

Web Engineering I



Mannheim

Prof. Dr. Holger D. Hofmann

University of Cooperative Education Mannheim

Die Vorlesung

- Ziel der Dozenten ist es, den Studenten eine optimale Lern- und Lehrsituation zu bieten
- Störungen jeglicher Art beeinträchtigen die Lern- und Lehrsituation und sind daher zu vermeiden
- Das Miteinander im Rahmen einer Vorlesung vereinbaren wir durch eine "Vorlesungskultur"

Vorlesungskultur

- Pünktlichkeit (Vorlesungsbeginn, Pausenende)
- Nur eine Person redet während der Vorlesung
- Die private Internetnutzung ist während der Vorlesung/der Übungen untersagt
- Kein Essen während der Vorlesung
- Handys ausschalten, keine Telefonate
- Pausen werden bei Bedarf durchgeführt
- Bringen Sie sich ein!

Maßnahmen bei Verstößen

- Ermahnen ("gelbe Karte")
- Ausschluss aus der aktuellen Vorlesung
- Information des Studiengangsleiters
- Information des Ausbildungsunternehmens
 - Personalgespräch
 - Arbeitsrechtliche Konsequenzen

Organisational Issues

- Written test
- Slides via e-mail (mailing list?)
- Consultation Hours: by arrangement
 - holger.hofmann@dhbw-mannheim.de
- Summary and muddiest point

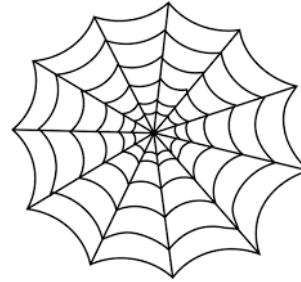
Lab Work

- Use of laptop computers
- Software is provided, if required
- Pair Programming/Lab Work (2 Persons per Computer)
 - Alternating programming/supervision
 - Discussion/clarification of open issues during programming

Web Engineering

■ Web

- Interwoven IT entities



■ Engineering

- Subdivision of a problem into solvable subproblems
- Abstraction: Focussing to important things; leave out unimportant things
- Reuse: To not re-invent the wheel
- Repeatable Solutions



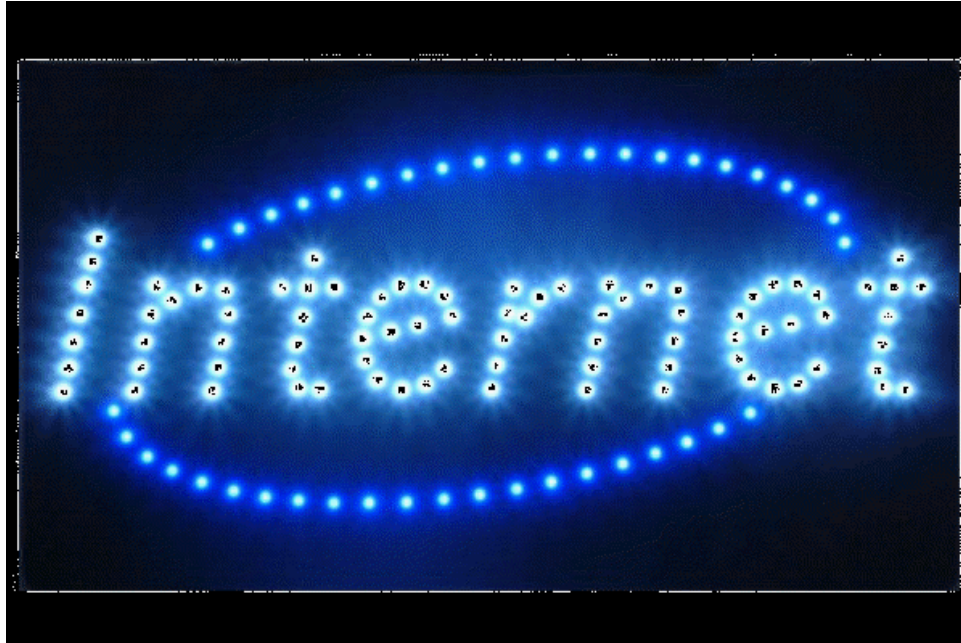
-> Does Computer Science differ from other Engineering disciplines?

Lecture Outline



Web Engineering I

The Internet, WWW, and Protocols

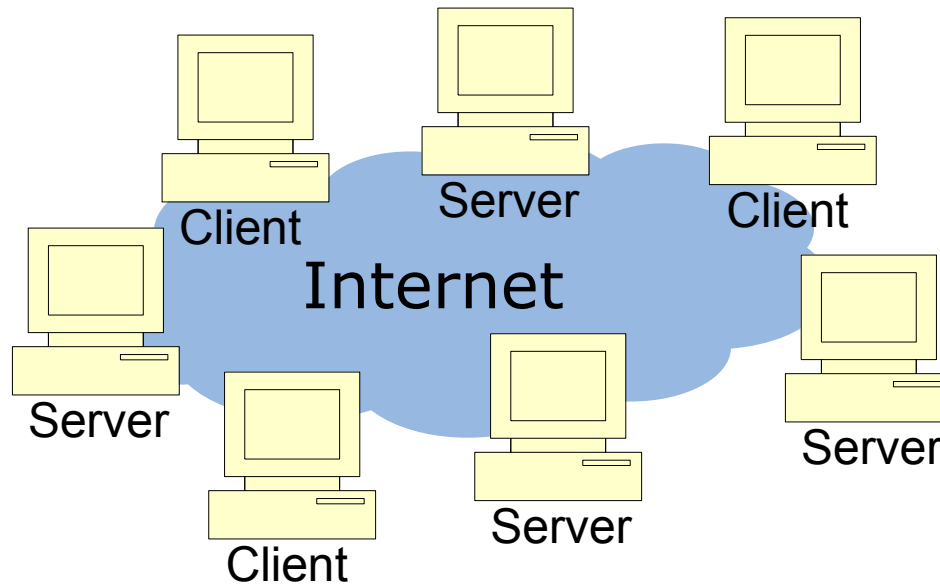


The Internet...



The World Wide Web

- Is a network of computers that exchange text, graphics, multimedia content using standard protocols
- Content is available via Web Servers
- Web Clients access Web Servers



Definitions of the World Wide Web

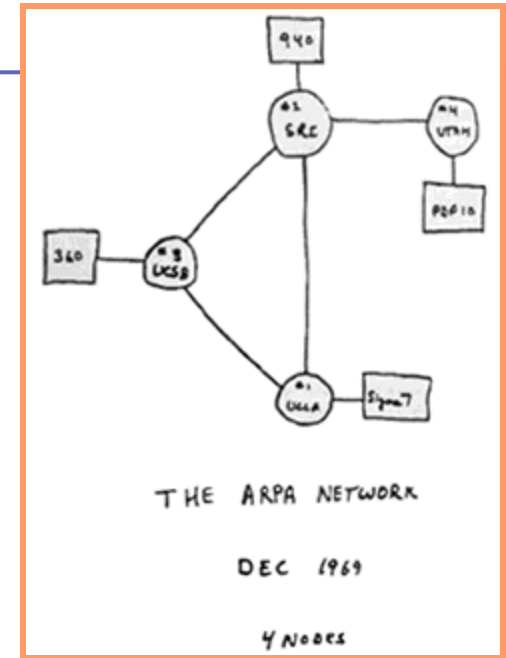
- The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge. [World Wide Web Consortium]
- The complete set of documents residing on all Internet servers that use the HTTP protocol, accessible to users via a simple point-and-click system. [The American Heritage Dictionary of the English Language, Fourth Edition]
- A system of Internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML (HyperText Markup Language) that supports links to other documents, as well as graphics, audio, and video files. This means you can jump from one document to another simply by clicking on hot spots. Not all Internet servers are part of the World Wide Web. [webopedia.com]

The Web: Ideas and Goals

- Localisation of Information using a uniformed addressing method
- Uniform Access (write/read) via a Standard User Interface
- Contents as Hypermedia Documents that can be visualised/played on different Computer (types)
- Integration of external Sources of Information (e.g., databases)
- Transaction Support as a Basis for interactive Applications (Client/Server)
- "Democracy": Anybody can provide Information on the Web

Historical Sketch

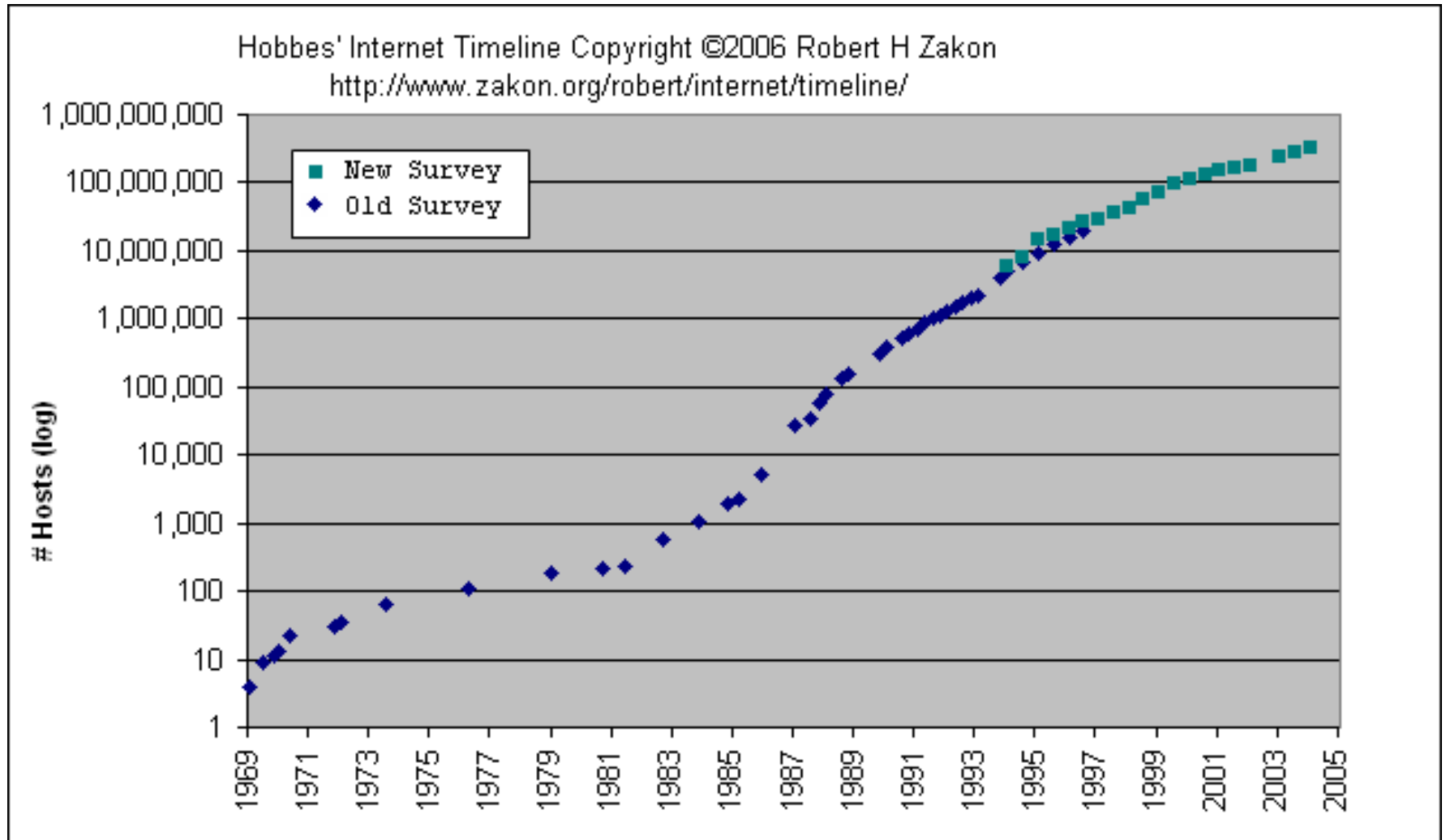
- 1965 Terms Hypertext and Hypermedia (Ted Nelson)
- 1969 ARPANET (4 nodes)
- 1974 TCP Protocol
- 1983 Term Internet
- 1989 World Wide Web (Berners-Lee, Cailliau; Release 1991)
- 1993 Mosaic Browser (341.634% annual growth rate of Web)
- 1995 Web has higher transfer volume than FTP



More Information in "A Brief History of the Internet",

<http://www.isoc.org/internet/history/brief.shtml>

Growth of the Web



© Prof. Dr. Holger D. Hofmann, - 16 -



- develops and promotes Internet standards, e.g., TCP/IP, Internet Protocols



- standard organisation for the WWW
- e.g., HTML, HTTP, URL

The Idea: Standards

- „It's not often in standardization that you can actually simplify something," *Tim Berners-Lee*



"If your response is to not be on the Web, then you lose."

- Standardisation with the WWW concerns mainly Protocols and Services

Exercise 1.1

Protocols

- Protocols are formal rules of behaviour and specify the "HOW"
- The Tasks of a Protocol are:
 - Addressing of Communication Endpoints
 - Management of Data Flow
 - Provision of a secure Data Transmission Service
- Example: PPP (Point-to-Point Protocol, Data Access via Modem)
- -> Serial/Parallel Communication

Services

- Services are Groups of Operations and specify the "WHAT"
- Can be connectionless (e.g., like "snail mail")
- Can be connection-oriented (e.g., like a phone call)
- Example: WWW (World Wide Web)

Layer Model

