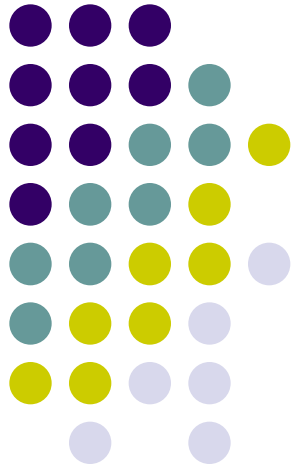
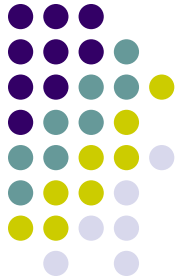
CSE 301
History of Computing

The World Wide Web

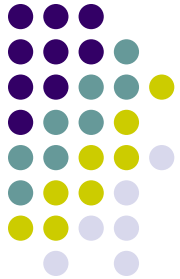


Internet Applications



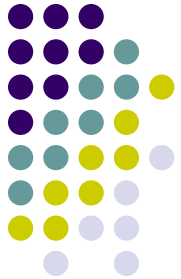
- E-mail – killer app. of the early Internet
  - Developed by Ray Tomlinson of BBN
  - originally, a message exchanging service on early time sharing mainframe computers connected to a number of terminals
- Usenet
  - a system of distributed discussion groups
  - originally an application to connect Unix computers
  - Invented in 1979 - The first nodes connected were University of North Carolina and Duke University.

Internet Applications



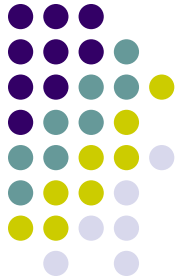
- Gopher
  - a distributed document search and retrieval network protocol designed for the Internet.
  - Released in 1991 by Paul Lindner and Mark McCahill of the University of Minnesota.
  - Veronica is a search engine system for the Gopher protocol, developed at the University of Nevada

Commercialization & Privatization



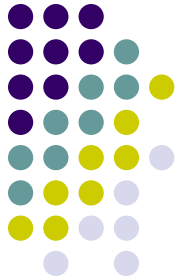
- NSFNet originally had restrictions: no commercial use
  - Soon would change
  - clarinet.com – first, in 1989
- Internet Service Provider (ISP) companies started to provided access in different lucky parts of the country
- By 1994, the NSFNet lost its standing as the backbone of the Internet.
  - the NSFNet was dropped as the main backbone, and commercial restrictions were gone

Internet Service Providers



- CompuServe – founded in 1969 in Columbus, Ohio
  - first to provide email services to PC users who subscribed in 1979
  - first to provide real time chat in 1980
  - was largest online service through 80s
  - rates in early 90s: $10/hour
- Many competitors, of course:
  - AOL, Prodigy, MSN, etc.

Douglas Engelbart & Ted Nelson

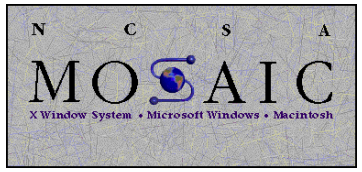


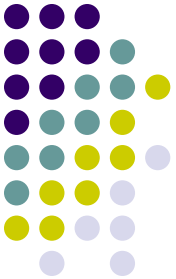
- Both had proposed hypertext in the 1960s
- Engelbart as part of his experimental computing system at Stanford
- Anti-establishment Nelson as a way for authors to sell books without publishers
- What is hypertext?

World Wide Web

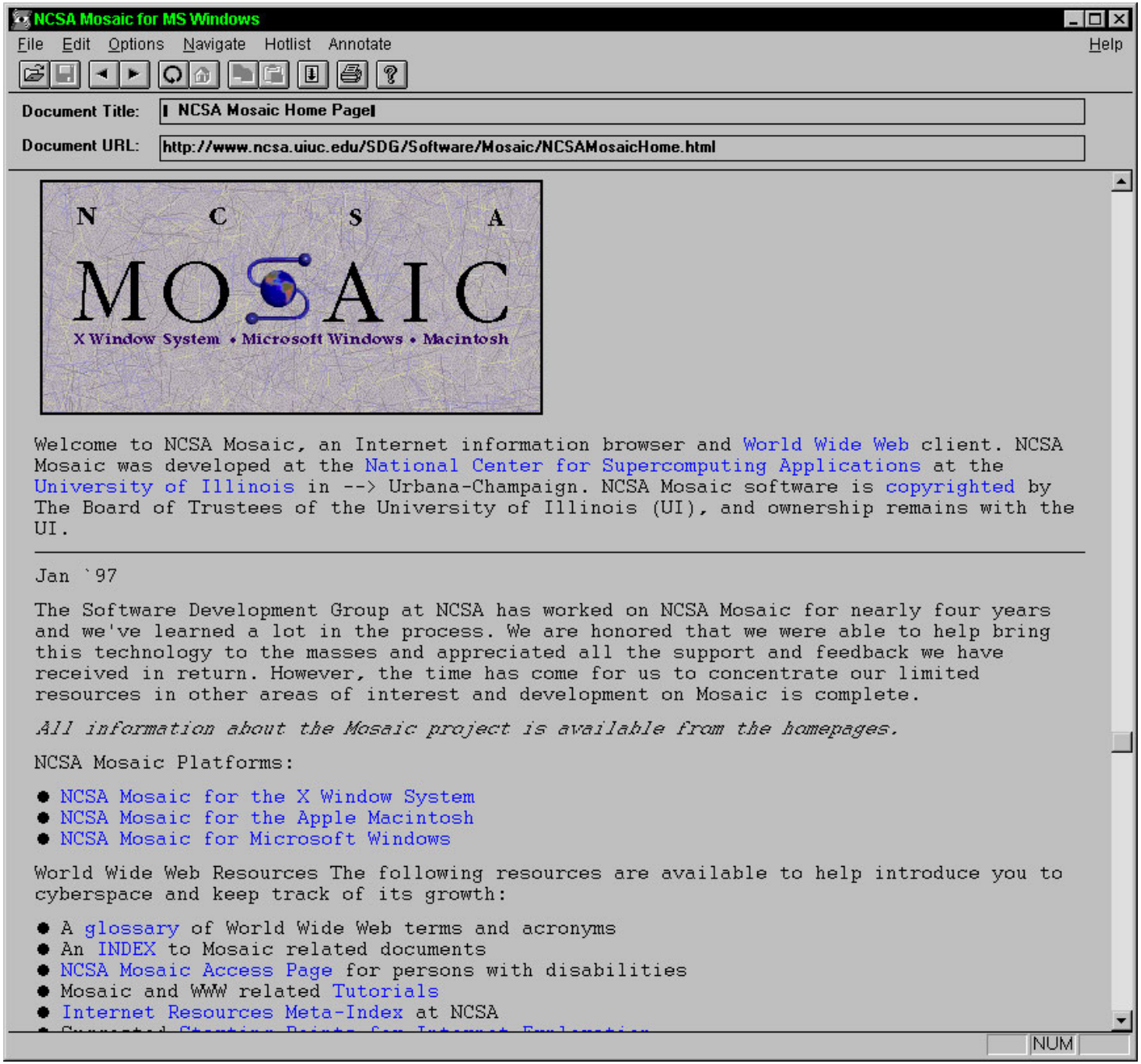
- In 1989, Tim Berners-Lee, a physicist working at CERN, the European Particle Physics Laboratory, wanted a way for physicists to share information about their research.
- His documentation project was the source of the three key inventions that made the World Wide Web possible:
  - URL – Uniform Resource Locator
  - HTML – HyperText Markup Language
  - HTTP – HyperText Transfer Protocol

Web Browsers

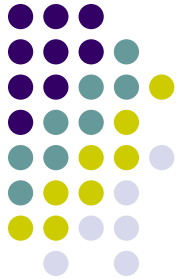




- Mosaic
  - Developed by a team at the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign (NCSA-UIUC), led by Marc Andreesen.
- Netscape Navigator
  - Andreesen and Jim Clark, one of the founders of Silicon Graphics, Inc., started Mosaic Communications
  - This company became Netscape Communications Corporation, making the first commercially successful browser.
- Internet Explorer
  - Microsoft acquired technology from SpyGlass (who got their technology from NCSA) to develop their browser.
  - Microsoft includes IE in their Windows operating system leading to an anti-trust suit by the U.S. Dept. of Justice in 1997.


NCSA Mosaic for MS Windows
File Edit Options Navigate Hotlist Annotate Help
Document Title: NCSA Mosaic Home Page
Document URL: http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/NCSAMosaicHome.html
N C S A
MOSAIC
X Window System • Microsoft Windows • Macintosh
Welcome to NCSA Mosaic, an Internet information browser and World Wide Web client. NCSA Mosaic was developed at the National Center for Supercomputing Applications at the University of Illinois in --> Urbana-Champaign. NCSA Mosaic software is copyrighted by The Board of Trustees of the University of Illinois (UI), and ownership remains with the UI.
Jan `97
The Software Development Group at NCSA has worked on NCSA Mosaic for nearly four years and we've learned a lot in the process. We are honored that we were able to help bring this technology to the masses and appreciated all the support and feedback we have received in return. However, the time has come for us to concentrate our limited resources in other areas of interest and development on Mosaic is complete.
All information about the Mosaic project is available from the homepages.
NCSA Mosaic Platforms:
NCSA Mosaic for the X Window System
NCSA Mosaic for the Apple Macintosh
NCSA Mosaic for Microsoft Windows
World Wide Web Resources The following resources are available to help introduce you to cyberspace and keep track of its growth:
A glossary of World Wide Web terms and acronyms
An INDEX to Mosaic related documents
NCSA Mosaic Access Page for persons with disabilities
Mosaic and WWW related Tutorials
Internet Resources Meta-Index at NCSA
NUM

Microsoft vs. Netscape

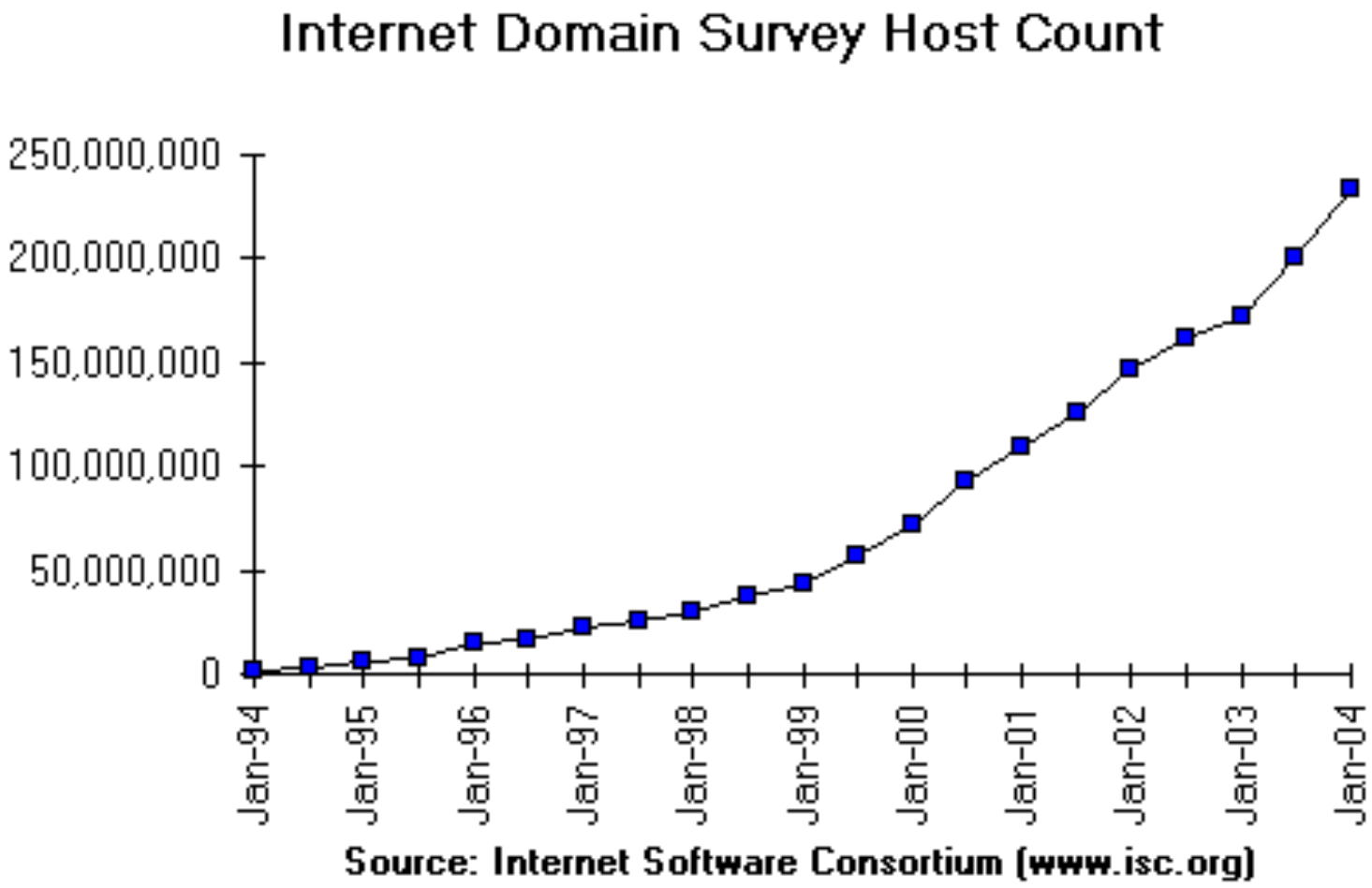


- Users paid to download and use Navigator
- Microsoft included Internet Explorer with their operating system for free
- Court case ensued
- Microsoft would eventually lose the case
- Netscape would lose the browser war

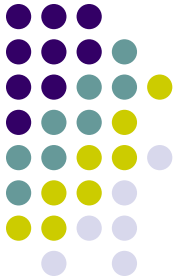
Search Engines

- Lycos
  - from a research project by Dr. Michael Mauldin of Carnegie Mellon University (CMU) in 1994.
- Yahoo!
  - created by Stanford graduate students David Filo and Jerry Yang in 1994.
- AltaVista
  - originated in 1995 with scientists at Digital Equipment Corporation's Research lab in Palo Alto.
- Google
  - founded in 1998 by Stanford's Larry Page and Sergey Brin,
  - based on a mathematical analysis of the relationships between what websites would produce better results than the basic techniques then in use

Internet Hosts

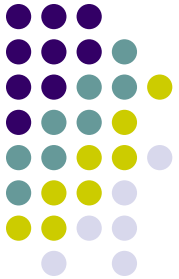


What else comes with the Internet?



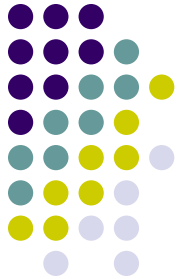
- Spam
- Hacking
- Child Pornography
- Cookies
- Spyware
- Viruses
- Trojan Horses
- Hate Sites
- Body organs for sale

The Home Office



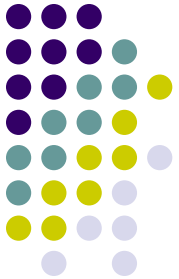
- Made more practical as the Internet capabilities improve
- Work at home (cyber-commute)
- Advantages:
  - No travel
  - Work in your pajamas
- Disadvantages:
  - No face to face time
  - Requires more self discipline

The Mobile Office



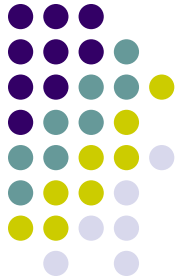
- Wireless Internet connections make work on the go possible
- Answer email in your car
- Surf the Web on a lawn chair under a tree

Online Gaming



- People replace AI
- Games as immersive universes
- Games as societies
- Lagless games?

What's next?



- Computing history spreads around the globe
- India & China, in particular, potentially have armies of computer scientists
- American companies & research institutions still primarily drive computing innovation (e.g. Google, Microsoft, Stanford, etc.)
  - their influence will likely be gradually watered down
- Other influential companies in the future:
  - your companies!