



"The Internet is down..."

# Web Technology

Lecture 2: Introduction to the  
Internet and the WWW

# Course Websites and Contacts

<http://www.abdn.ac.uk/myaberdeen>

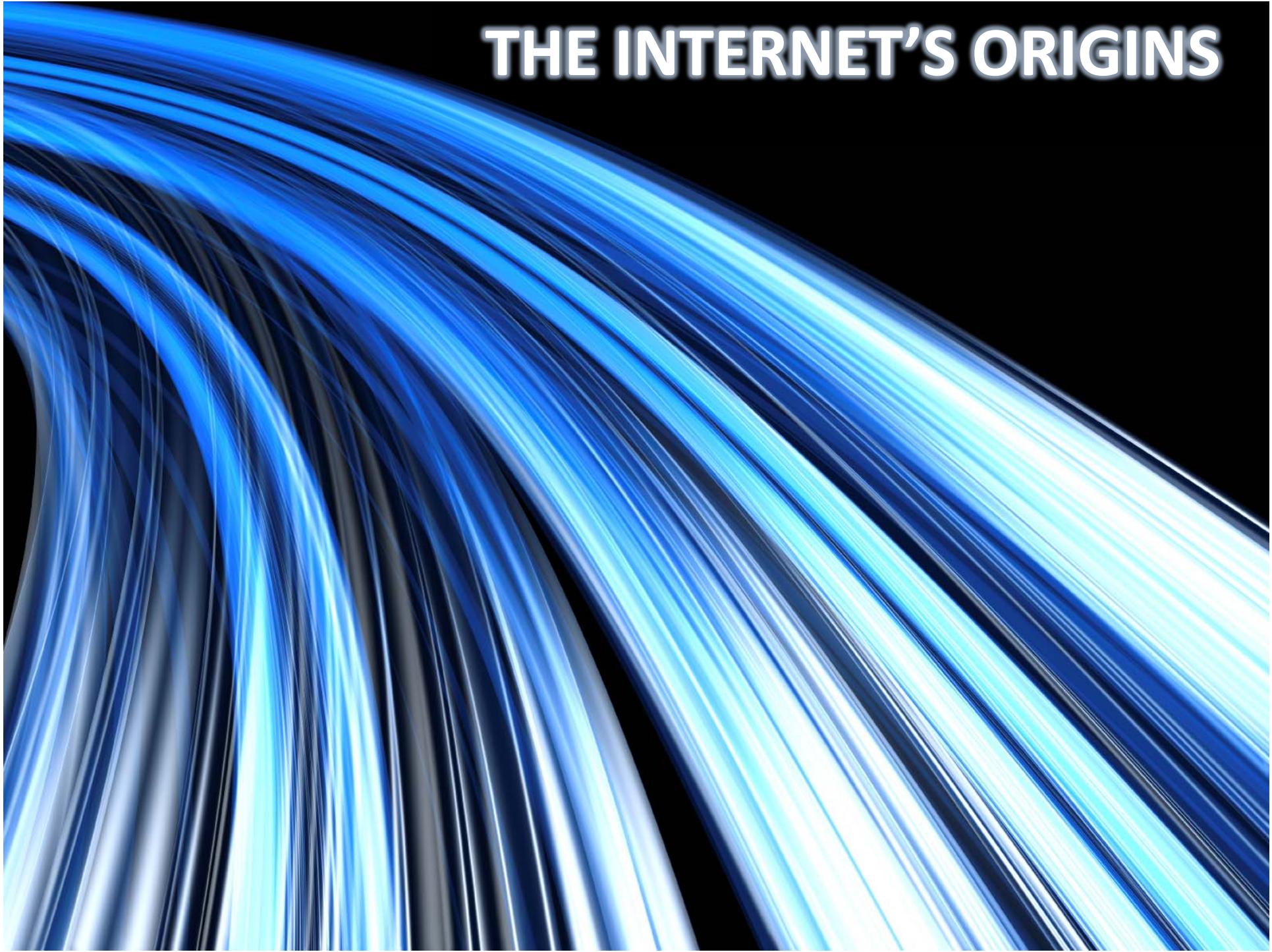
For questions please contact the  
course coordinator:

n.beacham@abdn.ac.uk

# Practicals

- CS1522 1 Practical per week
  - Start next week
- CS5548 1 Practical per week:
  - Start next week
- Use MyTimetable to pick a practical
  - <http://abdn.ac.uk/mytimetable>
- CS5574 (Distance Learning)
  - Practicals to be done in your own time, one per week

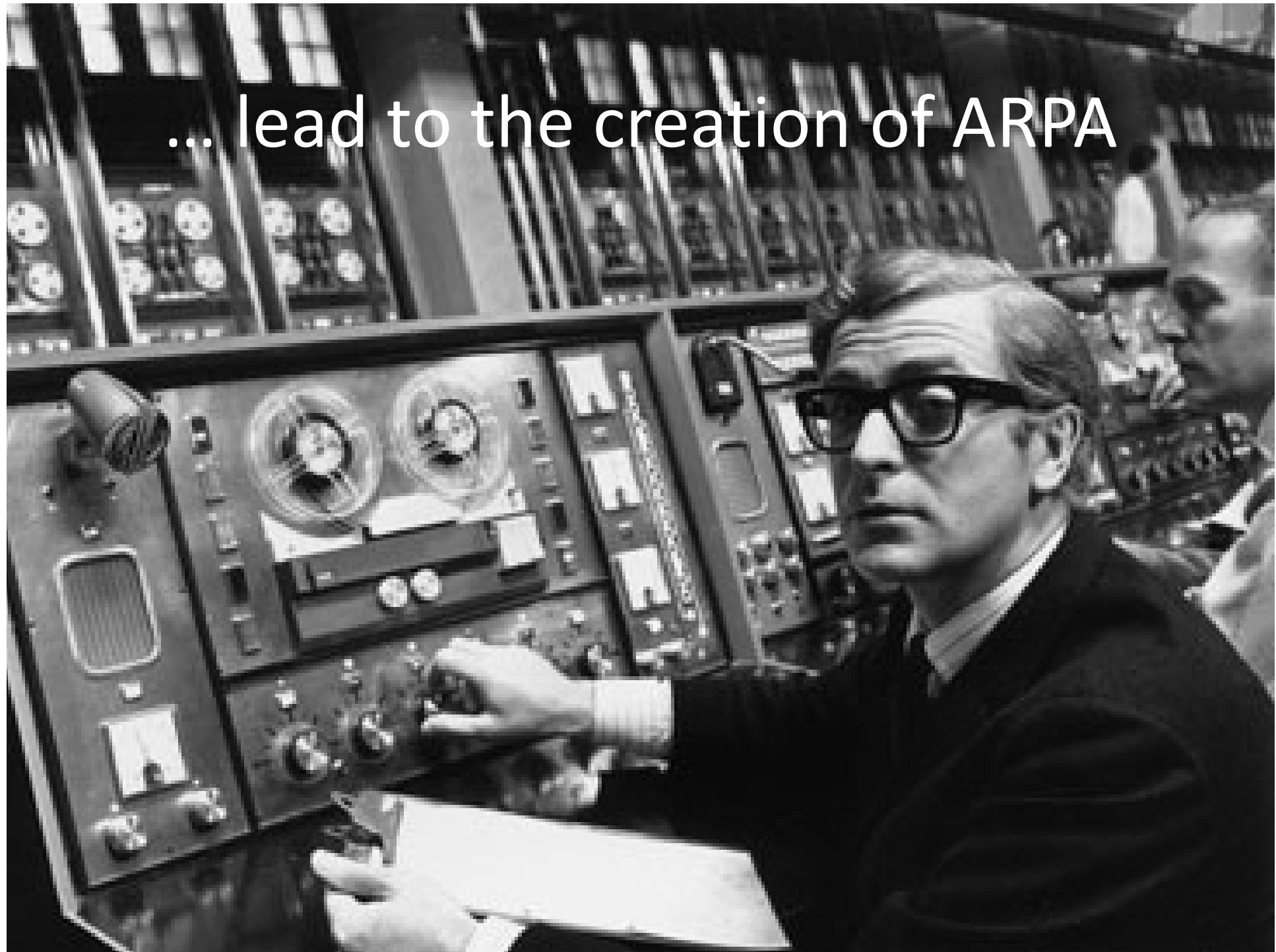
# THE INTERNET'S ORIGINS

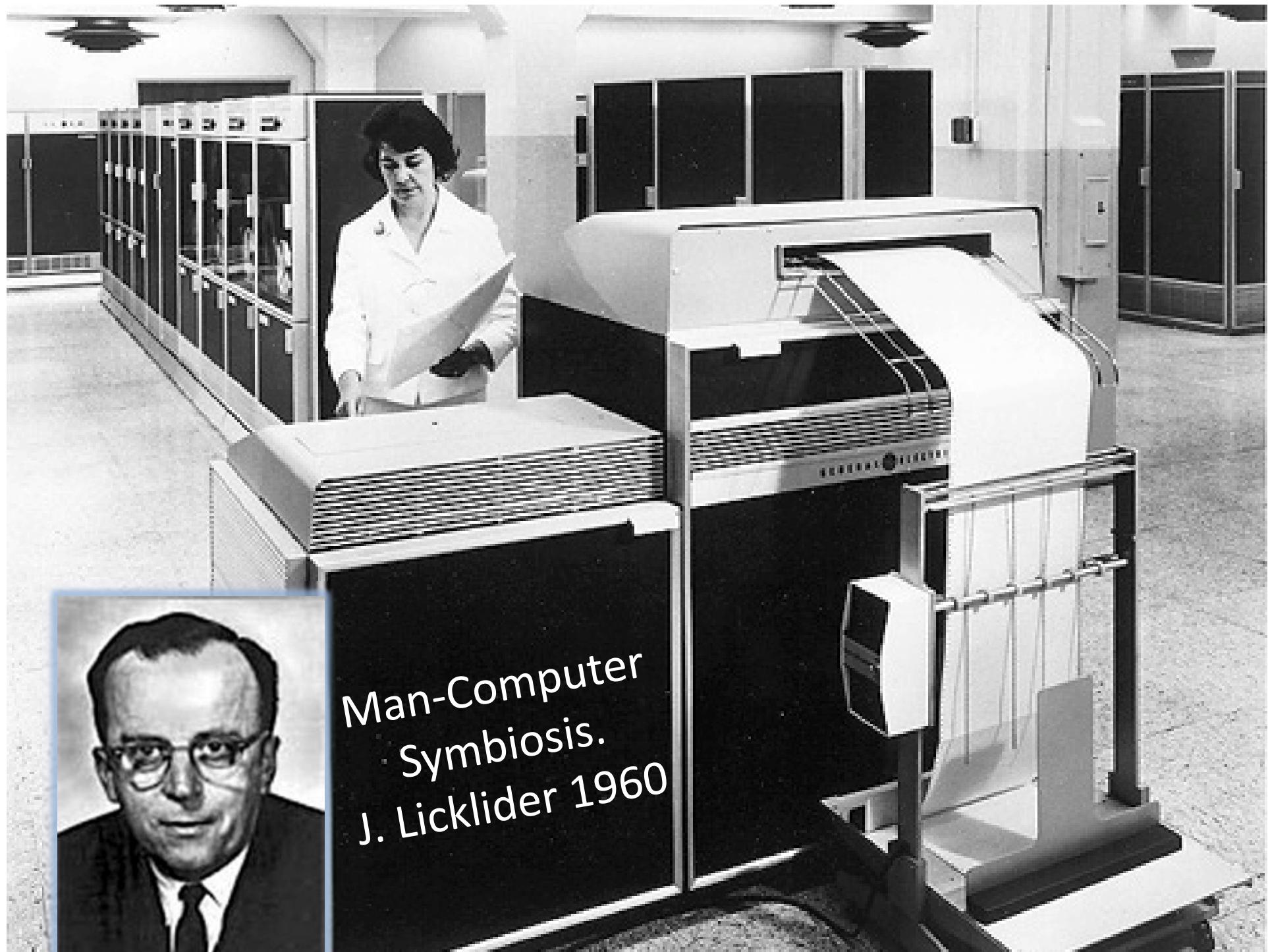
A dynamic, abstract visual representation of data flow or network traffic. It consists of numerous thin, glowing blue and white lines that curve and twist across the frame. The lines are brighter and more concentrated on the right side, creating a sense of motion and direction. The background is a solid black, which makes the bright blue and white streaks stand out sharply.

On the fourth of October 1957 ...



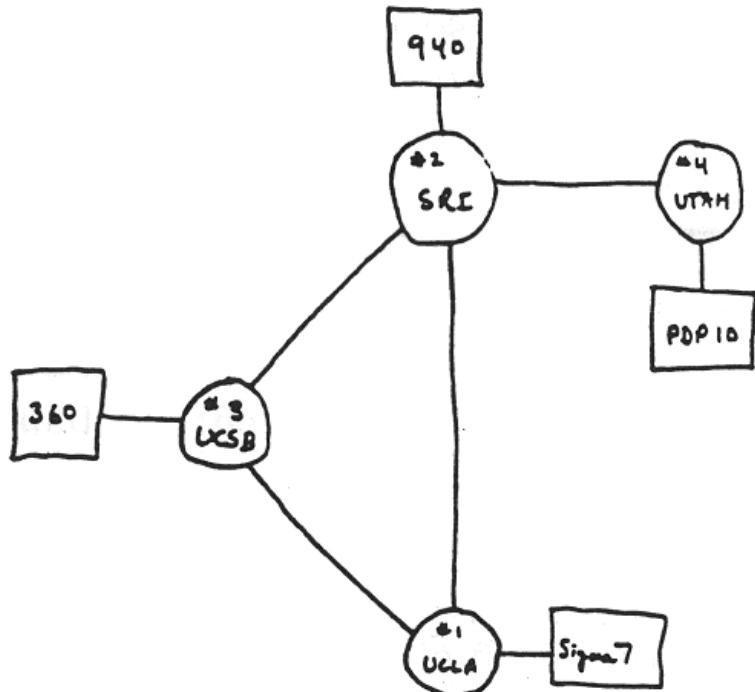
... lead to the creation of ARPA





Man-Computer  
Symbiosis.  
J. Licklider 1960

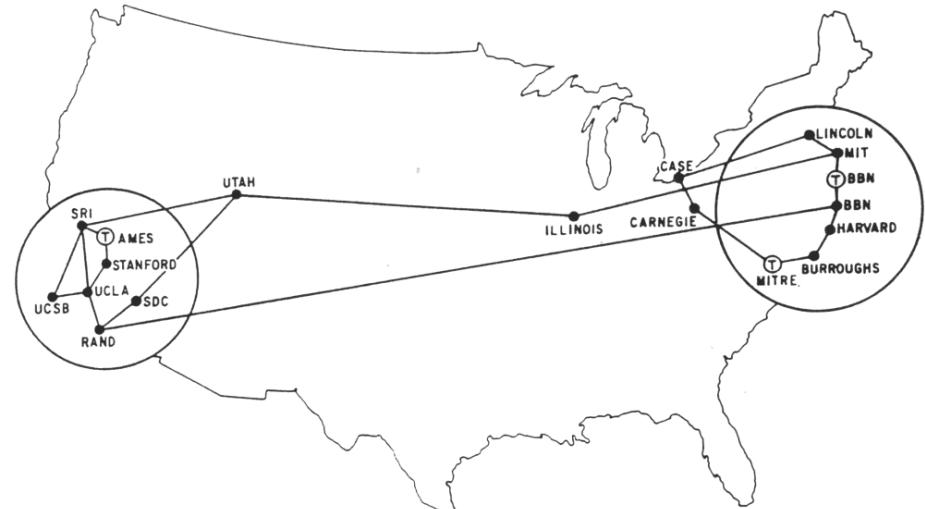
# ARPANET



THE ARPA NETWORK

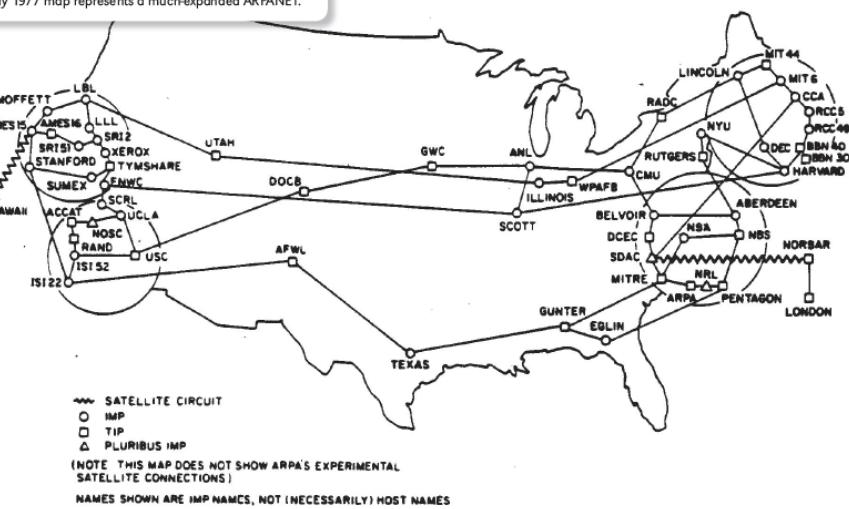
DEC 1969

4 NODES



MAP 4 September 1971

This July 1977 map represents a much-expanded ARPANET.



Network Working Group  
Request for Comments: 675  
NIC: 2  
INWG: 72

Vinton Cerf  
Yogen Dalal  
Carl Sunshine  
December 1974

## SPECIFICATION OF INTERNET TRANSMISSION CONTROL PROGRAM

December 1974 Version

### 1. INTRODUCTION

This document describes the functions to be performed by the internetwork Transmission Control Program [TCP] and its interface to programs or users that require its services. Several basic assumptions are made about process to process communication and these are listed here without further justification. The interested reader is referred to [CEKA74, TOML74, BELS74, DALA74, SUNS74] for further discussion.

The authors would like to acknowledge the contributions of R. Tomlinson (three way handshake and Initial Sequence Number Selection), D. Belsnes, J. Burchfiel, M. Galland, R. Kahn, D. Lloyd, W. Plummer, and J. Postel all of whose good ideas and counsel have had a beneficial effect (we hope) on this protocol design. In the early phases of the design work, R. Metcalfe, A. McKenzie, H. Zimmerman, G. Tellann, and M. Elie were most helpful in explicating

# What is the Internet?

- Computer network
  - Collection of computers interconnected by a telecommunication channel, allowing them to exchange information.
- An internet
  - A network of interconnected computer networks (internetwork)
- The Internet
  - The single globally-interconnected internet consisting of millions of networks and billions of interconnected computers.

# The Internet Big Picture (June 30, 2012)

World Total Population : 6,973,738,433

Internet Users: 2,405,518,376





YOU ARE HERE





http://com.

# THE CREATION OF THE WORLD WIDE WEB

[« Back](#)

Floodgap Gopher

gopher://gopher.floodgap.com:70/1/fun

GO!

[Return to the main menu for gopher.floodgap.com:70](#)

### [Floodgap Systems gopher root](#)

```
.o88o.          o8o          o8o
 888  "          `YP          `YP
o8888oo  oooo  oooo  ooo. .oo.  '  ooo. .oo.  '
   888  '888  `888  `888P"Y88b  '888P"Y88b
   888  888  888  888  888  888  888
   888  888  888  888  888  888  888
o888o  'V88V"V8P' o888o o888o  o888o o888o

.ooooooooooo  .oooo.  ooo. .oo. .oo.  .ooooo.  .oooo.o
888' `88b  `P  )88b  `888P"Y88bP"Y88b  d88' `88b d88(  "8
888  888  .oP"888  888  888  888  888oooo888  `"Y88b.
`88bod8P'  d8(  888  888  888  888  888  .o o.  )88b
`8ooooooo.  `Y888""8o o888o o888o o888o `Y8bod8P' 8""888P'
d"      YD
"Y88888P'  @ Floodgap.com
```

Don't you think you need a little diversion? Here are some not-so-useful gopher resources for when you need to relax.

### [Figlet Gateway](#)

Design your own ASCII text art! Utilizes the open-source tool figlet.

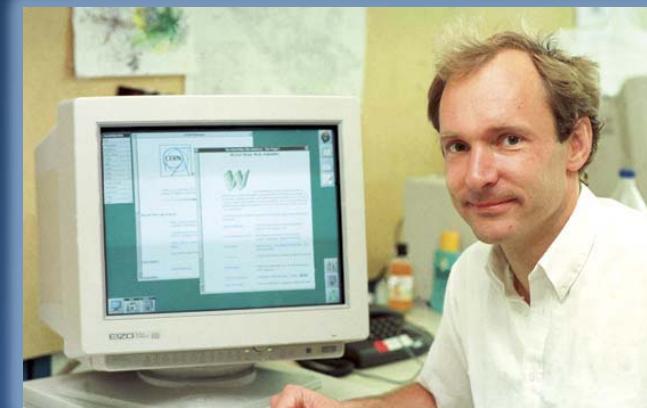
### [Twitpher Twitter->Gopher Interface](#)

Forget Web 2.0. The time has come for Gopher 2.0.

### [Current phase of the moon](#)

### [Thought for the day \(/usr/games/fortune\)](#)

1990-91 Tim Berners-Lee and Robert Cailliau developed HTML in Switzerland; first concept of the WWW – a set of linked HTML documents accessed through the internet.



# 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 ?

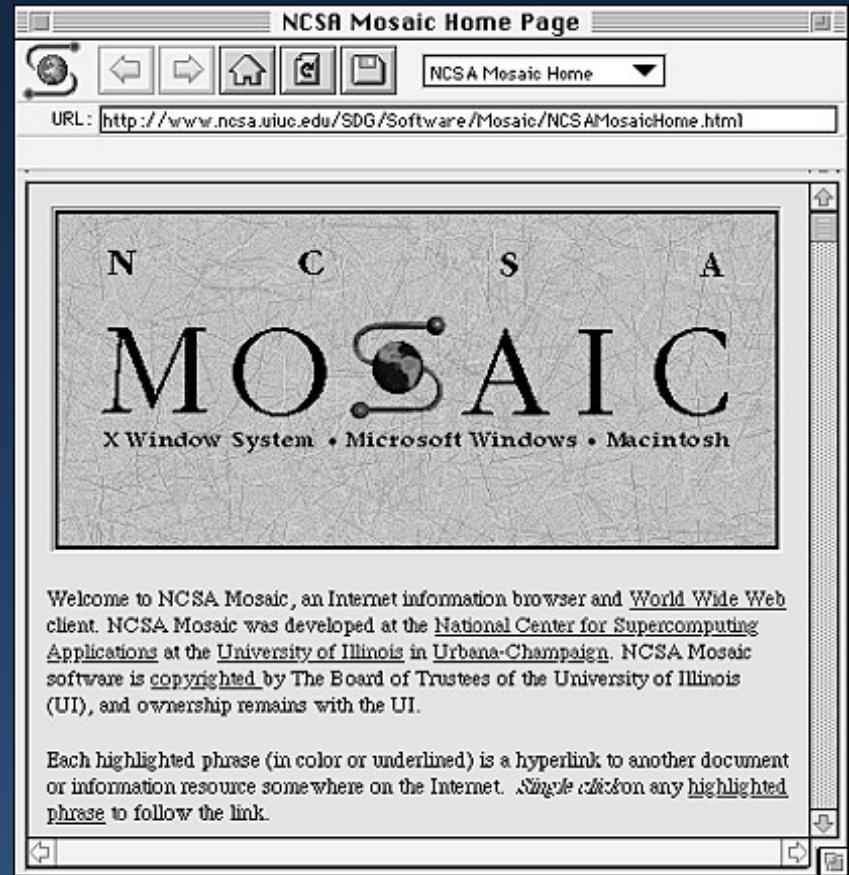
If you would like to support the web..

## Getting code

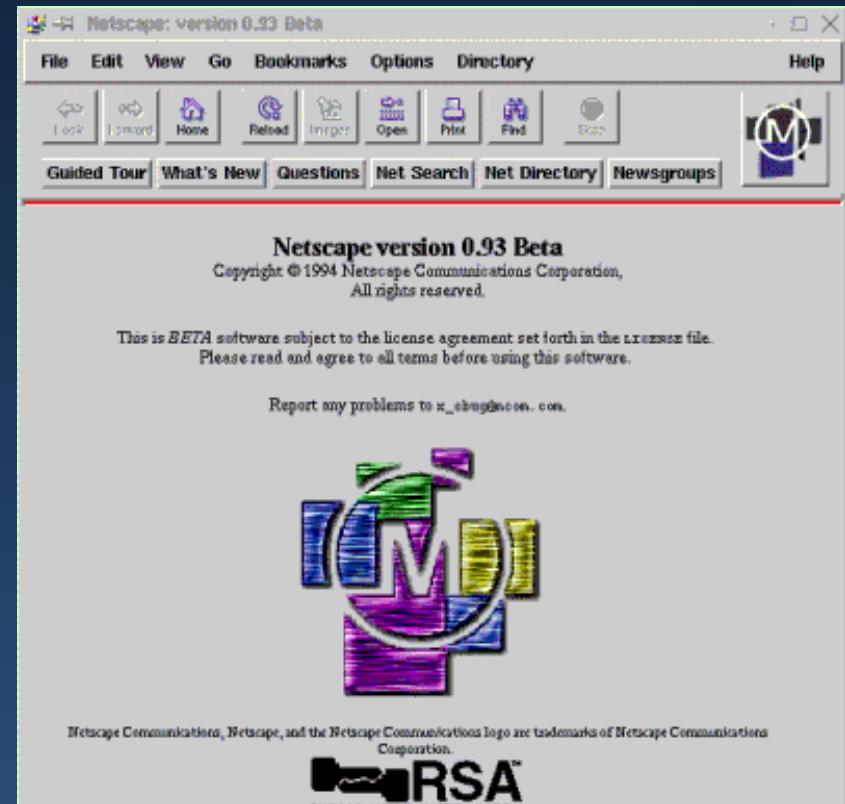
Getting the code by [anonymous FTP](#) , etc.



1992 – 93 NCSA in Illinois developed Mosaic; first widely used Web browser.



1994 Marc Anderseen  
and Jim Clark found  
Netscape, Inc. and  
developed the first  
commercial Web  
browser: Netscape  
Navigator



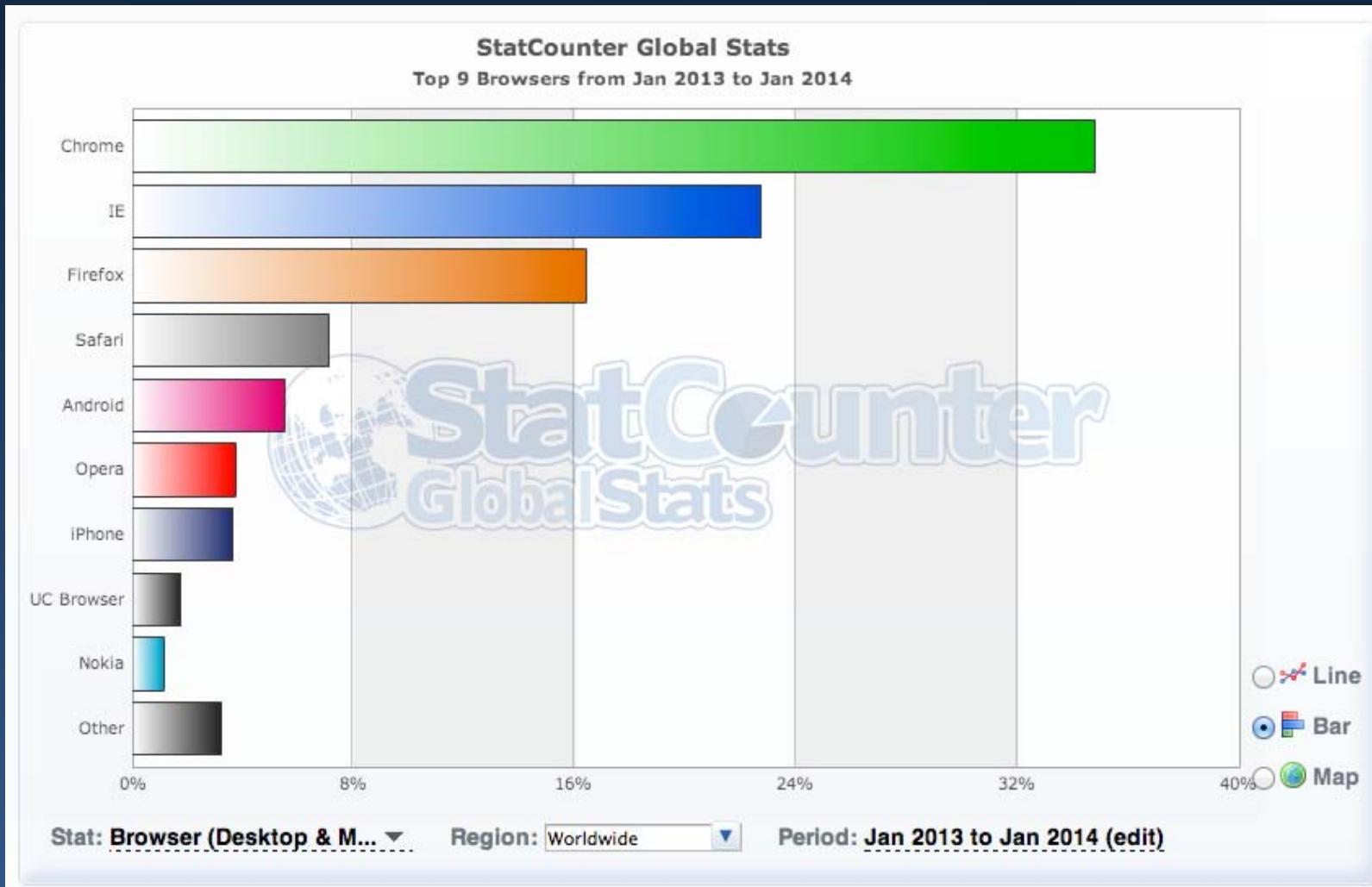


# What Web Browser do you use?

- A. Chrome
- B. Firefox
- C. Internet Explorer
- D. Safari
- E. Other



# Browser Statistics (Jan 2013-214)



# Web Standards

“The World Wide Web (known as “WWW”, “Web” or “W3”) is the universe of network-accessible information, the embodiment of human knowledge” (W3C)

*“HTML, XML, CSS and the DOM are more than just a set of interesting technologies. They are a way of creating Web pages that will facilitate the twin goals of sophisticated and appropriate presentation and widespread accessibility.”*

- WaSP mission statement of 1998



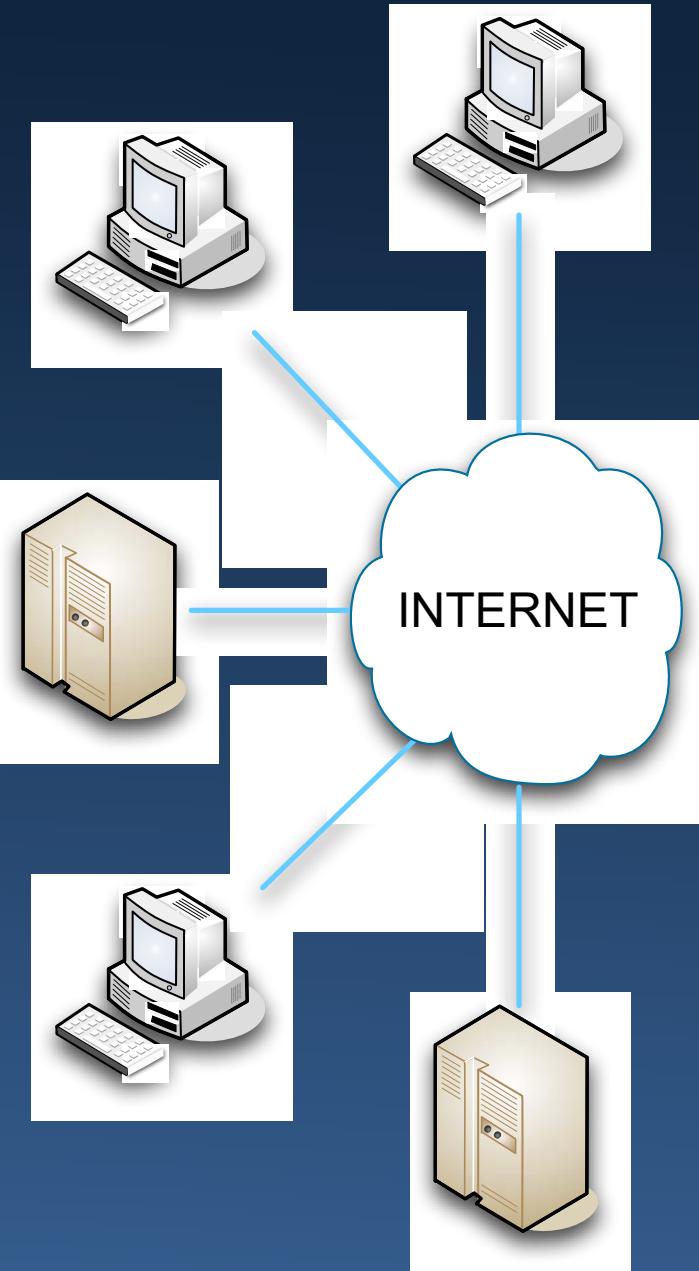
**HOW DOES THE WEB WORK?**

# How do computers communicate via the Internet?

- Content is passed around using communication protocols
  - Examples:
    - Web Pages : Hypertext Transfer Protocol (HTTP)
    - Emails: Simple Message Transmission Protocol (SMTP)
- **Client** (your computer)
- **Server** (the computer where the website reside)

# TCP/IP

- Rules for basic data exchange across the Internet are defined by two protocols:
  - Transmission Control Protocol (TCP)
  - Internet Protocol (IP)
- Other internet protocols rely on TCP/IP
- To connect to the Internet, a computer needs software that implements the TCP/IP protocols.



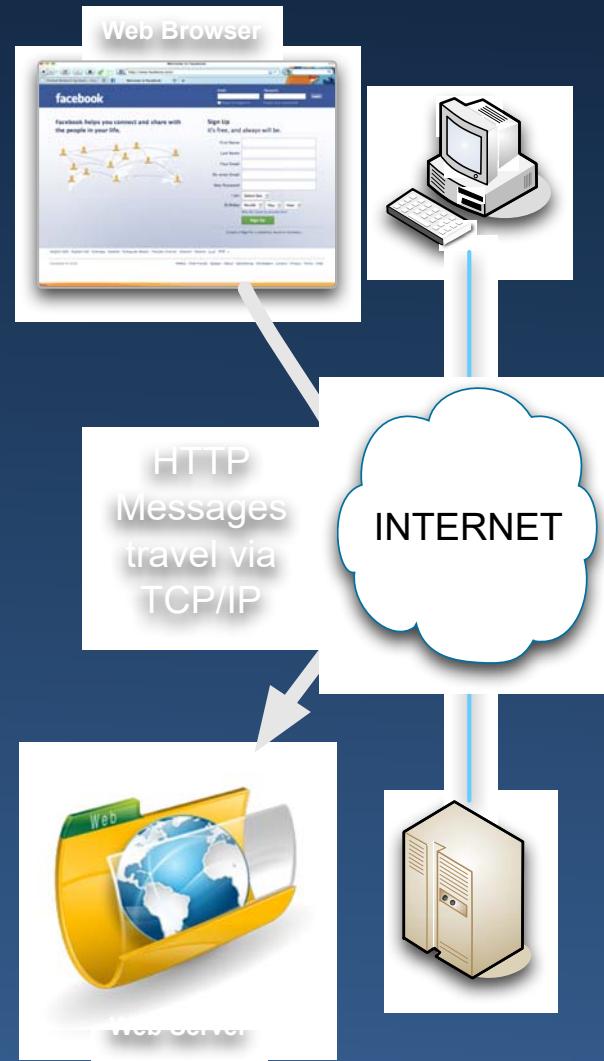
# DNS – Domain Name Service

- Most computers providing Internet services have unique host names, used by users to refer to the computer.
- Each computer connected directly to the Internet also has a unique IP address, used by TCP/IP software to deliver data.
- The DNS is the protocol used to convert host names to IP addresses, and is implemented by DNS software.



# HTTP – Hypertext Transfer Protocol

- Used for communication between Web clients (browsers) and Web servers.
- To request a Web page, a browser sends a Web server a HTTP GET message.
- To send data to a Web server, a browser can use a HTTP POST message.



# URL – Uniform Resource Locator

- Every request starts by typing a Uniform Resource Locator (URL)
- The URL standard defines a common way to refer to any Web page, anywhere on the Web.
- Syntax:  
*service\_type://hostname.domain:port/filepathname*

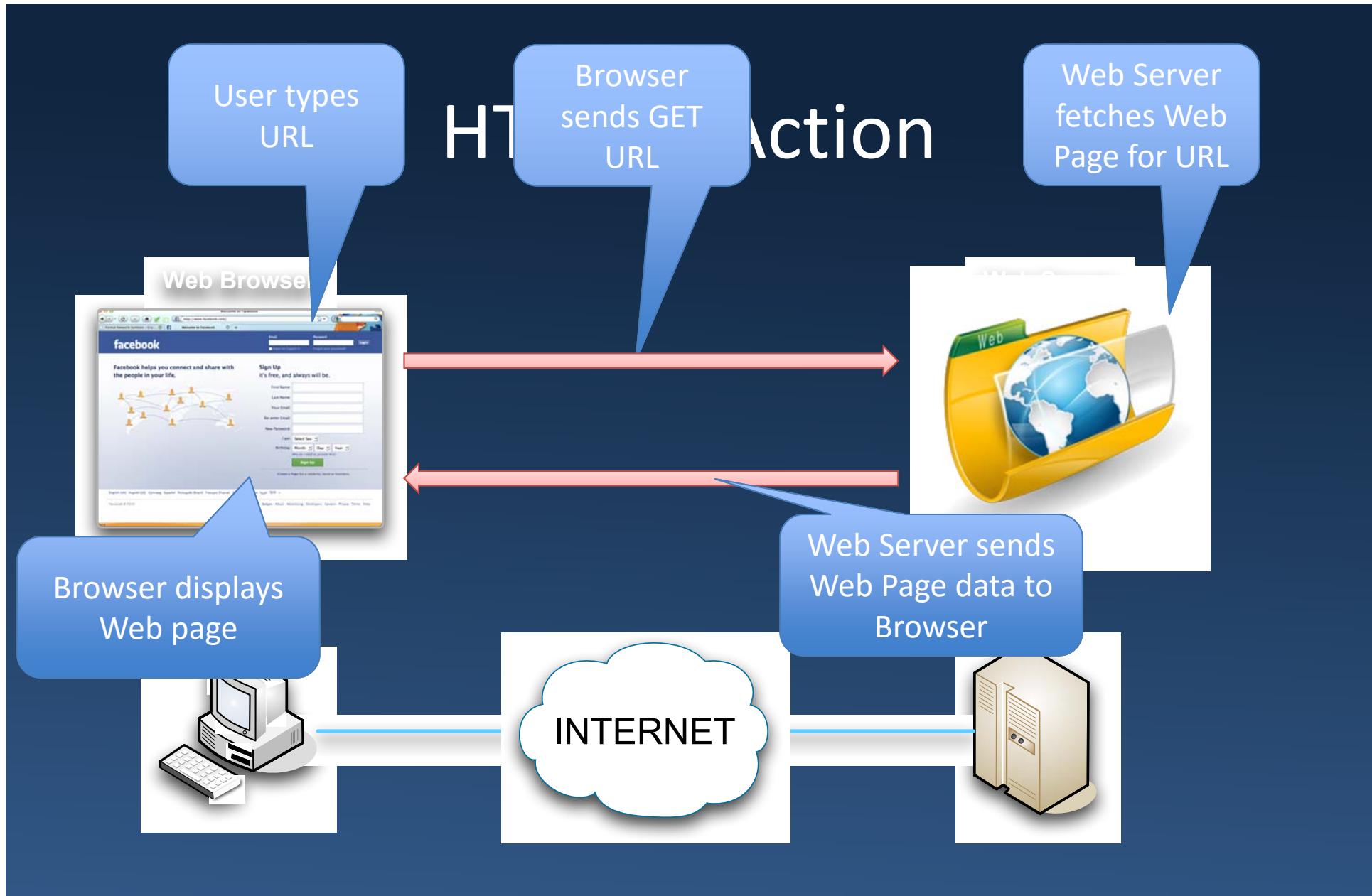
Service Type

Name of the  
host computer

Sub-directory  
of the website

File Name

<http://www.abdn.ac.uk/undergraduate/index.php>



# Where are we now?



0.0012 mbit



0.5 - 24mbit (ADSL), 30-1000mbit (VDSL, Fibre)



0.056 mbit



0.2mbit (EDGE), 1-20mbit (3G), 20-200mbit (LTE)



UNIVERSITY  
OF ABERDEEN

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# Summary

## In this lecture

- Internet Origins
- Creation of the World Wide Web
- How the Internet Works

## What next?

- Introduction to HTML
- How to create a basic Web page