

The Internet...

How Does THAT work?!

Today's Topic: Viewing A Webpage

Optoro 2015

Brock Wilcox
bwilcox@optoro.com

"Glossing over things"

This thing is glossy
So that we can see a truth
Reflected in lies

Brief highlights of Web History

FTP (1972)

Archie (1991)



Gopher (1991)

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

Tim's Home Page

[My home page](#)

altas

The World-Wide Web Virtual Library: Subject Catalogue

The WWW Virtual Library

High-Energy Physics Information

CERN Welcome

This is a [type](#) ., an

Mail to [mailto:mas](#)
to add po
[administr](#)

See also

Aerospaut

Agricul

[Anthropology](#)

[Archaeology](#)

[Asian Studies](#)

[Astronomy and](#)

[Bio Sciences](#)

Separate list.

Separate list.

European Laboratory for Part

Geneva, Switzerland

About the Laboratory:

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

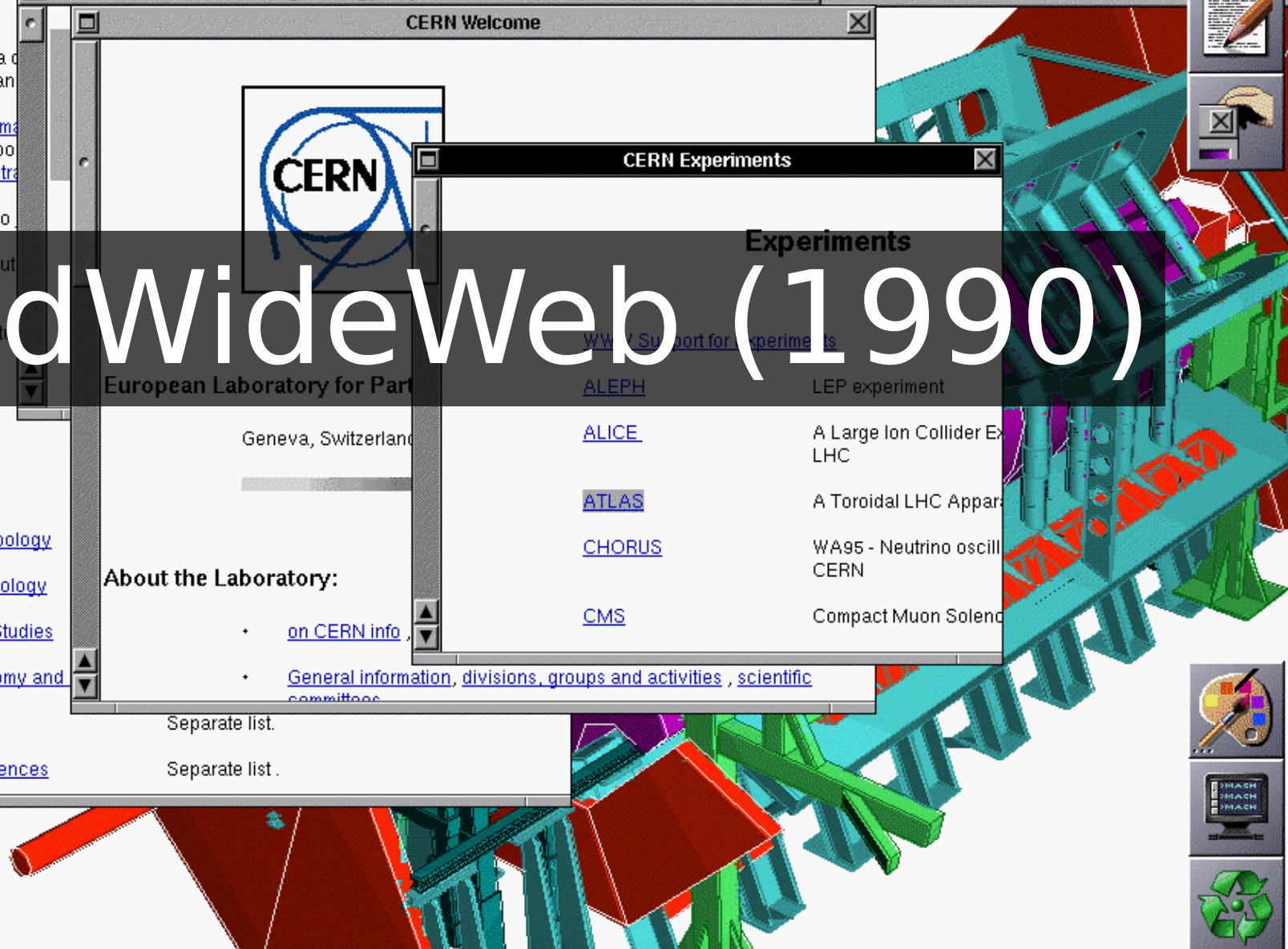
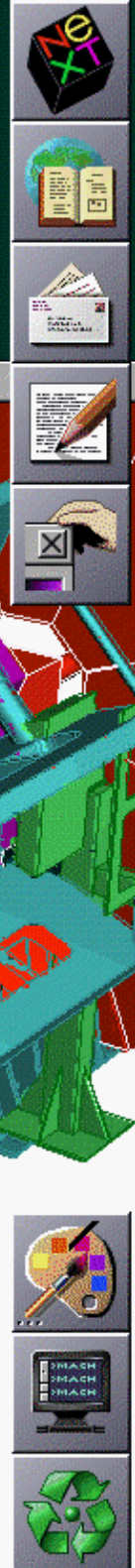
CERN Experiments

Experiments

[WWW Support for Experiments](#)

ALEPH	LEP experiment
ALICE	A Large Ion Collider Ex LHC
ATLAS	A Toroidal LHC Appar
CHORUS	WA95 - Neutrino oscill CERN
CMS	Compact Muon Solenoid

WorldWideWeb (1990)



GNU Operating System - Free Software Foundation



[Free as in Freedom](#)

Welcome to the GNU Project web server, www.gnu.org. The [GNU Project](#) was launched in 1984 to develop a complete UNIX style operating system which is [free software](#): the GNU system. (GNU is a recursive acronym for "GNU's Not UNIX"; it is pronounced "guh-noo.") Variants of the GNU operating system, which use the kernel Linux, are now widely used; though these systems are often referred to as "Linux," they are more accurately called [GNU/Linux](#).

This is the web site of the [Free Software Foundation](#) (FSF), the principal organizational sponsor of the GNU Project. FSF receives very little funding from corporations or grant-making foundations. We rely on support from individuals like you who support FSF's mission to preserve, protect and promote the freedom to use, study, copy, modify, and redistribute computer software, and to defend the rights of Free

WorldWideWeb

WorldWideWeb Browser/Editor

Version: 2.02 with libwww 2.16pre 1

exercise in global information availability
original WorldWideWeb program

by Tim Berners-Lee

Copyright 1990,91,93,94, TBL, CERN. Distribution restricted: ask for terms.

Text: Text which is not constrained to be linear.
Media: Information which is not constrained linear... or to be text.

This is a new version of the NextStep WorldWideWeb application with the libWWW library. Bug reports to timbl@info.cern.ch, quoting the version information above. Check the list of known bugs in the web too.

This was the original prototype for the World-Wide Web. Many browsers for other platforms now exist (Read the web for details). After many years lying fallow, this application has now sprouted images and nested HTML elements and things you have an Internet connection when using "help" under the info menu you will get you a about this application. If you do not have an internet connection you will not be able to read news, you should set the name of your local news server in the preferences.

WorldWideWeb	Style	Document	Navigate	Find
Info	Copy style	Open file...	Back	Find Panel...
Navigate	Apply style	Open given document address	Next	Find Next
Document	Address	New file...	Previous	Find Previous
Find	Lists	Respond	Home	Enter Selection
Edit	Glossary	Save	Panel...	Jump to Selection
Links	Example	Save all edited windows	Links	
Style	Normal	Save a copy in	Mark all	
Print...	Heading 1	Inspect...	Mark selection	
Page layout...	Heading 2	Diagnostics)	Link to marked	
Windows	Heading 3	Miniaturize	Link to New	
Services	Heading 4	Open master template document	Unlink	
Hide	Format	Close all other windows	Link to file...	
Quit	Panel...	Close	Help	

Mark/Inspect

Selection Link destination Image

Change

Link selection to marked Insert image

relationship (none)

Address:

Open

23:55

MON 13 DEC



Viola Central

What's New?

ViolaWWW Hypermedia Browser (V 3.3)



Warning: this is a *beta* release of ViolaWWW. Updates of this software may be found in <ftp://ftp.ora.com/pub/www/viola>. Bug reports, etc, would be greatly appreciated.

*Viola*

WorldWideWeb

Hypermedia Browser

violaWWW

ViolaWWW is a World Wide Web browser. ViolaWWW is built using the Viola hypermedia language/toolkit, and now also comes with a Motif front end.

Viola's support of HTML 3.0 (aka HTML+) so far includes:

- Paragraph as container.
- Nesting lists.
- Input forms.
- Tables.

URL: http://berkeley.ora.com/proj/viola/vw/about_3.3.html



http://hakatai.mcli.dist.maricopa.edu/



Welcome to MCLI

..... the Maricopa Center for Learning and Instruction, located at the District office of the [Maricopa Community Colleges](#), Arizona. MCLI is considered a national model for motivating, infusing, and promoting innovation and change in the community college environment. Listen to our [audio Greeting!](#)

On the World Wide Web with MCLI

Places to go, things to do....

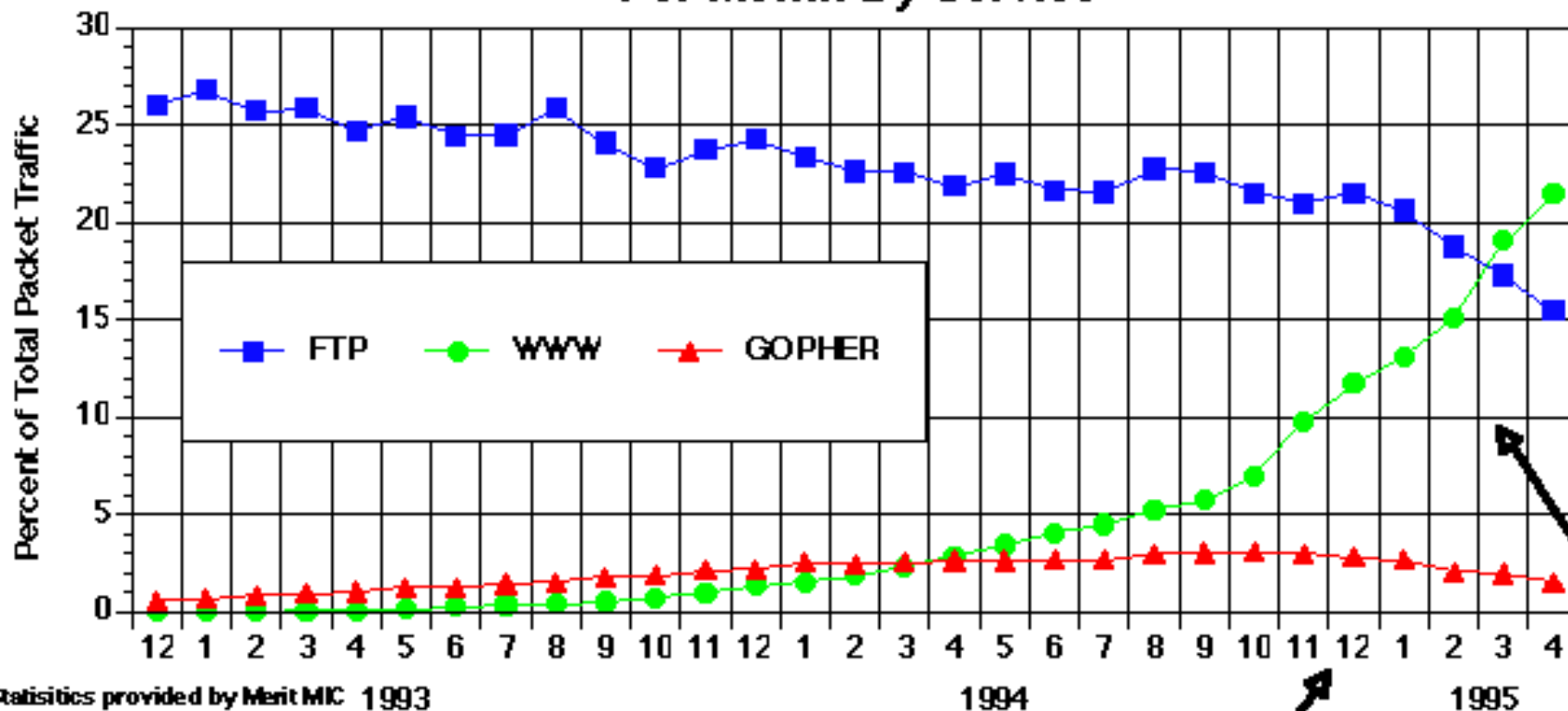
- [HOT Links](#) to the World Wide Web
- [Teaching and Learning on the Web](#)
- [Into the Internet with Mosaic](#); as printed, it makes a nice handout.
- Get a start [creating Mosaic pages](#) or jump into our tutorial on [Writing HTML Documents](#)
- If you plan to travel the [Information SuperHypeWay](#), then pay a visit [Dr. Internet](#). Or, fill up with a bowl of [Internet Soup](#). At least, make sure that you have earned your [drivers license](#)
- [Information](#) about the MCLI World Wide Web server and [latest statistics](#) on its use.
- What's in our URL? [What is "hakatai" ?](#)

Using Mosaic...

- MCLI's [Tips n' Tricks](#) for Mosaic
- [Compare the screens for Macintosh and Windows Mosaic clients](#)
- [NCSA Mosaic for Macintosh User's Guide](#)
- [NCSA Mosaic for Microsoft Windows User's Guide](#)

Mosaic

Percent Of Total Packets Transferred Per Month By Service



Statistics provided by Merit MIC 1993
 Graphs by James Pitkow GYU
 (pitkow@cc.gatech.edu)

Transition to new
 architecture starts to take effect

Prodigy et al. go online

"Worse is Better"
(VHS vs Betamax)

Surviveable Chaos → Evolution

Key elements of the Web Browser:

- Embed navigation into documents (hyperlinks)
- Allow for experimental features (ignore stuff)
- Separate content from style (css)
- Provide client storage (cookies)
- Allow for dynamic interaction (javascript)
- Allow for dynamic server interaction (AJAX)

Web Browser (aka Web Client)

- Download a document
- Display ("render") the document
- Execute the document (javascript)

(that was the most important slide)

Now the "details"

You → Your Friend

You: "Hey! You should checkout optoro.com!"

Friend: "OK."

Friend → Browser

Friend: "Uh... go to optoro.com" (in location)

Browser: "OK. Gimme a sec..."

Browser → DNS Server

Request: "What is the IP address for optoro.com?"

Response: 23.20.80.43

'host' demo

Browser → 23.20.80.43 (aka optoro.com)

Request: "Give me /"

23.20.80.43: Gives file "<html><head>....."

'curl' demo

Browser starts "rendering"
aka "drawing" on your screen.

```
<h1>blah</h1>
```

Becomes a big header "blah"

<p>I've got a lovely bunch of coconuts</p>

Becomes a paragraph

Sometimes stuff wraps to fit,
adjust for different fonts/sizes,
margins get shifted, etc.

This is very tedious work!

Browser gets to:

```
<img src='/assets/optoro-logo--grey.svg'>
```

or something like that.

Now to fetch this image file from the server!

Browser → 23.20.80.43 (aka optoro.com)

Request: "Give me /assets/optoro-logo--grey.svg"

23.20.80.43: Gives file

And so on, asking the server for any bits needed to render the site.

Network Debugger Demo

First bit of trickery:

Server-side dynamic content

Next bit of trickery:

Client-side dynamic content

In summary...

- Type in a location (aka URL, address, or website)
 - Parts: protocol, server, path, params, "anchor"
- Translate server name → IP Address
 - DNS
- Connect to server
 - AKA "computer"
- Request document
 - Just one to start with
 - Might secretly be dynamically generated!
- Render document
 - Document Object Model, CSS
 - ... do more requests for pieces (images, css)
- Execute Javascript
 - DYNAMIC!
- Background requests (AJAX/XHR)
 - MOAR DYNAMIC!!!