

Web Engineering

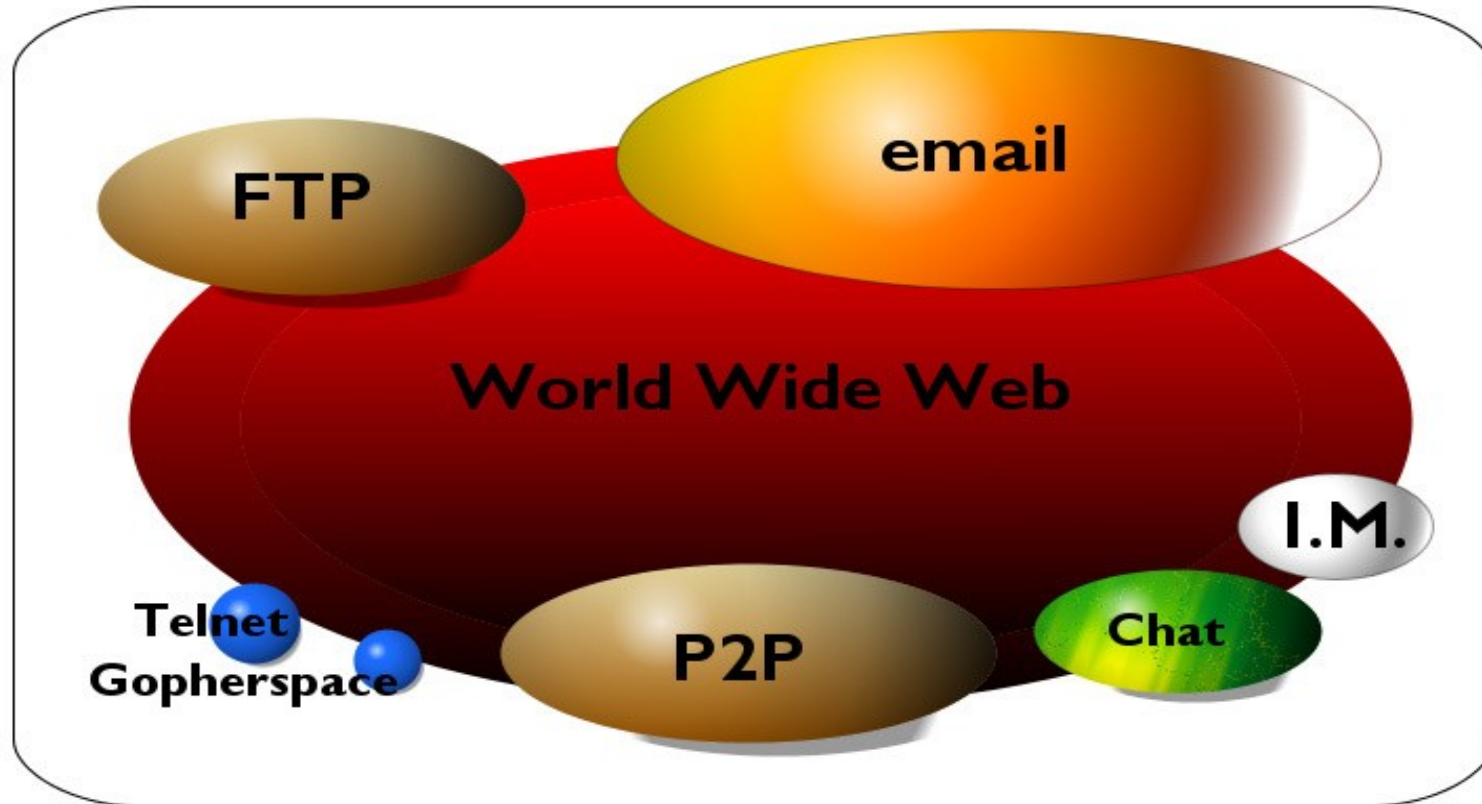
- Flavio Trolese: Was bisher geschah
- Internet vs. WWW
- Kurze Geschichte des WWW
- Konzepte und Technologien
- Gruppenarbeiten

me myself I

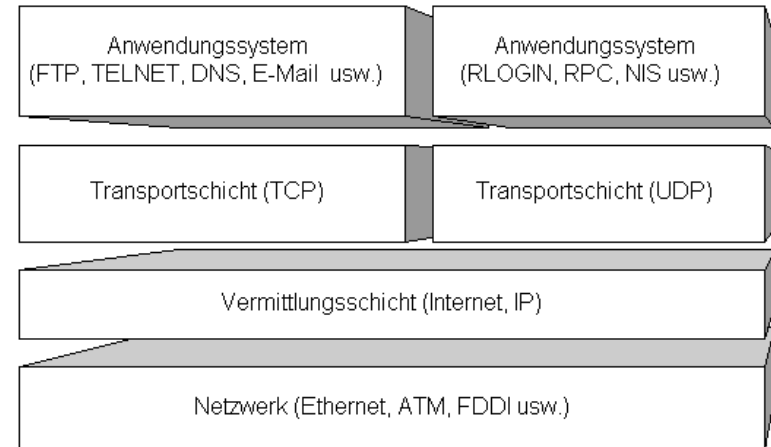
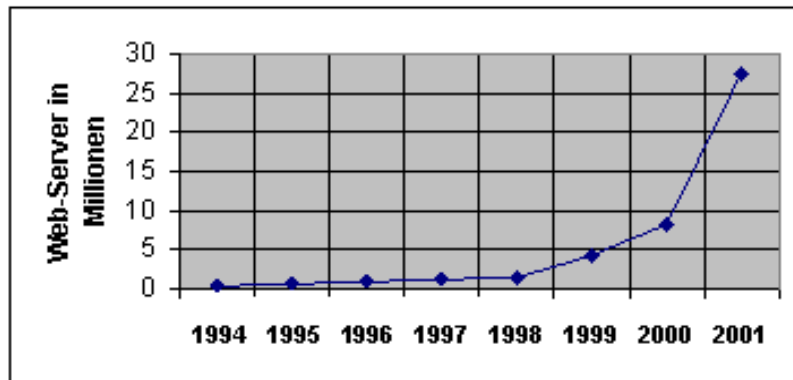
- Seit 1998 mit Webtechnologien unterwegs
 - HTML, CSS, PHP, ColdFusion, ASP, JSP, Servlets, Tapestry, Trails, J2EE, XML
 - Momentan: Lawful Interception bei panter llc.

Internet vs. WWW

The Internet: a collection of subnetworks



Geschichte



W3C Timeline

Pre-W3C Web and Internet Background

- 1965: Vannevar Bush article in *Atlantic Monthly* describes a hypothetical electrical mechanical device called a Memex, for memory extension, which could make and follow links between documents on microfilm.
- 1960: J.C.R. Licklider publishes "Man-Computer Symbiosis".
- 1962: Douglas Engelbart publishes "Augmenting Human Endless: A Conceptual Framework".
- 1963: Ted Nelson coins the term "Hypertext" in "The Structure for the Complex, the Changing, and the Indeterminate," 20th National Conference, New York Association for Computing Machinery.
- 1968: Douglas Engelbart demonstrates Online System (NLS).
- 1969: Advanced Research Projects Agency commission ARPANET to conduct research on networking.
- 1971: The development of BBN messenger program to send message across a distributed network.
- 1972: Stanford research program to ARPANET users using the "G" sign as part of the address.
- 1974: Vint Cerf and Bob Kahn publish "A Protocol for Packet Network Interconnection", which specifies in detail the design of a Transmission Control Protocol (TCP).
- 1978: Part of TCP published separately as the Internet Protocol (IP).
- 1980: While consulting for CERN, Tim Berners-Lee writes a program, "Engelbart's Web," which allows links to be made between arbitrary nodes.
- 1984: Paul Mockapetis introduces Domain Name System (DNS).
- 1989: Tim Berners-Lee creates Transmission Management A Proposal for comments at CERN.

- 1989: Mark Andriessen and colleagues leave NCSA to form Public Communications Corp., which later becomes Netscape.
- Traditional dial-up systems Compuserve, AOL, Prodigy begin to provide Internet access.
- 1 Oct. W3C created.
- 1990: End of 1990 development stage for first browser (called "WorldWideWeb"), which ran on an early, and low-speed browser. Collaboration between CERN and Internet in December 1990.
- 1991: "Dec Hypertext '91 Conference in San Antonio, Texas (USA). Tim Berners-Lee paper on Web was accepted as poster session."
- 1992: Development stage for first browser (called "WorldWideWeb"), which ran on an early, and low-speed browser. Collaboration between CERN and Internet in December 1990.
- 1993: First number of browsers released, including Mosaic, Erwise, Viola, and Surfline.
- 1994: First W3C meeting in Europe.
- 1995: First W3C public meeting in Zurich.
- 1996: First W3C public meeting in Geneva.
- 1997: First W3C public meeting in Paris.
- 1998: First W3C public meeting in Santa Clara.
- 1999: First W3C public meeting in Brisbane.
- 2000: First W3C public meeting in Toronto.
- 2001: First W3C public meeting in Amsterdam.
- 2002: First W3C public meeting in Hong Kong.
- 2003: First W3C public meeting in Honolulu.
- 2004: First W3C public meeting in Budapest.

W3C

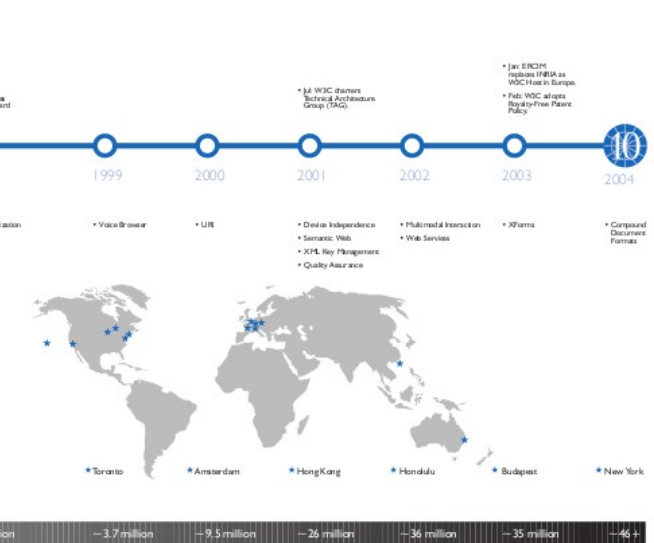
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Starting year of current W3C Activities

- 1994: Document Object Model (DOM)
- 1995: Privacy
- 1996: Synchronized Multimedia
- 1997: Web Accessibility Initiative (WAI)
- 1998: Internationalization
- 1999: Voice Browser
- 2000: URI
- 2001: Design Independence
- 2002: Semantic Web
- 2003: XML Key Management
- 2004: Quality Assurance
- 2005: Multimedia Interaction
- 2006: Web Services
- 2007: XForms
- 2008: Compound Document Formats

Web conference

- Geneva (Jan)
- Chicago (Oct)
- Darmstadt (Apr)
- Boston (Dec)
- Paris (Large conference to date)
- Santa Clara
- Brisbane
- Toronto
- Amsterdam
- Hong Kong
- Honolulu
- Budapest
- New York



- W3C-10: Time Line Graphic: <http://www.w3.org/2004/Talks/Styles/w3c10/images/timeline.pdf>

Geschichte

- **1945:** Vannevar Bush writes an article in Atlantic Monthly about a photo-electrical-mechanical device called a Memex, for memory extension, which could make and follow links between documents on microfiche
- **1960s:** Doug Engelbart prototypes an "oNLine System" (NLS) which does hypertext browsing editing, email, and so on. He invents the mouse for this purpose. See the Bootstrap Institute library.

Geschichte

- **1980**: While consulting for CERN June-December of 1980, Tim Berners-Lee writes a notebook program, "Enquire-Within-Upon-Everything", which allows links to be made between arbitrary nodes. Each node had a title, a type, and a list of bidirectional typed links. "ENQUIRE" ran on Norsk Data machines under SINTRAN-III.
- **1989**: "Information Management: A Proposal" written by Tim BL and circulated for comments at CERN (TBL). Paper "HyperText and CERN" produced as background

Konzepte

- **Querverweise**
 - Hervorgehobene Worte oder Bilder, die weitere Dokumente oder Abbildungen referenzieren (Hyperlinks).
- **URL**
 - Querverweis besteht aus zwei Komponenten, einem Anker und dem Universal Resource Locator, welcher beschreibt, was beim Aktivieren des Hyperlinks zu tun ist.
 - Beispiel für ein URL: <http://www.hsz-t.ch/extranet>
- **HTTP**
 - Das HyperText Transfer Protocoll dient Web-Browser und -Server zur Kommunikation.

Konzepte

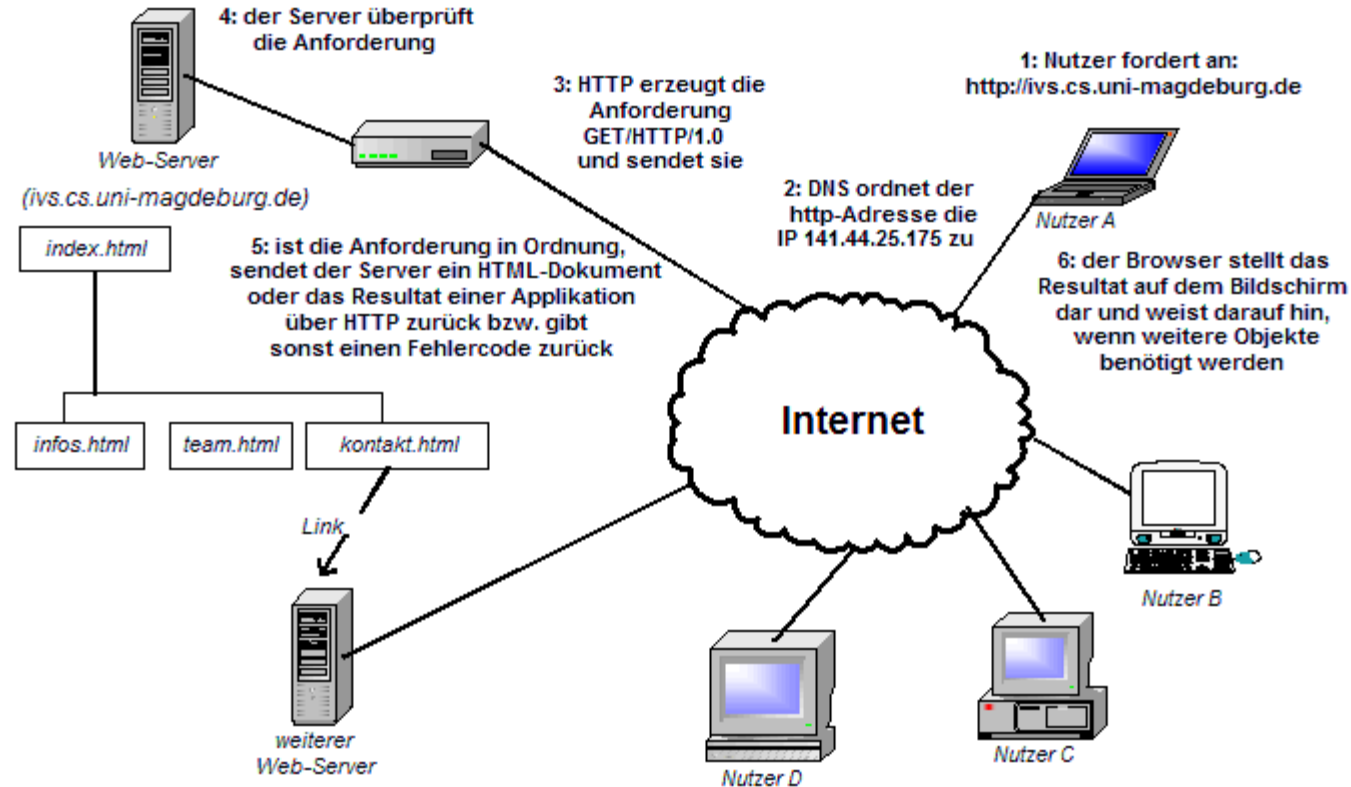
- **Web-Server**

- Die Serversoftware wird als Web-Server bezeichnet. Dient zum Versenden von Dokumenten und Ausführen von speziellen Skripten.

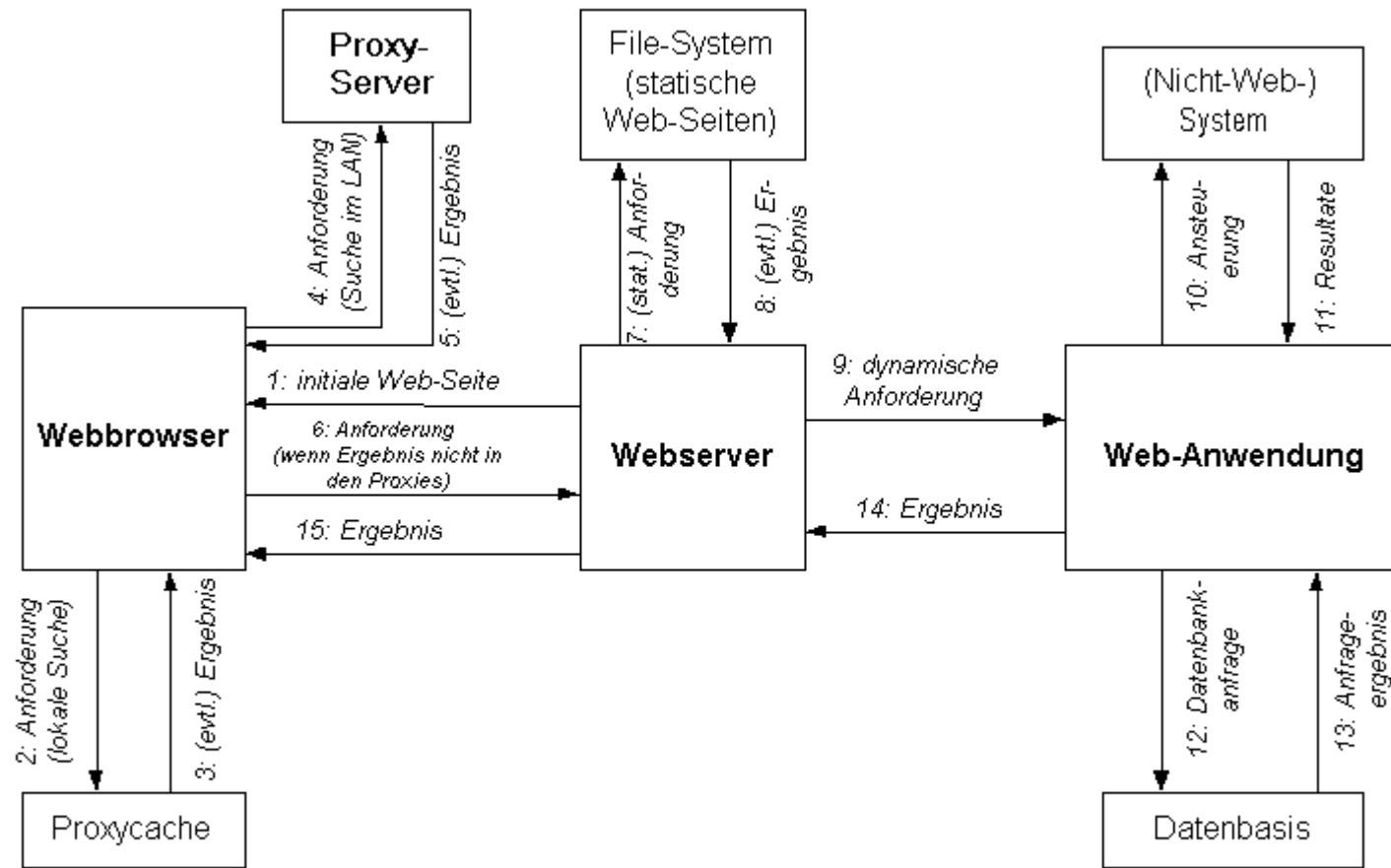
- **Web-Browser**

- Fordert Dokumente beim Server an, interpretiert deren Inhalt und zeigt sie dem Nutzer an (Text, Bilder, Animationen, etc.)

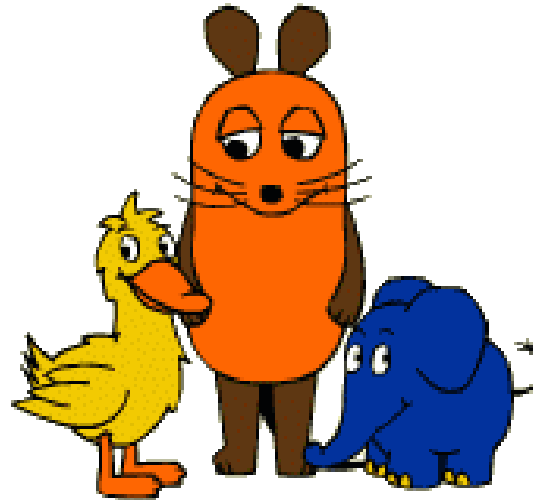
Konzepte



Konzepte



Konzepte



- <http://www.wdrmaus.de/sachgeschichten/internet/>

Request Cycle

1. Der Client sendet einen HTTP-Request an die Webanwendung
2. Webanwendung verarbeitet der Anforderung und generiert neue Daten als Antwort
3. Webanwendung versendet die Daten mit einer HTTP-Response
4. 4. Darstellung der Daten im Client (meist ein Browser)

siehe: <http://web-sniffer.net/>

Konzepte

- Analyse eines einfachen HTTP-GET
- Tools:
 - wireshark (www.wireshark.org)
 - tcpxtract (<http://tcpxtract.sourceforge.net/>)
- Siehe <http://wiki.wireshark.org/SampleCaptures>

Konzepte

The screenshot displays the Wireshark interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, and Help. Below the menu is a toolbar with various icons for file operations, navigation, and analysis. A filter bar is present with a dropdown menu and buttons for 'Expression...', 'Clear', and 'Apply'.

No. .	Time	Source	Destination	Protocol	Info
1	2004-05-13 12:17:07.311224	145.254.160.237	65.208.228.223	TCP	3372 > www [SYN]
2	2004-05-13 12:17:08.222534	65.208.228.223	145.254.160.237	TCP	www > 3372 [SYN]
3	2004-05-13 12:17:08.222534	145.254.160.237	65.208.228.223	TCP	3372 > www [ACK]
4	2004-05-13 12:17:08.222534	145.254.160.237	65.208.228.223	HTTP	GET /download.html
5	2004-05-13 12:17:08.783340	65.208.228.223	145.254.160.237	TCP	www > 3372 [ACK]
6	2004-05-13 12:17:08.993643	65.208.228.223	145.254.160.237	TCP	[TCP segment of
7	2004-05-13 12:17:09.123830	145.254.160.237	65.208.228.223	TCP	3372 > www [ACK]
8	2004-05-13 12:17:09.123830	65.208.228.223	145.254.160.237	TCP	[TCP segment of
9	2004-05-13 12:17:09.324118	145.254.160.237	65.208.228.223	TCP	3372 > www [ACK]
10	2004-05-13 12:17:09.754737	65.208.228.223	145.254.160.237	TCP	[TCP segment of
11	2004-05-13 12:17:09.864896	65.208.228.223	145.254.160.237	TCP	[TCP segment of
12	2004-05-13 12:17:09.864896	145.254.160.237	65.208.228.223	TCP	3372 > www [ACK]
13	2004-05-13 12:17:09.864896	145.254.160.237	145.253.2.203	DNS	Standard query

Below the packet list, the details pane shows the structure of the selected packet (Frame 4):

- Frame 4 (533 bytes on wire, 533 bytes captured)
- Ethernet II, Src: Xerox_00:00:00 (00:00:01:00:00:00), Dst: fe:ff:20:00:01:00 (fe:ff:20:00:01:00)
- Internet Protocol, Src: 145.254.160.237 (145.254.160.237), Dst: 65.208.228.223 (65.208.228.223)
- Transmission Control Protocol, Src Port: 3372 (3372), Dst Port: www (80), Seq: 1, Ack: 1, Len: 479
- Hypertext Transfer Protocol
 - GET /download.html HTTP/1.1\r\n
 - Host: www.ethereal.com\r\n
 - User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.6) Gecko/20040113\r\n
 - Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,image/pr
 - Accept-Language: en-us,en;q=0.5\r\n
 - Accept-Encoding: gzip,deflate\r\n

Konzepte

- tro@pussycat:/tmp\$ tcpxtract -f http.cap
- Found file of type "html" in session [65.208.228.223:20480 -> 145.254.160.237:11277], exporting to 00000001.html



Ethereal: Down

File Edit View History de.licio.us Bookmarks Tools Help

file:///tmp/00000001.html

Recently Bookmarked HIBERNATE - Relati... rentzsch.com: Progr... Ganym

Disable Cookies CSS Forms Images Information Miscellaneous

MyWiki: Main SampleCaptures - The Wire... **Ethereal: Down**

 **Ethereal**
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The Official source code release and installers for Windows, Red Hat Linux/Fedora

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FTP: [Main site](#) [Australia](#) [Australia](#) [Austria](#) [Germany](#) [Japan](#) [Mexico](#) [Sweden](#)

Lernziele

- Was ich wissen muss:
 - Unterschiede zw. Internet und WWW
 - Die 5 Hauptkonzepte des WWW
 - Http: Request response cycle
 - Wofür wird das tool wireshark eingesetzt?
 - Wofür wird das tool tcpxtract eingesetzt
 - Grobes Verständnis der Geschichte des WWW

Gruppenarbeiten

- Gruppe à zwei bis drei Personen
- Text durchlesen
- Zusammenfassung erstellen in der Gruppe (1/2 A4 Seite ASCII Plain Text)
- kurze Präsentation (5-10min) vor der Klasse

Gruppenarbeit I

- **“As We May Think”**
- Siehe:
“http://wwwcs.uni-paderborn.de/~winkler/bush_d.html”

Gruppenarbeit II

- **“ENQUIRE”**
- **siehe:** <http://www.w3.org/History/1980/Enquire/manual/>

Gruppenarbeit III

- **“TBL Proposal”**
- siehe: <http://www.w3.org/History/1989/proposal.html>

Gruppenarbeit IV

- **"HTTP"**
- siehe:
http://de.wikipedia.org/wiki/Hypertext_Transfer_Protocol

Gruppenarbeit V

- **"HTML"**

- siehe:

http://de.wikipedia.org/wiki/Hypertext_Markup_Language