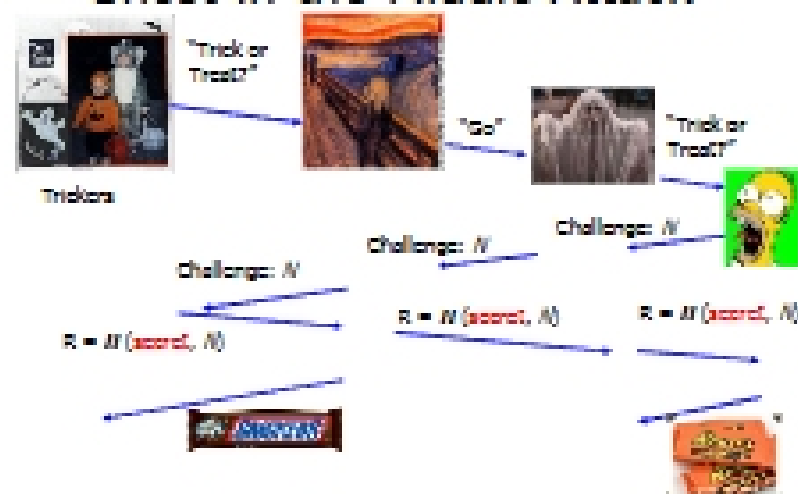


## Class 30: Vocational Skills *How (and Why) to Build a Dynamic Web Application*

### Trick-or-Treat



### Ghost-in-the-Middle Attack



### Who Invented the Internet?

### internetwork

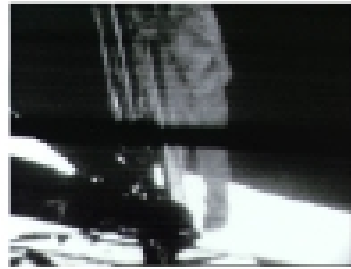
A collection of multiple networks connected together, so messages can be transmitted between nodes on different networks.

### The First internet

- 1800: Sweden and Denmark worried about Britain invading
- Edelcrantz proposes link across strait separating Sweden and Denmark to connect their (signaling) telegraph networks
- 1801: British attack Copenhagen, network transmit message to Sweden, but they don't help.
- Denmark signs treaty with Britain, and stops communications with Sweden

## First Use of Internet

- October 1969: First packets on the ARPANet from UCLA to Stanford. Starts to send "LOGIN", but it crashes on the G.
- 20 July 1969: Live video (b/w) and audio transmitted from moon to Earth, and to millions of televisions worldwide.



## The Modern Internet

- Packet Switching: Leonard Kleinrock (UCLA) thinks he did, Donald Davies and Paul Baran, Edelcrantz's signalling network (1809) sort of did it
- Internet Protocol: Vint Cerf, Bob Kahn
- Vision, Funding: J.C.R. Licklider, Bob Taylor
- Government: **Al Gore** (first politician to promote Internet, 1986; act to connect government networks to form "Interagency Network")

## Kahn and Cerf's Answer

Al Gore was the first political leader to recognize the importance of the Internet and to promote and support its development.

No one person or even small group of persons exclusively "invented" the Internet. It is the result of many years of ongoing collaboration among people in government and the university community. But as the two people who designed the basic architecture and the core protocols that make the Internet work, we would like to acknowledge VP Gore's contributions as a Congressman, Senator and as Vice President. No other elected official, to our knowledge, has made a greater contribution over a longer period of time.

[http://www.firstmonday.org/issue/issue5\\_10/wiggins/](http://www.firstmonday.org/issue/issue5_10/wiggins/)

## Government and Networking

### Chappe wanted a commercial network

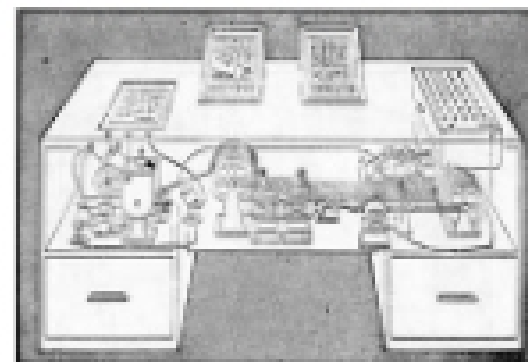
The use of novel methods that modify established habits, often hurts the interests of those who profit the most from the older methods. Few people, with the exception of the inventors, are truly interested in helping projects succeed while their ultimate impact is still uncertain... Those in power will normally make no effort to support a new invention, unless it can help them to augment their power; and even when they do support it, their efforts are usually insufficient to allow the new ideas to be fully exploited. (Claude Cheppe, 1834)

Anyone performing unauthorized transmissions of signals from one place to another, with the aid of telegraphic machines or by any other means, will be punished with an imprisonment of one month to one year, and a fine of 1,000 to 10,000 Francs.

French Law passed in 1837 made private networking illegal

## The World Wide Web

## The "Desk Wide Web"



Memex Machine  
Vannevar Bush, *As We May Think*, LIFE, 1945

## Licklider and Taylor's Vision

Available within the network will be functions and services to which you subscribe on a regular basis and others that you call for when you need them. In the former group will be investment guidance, tax counseling, selective dissemination of information in your field of specialization, announcement of cultural, sport, and entertainment events that fit your interests, etc. In the latter group will be dictionaries, encyclopedias, indexes, catalogues, editing programs, teaching programs, testing programs, programming systems, data bases, and – most important – communication, display, and modeling programs. All these will be – at some late date in the history of networking - systematized and coherent; you will be able to get along in one basic language up to the point at which you choose a specialized language for its power or terseness.

J. C. R. Licklider and Robert W. Taylor, *The Computer as a Communication Device*, April 1968

## The World Wide Web

- Tim Berners-Lee, CERN (Switzerland)
- First web server and client, 1990
- Established a *common language* for sharing information on computers
- Lots of previous attempts (Gopher, WAIS, Archie, Xanadu, etc.)

## World Wide Web Success

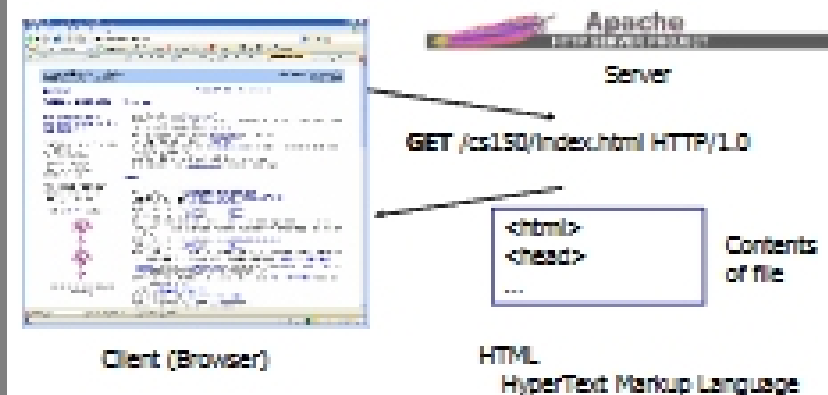
- World Wide Web succeeded because it was **simple!**
  - Didn't attempt to maintain links, just a common way to name things
  - Uniform Resource Locators (URL)

<http://www.cs.virginia.edu/cs150/index.html>

Service      Hostname      File Path

HyperText Transfer Protocol

## HyperText Transfer Protocol



## Popular Web Site: Strategy 1 Static, Authored Web Site



## Popular Web Site: Strategy 2 Dynamic Web Applications

