



# The Web is not the Internet

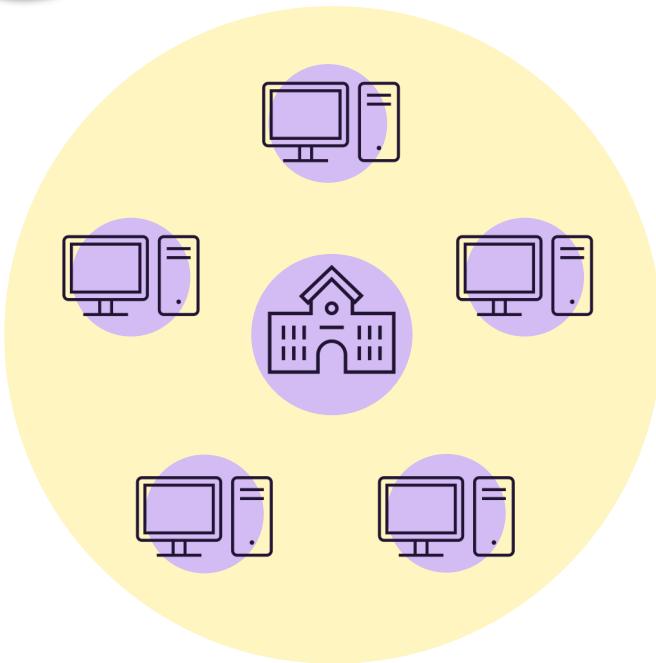
## A Brief History of the World Wide Web

Fundamentals of Scientific Metadata: Why Context Matters



# Advent of the internet

# 1960s

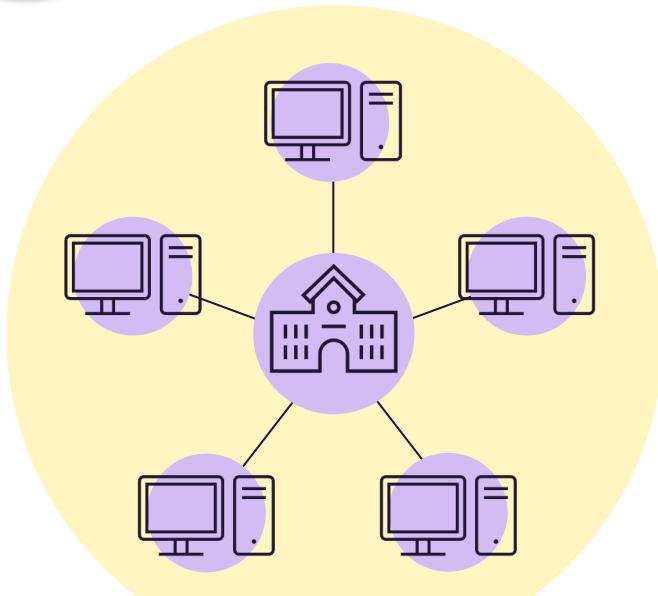


NEAC 2204 transistorized computer  
[Image: <https://www.computerhistory.org>]



# Advent of the internet

# 1960s



Local Area Network (LAN)

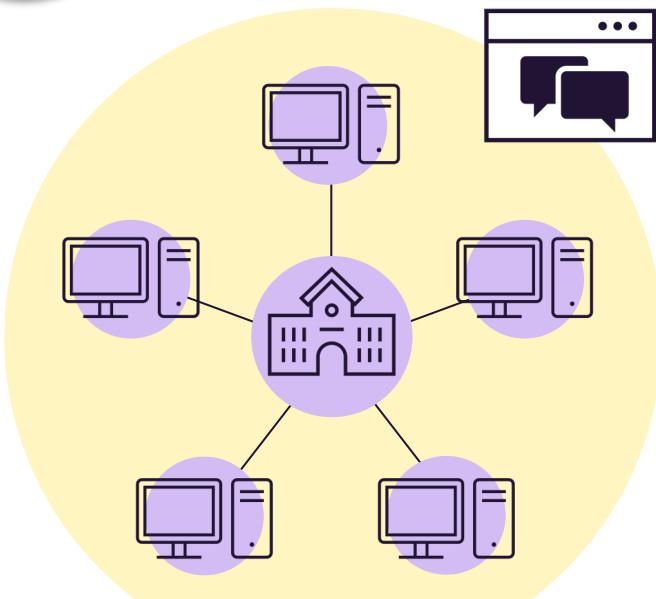


NEAC 2204 transistorized computer  
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# Advent of the internet

# 1960s



Local Area Network (LAN)

Communication  
Protocols

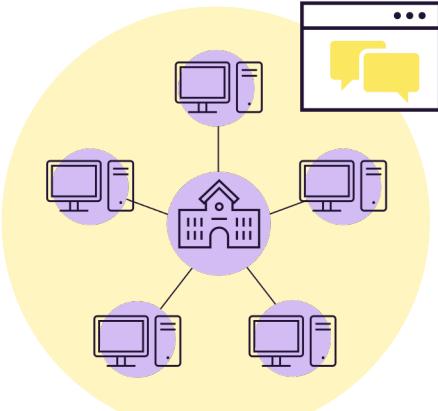
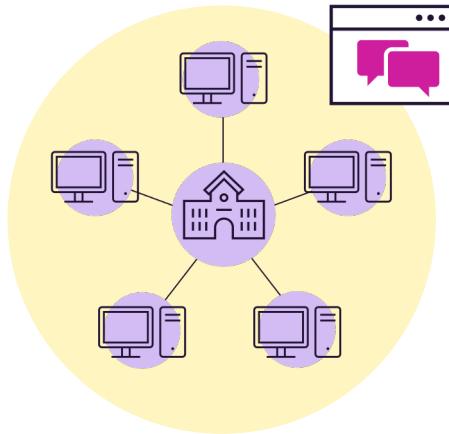
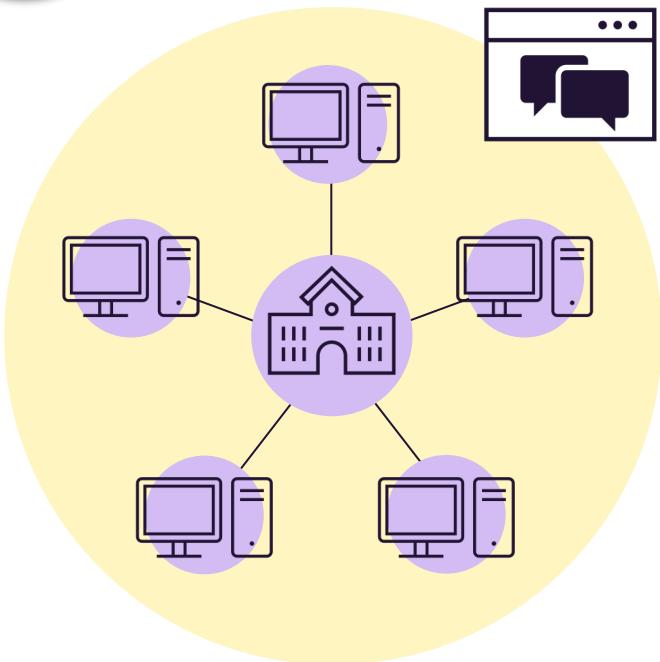


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# Advent of the internet

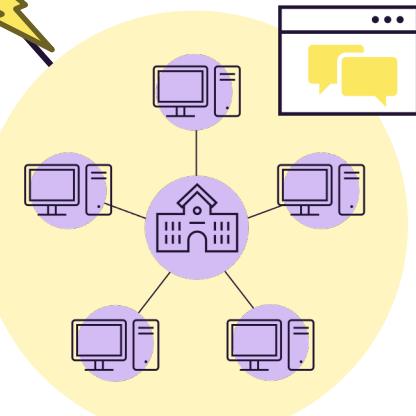
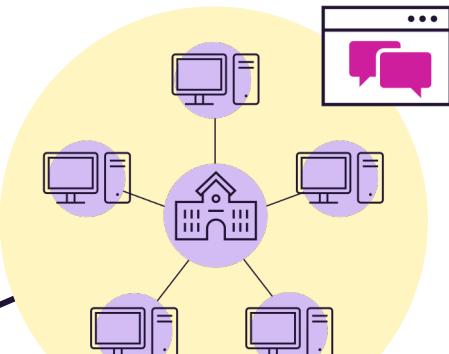
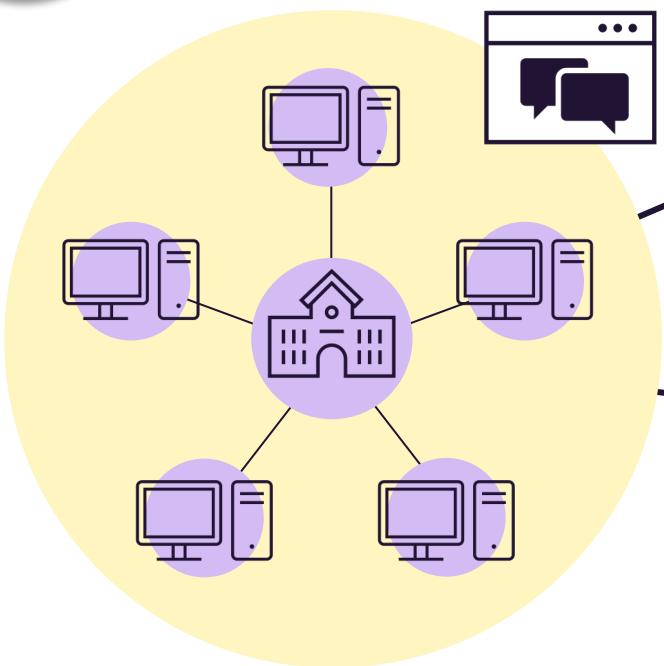
# 1960s





# Advent of the internet

# 1960s





The internet

# 1970s

Vint Cerf & Bob Kahn  
developed Internet Protocol Suite at the  
Defense Advanced Research Projects Agency  
(DARPA)

TCP/IP  
(Transmission Control Protocol / Internet Protocol)

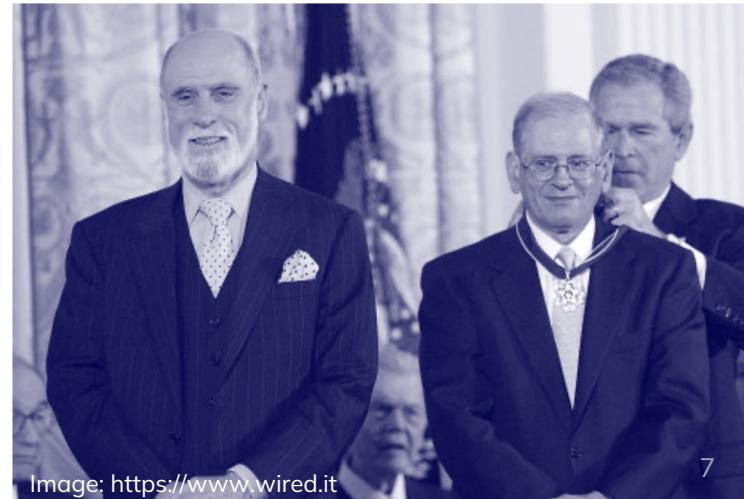
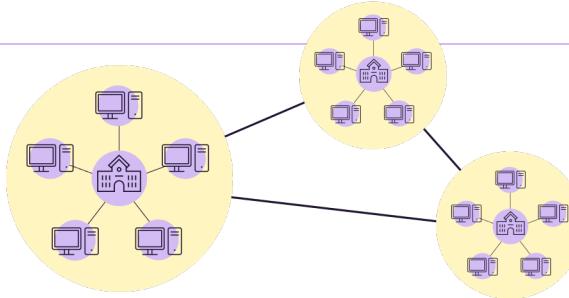


Image: <https://www.wired.it>



# The internet

# 1970s



Vint Cerf & Bob Kahn  
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TCP/IP  
(Transmission Control Protocol / Internet Protocol)

→ enabled communication between networks

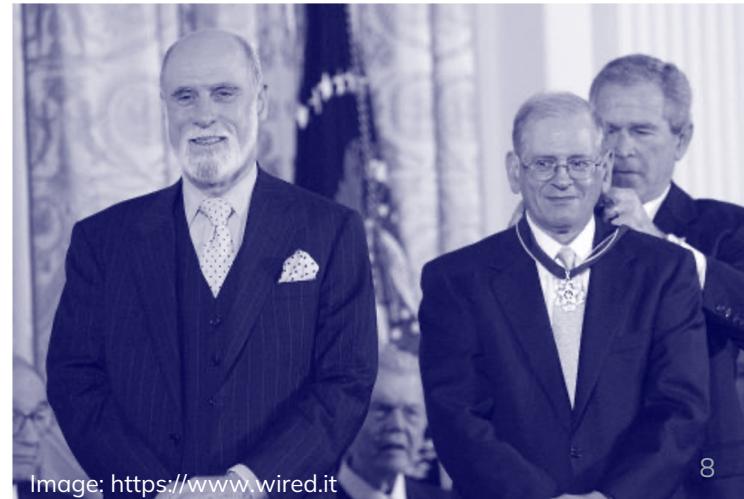


Image: <https://www.wired.it>



The internet

# 1980s

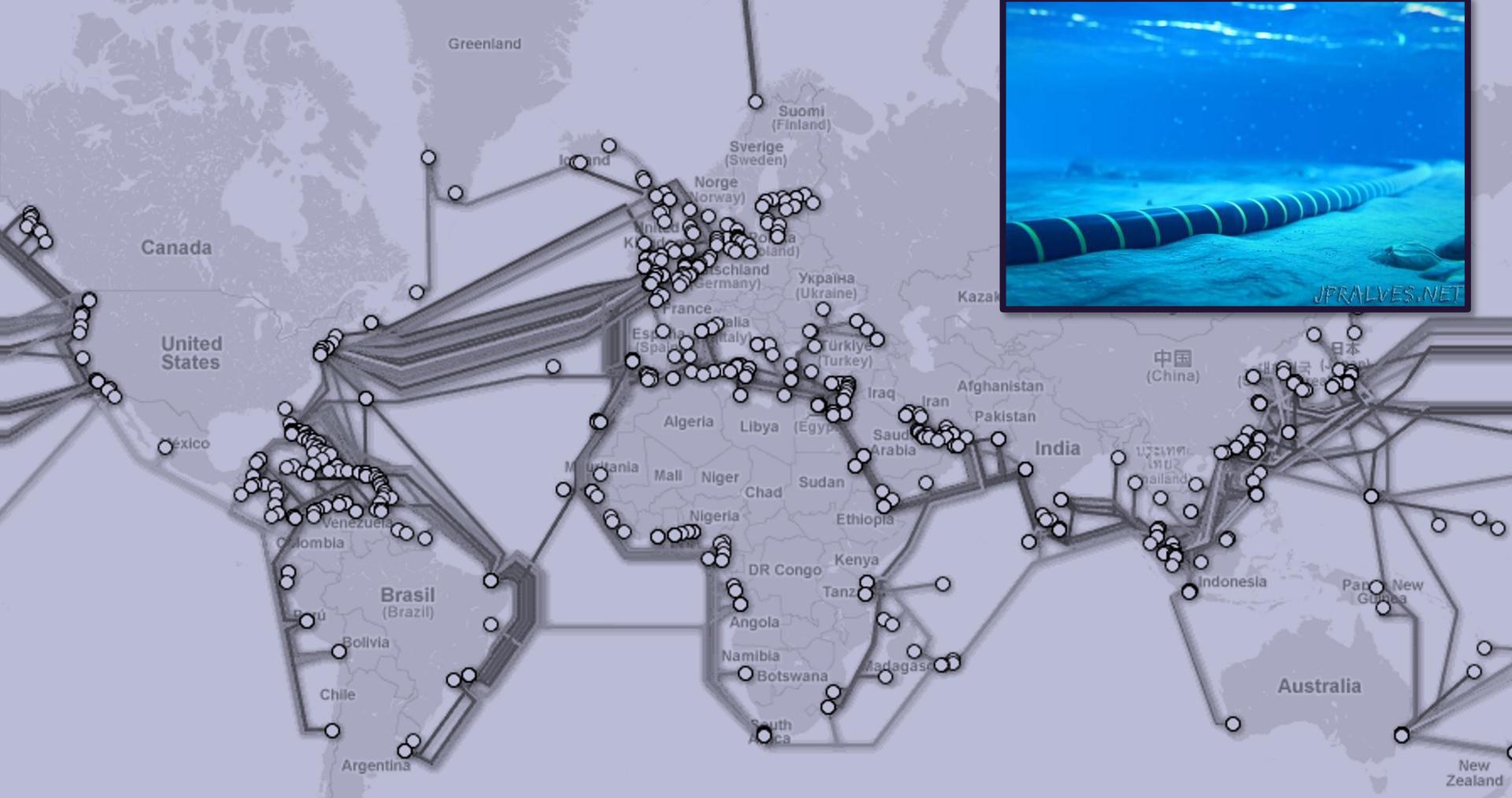


University of California, Berkley, puts one  
**TCP/IP code under public domain.**



## The Internet – Network of Networks

Image: <https://www.tuinstitutoonline.com>



The Internet – Network of Networks

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## 1980s



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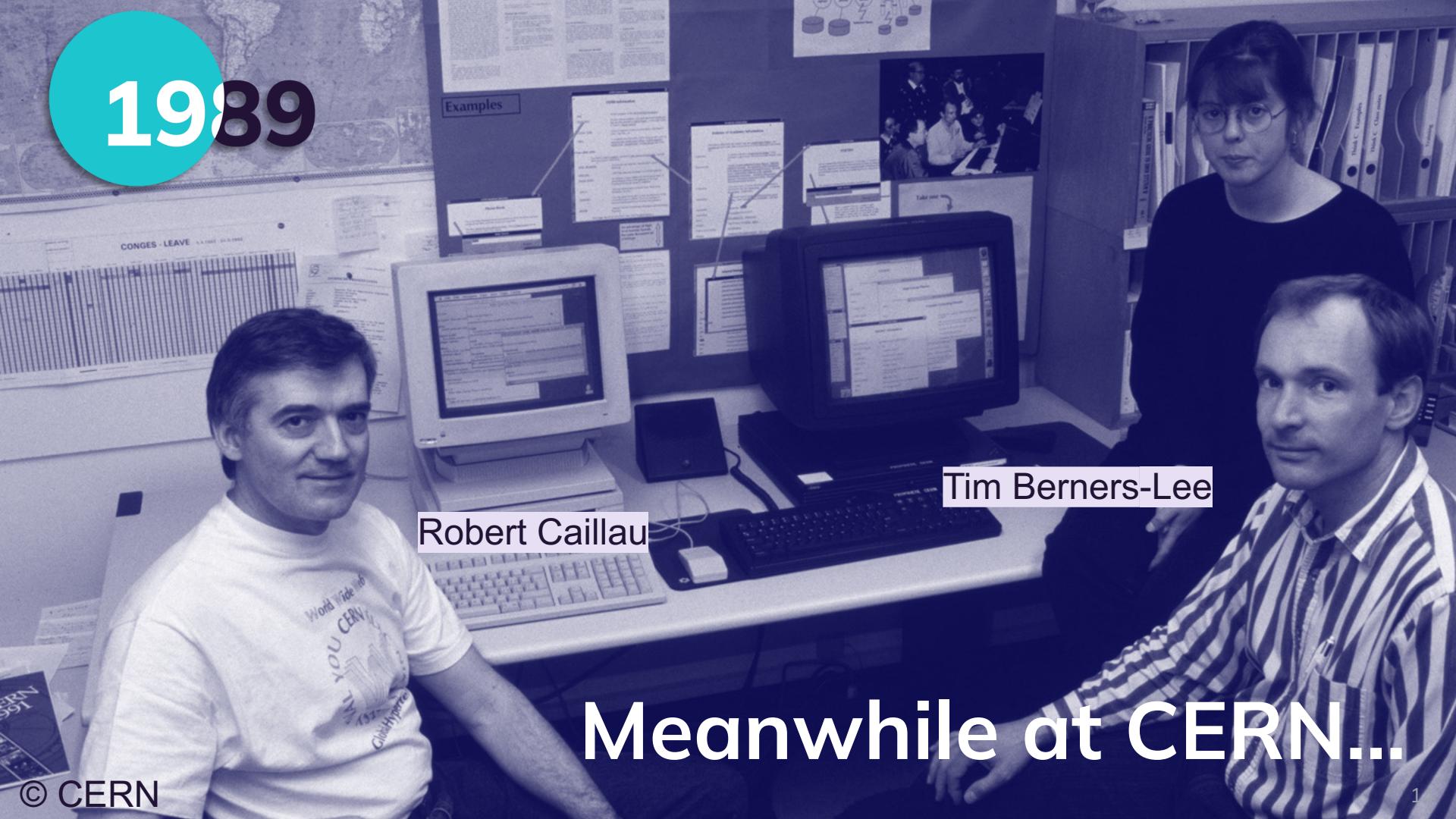
**(Simple) Mail Transfer Protocol [(S)MTP]** are developed at University of California, LA, by Jon Postel and Suzanne Sluizer

# 1989



## Meanwhile at CERN...

1989



Robert Caillau

Tim Berners-Lee

Meanwhile at CERN...



# Science created the World Wide Web

- **CERN research centre** in Geneva, Switzerland
- researchers Tim Berners-Lee and Robert Cailliau
- joint proposal for **World-Wide Web**
- developed to “meet the demand for **automated information-sharing between scientists** in universities and institutes around the world”. [1], [2]

[1] <http://info.cern.ch/hypertext/WWW/Proposal.html>

[2] <https://arxiv.org/pdf/1701.04765.pdf>



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The World Wide Web is a service,  
that runs on the internet  
which allows to search, get and share data.

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# Robert Caillau

*„During some sessions in the CERN cafeteria, Tim and I try to find a catching name for the system. [...] Tim proposes "World-Wide Web".*

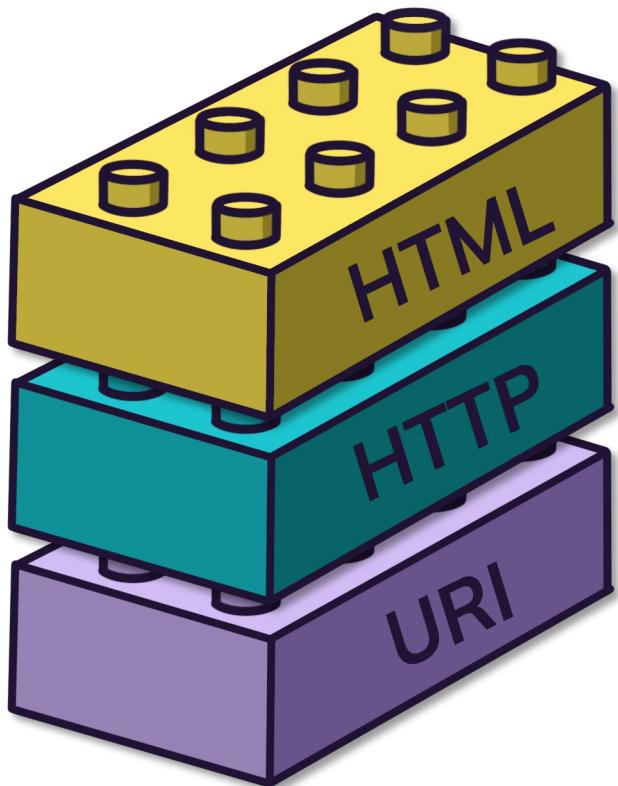
*I like this very much, except that it is difficult to pronounce in French...“*



Quote: [http://www.netvalley.com/archives/mirrors/robert\\_caillau\\_speech.htm](http://www.netvalley.com/archives/mirrors/robert_caillau_speech.htm)

Image: © juliadeboer.com / TheNextWeb.com

# World Wide Web building blocks

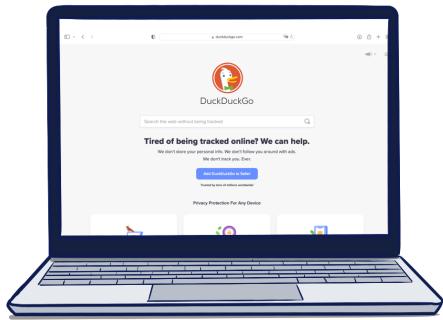


HyperText Markup Language

HyperText Transfer Protocol

Uniform Resource Identifiers

# Outlook: HTTP GET request in client-server communication



HTTP Request

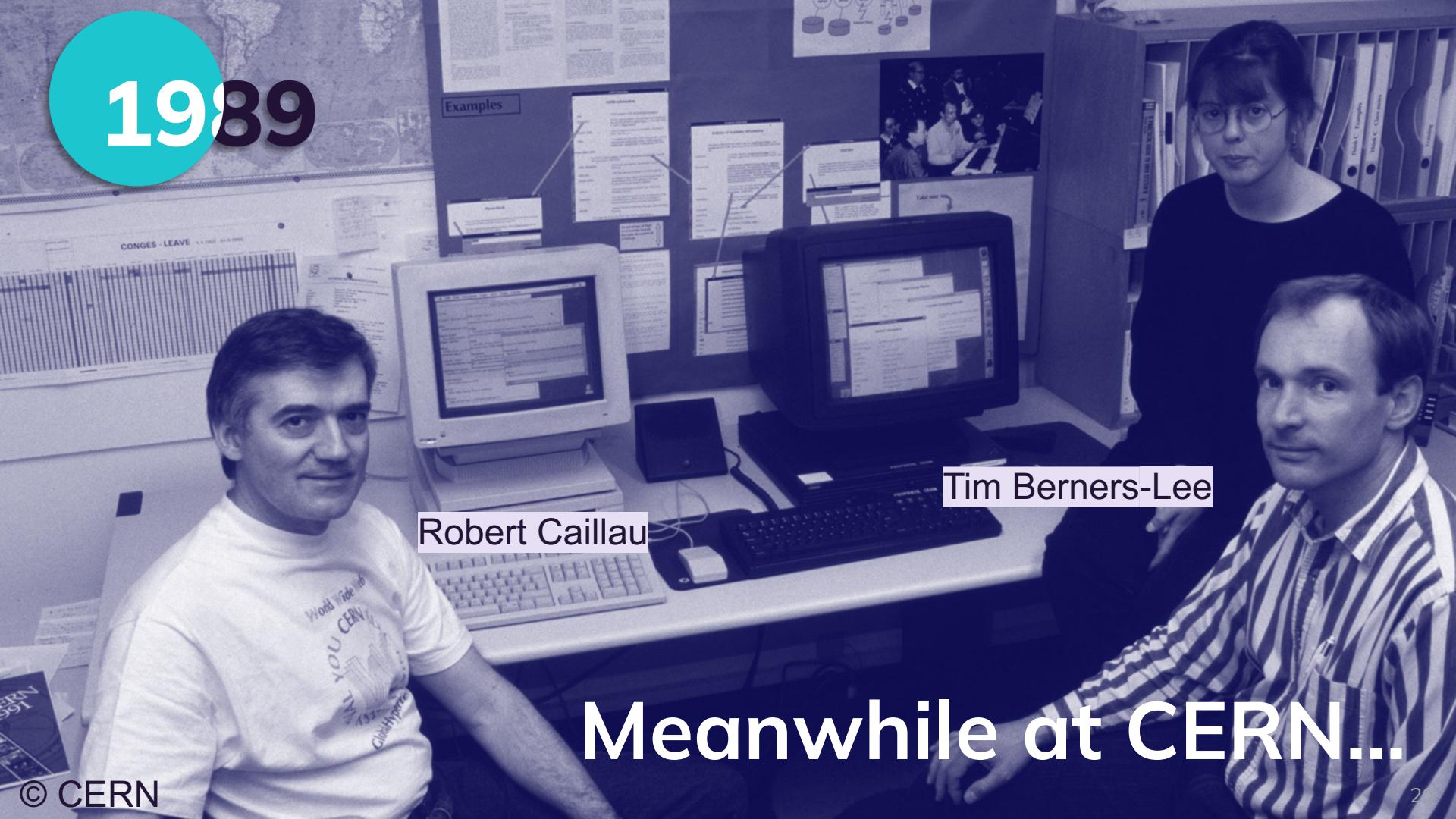
GET Path HTTP/1.0

Host: Host  
User-Agent: Mozilla  
...



More on this  
*tomorrow*

1989

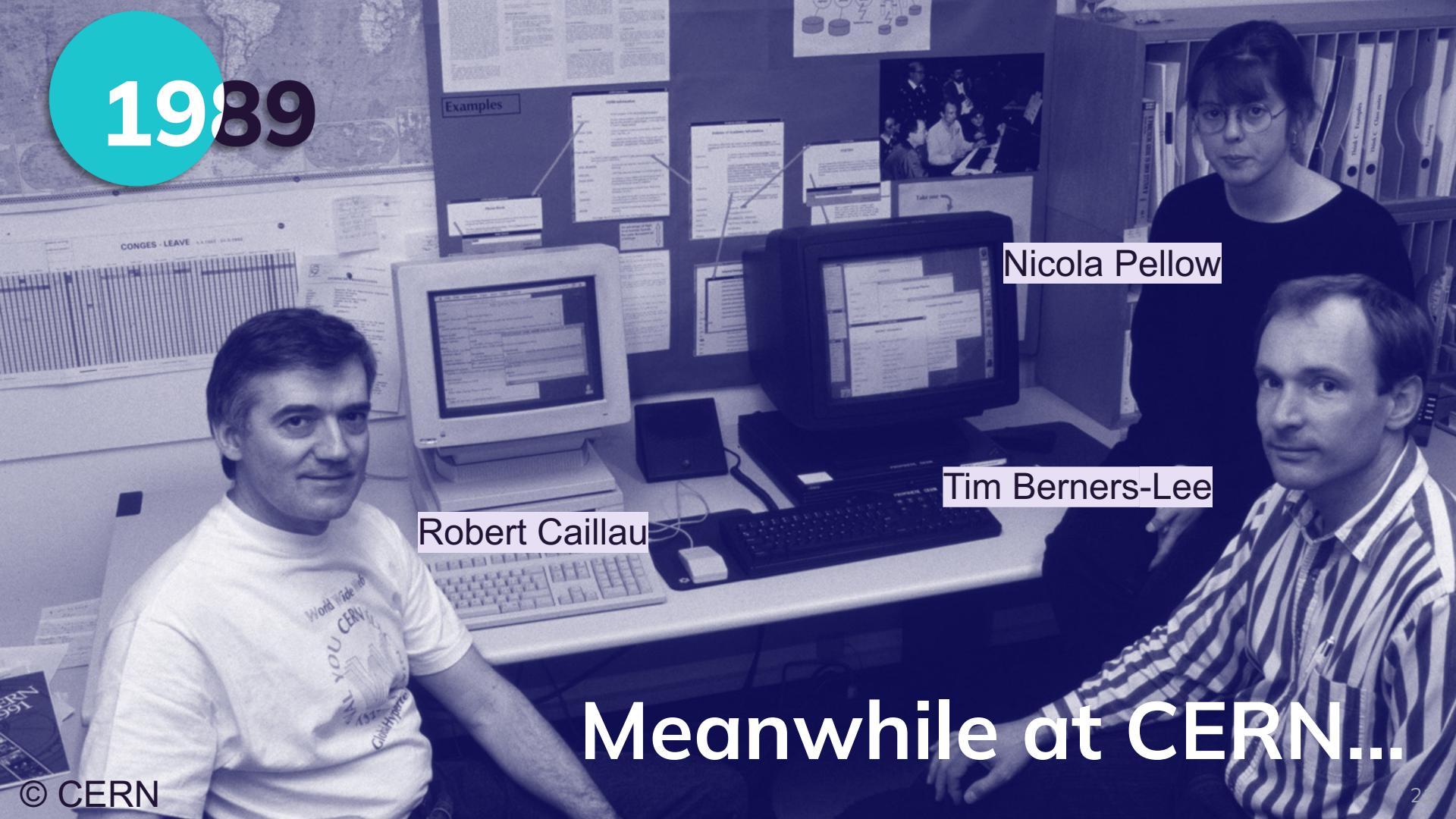


Robert Caillau

Tim Berners-Lee

Meanwhile at CERN...

1989



# CERN

The European Laboratory for Particle Physics, located near Geneva[1] in Switzerland[2] and France[3]. Also the birthplace of the World-Wide Web[4].

This is the CERN laboratory main server. The support team provides a set of Services[5] to the physics experiments and the lab. For questions and suggestions, see WWW Support Contacts[6] at CERN

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[About the Laboratory\[7\]](#) - [Hot News\[8\]](#) - [Activities\[9\]](#) - [About Physics\[10\]](#) - [Other Subjects\[11\]](#) - [Search\[12\]](#)

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## About the Laboratory

[Help\[13\]](#) and [General information\[14\]](#), divisions, groups and activities[15] (structure), [Scientific committees\[16\]](#)

[Directories\[17\]](#) (phone & email, services & people), [Scientific Information Service\[18\]](#) (library, archives or Alice), [Preprint\[19\]](#) Server

1-45, Back, Up, <RETURN> for more, Quit, or Help: ■



# Early web servers & repositories

- early 1990s **arXiv preprint repository** switches from email to HTTP access for manuscript transmission.
- **1992** Deutsches Elektronen-Synchrotron DESY in Hamburg connects a web server to the WWW.
- **Web repositories** store and publish (scholarly) digital objects – like paper publications and research data – and their metadata records. They aim to **improve the persistent findability and accessibility of research output on the Web**.



The arXiv preprint server in the 1990s (© Paul Ginsparg)



# Registries of repositories

Repositories are indexed for findability in registry services.

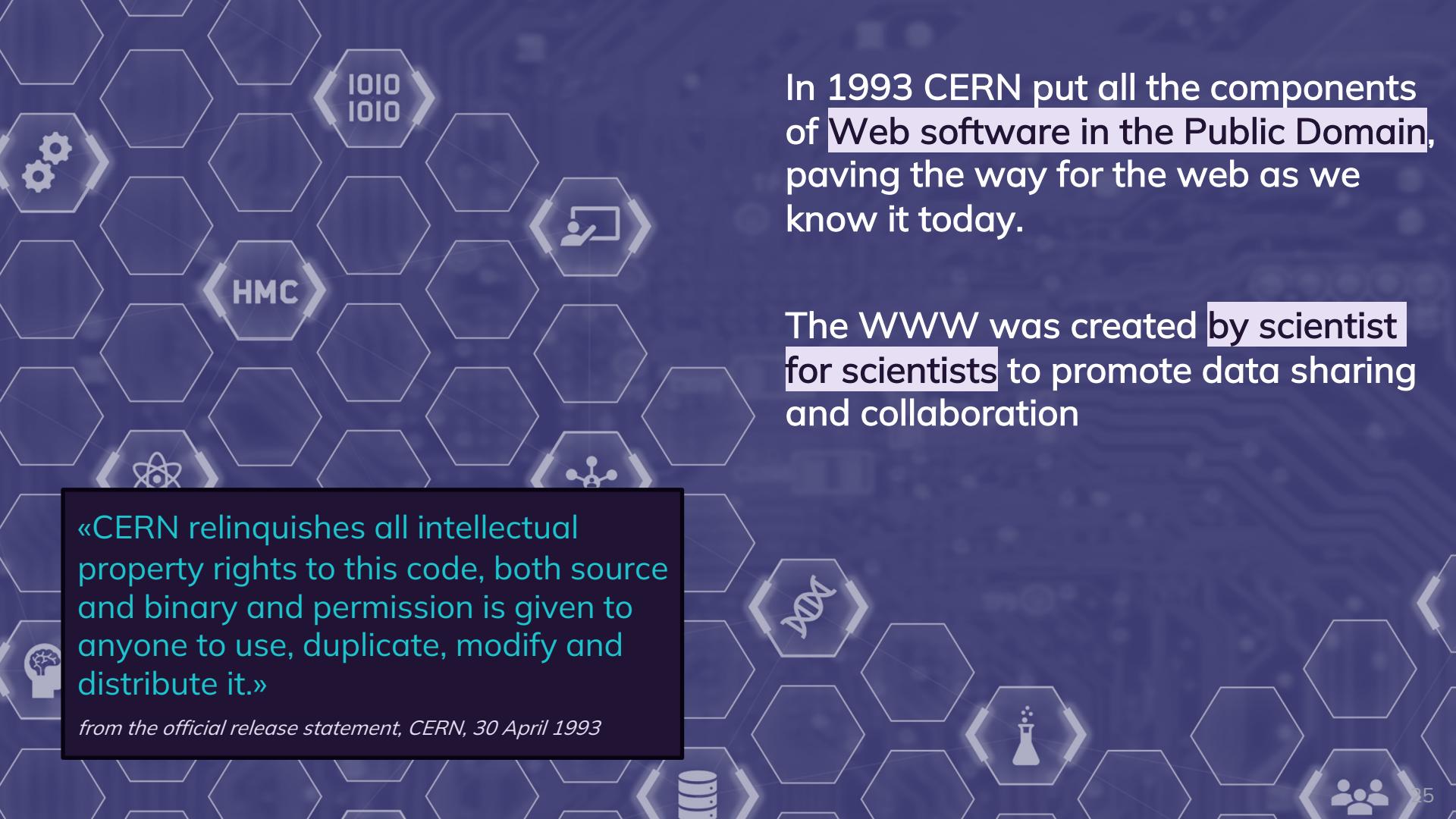
[www.re3data.org](http://www.re3data.org)

[v2.sherpa.ac.uk/opendoar](http://v2.sherpa.ac.uk/opendoar)

[risources.dfg.de](http://risources.dfg.de)



Screenshot of re3data.org search box



In 1993 CERN put all the components of Web software in the Public Domain, paving the way for the web as we know it today.

The WWW was created by scientist for scientists to promote data sharing and collaboration

«CERN relinquishes all intellectual property rights to this code, both source and binary and permission is given to anyone to use, duplicate, modify and distribute it.»

*from the official release statement, CERN, 30 April 1993*