The Story of Cyberspace

From PLATO to Facebook

Kaido Kikkas

Everyone's got an opinion

- "A quite recently invented nice place to read news, write to friends and chat"

- "A toy for computer nerds"

- "Unlimited advertising!"

- "Playground of perverts and other weirdos"

- "The mystical cyberspace"

You get what you seek

- Plenty of useful information <=> loads of bullshit
- Many nice people <=> a host of dorks and idiots
- An interaction aid <=> a source of 'Ooops..!'
- A place to get help <=> a source of despair
- A media channel <=> yellow news and hate speech
- Literature and art <=> a toilet wall ('F… you, too!')
- Faeryland <=> cyberjungle

Two parables

- Internet is a knife – a surgeon can save lives, a bandit can kill someone

- Internet is an amplifier – for human relations, mass media, wisdom, stupidity…

Main services

- The Web (WWW)

- E-mail

- File transfer (FTP, various P2P solutions)

- Virtual terminal / remote access (Telnet, SSH)

- Real-time interaction (IRC, talkers, MUD, IM, VoIP apps)

- Derivatives and combinations of the above

Where did it all start?

- Again, opinions differ. Some possible starting points include
  - The Atlantic Cable 1858/1866
  - Hackers: the U.S. radio amateurs of early 20th century; Radio Act 1927
  - The *War of the Worlds* media panic 1938
  - *As We May Think* by Vannevar Bush 1945
  - *Cybernetics* by Norbert Wiener 1948
  - The AI Conference at Dartmouth 1956 (McCarthy and Minsky)
  - Sputnik 1 1957

"OMG! The Russians are in space!"

- Someone said: "The Russians put up Sputnik yesterday, and it goes around the world saying *beep-beep-beep.* Then, when it gets to the U.S., it says *ha-ha-ha*."

- NY Times on Oct 4, 1957: "A shocker like Pearl Harbor, waking America up and making it buckle down."

- The National Defence Education Act 1958 – 5 bln $ => 13 bln

- The Advanced Research Projects Agency (ARPA) and their 'nuclear shield' programme – one of the goals was to create a control network capable to keep working 'half dead' (the assumption was that the Russians will hit first)

Research

- 1960 – *Man-Computer Symbiosis* by J.C.R. Licklider

- 1961 – a theoretical foundation for a new type of network is laid by Leonard Kleinrock at MIT

- 1962 – *Augmenting Human Intellect: A Conceptual Framework* by Douglas Engelbart

- 1964 – the first practical specification by Paul Baran. The central idea is to divide the whole traffic into packages that find their way over the network independently

Summer of '69 (thanks, Bryan)

- The most popular suggestion for the birth of Internet

- 4 nodes: Santa Barbara, UCLA, Stanford, Utah

- The first login crashed at 'g'…

- The spiritual roots of Internet - academy + counterculture (so that's why there are so few normal people online…)

The tech Babel

- For a time, no common 'language' existed

- 1970 – the first attempt in NCP (Network Control Program), the first layered approach and development of the Open Systems Interconnection (OSI) model

- 1974 – Transmission Control Program

- 1978 – Transmission Control Protocol / Internet Protocol (TCP/IP), developed by Robert Kahn and Vinton (Vint) Cerf

First e-mails and and online shrink

- 1971 – ARPAnet spans the whole 23 computers

- A MIT engineer named Ray Tomlinson sends the first text message between computers. His application to ARPAnet for a new protocol gets approved, e-mail is born. He also borrows the @-sign from teletype

- 1972 – first real-time long-distance text chat – a 'patient' is in Stanford and a 'psychiatrist' in Massachusetts. To top it off, both were actually what we call bots today (PARRY vs ELIZA)

Expansion

- 1970 – AlohaNet on Hawaii, a wireless connection

- 1973 – expansion to the UK and Norway, the term 'Internet' adopted. First specification of FTP. Bob Metcafe invents Ethernet

- UIUC Plato Notes – first online community

- 1975 – first mailing lists. Queen Elizabeth becomes the first head of state to send e-mail. First version of the Jargon File

"Stop the damn world, I wanna get off!"

- The Vietnam War (1965-75) and Nixon's Watergate (1972-74) – many people in the U.S. get a rude awakening

- Among other things, emergence of crackers, phreakers and other similar creatures – the government does not deserve respect anymore, it deserves a finger

Late 70s

- 1975 – Minitel (France) and CompuServe (US)

- 1978 – first BBS opened in Chicago

- 1979 – first MUD at the University of Essex, UK

- A controversial idea (the author is disputed, could be Scott Fahlman or Kevin McKenzie) to add characters denoting emotions to texts – after a while, smileys start to spread

Internet gets ready (for a short while)

- 1982 – TCP/IP adopted as the universal base of Internet
- 1983 – FidoNet
- 1983 – first standard of nameserver (NIC)
- 1984 – BIND and DNS
- 1985-1990 - a period of stability: main services are E-mail, Telnet, FTP and Usenet, IRC is added in 1988

CERN

- 1989 – CERN (European Organization for Nuclear Research) connected to Internet

- 1990-91 – a British independent contractor named Timothy Berners-Lee proposes a novel method for non-linear (hypertext) documents. The system is published via CERN FTP site and spreads rapidly

- Note: Berners-Lee refused to use any restrictive measures for his invention

Prerequisites for the Web explosion

- The Protocol: HTTP by Sir Timothy

- The new operating system called Linux, also released in 1991 (and a bit later, also the Apache web server software)

- MS Windows, the first ubiquitous GUI for PC-s

- NCSA Mosaic and later Netscape, the first web browsers

Right time, right place

- Like at other important points in history, some people made a lot of money:

    - Marc Andreessen – left NCSA, founded Netscape and ruled the web for some years

    - Brian Pinkerton – built Webcrawler, the first web robot, as a part of his thesis at the University of Washington

    - Two Stanford students named David Filo and Jerry Yang pile up their web links and build a large 'Web catalogue', later known as Yahoo!

90s

- 1993-94 – governing organizations created (InterNIC and W3C)

- 1995 – birth of LAMP and Java

- 1995-2000 – the censorship wars in the U.S. (CDA, COPA, CIPA)

- 1996 – *A Declaration of the Independence of Cyberspace* by John Perry Barlow

- 1998 – ICANN takes over from InterNIC, the current domain system is introduced

A sleepy, sleepy Microsoft

- 1994-95 – Microsoft ignores Internet and builds their own Microsoft Network

- 1996 – MS wakes up and attempts to 'divide the market' with Netscape. Refusal launches an all-out offensive

- Spyglass => IE

- 1997 – MS wins the first war. Netscape open sources their newest prototype

- The war goes on – Mozilla and others

Messengers

- Forefathers: Unix Talk and MUDs/talkers
- 1996 – ICQ (*I Seek You* – meant for finding game partners)
- 1997 – AOL Messenger, later developing into Gaim/Pidgin
- 1999 – Microsoft Messenger (aka MSN Messenger and Windows Live Messenger)
- 2000 – Jabber and multi-protocol clients (e.g. Trillian)
- Later, convergence with VoIP apps (Skype) and also microblogging

Millennium

- Commercialization and dotcom boom

- Multimedia

- FLOSS emerges as a serious alternative (also on desktop)

- New domain names (.name, .biz, .info)

- Internet as a venue for games and relationships

- Legal nitpicking and cyberdung

Social software

- Networked services and applications that actively involve the user community

- Wikipedia 2001, Flickr 2004, YouTube 2005…

- Blog boom => web services (Blogger.com, WordPress.com) and standalone software (Movable Type, TextPattern, WordPress)

- Increasing use in education and business

- Microblogging (Twitter, Jaiku, identi.ca)

- Social networks

- Darker side: 4chan (2003)

(Web-based) social networks

- Main players

    - 2002 Friendster (and Rate.ee in Estonia)

    - 2003 MySpace and LinkedIn

    - 2004 Facebook and Orkut

    - 2005 Reddit

    - 2010 Diaspora

    - 2011 Google Plus

- An interesting thing to study: the rapid rise and fall of Orkut. Another one: the failure of G+

- The usage rapidly exceeded the initial idea

Because we can

- In times of old, nobody could just write an encyclopedia, add new stories to the Lord of the Rings or be a hotshot reporter at an international crisis site

- Today, we have (respectively) Wikipedia, Fanfiction.net/AO3 and Twitter/Flickr/Facebook/Snapchat/…

- Read more on the topic: *The Wealth of Networks* by Yochai Benkler (see benkler.org)

Ignorance can kill

- A serious problem of the recent years

- Cheap PC + ubiquitous Internet + insecure software + stupid user = LOADS OF CRAP

- Malware, credit card fraud, phishing, social engineering, DDOS…

- No clear-cut solution. Mandatory 'driving license'? Allow remote administration by software vendors (W10 seems to go that way)? Outlaw Windows?

Future?

- Even more multimedia

- Semantic Web and Big Data

- More fun (but no work?)

- More controlled and commercial? Or back to the roots? Or split the thing in half?

- Death by dung?

- We'll see...

More on the topic

- Moschovitis C. et al. History of the Internet

- Living Internet, http://www.livinginternet.com/i/ii.htm

- Hobbes' Internet Timeline,
  http://www.zakon.org/robert/internet/timeline/

- History of the Internet,
  http://www.nic.funet.fi/index/FUNET/history/internet/en/
  etusivu-en.html

- ISOC. History of the Internet,
  http://www.internetsociety.org//internet/internet-51/his
  tory-internet

Thanks