

What is e-Research?

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m@m 28 January 2010

Outline

- e?
 - $e = 3*d \rightarrow t$
 - Three key features of e-research
 - The e-research cycle
 - Implications for social research
 - Conclusion
 - Where to find out more
 - Questions
-

e?

■ The e in e-research?

- electronic
- enhanced
- empowered
- enabled
- exciting
- ebahgum - wonderment

$$e = 3 * d \rightarrow t$$

digital technology (technology push)

+

digital world (growing digital footprints)

+

digital natives (adept user pull)

=

transform science

including (especially?) social science

Some history – technology push

- 1940s computers
 - 1954 silicon transistor
 - 1957 Sputnik I
 - 1958 Advanced Research Projects Agency – ARPA
 - 1960s packet switching -> ARPANET
 - TCP/IP standard
-

Technology push

- 1970s
- email and remote access
- Ethernet – shared channel
- modems
- 1979 first emoticon used :-)

Technology push

- 1980s
- personal computers
- commercial access to networks
- Bulletin Boards – Usenet
- Multi-User Dungeons – MUDs
- UK Joint Academic Network – JANET
- NSFNET, EUNet etc

Technology push

- 1990s
 - Local Area Networks – LANs
 - gopher – distributed document search
 - World Wide Web – hypertext
 - browsers – Mosaic → Netscape
 - Internet Service Providers – ISPs
 - 1992 “surfing the Internet” coined
 - 1998 Google incorporated
-

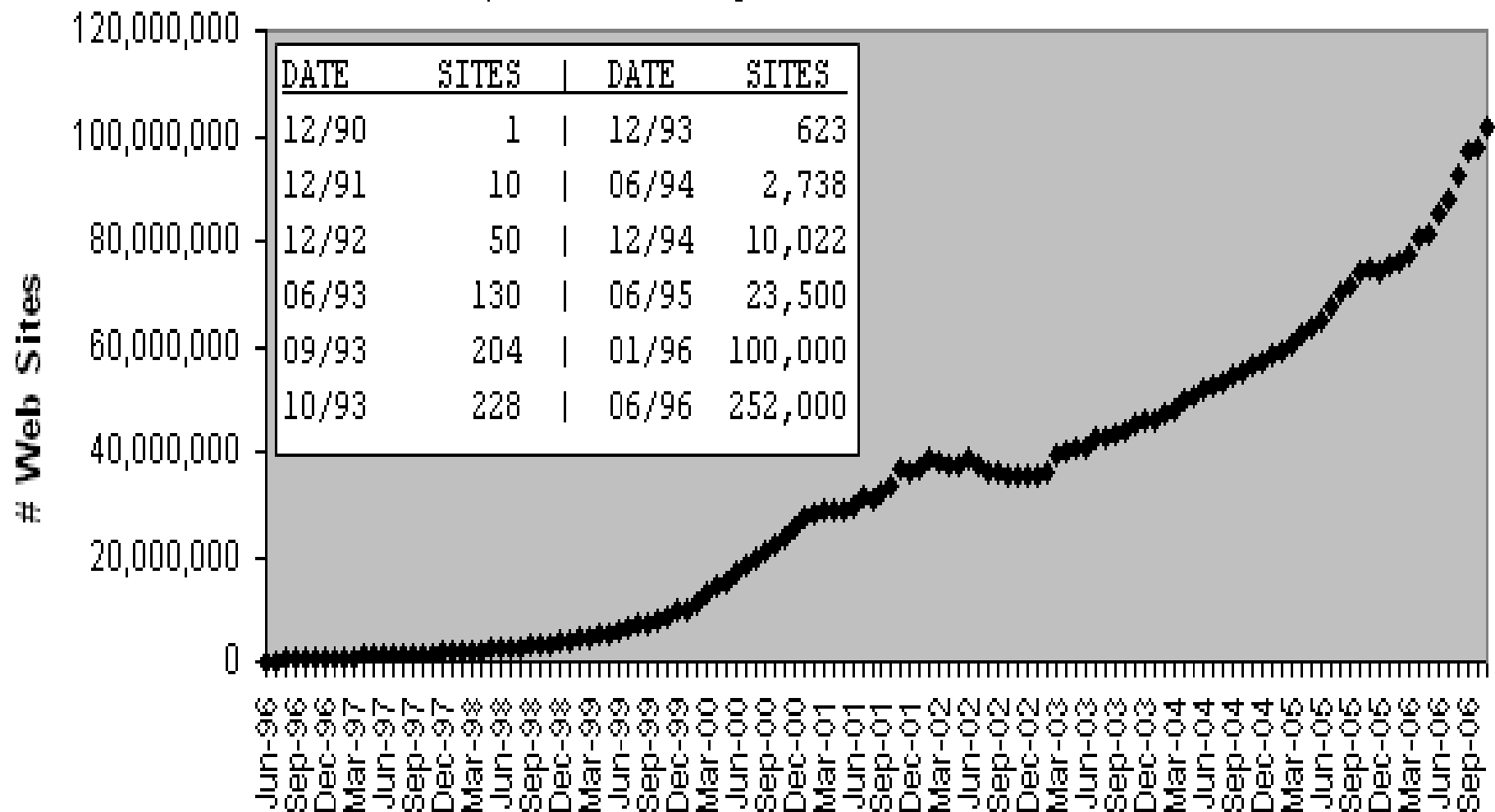
Technology push → user pull

- 2000s
- dot com boom and bust
- peer to peer file sharing
- user content providers
- wireless
- convergence of computers + communications
- digital natives

Total number of websites

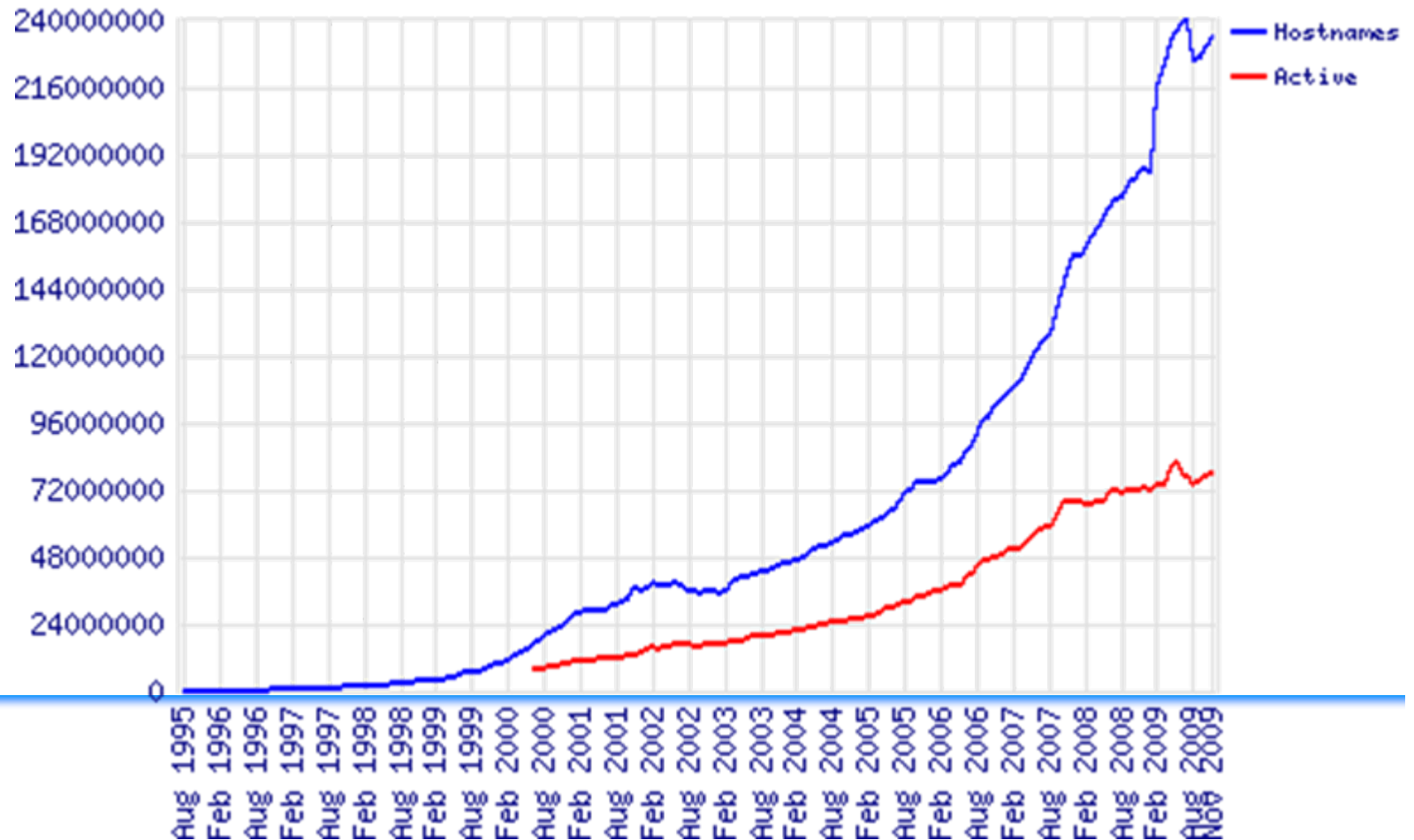
Hobbes' Internet Timeline Copyright ©2006 Robert H Zakon

<http://www.zakon.org/robert/internet/timeline/>



Total number of websites

[http://news.netcraft.com/archives/web_server_survey.html]



The digital age

UK - 2009

- 80% of adults are Internet users
[in the past 3 months / adults = 16+]
- 75% of current users go online daily
- Households with a computer
 - 1998/99 33%
 - 2009 70%+
- Households with Internet access
 - 1998/99 10%
 - 2009 70%

Digital natives

UK – 2009 Internet users

- 90% email
 - 78% info about goods and services
 - 69% travel and accommodation services
 - 54% internet banking
 - 44% download music, pictures, films
 - 42% listen to web radio, watch web tv
 - 42% seek health information
 - 40% upload self created content
 - 40% posting messages
-

e-science 'begins' – funding push

- 2001: science embraces the technology
- launch of UK e-Science Programme

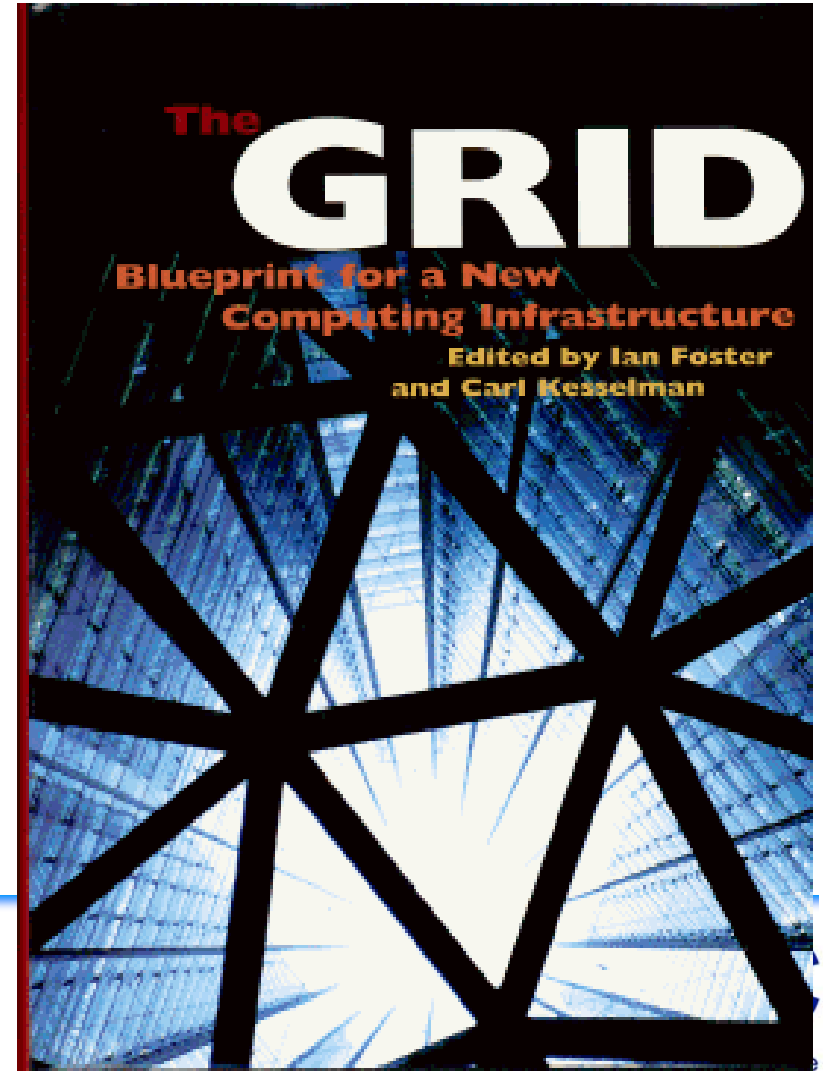
'e-Science is about global collaboration in key areas of science and the next generation of infrastructure that will enable it'

John Taylor, former DG of Research Councils,
UK Office of Science and Technology (as was)

- enabling infrastructure = the **Grid**

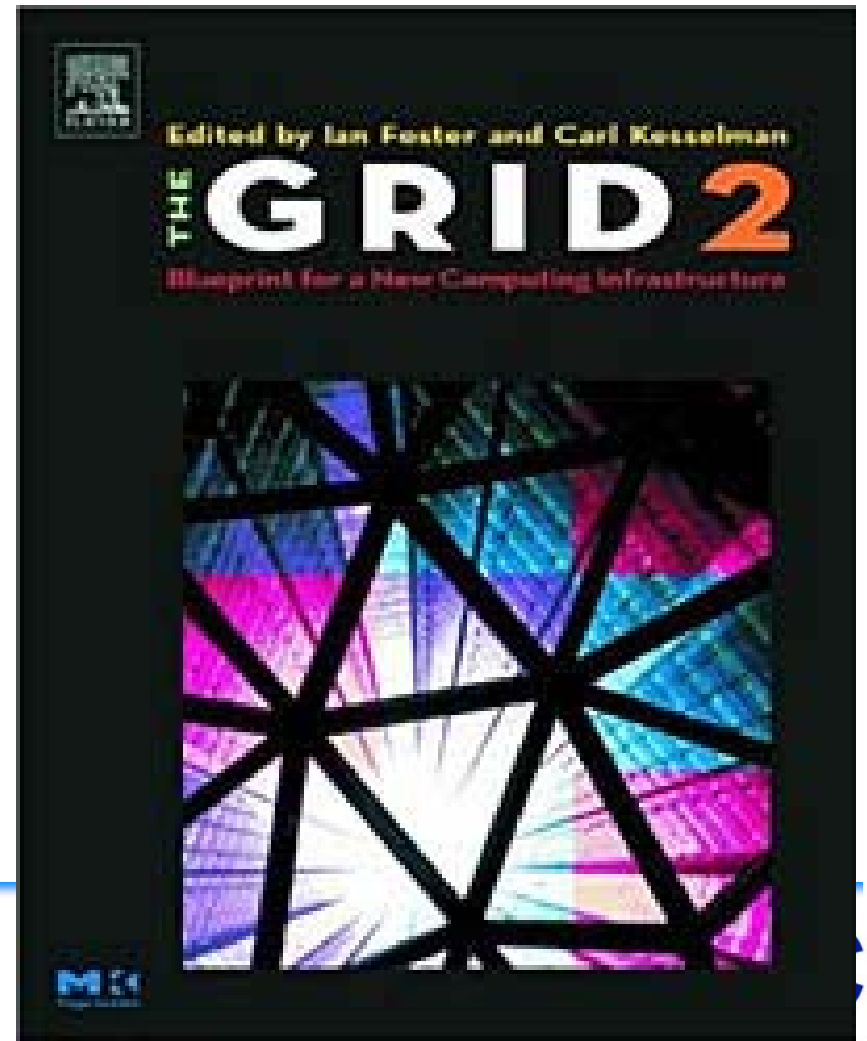
The first Grid book

- Ian Foster
- Carl Kesselman
- 1998
- 700 pages
- £46



The second edition

- Ian Foster
- Carl Kesselman
- 2004
- 750 pages
- and a website
- £42



e-science - funding

- 2001-06 UK e-Science Programme
 - £213m: core programme + RCs' own programmes
 - £13.6m ESRC
-
- US: NSF Office of Cyberinfrastructure
 - EU: EGEE – Enabling Grids for E-scienceE

e-science - vision



Large Hadron Collider



e-science – Large Hadron Collider

- huge amount of data
- huge computer power
- huge number of collaborators

- e-science = the Grid = hardware + software
 - coordinate and deliver over the internet
 - huge computer and data resources
 - bigger, faster, more collaborative,
better science

e-science – vision

- particle physics, weather prediction, bioinformatics
 - YES
- social sciences and humanities
 - nah
 - relatively small scale
 - very varied methods
 - few generic areas
 - don't need complex software to coordinate huge computing and data resources

e-social science – no thanks

- got what we need, thank you
 - computer-assisted interviewing: CATI → CAPI → CAWI
 - statistical packages – generic and niche
 - CAQDAS packages
 - social network analysis packages, etc
 - UK Data Archive / ESDS
 - email
 - search function
 - desktop / laptop computers sufficient

e-social science – a new direction

- Three drivers
 - one planned
 - ESRC's National Centre for e-Social Science (NCeSS)
 - one evolved
 - Grid → e-infrastructure
 - one unanticipated
 - Web 2.0
 - same for humanities and most physical sciences
-

National Centre for e-Social Science

- technology push meets user-requirements pull
 - ten big projects ('nodes')
 - social scientists + computer scientists
 - driver projects
 - 12 small speculative projects
 - 'social shaping' agenda
 - influences on take-up and barriers
 - informs dissemination
 - 100+ people
-

Grid → e-infrastructure

- e-infrastructure = the whole caboodle
 - digital equipment, software, tools, websites, deployments, operational teams, support services and training that provide computational services to researchers
- e-science – a **socio**-technology enterprise
 - technology alone does not provide solutions
 - technology embedded in research practices
 - research practices appropriating technology

Web 2.0

- name of commercial conference in 2004
- easy to use via familiar browser
- from users to content producers
 - blogs, wikis, forums
 - social networking
 - sharing photos, videos
 - podcasts
 - tagging, rating

Web 2.0 examples



MeRC

Manchester eResearch Centre



Web 2.0 +

- from user content to user software
- providers release APIs
 - users develop applications
 - software that interfaces with provider software
 - Google maps → mashups
 - iPhone apps
 - iPad apps!

Cloud computing

- Grid + Web 2.0
- outsource the technology (the hard bits)
- software as a service
- plug in and go
- whatever, whenever, wherever

3 drivers: e-science → e-research

- harnessing **any** innovations in digital technologies
- integrating them into an e-infrastructure
 - networked – across the Internet
 - interoperable – seamless, single sign-on
 - scalable – to any magnitude
- enabling science
 - new methods of research
 - overcoming past limitations

Summary so far

- technology push → e-science vision = Grid
- not relevant to most (social) scientists
- 3 drivers → new broad direction
- e-science → e-research = ICT-enabled
- e-research = 3*d
 1. digital data
 2. digital technology – computer power
 3. digital natives – collaboration

So ...

- what **is** e-research?
- examples please!
- you are already doing e-research

The e-research cycle

1. collaboration
 2. literature review
 3. secondary data
 4. collecting data
 - a. quantitative
 - b. qualitative
 5. analysing data
 - a. quantitative
 - b. qualitative
 6. dissemination
-

1. Collaboration ...

- email and attachments
 - distribution list of contacts
 - JISCMail list for subscribers
 - <http://www.jiscmail.ac.uk/>
 - versioning
 - Track Changes in Word
 - sharing Google docs online
 - <https://www.getdropbox.com/>
-

... Collaboration

- social networking websites
 - Facebook and many others
 - <https://www.researchgate.net/>
 - Sage - <http://www.methodspace.com/>
 - Create your own <http://www.ning.com/>
- collaboration software (VRE, VLE)
 - contact list, calendar, email, blog, announcements, file manager, wiki, etc

NCESS Portal

e-Infrastructure Project : ESRC e-IP : Home - Windows Internet Explorer

http://weaver.dl.ac.uk/portal/site/18e05b54-6c2e-4963-80a1-b56ef16ec87b

File Edit View Favorites Tools Help

Google ncess blog Go RS Check AutoLink AutoFill Send to ncess blog Settings

e-Infrastructure Project ... Capture a Screen Shot of yo...

NCESS
National Centre for e-Social Science

Logout

My Workspace | **ESRC e-IP** | NCESS Hub | Network Proposal

Home
Information Centre
Documents and Links
NCESS Web site
Wiki
Blogger
Schedule
Search
Site Info
e-IP Web site
Chat Room
EDINA
Announcements
Help

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Worksite Information

ESRC e-Infrastructure Project management worksite. Use this site to share information about the project, its progress and related technical information. We can also use it as a testbed for portal-related work before releasing to end users.

Please note mail list for this project is NCESS-E-IP@listserv.manchester.ac.uk

Recent Chat Messages

Recent Announcements

[new site](#)
(Rob Allan - 18-Feb-2008 16:36)

[New Resources](#)
(Rob Allan - 18-Feb-2008 13:38)

[new server](#)
(Rob Allan - 28-Sep-2007 16:07)

Calendar

Options

March, 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
24	25	26	27	28	29	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

start | Inbox - Microsoft Out... | Calendar - Microsoft ... | To do list - Microsoft ... | C:\Documents and Se... | SG Social Research P... | e-Infrastructure Proj... | Internet | 100% | EN | 22:20

NCeSS Portal


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File Edit View Favorites Tools Help

Google ncess blog Go RS Bookmarks 126 blocked Check AutoLink AutoFill Send to ncess blog Settings

e-Infrastructure Project ... x Capture e-Create Chat as a...



My Workspace ESRC e-IP NCeSS Hub Netw

Home **Worksite Informa**

Information Centre

Documents and Links

ESRC e-Infrastructure Project m and related technical informatio

NCeSS Web site Please note mail list for this pro

Wiki

Blogger

Schedule

Search

Site Info

e-IP Web site

Chat Room

EDINA

Announcements

Help

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Calendar

Options

March, 2008

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Home

[Schedule](#)

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[Help](#)

Logout



- more -

Recent Chat Messages

its progress to end users.

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Today

Sat
1
8
15
22
29

start

Inbox - Microsoft Out... Calendar - Microsoft ... To do list - Microsoft ... C:\Documents and Se... SG Social Research P... e-Infrastructure Proj...

Internet 100% 22:20



2. Literature review ...

- subject / topic

<http://www.intute.ac.uk/>

- books

academic and specialist library catalogues

<http://copac.ac.uk/>

- articles

BL's electronic Contents of 20,000 journals and 16,000 conference proceedings - <http://zetoc.mimas.ac.uk/>

Scopus is similar

- JRUL find-it service

2. ... Literature review ...

- blogs
<http://technorati.com/>
- Google books
<http://books.google.co.uk/books>
- Social Science Citation Index
- Google scholar
<http://scholar.google.co.uk/>
- Wikipedia
http://en.wikipedia.org/wiki/Main_Page

2. ... Literature review

- keeping references and cite while you write

<http://www.endnote.com/>

- sharing references

<http://www.connotea.org/>

<http://www.citeulike.org/>

- sharing bookmarks/tags

<http://delicious.com/>

<http://www.diigo.com/>

3. Secondary data ...

- UK Data Archive
<http://www.data-archive.ac.uk/>
- Economic and Social Data Service
- UK National Statistics
<http://www.statistics.gov.uk/hub/>

3. ... Secondary data

- ❑ archives galore
<http://www.archiveshub.ac.uk/>
- ❑ UK government archive
<http://www.nationalarchives.gov.uk/>
- ❑ newspaper archive
lexisnexis®
- ❑ BL sound archive
<http://sounds.bl.uk/>

4. Collecting data

quantitative

- online surveys – design, deliver, analyse
<http://www.surveymonkey.com/>
- lots of rivals from free to costly

qualitative

- digital recording devices
 - audio, photos, video
 - constantly evolving
 - microphone is critical

5. Analysing data

quantitative

- lots, free to costly - <http://en.freestatistics.info/>
- interoperability? – GROWL, multiR, e-Stat node
<http://www.cmm.bristol.ac.uk/research/NCESS-EStat/>
- Nesstar - <http://www.esds.ac.uk/resources/nesstar.asp>

qualitative

- CAQDAS packages – Atlas.ti, NVivo
 - **transcripts**, photos, video – still evolving
 - <http://caqdas.soc.surrey.ac.uk/>
 - Digital Replay System, MiMeG node

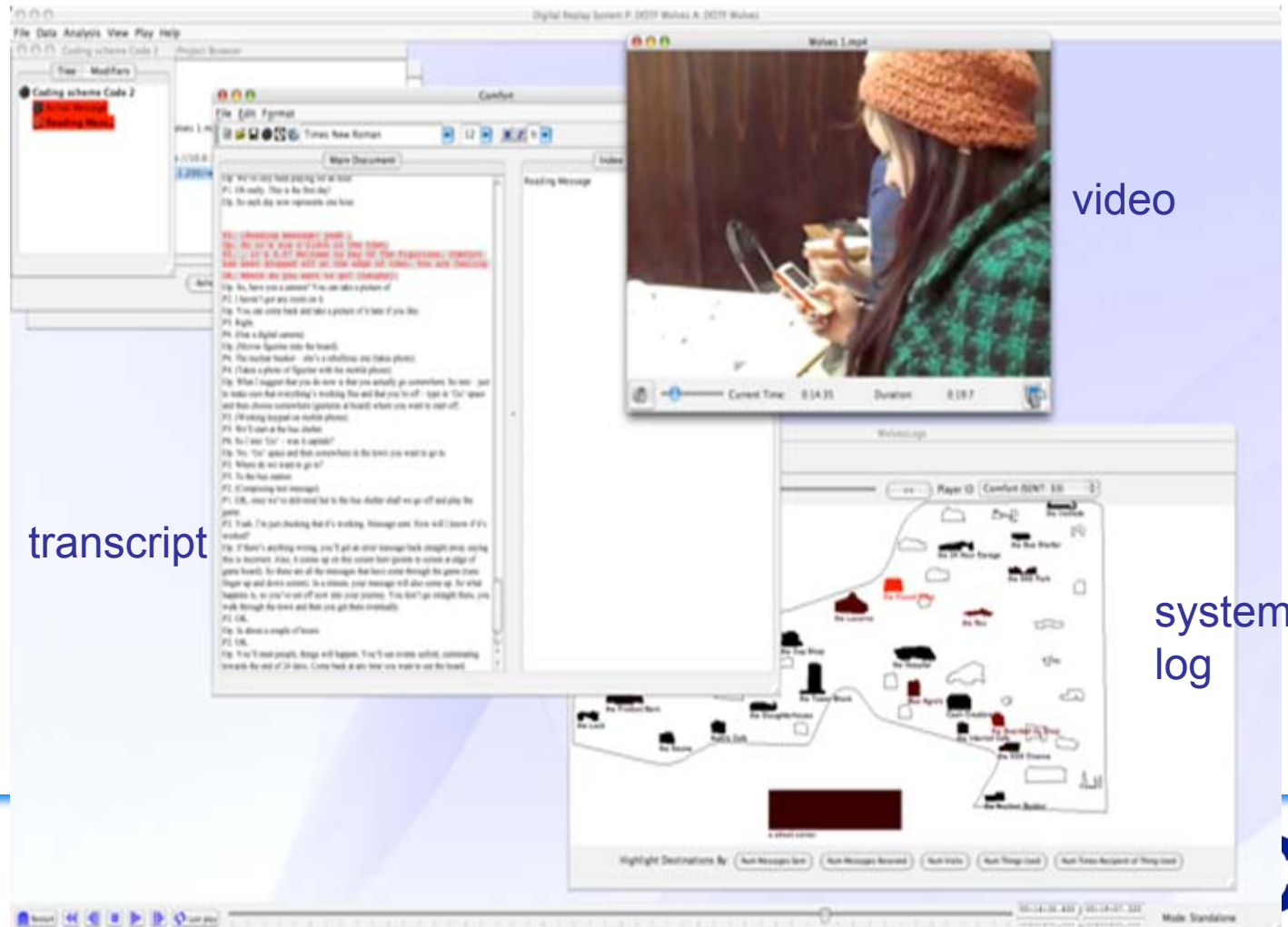
Digital Replay System

code
tree

video

transcript

system
log



Mixed Media Grid - MiMeG

- Collaborative video analysis

The screenshot displays the VidGrid v1.0 (user: master) application window. The main interface includes a menu bar (File, Equip, Annotations, Synchronization, Help) and a large video player window titled 'V' showing a video of two men in an office setting. The video is annotated with red circles and arrows. A 'File selection' dialog is open, showing a table of files:

File	Mime type	Frozen
interview1.mpg	video/mpeg	No
interview1_log	text/plain	No

Below the video player, the 'interview1_log' window displays a list of annotations with timestamps:

- 00:00:00.000000000 Start of interview
- 00:00:01.057000000 Interviewer points left
- 00:00:05.853000000 Interviewer points right
- 00:00:19.542999872 See where interviewee is looking, and placement of the hands

The 'Play controls' window shows the current time (00:00:19.542999872) and a timeline with buttons for Restart, Back 2s, -0.1s, Stop, +0.1s, Play, and Last play. The 'Annotation settings' window shows a slider for Persistence in seconds, a brush width slider, and a color key with red for 'master' and green for 'slave1'.

At the bottom of the interface, the status bar reads: Equip master on equip://9123/

6. Dissemination ...

- ❑ presentations
<http://www.slideshare.net/>
- ❑ websites
<http://www.google.com/sites/>
<http://www.webnode.com/>
- ❑ photos
<http://www.flickr.com/>
- ❑ video
<http://www.vimeo.com/>

6. ... Dissemination

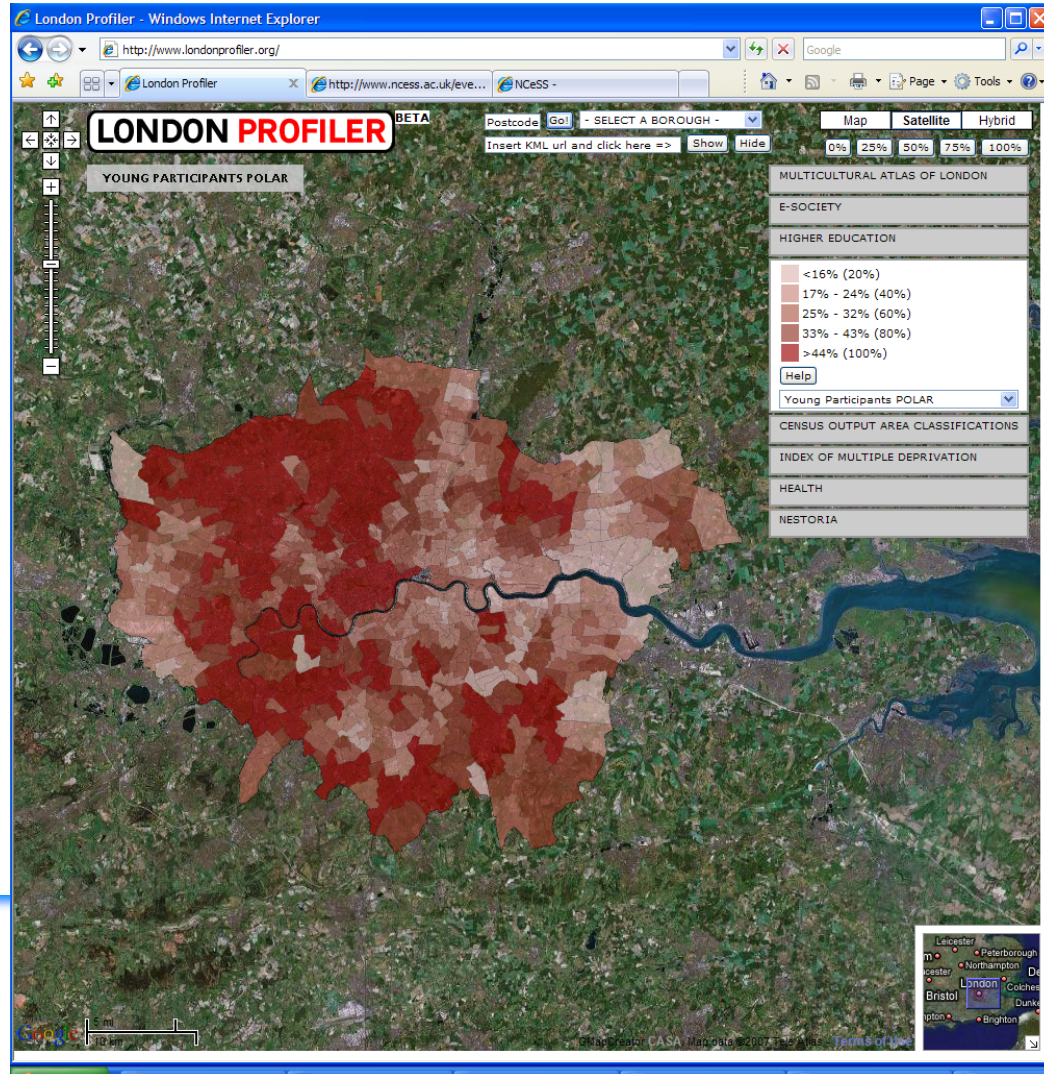
- Mapping

- maptube – <http://www.maptube.org/>
- London Profiler - <http://www.londonprofiler.org/>

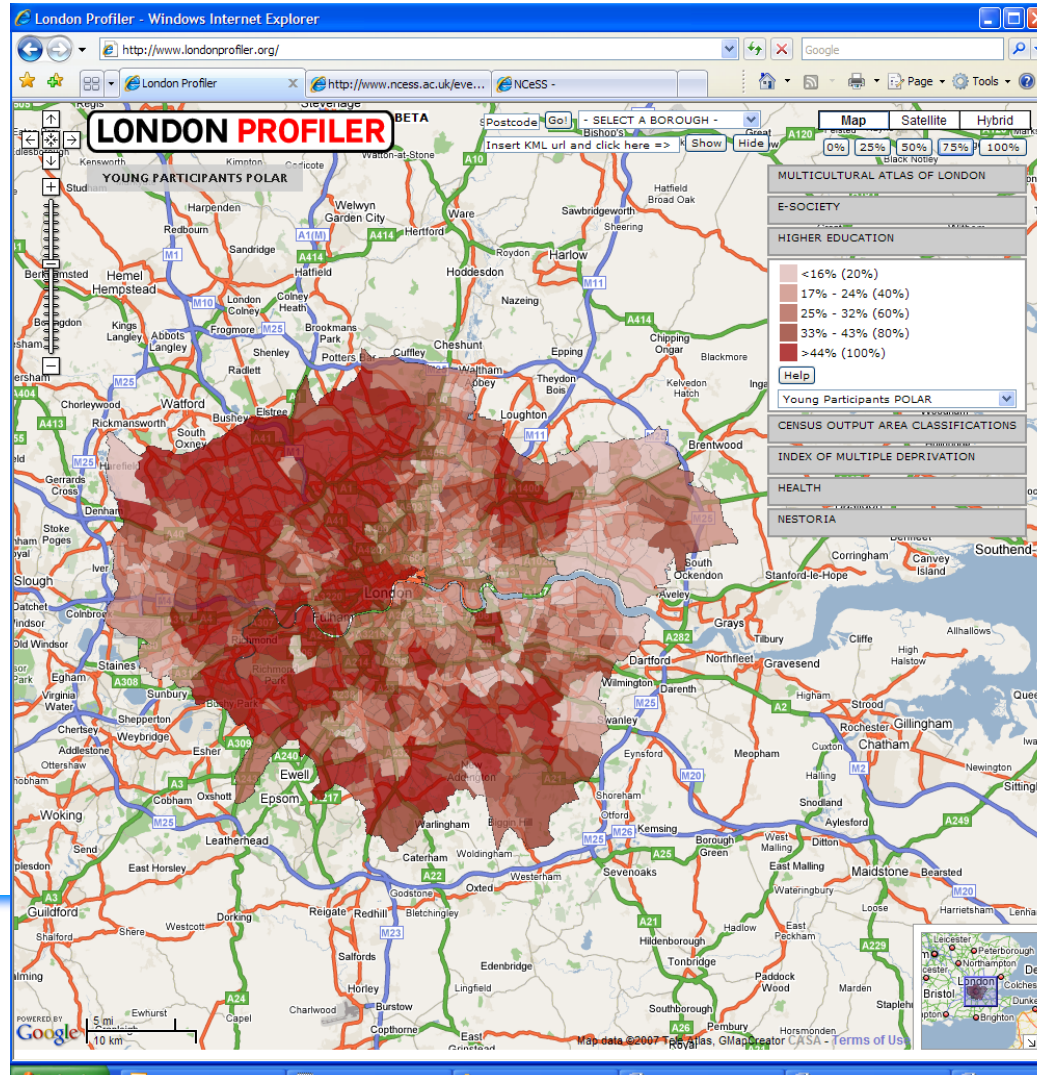
London Profiler



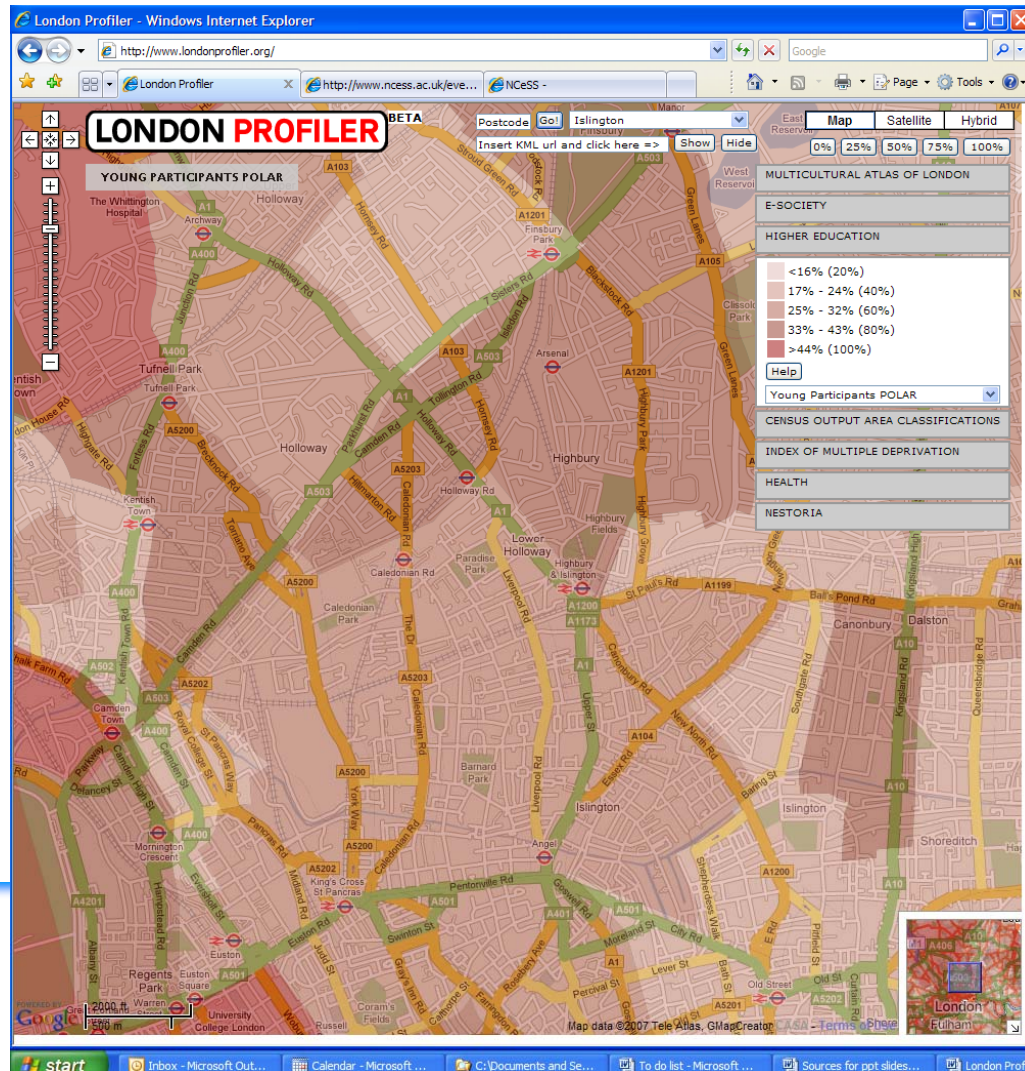
Higher Education



Higher Education



Higher Education



Summary

- e-research involves using advanced ICTs (the e-infrastructure) to:
 - locate, access, share, integrate, analyse and visualise digitised data seamlessly across the Internet on a hitherto unrealisable scale
 - facilitate collaboration across distributed teams
 - enable advances in research that would not otherwise have been possible.
-

Social science of the future

- Explosion of social data
 - administrative
 - transactional
 - spatial
 - user-generated
 - systems-generated
 - Opportunity to transform social science
 - Necessary to transform social science??
-

The future : $e = 3*d \rightarrow t$?

■ Optimistic

- ferment of innovation
- digital natives are coming
- key challenges as drivers

■ Pessimistic

- e-research innovations unsustainable
- barriers to / lack of incentives for adoption
- efforts dissipated

Hype versus reality



www.Gartner.com

would a pencil be easier?

Where to find out more

<http://www.MeRC.ac.uk>

<http://www.methods.manchester.ac.uk/methods/ereseach/index.shtml>

Thank you

This presentation will be available on the
m@m website

Questions?

p.halfpenny@manchester.ac.uk