! The TCL sounds interesting -- where did you get it?

<http://lists.w3.org/Archives/Public/www-talk/1991SepOct/0003.html>

Los primeros <tags>

HTML Tags

This is a list of tags used in the [HTML](#) language. Each tag starts with a tag opener (a less than sign) and ends with a tag closer (a greater than sign). Many tags have corresponding closing tags which identical except for a slash after the tag opener. (For example, the [TITLE](#) tag).

Some tags take parameters, called attributes. The attributes are given after the tag, separated by spaces. Certain attributes have an effect simply by their presence, others are followed by an equals sign and a value. (See the [Anchor](#) tag, for example). The names of tags and attributes are not case sensitive: they may be in lower, upper, or mixed case with exactly the same meaning. (In this document they are generally represented in upper case.)

Currently HTML documents are transmitted without the normal SGML framing tags, but if these are included parsers will ignore them.

Title

The title of a document is given between title tags:

```
<TITLE> ... </TITLE>
```

The text between the opening and the closing tags is a title for the hypertext node. There should only be one title in any node. It should identify the content of the node in a fairly wide context, and should ideally fit on one line.

The title is not strictly part of the text of the document, but is an attribute of the node. It may not contain anchors, paragraph marks, or highlighting. the title may be used to identify the node in a history list, to label the window displaying the node, etc. It is not normally displayed in the text of a document itself. Contrast titles with [headings](#) .

Next ID

Obsolete: NeXT Browser only. May be ignored. This tag takes a single attribute which is the number of the next document-wide numeric identifier to be allocated (not good SGML). Note that when modifying a document, old anchor ids should not be reused, as there may be references stored elsewhere which point to them. This is read and generated by hypertext editors. Human writers of HTML usually use mnemonic alpha identifiers. Browser software may ignore this tag. Example of use:

```
<NEXTID 27>
```

<http://www.w3.org/History/19921103-hypertext/hypertext/WWW/MarkUp/Tags.html>

1995: Primer RFC

[[Docs](#)] [[txt](#)|[pdf](#)] [[draft-ietf-html-spec](#)] [[Diff1](#)] [[Diff2](#)]

Obsoleted by: [2854](#)

HISTORIC

Network Working Group
Request for Comments: 1866
Category: Standards Track

T. Berners-Lee
MIT/W3C
D. Connolly
November 1995

Hypertext Markup Language - 2.0

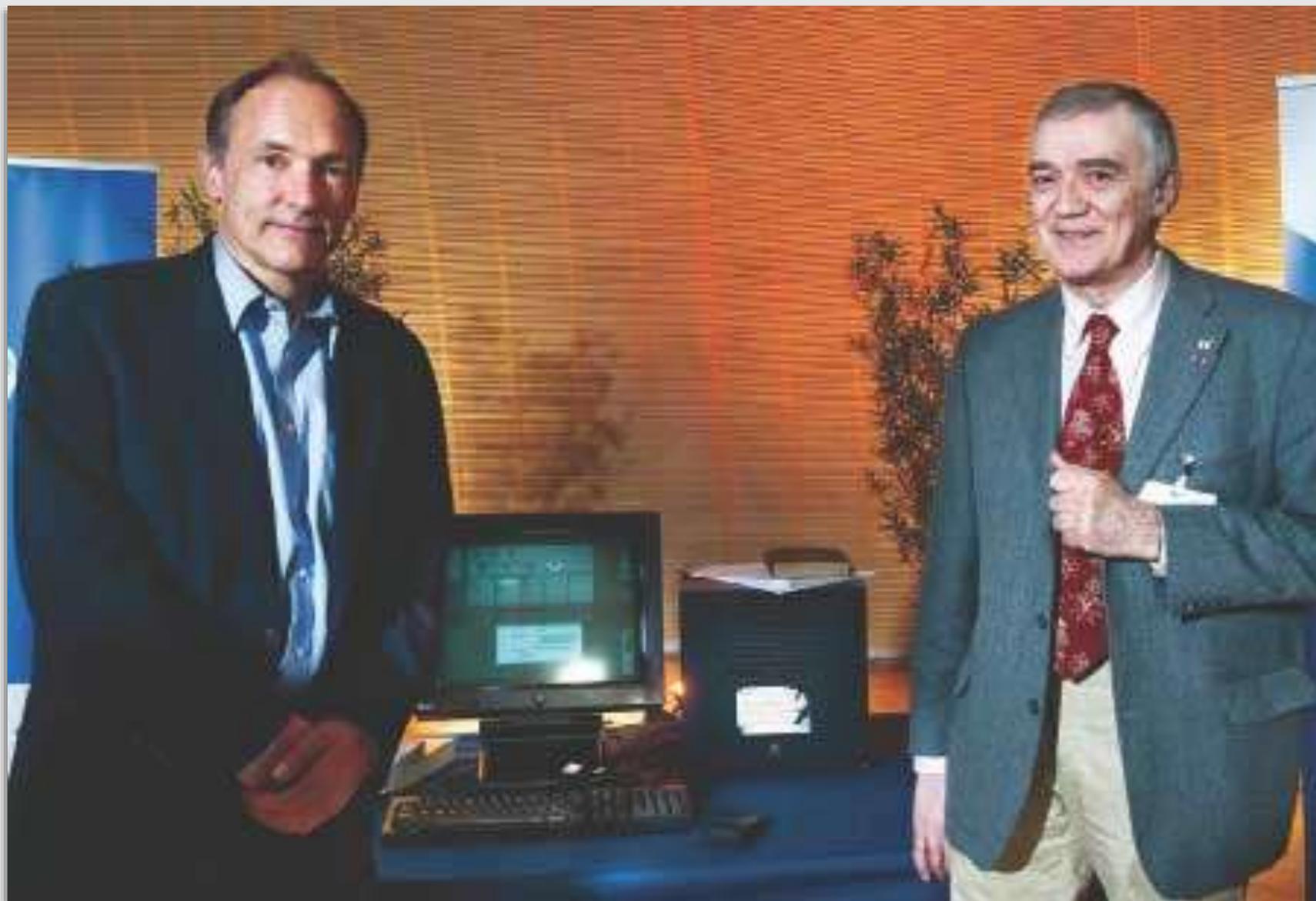
Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

<http://tools.ietf.org/html/rfc1866>



El primer servidor web





ORGANISATION EUROPÉENNE POUR LA RECHERCHE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR

1211 GENÈVE 23 (SUISSE)

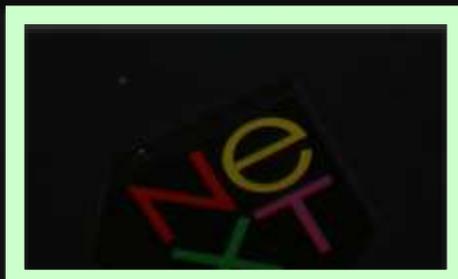
This machine is a ser
DO NOT POWE
... DOWN!!

NET

ORGANISATION EUROPÉENNE POUR LA RECHERCHE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR

1211 GENÈVE 23 (SUISSE)

This machine is a ser
DO NOT POWE
... DOWN!!



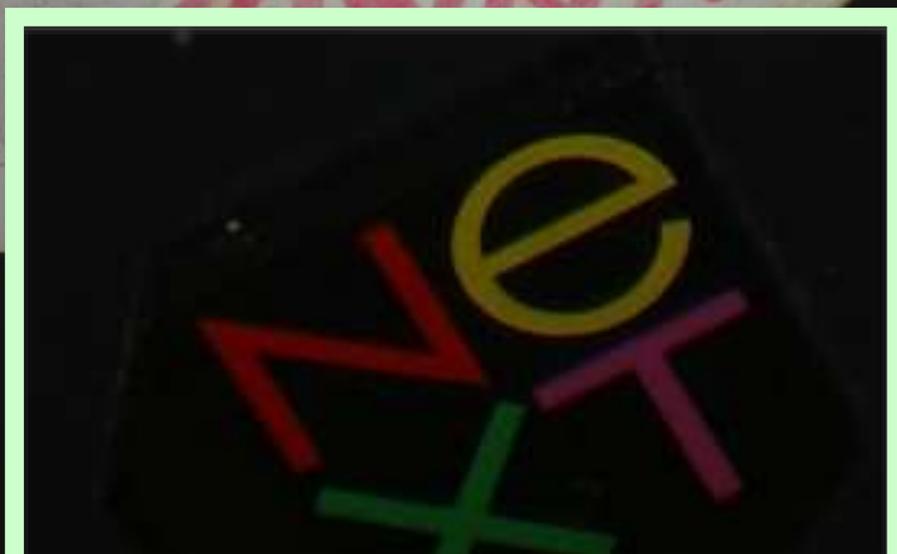
ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLEAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

1211 GENÈVE 23 (SUISSE)

This machine is a ser

DO NOT POWER

... DOWN!!





A blurred background image of a sailboat on the ocean. The boat's mast and rigging are visible against a blue sky and sea. The text is overlaid on a dark blue rectangular background.

El primer navegador web

- Info r Mark all A
- Navigate r Mark selection M
- Document r Link to marked L
- Find r Link to new N
- Edit r Unlink Z
- Links r Link to file...
- Style r Help
- Print p
- Page layout r
- Windows r
- Services r
- Hide h
- Quit q

Tim's Home Page

My home page

[Home](#)

The World Wide Web Virtual Library: Subject Catalogue



The WWW Virtual Library

High-Energy Physics Information

CERN Welcome



European Laboratory for Particle Physics
Geneva, Switzerland

About the Laboratory:

- [Home on CERN info](#)
- [General information, divisions, groups and activities - scientific](#)

Separate list.

Bio Sciences Separate list.

CERN Experiments

Experiments

[WWW Support for Experiments](#)

ALEPH	LEP experiment
ALICE	A Large Ion Collider Experiment at the LHC
ATLAS	A Toroidal LHC Apparatus
CHORUS	WA95 - Neutrino oscillation experiment at CERN
CMS	Compact Muon Solenoid

```
class="container">
  <div class="row">
    <div class="col-md-6 col-lg-8"> <!-- _____ BEGIN M
      <nav id="nav" role="navigation">
        <ul>
          <li><a href="index.html">Home</a></li>
          <li><a href="home-events.html">Home Events
        </ul>
        <ul>
          <li><a href="tall-button-header.htm
          <li><a href="image-logo.html">Image
          <li class="active"><a href="tall-lo
        </ul>
      </li>
      <li class="has-children"> <a href="#">Carou
        <ul>
          <li><a href="variable-width-slider.f
          <li><a href="variable-width-slider.html
```

La primera página web

World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [Mailing lists](#) , [Policy](#) , November's [W3 news](#) , [Frequently Asked Questions](#) .

[What's out there?](#)

Pointers to the world's online information, [subjects](#) , [W3 servers](#), etc.

[Help](#)

on the browser you are using

[Software Products](#)

A list of W3 project components and their current state. (e.g. [Line Mode](#) ,X11 [Viola](#) , [NeXTStep](#) , [Servers](#) , [Tools](#) , [Mail robot](#) , [Library](#))

[Technical](#)

Details of protocols, formats, program internals etc

[Bibliography](#)

Paper documentation on W3 and references.

[People](#)

A list of some people involved in the project.

[History](#)

A summary of the history of the project.

[How can I help ?](#)

If you would like to support the web..

[Getting code](#)

Getting the code by [anonymous FTP](#) , etc.

Los resultados



Internet Hosts – Growth in Numbers

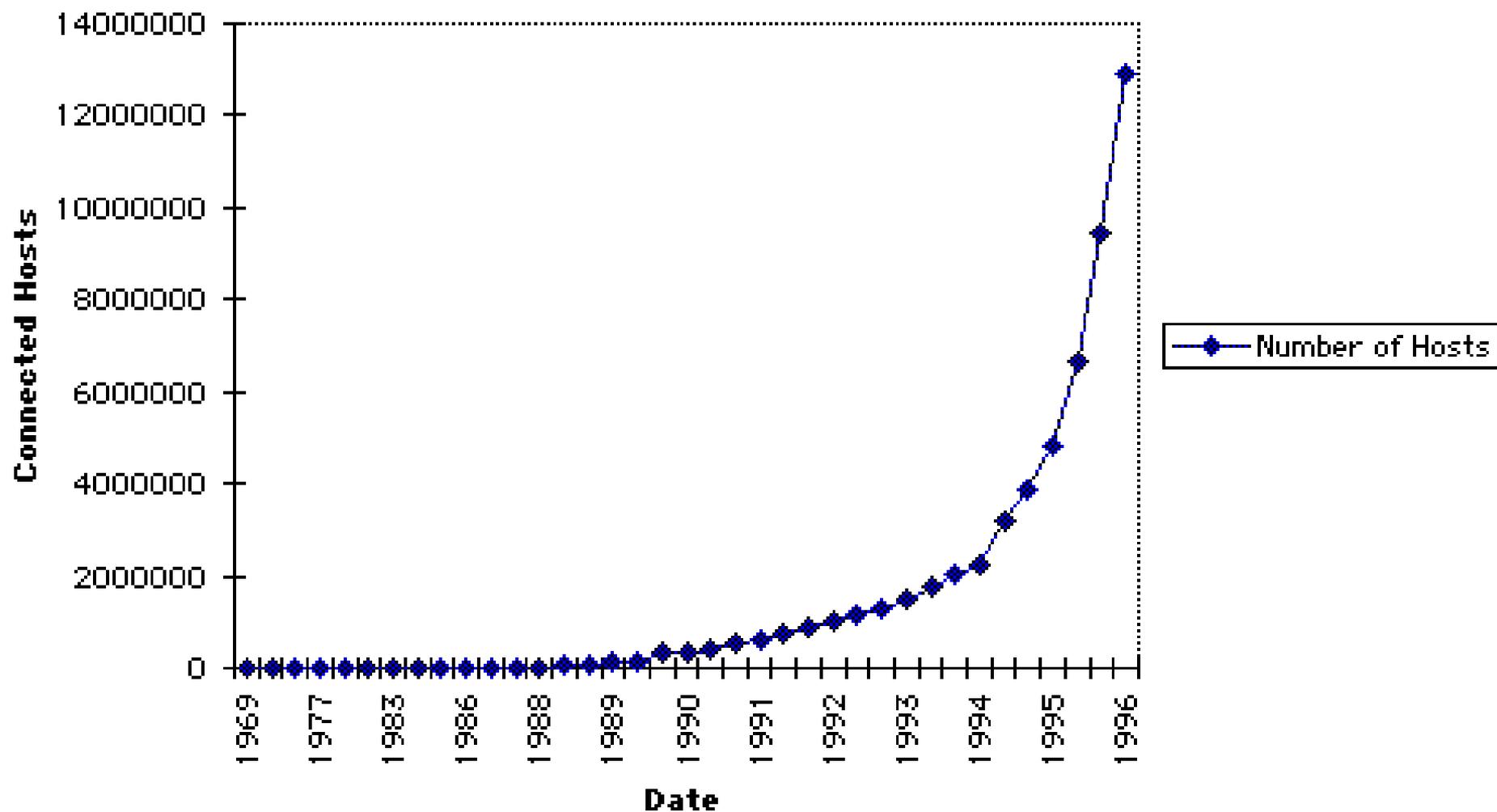
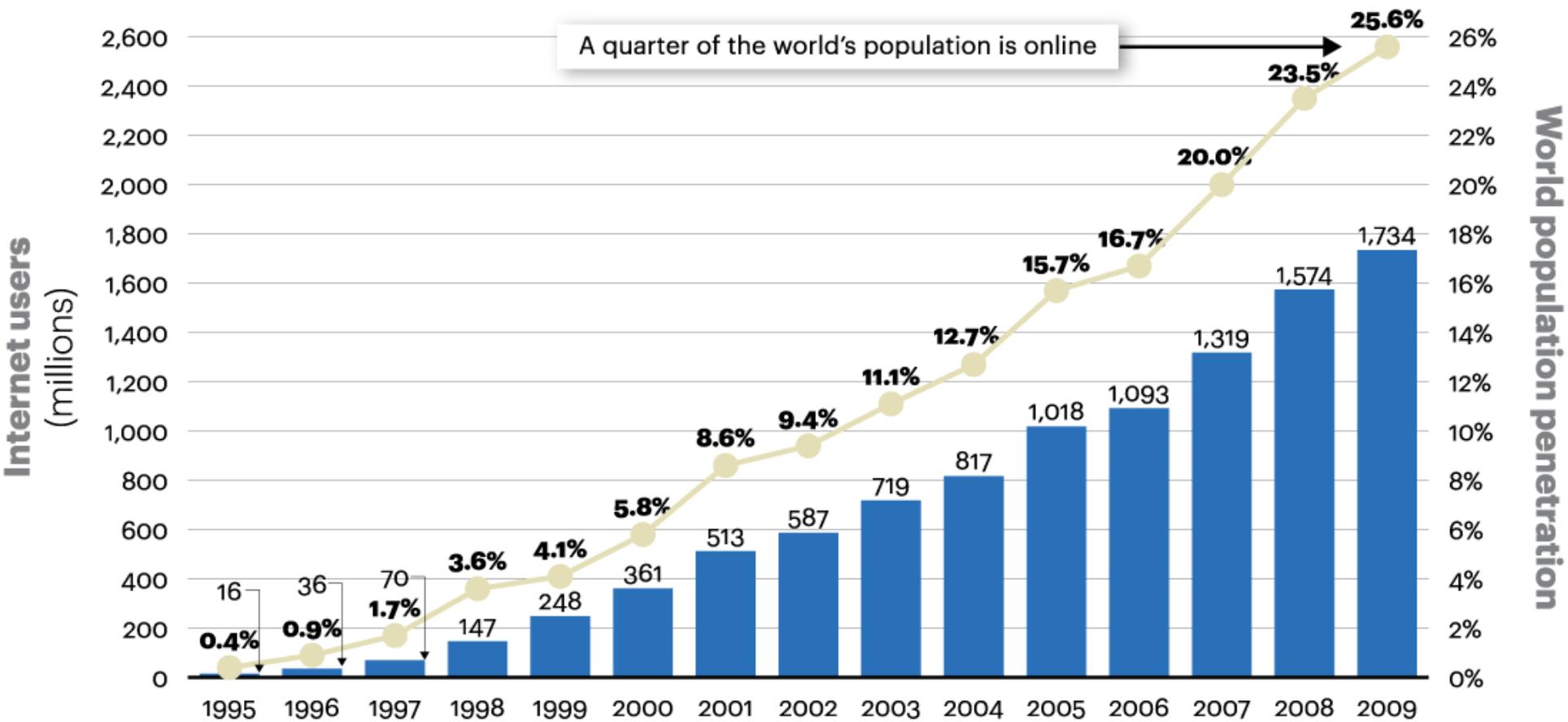


Figure 1

Global Internet users and penetration rate (1995-2009)



Sources: Nielsen, ITU; A.T. Kearney analysis

Sir Tim Berners-Lee





Tweets



[Tim Berners-Lee](#) @timberners_lee

1h

This is for everyone #london2012 #oneweb #openingceremony
@webfoundation @w3c

Collapse Reply Retweet Favorite

8,622

RETWEETS

1,192

FAVORITES



10:08 PM - 27 Jul 12 via Twitter for iPhone · Details

POGNET







Sacándole provecho a las **tecnologías exponenciales** parte 3:

Internet: la gran maravilla de nuestros tiempos: **Internet moderno**

**Cátedra
Pedro Nel Gómez:
Mindset innovador a
prueba de futuro**

