Designing and Using Cyberinfrastructure: Challenges and Opportunities for History

Thomas J. Misa
Joline Zepcevski, Jeff Yost, Josh Welsh, Jonathan Clemens
Charles Babbage Institute
University of Minnesota
www.cbi.umn.edu
FB: BabbageInstitute
Topics today

1. Cyber-infrastructure?
2. NSF’s FastLane [1994-2000--]
3. Collecting/validating data
4. Dimensions for analysis: designers + users
5. Challenges for history

HCC:07-47445 + HCC:08-11988
Cyber-infrastructure

Dan Atkins* ‘Revolutionizing S+E Through Cyberinfrastructure’ [2003]
- Office of CI [FY 2006 $127m]
- OCI SI2 + CIF21 ... [FY-12 $236m]

Networks ... distributed ... transformative ... big science
"eScience" + "digital humanities"
FastLane (1)

glory days of NSFNET [1985–95]
CMU + Michigan* EXPRES [1986–]
Connie McClindon "FastLane" [1994]
3x awards [1996] ... Transition 1998–
All proposals in 2000
FastLane Requirement and Submission Deadlines

- Is FastLane Required to Submit Notifications and Requests?
- FastLane Contacts for Proposal Preparation
- FastLane Proposal Submission Deadlines By Date
- FastLane Proposal Submission Deadlines By Program

The National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230, USA
Tel: 703-306-1234
FIRS: 800-877-8339 ~ TDD: 703-306-009

Last Modified: Mar 24, '99
The Basics - Or What is Needed to Start With...

- Workstation Software requirements:
  - Browser
    - Netscape 3.0 or above
    - MSIE 4.01 or above
  - PDF file generator
    - Adobe Acrobat or Distiller 3.01 or above
    - Aladdin Ghostscript 5.10 or above
  - Adobe Reader

Without these elements, you will be unable to fully utilize FastLane
FastLane (2)

- NSF’s infrastructure for grant-making (proposal submits, reviews, panels, money, annual+final reports)
- Internal NSF: e-Jacket: ‘replicate paper jacket in electrons’
- obligatory point-of-passage
- any skewing effect?
How to do research . . . ?

~20 NSF managers, designers, coders, trainers + policy (+support)

1,000 "legacy users" at NSF

50,000 PI users + 300x sponsored projects staff

effects on HBCU + EPSCoR*

no paper trail
Collecting data

- CBI oral history interviews (N=286)
- designers + users (NSF=44) + research univs + HBCU + EPSCoR
- web-based interviews [SHOT 2008] <tinyurl.com/3ogotvw>
- fastlanehistoryproject.org (N=315)

\*v. large dataset ... how to analyze?
Validating data

in-person (N=286 to date)
- fields: +chemists / -engineers
- positive views on FL ... F2F*

web-based (N=315) [scale to >> 10]
- same univs as in-person
- + balanced fields/gender
- some negative views*

dataset >600 * 80% ~500 public
Web* vs. in-person?

time, work, PIs, ‘FastPain’

www.wordle.net
Think, people … (smaller PIs, work + no -load)
Web vs. in-person?

- Baer ea. ‘Obtaining Sensitive Data Through the Web: Design and Methods’ Epidemiology (2002)
- Davis ea. ‘Interviewing online: Internet + HIV study in London’ AIDS Care (2004)
- Seale ea. ‘Interviews and Internet Forums: Two Sources of Qualitative Data’ Qual Health Res (2010)
Collecting data

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v. large dataset ⇔ how to analyze?
NSF–NCSA–Mosaic ‘front end’ of FL software fork: Perl/Java vs. C+PS

- ‘Rich Schneider track ... writing in Perl as fast as I could’ ‘competitive’ [input]
- rival C for PostScript forms [output]
- “prohibitively expensive to pull the train off the track of PS forms” GPG:2 teams

Adobe for PDF creation: proprietary, controversial, barrier
Moore’s law?

2x server load each deadline

server + network stability

(PC-browser access little problem)
value-laden design:

✓ security, interoperability, sanctity of merit review, reliability

not: speed, flexibility, early review

intentional user-designer feedback

paper paradigm > re-engineering

support for ‘complex’ proposals
150% submits 5 yrs = 1x NSF staff

Cross-directorate review + funding

User-designer feedback (++NSF)

Local support staff

Small ‘differential’ consequences

NSF funding levels >> ‘impact’ of FL
infrastructure = IS

‘early days ... lots of IS was fragile. Ours [NSF’s] was.’ routers-RS

problem ‘wasn’t the technical IS ... people IS’ small colleges-CR

‘tendency to design cyber IS because you can, [not] useful ... end users’ nsf

‘they didn't have IS to be able to do it properly ... collaborative instead’ spa
Challenges for history (1)

‘Infrastructures ... widely shared understandings’ (Edwards 2010:193)

infra-structure: links ‘between’

.... long-term structures, momentum, irreversible
Challenges for history (2)

is big history ‘inevitable’?

[simple approach ... design portable]

for smaller ‘user history’:
- devise Qs with (pre)interviewees
- user data using CBI-FL platform
  (custom tool ➤ product)
- select in-person interviews

Monday, November 7, 2011
Challenges for history (3): lessons?

- User feedback in design phase
- Real users (1994 + FDP)
- Modules (submit, reviews, panels, reports, $$) ... not ‘everything’
- Stable interface (1998–today)*
- ‘Simple’ ‘intuitive’ ‘easy-to-use’
- User-centric (X grants.gov)
Challenges for history (3): lessons?

chronicle.com/article/Why-Grantsgov-Should-Be/46654

From the issue dated January 12, 2007

FIRST PERSON

Why Grants.gov Should Be Abolished

The advent of a Web site means that small colleges can kiss their chances of getting federal money goodbye

By CAROL KOLMERTEN

Back in the 20th century, it took what seemed like quite a while — perhaps an hour or two — to stand by an old duplicating machine as it churned out pages that we then had to staple together to make the 11 or 14 or 16 copies of a grant proposal that government agencies wanted.