

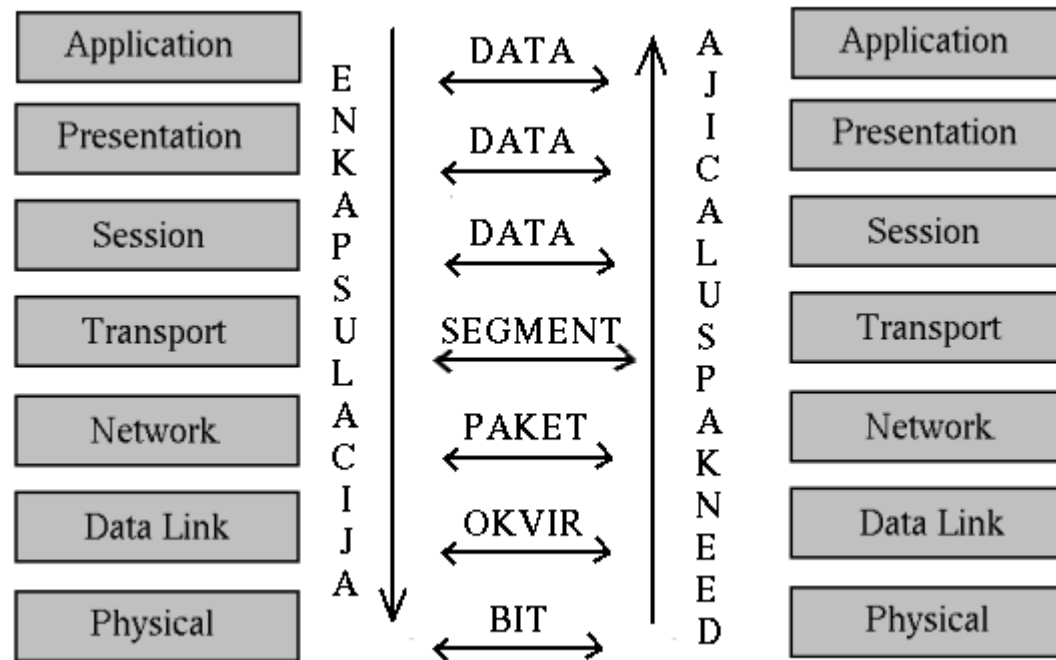
Primjena elektroničkih računala

Računalne mreže

dr. sc. Hrvoje Kalinić



Računalne mreže



Računalne mreže

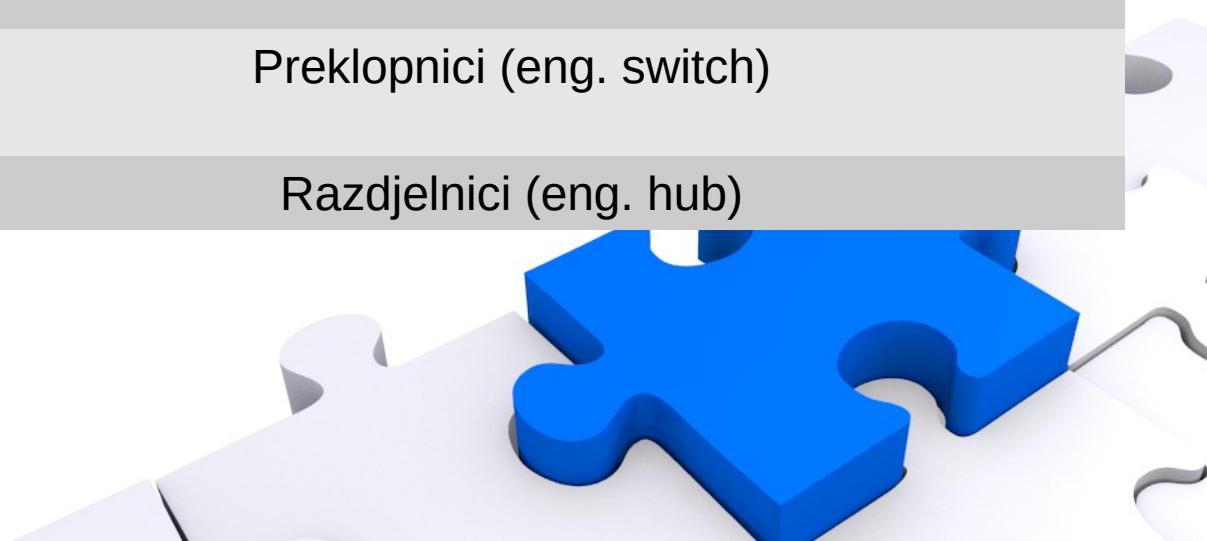
	OSI sloj	Uloga
7. Podatci	Aplikacijski	Sučelje mrežne aplikacije, prevodi mrežni proces u aplikaciju
6. Podatci	Prezentacijski	Prikaz podataka, enkripcija i dekripcija, pretvara strojno ovisnu reprezentaciju podataka u strojno neovisnu
5. Podatci	Sesijski (pregovarački)	Uspostavlja komunikaciju među hostovima (domaćinima), upravlja međuprotokolskim dijalogom (sesijama)
4. Segmenti	Transportni	Osigurava pouzdanu dostavu segmenata među čvorovima mreže
3. Paketi / Datagrami	Mrežni	Adresiranje, usmjeravanje (routing) i dostava (ne nužno pouzdana) datagrama do čvorova mreže
2. Okvir / Bit	Podatkovni	Osigurava pouzdan prijenos informacije između dviju točaka (point-to-point connection)
1. Bit	Fizički	Osigurava vezu između točaka (point-to-point)

Računalne mreže

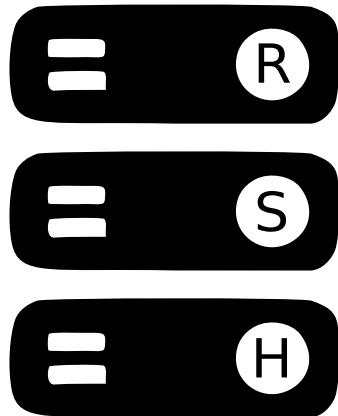
OSI sloj	Protokol
7. Aplikacijski sloj	HTTP, SMTP, SNMP, FTP, Telnet, SIP, SSH, NFS, RTSP, XMPP, Whois, POP, IMAP, DNS, rsync, IRC...
6. Prezentacijski sloj	XDR, (SMB, NFS, CIFS), (ASN.1), AFP, NCP, MIME, TSL, SSL...
5. Sloj sesije	ISO 8327 / CCITT X.225, TLS, SSH, RPC, NetBIOS, ASP, Winsock, BSD sockets, 9P...
4. Transportni sloj	TCP, UDP, RTP, SCTP, SPX, ATP
3. Mrežni sloj	IP, ICMP, IGMP, BGP, OSPF, RIP, IGRP, EIGRP, ARP, ATM, RARP, X.25
2. Podatkovni sloj (sloj veze)	Ethernet, Token ring, HDLC, Frame relay, 802.11 WiFi, FDDI, PPP
1. Fizički sloj	RS-232, IEEE 1394 interface (firewire), 802.11 Wi-Fi, bluetooth ili USB (fizički), DSL... Bakrene žice, svjetlovodi, bezžični prijenos...

Računalne mreže

	OSI sloj	Sučelje
7.	Aplikacijski	Čovjek (aplikacija)
6.	Prezentacijski	Operacijski sustav (OS)
5.	Pregovarački	Međuračunalna komunikacija (sesija)
4.	Transportni	Dial-up modemi
3.	Mrežni	Usmjerivači (eng. router)
2.	Podatkovni	Preklopnici (eng. switch)
1.	Fizički	Razdjelnici (eng. hub)



Računálne mreže



...
Mrežni
Podatkovni
Fizički

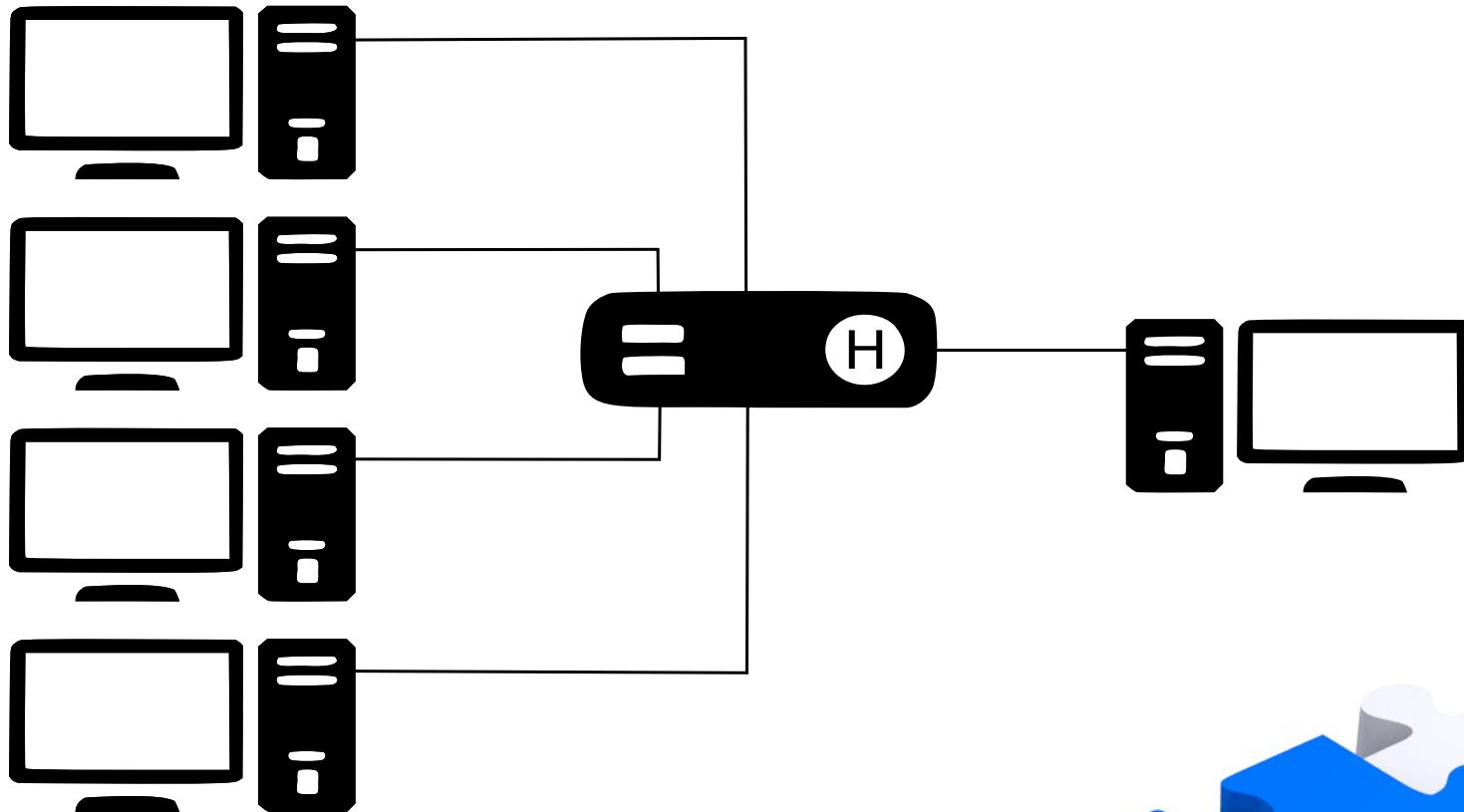
IP
10.1.21.3

MAC
00-01-23-45-67-D1

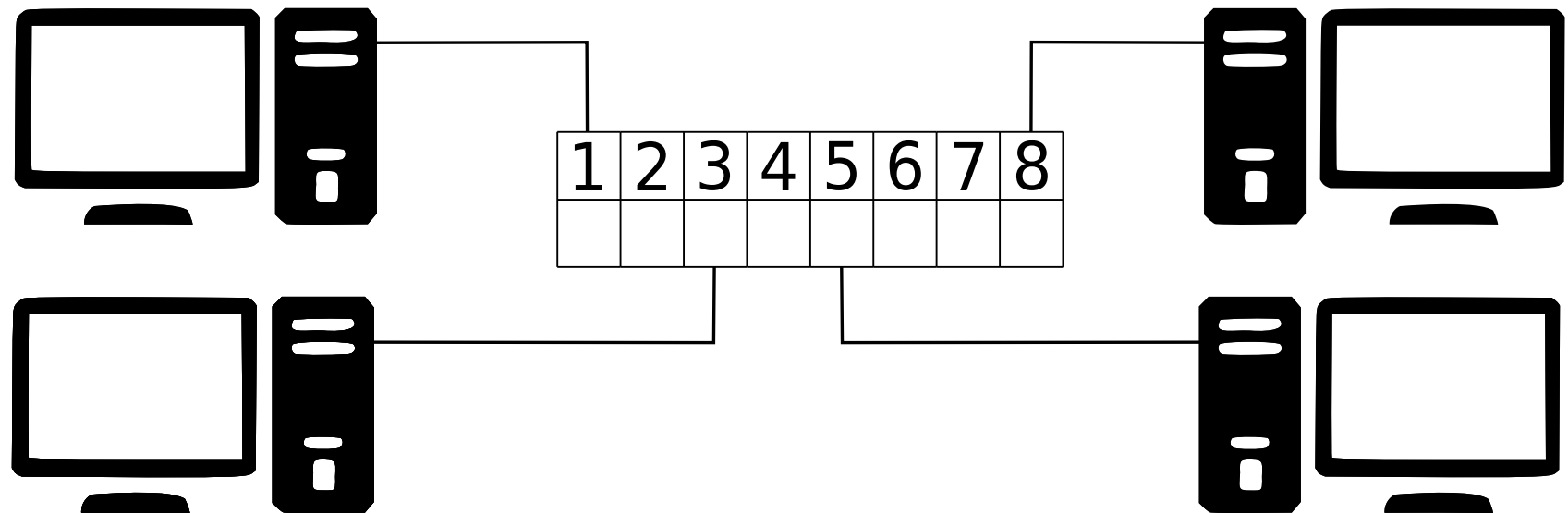
1000101100111...



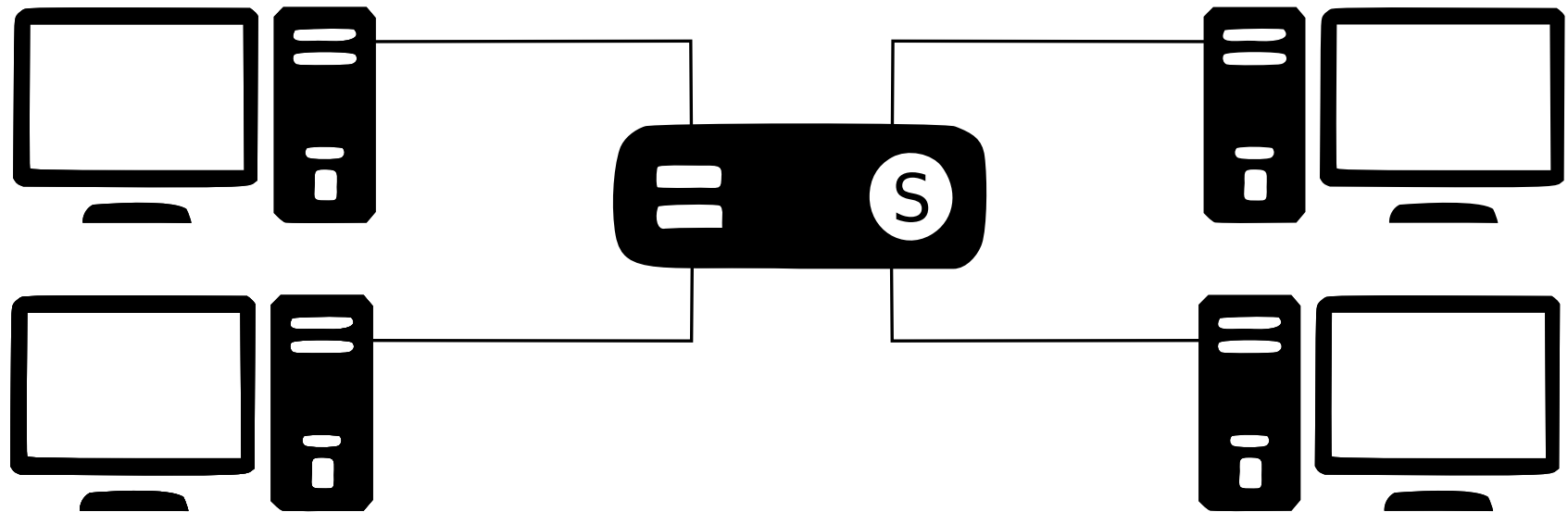
Računálne mreže



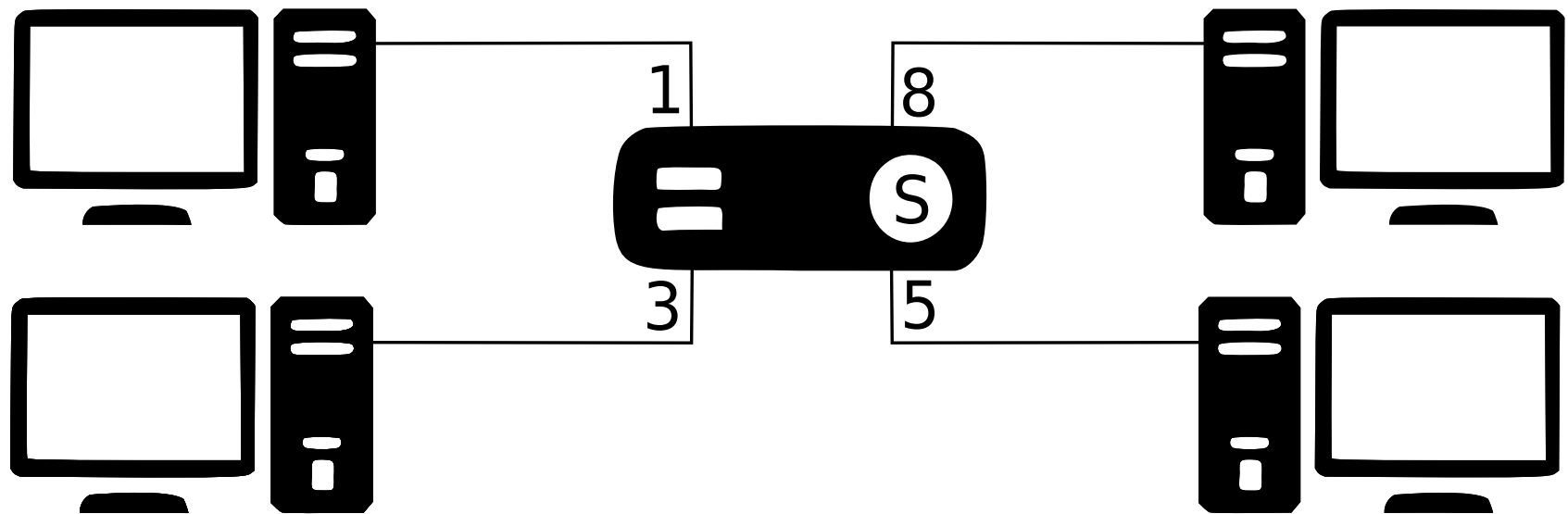
Računálne mreže



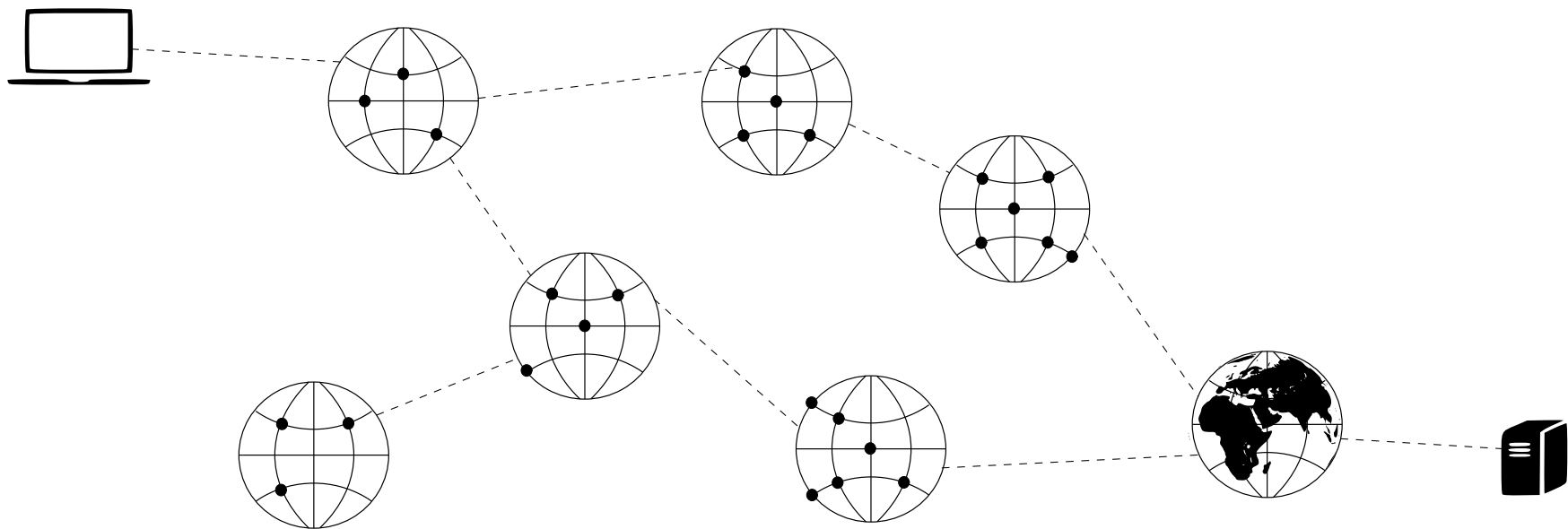
Računálne mreže



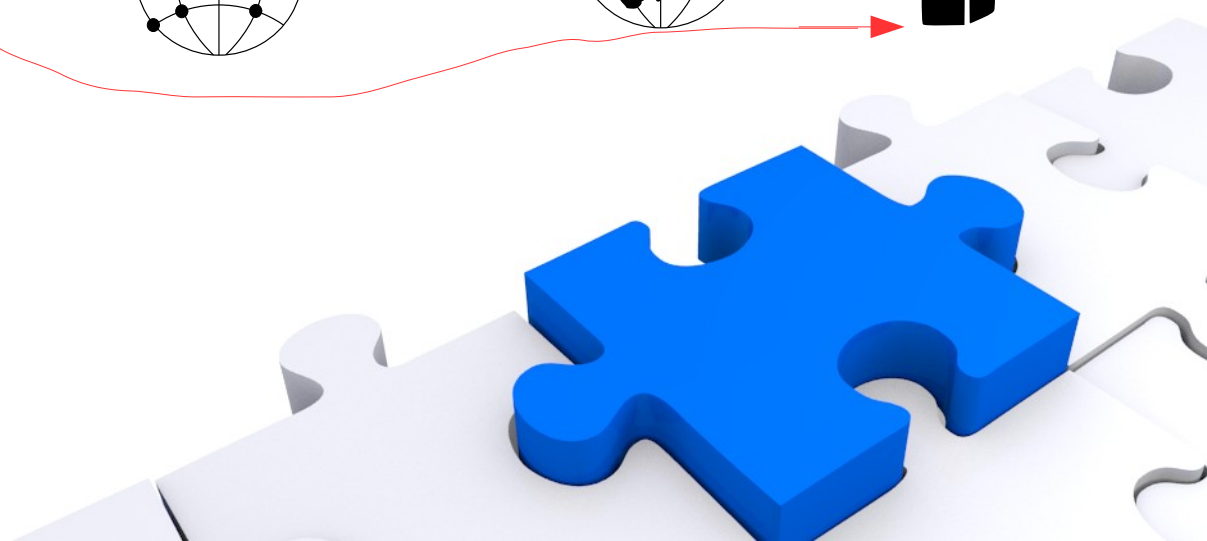
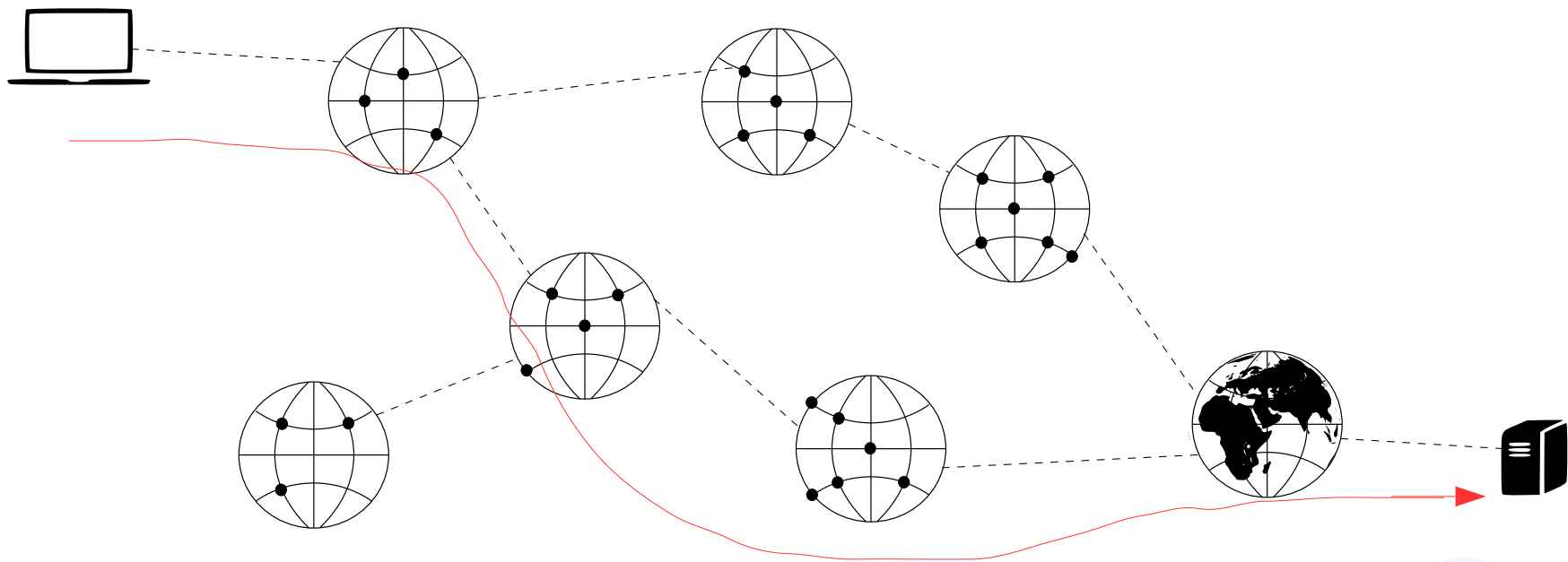
Računálne mreže



Računálne mreže



Računálne mreže



Računalne mreže

- MAC (eng. Media Access Control)
- IP (eng. Internet Protocol)
- DNS (eng. Domain Name System)



Računalne mreže

- Osnovne mrežne usluge
 - Pregled sadržaja na poslužiteljima
 - Elektronička pošta
 - Spajanje na udaljeno računalo
 - Utakanje i istakanje datoteka



Računalne mreže

- Osnovne mrežne usluge
 - www
 - e-mail
 - ssh (telnet)
 - sftp (ftp)



Računalne mreže

- WWW
 - Sustav raspodijeljenih dokumenata međusobno povezanih
- Standardi
 - HTML (Hyper Text Markup Language)
 - Za pisanje hipertekstualnih dokumenta
 - URL (Uniform Resource Locator)
 - Za adresiranje hipertekstualnih dokumenata
 - HTTP (Hyper Text Transport Protocol)
 - Za pristup i prihvatanje hipertekstualnih dokumenata
 - CGI (Common Gateway Interface)
 - Za pisanje interaktivnih programa

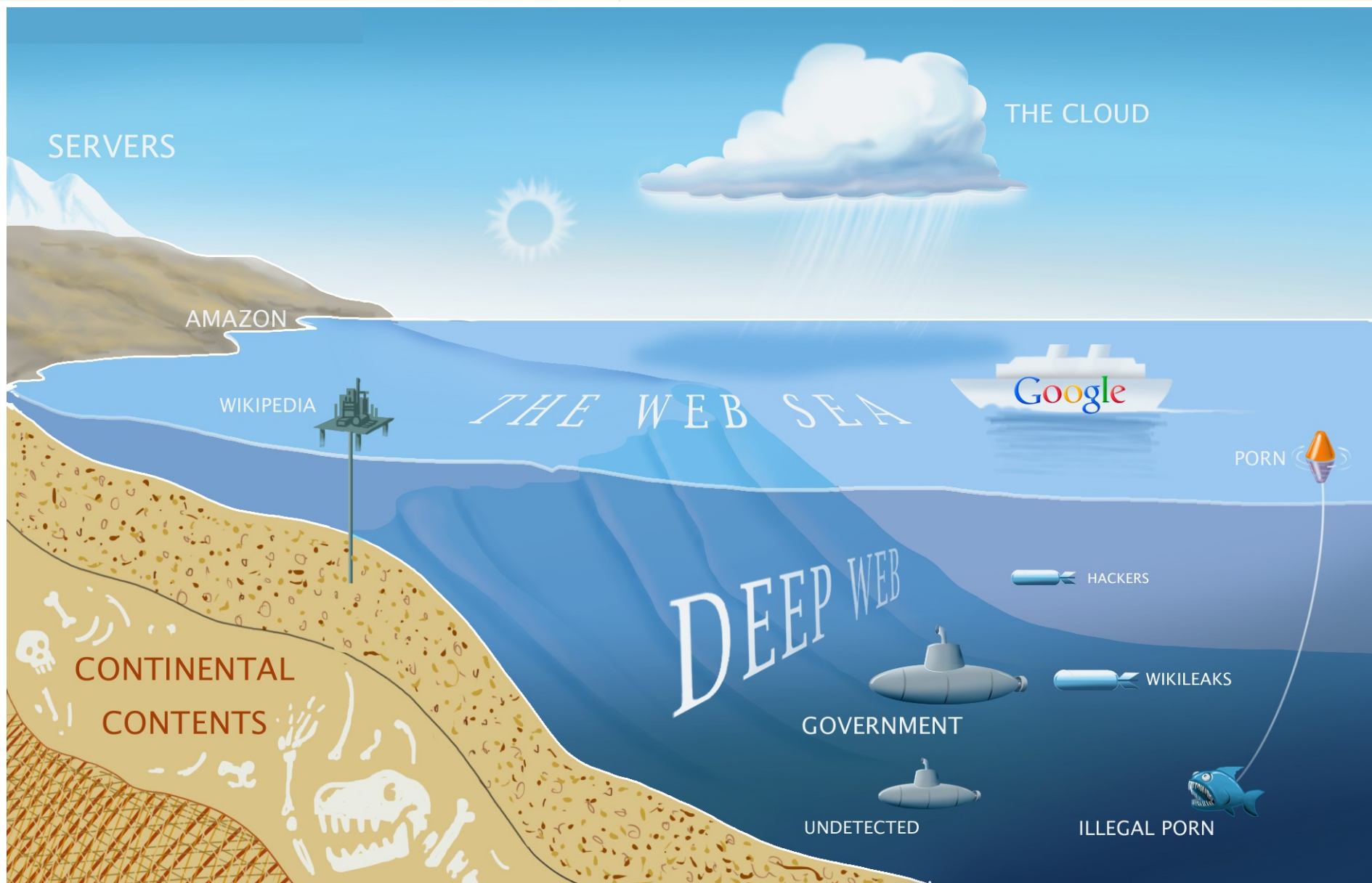


Računalne mreže

- Pretraživači WWW-a
 - Google
 - Yahoo
 - Duckduckgo
 - ...
- Organizirano pretraživanje i automatsko indeksiranje svih dostupnih hipertekstualnih dokumenata



Računalne mreže



Average time spent on Facebook: **6.5 hours** per **month**.
Source: Reston Research

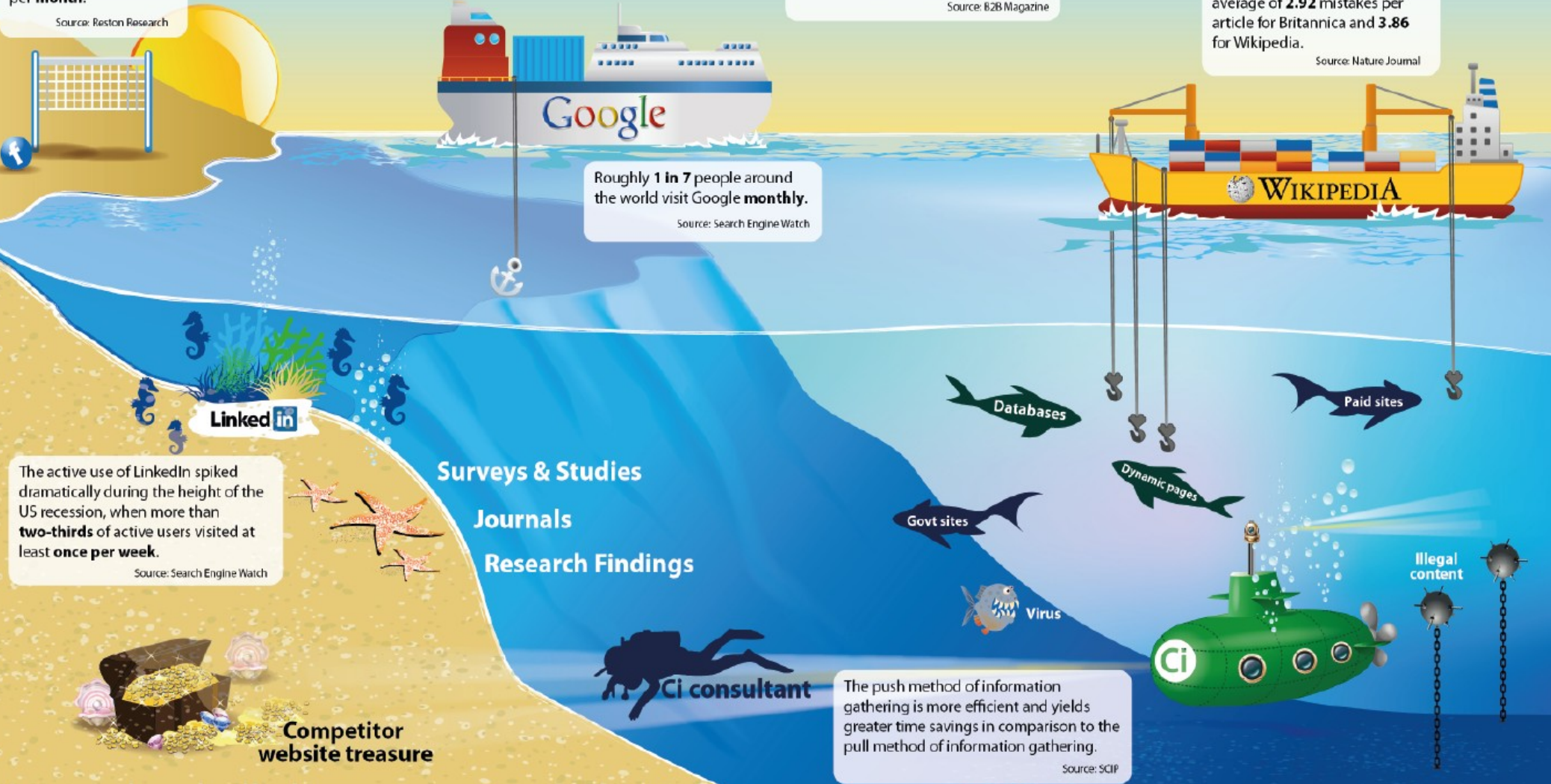
When advertising and marketing executives were asked which social media networks would receive the most advertising or marketing investment in 2012, they selected Facebook (**53%**), followed by Twitter (**43%**), Google (**41%**), LinkedIn (**38%**) and YouTube (**36%**).
Source: B2B Magazine

Although widely criticized, a 2005 study confirmed that Wikipedia is about a good a source as Encyclopedia Britannica. The study found an average of **2.92** mistakes per article for Britannica and **3.86** for Wikipedia.
Source: Nature Journal

Roughly **1 in 7** people around the world visit Google **monthly**.
Source: Search Engine Watch

The active use of LinkedIn spiked dramatically during the height of the US recession, when more than **two-thirds** of active users visited at least **once per week**.
Source: Search Engine Watch

The push method of information gathering is more efficient and yields greater time savings in comparison to the pull method of information gathering.
Source: SCIP



LinkedIn

Surveys & Studies
Journals
Research Findings

Competitor website treasure

Ci consultant

Ci

Illegal content

Databases

Paid sites

Dynamic pages

Govt sites

Virus

EXPLORING THE DEPTHS OF THE DEEP WEB

Eighty-five percent of Web users use search engines to find needed information, but nearly as high a percentage cite the inability to find desired information as one of their biggest frustrations.^[2]

85%



0.03%

Internet searchers are searching one in 3,000 of the pages available to them today. ^[1]

SURFACE WEB

Linked content search engine crawlers can find; Content submitted to search engines

19 TB of content ^[3]

1B unique documents ^[3]

DEEP WEB

AKA 'invisible web'

Dynamic content ; Password protected or unlinked content; Form-controlled entry restricted pages; Geo-tagged pages; Scripted Content; Non-HTML/text content; Pages updated or changed ahead of search engine indexing

7500+ TB of content ^[3]

550B unique documents ^[3]

Traditional search tools are ill-equipped to navigate The Deep Web. Serious information seekers are turning to semantic search technologies to surface answers in the Deep Web.

Largest growing category of new information on the Internet ^[3]

400-550X more public information than the Surface Web ^[3]

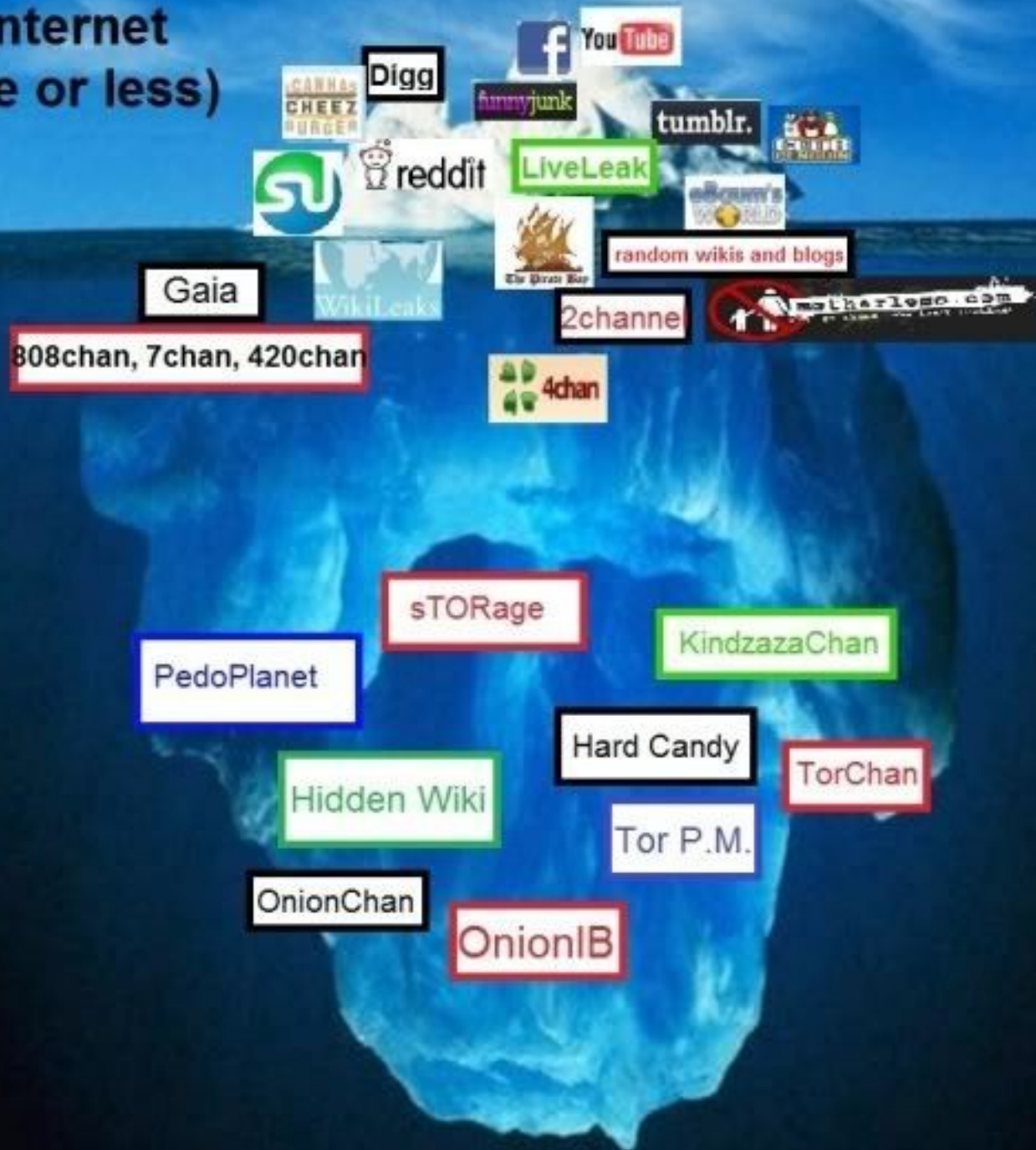
Total quality 1000 – 2000X greater than the quality of the Surface Web ^[3]

[1] NEC Research Institute study, published in Nature

[2] Tenth edition of GUV's (graphics, visualization and usability) WWW User Survey

[3] Bergman, K. T. (2001). The deep web: surfacing hidden value. The Journal of Electronic Publishing <http://dx.doi.org/10.3796/jep.1.0007.2001>

The Internet (more or less)



You can turn a computer on. Yay.

You must be really bored.

Either use a proxy, or say hi to the FBI.

Računalne mreže

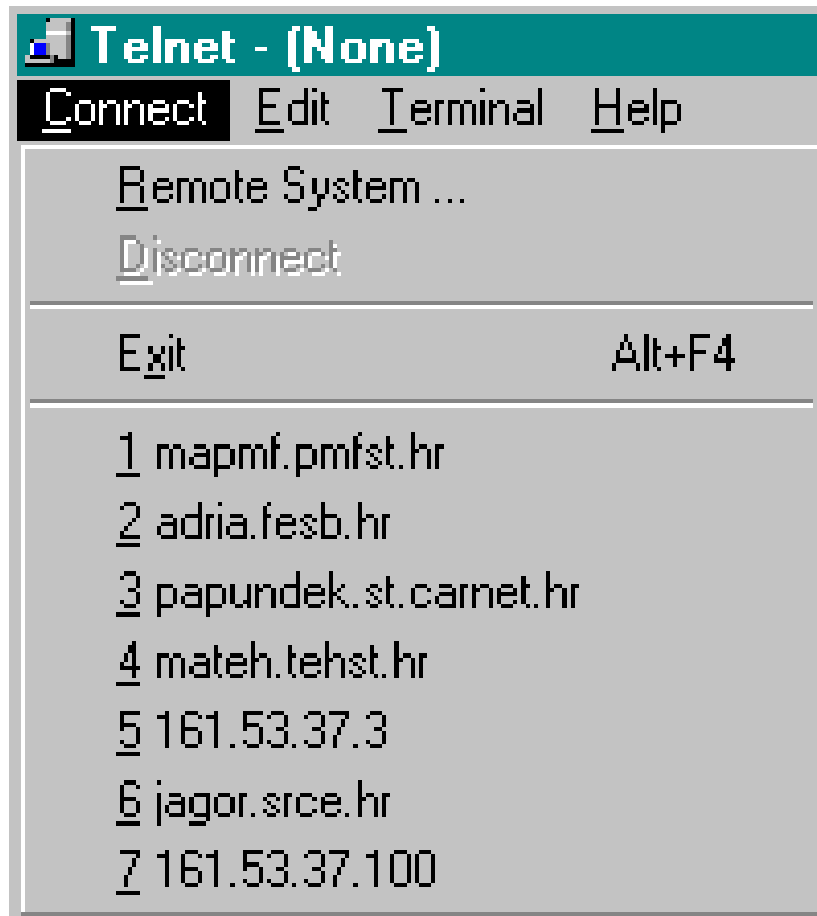
- E-mail
 - omogućava razmjenu poruka korisnika Interneta
 - Korisnici se međusobno poznaju nadimkom pri tom nazivu računala (adresi)
 - sindikat@izor.hr



Računalne mreže

- Telnet

- osnovni protokol za prijavljivanje rada na udaljenom računalu u okviru računalne mreže
- omogućava da se sa računala na kojem radite povežete na neko drugo računalo i koristite njegove usluge
- U takvoj vezi računalo s kojeg se povezujete postaje terminal udaljenog računala
- Izgled Telnet prozora u okruženju Windows operacijskog sustava



Telnet jadran.izor.hr

```
-----  
-                               -  
-      Institut za oceanografiju i ribarstvo      -  
-                               -  
-      S P L I T      -      C R O A T I A      -  
-                               -  
-----
```

```
hostname = jadran.izor.hr  
URL:      http://www.izor.hr  
e-mail:   office@izor.hr  
-----
```

jadran login: dadic

Password:

Last login: Tue Jan 2 12:58:29 2007 from pc-dadic.izor.hr on pts/1

Linux jadran 2.4.32-grsec #1 SMP Thu Feb 23 13:47:41 CET 2006 i686 GNU/Linux

```
This is a private computer facility. Access for any reason must be  
specifically authorized by the owner. Unless you are so authorized,  
your continued access and any other use may expose you to criminal  
and/or civil proceedings. Any and all monitoring of user activity  
may take place on this system by the management.
```

You have mail.

MANPATH: Undefined variable.

jadran>

Računalne mreže

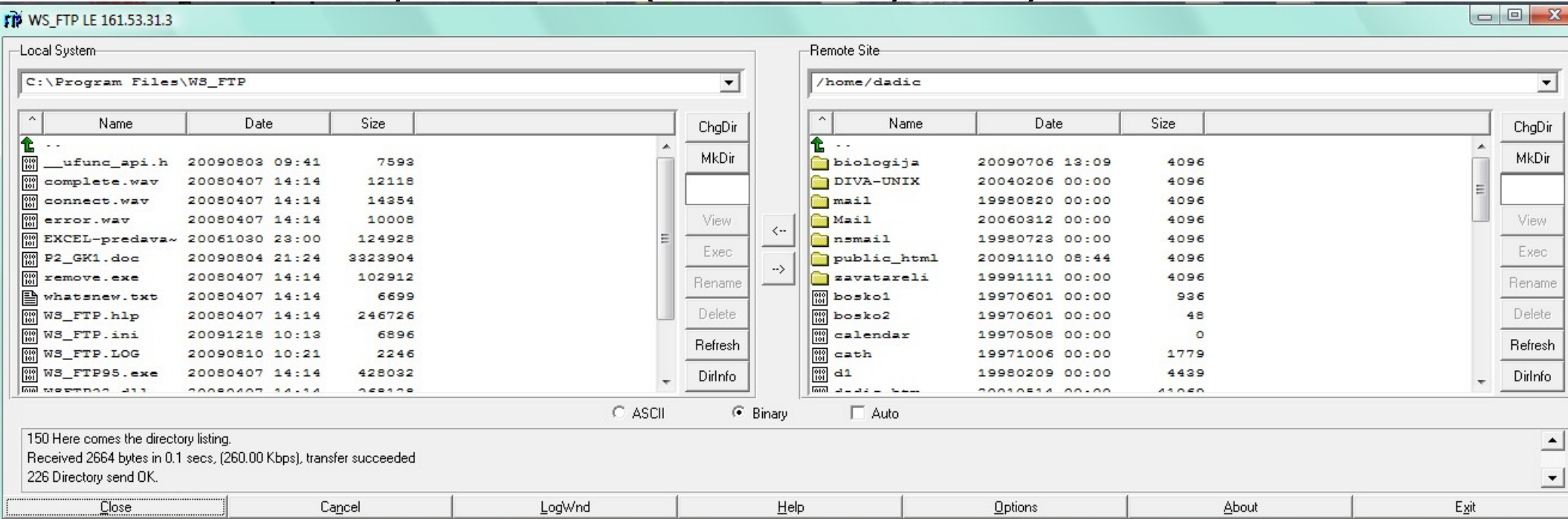
- FTP
 - omogućava prenošenje datoteka između dva računala povezana na Internet
 - Anonimno pristupanje datotekama
 - anonymous FTP (user: anonymous)
- Izgled grafičkog sučelja jednog od ftp programa...



Računalne mreže

- FTP

- omogućava prenošenje datoteka između dva računala povezana na Internet
- Anonimno pristupanje datotekama
 - anonymous FTP (user: anonymous)



Računalne mreže

ime.prezime@izor.hr

