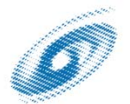


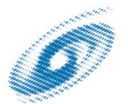
What makes virtual organizations work?

Thomas Finholt
School of Information
University of Michigan



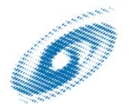
Outline

1. The changing nature of geographically-distributed collaboration
2. Lessons from the past
3. Beyond being there: A research program for virtual organizations
4. Conclusion



1. The changing nature of geographically-distributed collaboration

- ✓ Changes have a history (i.e., practices and technology evolve)
- ✓ These changes can be described in terms of:
 - Scale
 - Theoretical orientation
 - Technological paradigm
 - Characteristic research questions



History

- ✓ In terms of distributed work we are at a transition
- ✓ Specifically, much of what came before had a traditional antecedent
 - Collaboratory = a laboratory without walls
 - Video conferencing = a long distance face-to-face meeting
- ✓ However much of what is emerging has no precedent
(e.g., crowdsourcing, virtual organization)

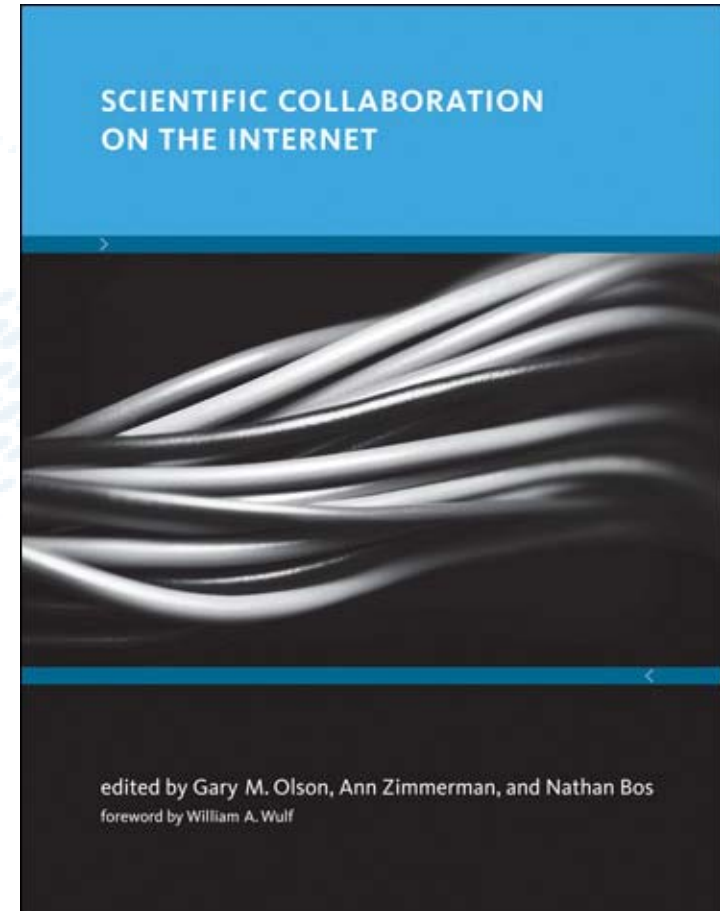


Dimension	Past	Future
Scale	Tens to hundreds	Thousands to millions
Theoretical orientation	Social psychological	Sociological or economic
Technology paradigm	CSCW	Social computing
Characteristic research question	“being there”	“beyond being there”

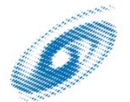


2. Lessons from the past

- v Collaboratory research at the University of Michigan
 - Space physics (UARC and SPARC)
 - Earthquake engineering (NEES)
 - Science of Collaboratories (NSF ITR)
- v Organized through the Collaboratory for Research on Electronic Work (CREW)
 - Founded in 1997
 - Dozens of faculty, staff and students



Available November 2008 from MIT Press





Anticipate cultural differences



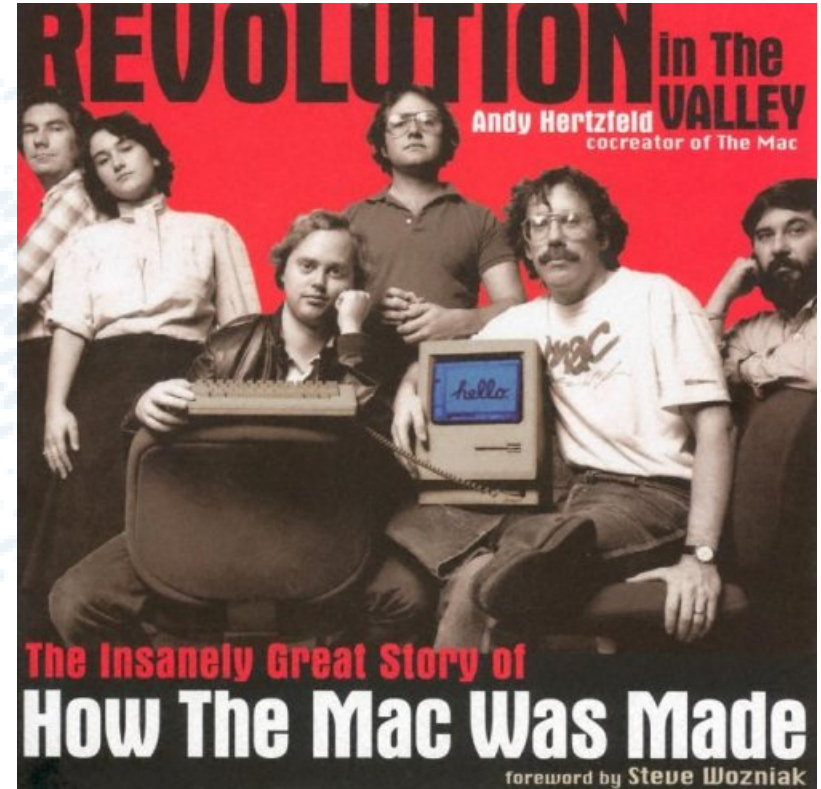
Domain scientists

- ✓ Power distance
 - Hierarchical
 - Bias toward seniority
- ✓ Individualist
 - “individual genius”
 - Solo PI model
- ✓ Masculine
 - Adversarial
 - Competitive
- ✓ Uncertainty avoidance
 - Highly skeptical of new technologies
 - Extremely risk averse



CI developers

- ✓ Power distance
 - Egalitarian
 - Bias toward talent
- ✓ Collectivist
 - Use the Internet to create worldwide communities
 - Project model
- ✓ Masculine
 - Adversarial
 - Competitive
- ✓ Uncertainty avoidance
 - Extremely open to new technologies
 - Extremely risk seeking



Plan for first contact

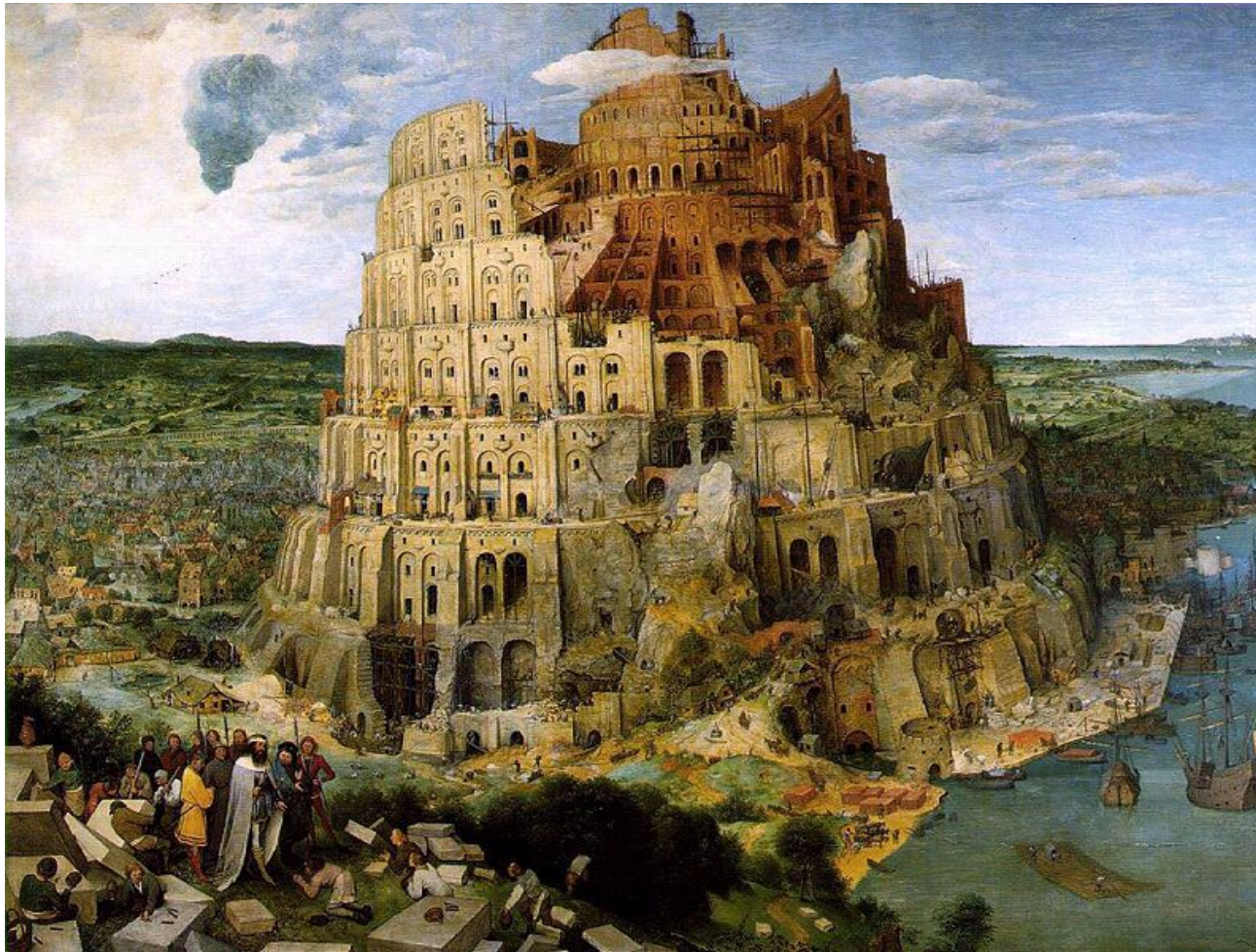






Communicate







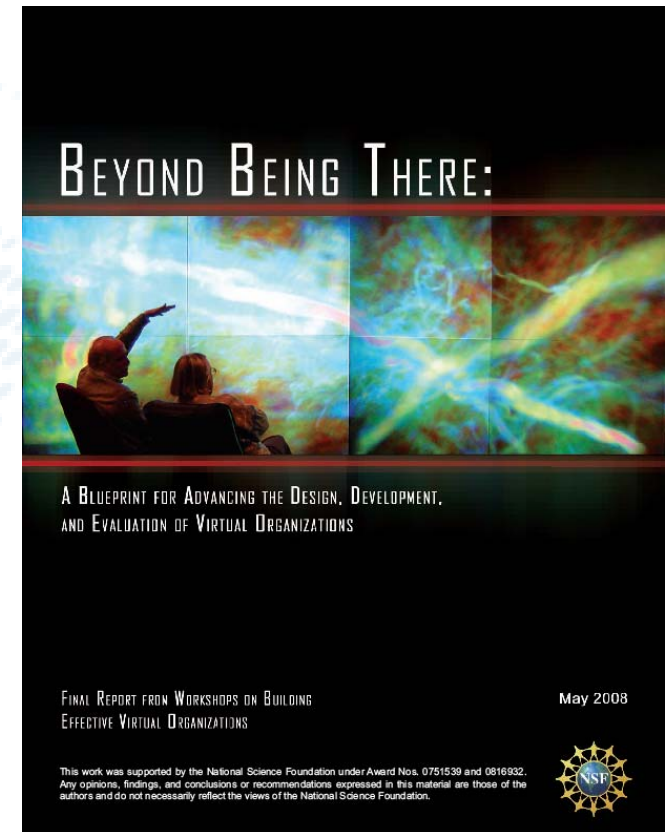
Seek common ground





3. Beyond being there: A research program for virtual organizations

- v NSF workshop on virtual organizations
 - September 2007
 - 42 invited participants
 - Technical
 - Social science
- v Building Effective Virtual Organizations
 - January 2008
 - 200 participants
- v Virtual Organizations as Socio-technical Systems
 - NSF program run by the Office of Cyberinfrastructure
 - Awards made summer 2008



http://www.ci.uchicago.edu/events/VirtOrg2008/VO_report.pdf



It can be tough to recognize successful innovations

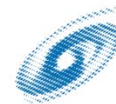
- ✓ First efforts are often awkward hybrids
- ✓ It is hard to know where the seeds of greatness might lie...



Charles King's "horseless carriage" (1896)
Detroit, Michigan

Source: American Automobile Manufacturers Association, <http://www.automuseum.com/carhistory.html>

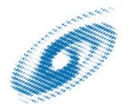
Virtual radical collocation





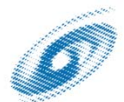
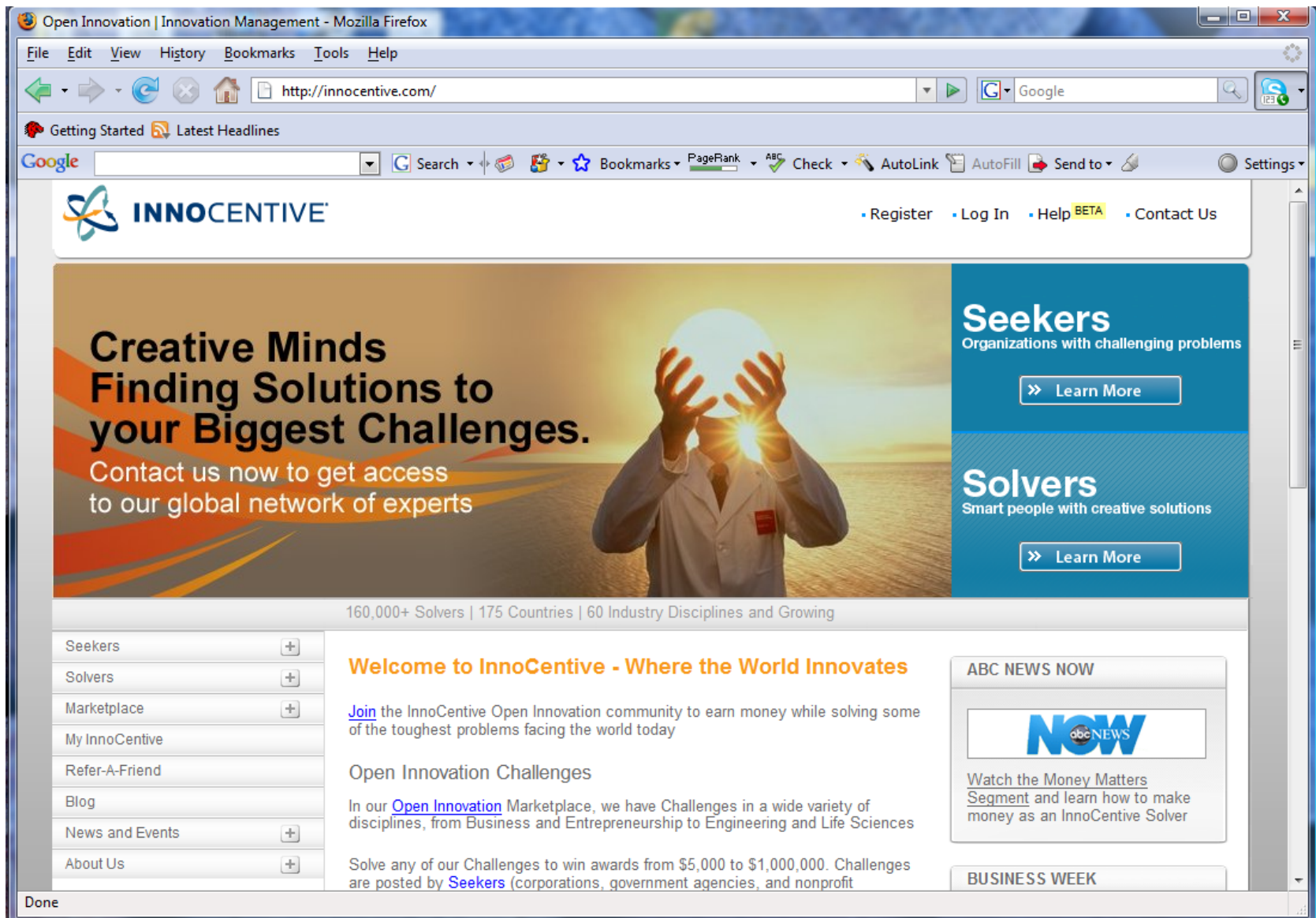
Unique aspects of virtual radical collocation

- ✓ Create advantages of physical proximity at a distance
 - Peripheral participation
- ✓ Add new capabilities
 - Multi-megapixel visualization
- ✓ Therefore:
 - Benefits of collocation (e.g., realistic and natural communication)
 - Benefits of dispersion (e.g., access to data and expertise not available locally)



Crowdsourcing





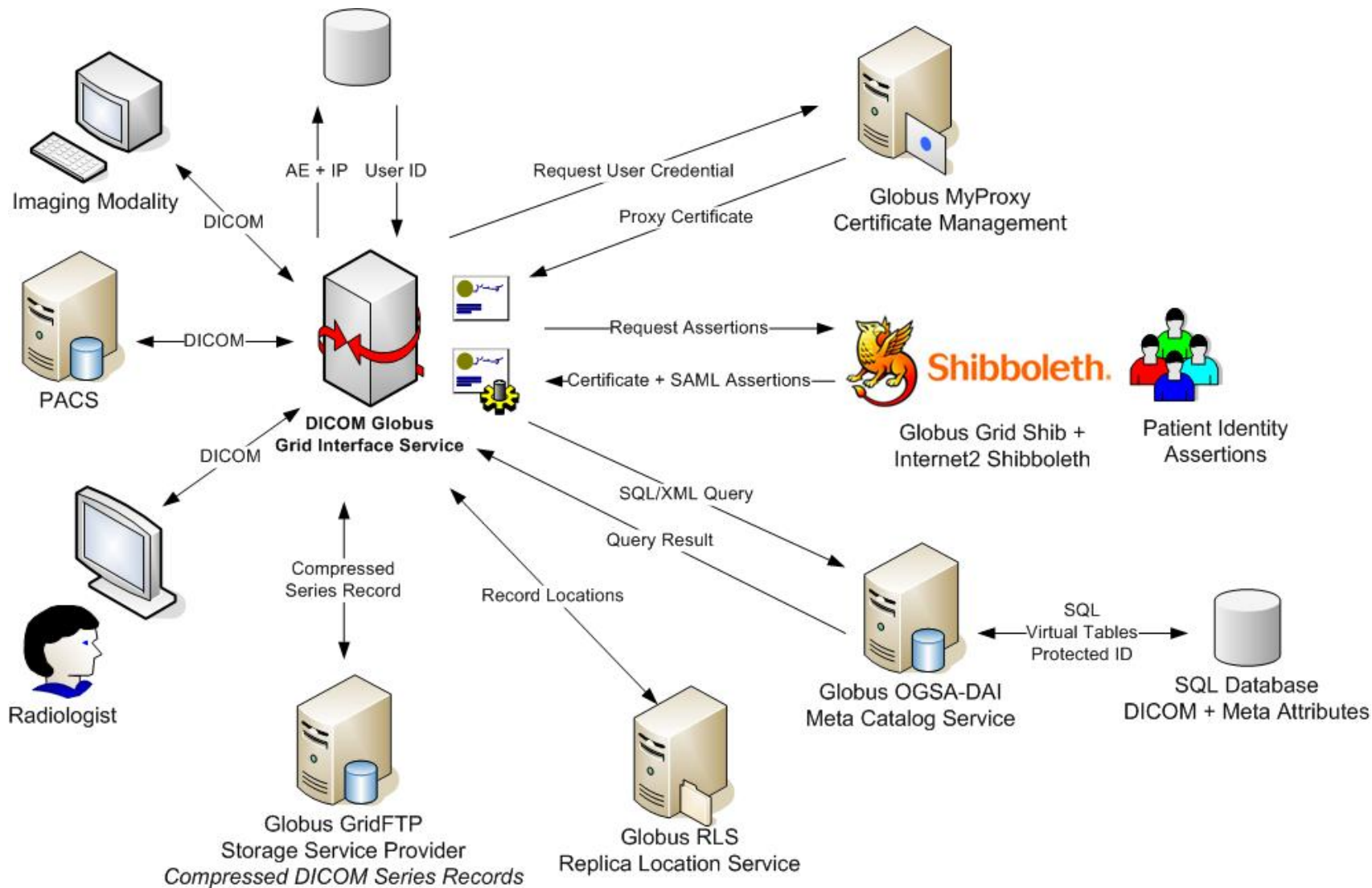
Unique aspects of crowdsourcing

- ✓ We don't know who is going to do the work
- ✓ Effort is contributed voluntarily
- ✓ Therefore:
 - Signaling (i.e., of task content) is important in order to attract the right kind of workers
 - Incentives are important in order to motivate workers (i.e., what is gained by doing the work)



Delegation of organizational work





MEDICUS Project (federated medical images)

<http://dev.globus.org/wiki/Incubator/MEDICUS>



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Introductory tutorials

Nanocurriculum
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Upload your own materials

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Services story suggestion

Take a Poll
What would you like to be able to purchase with your points in the new nanohub store?

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Contribute your financial support

Events

October

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Announcements

No Announcements

NCN News

Nanometer circuits closer to making flexible electronics a reality

Quantum research team sheds nanoscale conference in India

What's New on nanohub

- ECE 612 Lecture 6: Scattering Theory of the HOPEET (in Online Presentations, October 08, 2008)
- ECE 612 Lecture 7: Scattering Theory of the HOPEET (in Online Presentations, October 08, 2008)
- ECE 612 Lecture 8: HOPEET (in Velocity solutions (in Online Presentations, October 07, 2008)
- ECE 612 Lecture 9: HOPEET (in Report on the last charge (in Online Presentations, October 07, 2008)

VO Resource Selector - Internet Explorer provided by Dell

http://voins.grid.ac.uk/rgp-bin/index.cgi?Vo=16&grid=1®ion=0&nu=0&type=0

Virtual Organization Resource Selector

Grids: OSG

Virtual Organizations: nanohub 8.81

Open Science Grid

Usage & Documentation

Legend:

- Resource is currently up
- Resource is currently down
- Resource is under maintenance or on peering grid

Resource Site Verify Data

Resource BOGUE Data

Virtual Organization Information

Resources

Name	Gatekeeper	Type	Grid	Status	Last Test Date
ASGC_OSG	osg01.grid.siu.edu.tw:2119	compute	OSG 0.0.0	PASS	2008-10-13 16:15:21
BNL_ATLAS_1	gridg01.rac.bnl.gov:2119	compute	OSG 1.0.0	PASS	2008-10-13 16:17:58
BNL_ATLAS_2	gridg02.rac.bnl.gov:2119	compute	OSG 1.0.0	PASS	2008-10-13 16:22:53

Done

Internet | Protected Mode On

100%

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http://slashdot.org

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Developers: Microsoft Woos Developers Under the Silverlight

Posted by Slashdot on Monday October 13, @04:15PM

From the given-when-it-works dept.

Microsoft writes to tell us that with the impending release of their Silverlight 2.0 product, Microsoft is poised to enact the next phase of their plan, wooing developers and designers alike. Microsoft is funding a French open-source project designed to allow programmers to utilize the Eclipse framework to build Silverlight apps.

"Microsoft is also releasing for free a set of programming templates called the Silverlight Control Pack under its Microsoft Permissive License, as well as the technical specification for Silverlight's Extensible Application Markup Language (XAML) vocabulary via Microsoft's Open Specification Promise. The latter, said Goldfarb, should make it easier for would-be Silverlight developers."

Read More >>> comments

Hardware: University Tries "One iPhone Per Student"

Posted by Slashdot on Monday October 13, @03:27PM

From the excellent-and-divorced-masters-to-april dept.

AlphaGraphics writes to tell us that one freshman class has a little more than usual to be excited about. When student at Auburn Christian University showed up for their first days of class they were greeted with the choice of either a new iPhone 3G or an iPod Touch plus a package of custom web apps to use on them.

"The hardware is part of the Texas university's pilot mobile learning project, which has been gestating for over a year. About 650 first-year students chose the iPhone, and about 300 the iPod Touch, which is a very similar device but without the 3G radio (both devices incorporate an 802.11g Wi-Fi adapter). ACU pays for the hardware, student (or their parents) select and pay for their monthly AT&T service plan."

Read More >>> comments

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Win Video

- Digital Conversion PSA
- Star Trek: The A Team

Slashdot poll

Give two weeks' notice ...

- and get fired on the spot.
- to show common courtesy.
- to reward a pay raise.
- if you want to train a successor.
- (Score that, employment at will, baby!)

Vote | Results | Polls | Comments 544 | Votes 28057

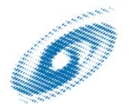
Recent Taps

- hardware
- hardware
- technology
- science
- istamakestudentof
- games



Unique aspects of delegating organizational work

- ✓ Much of the attention in virtual work has focused on technology and process to support social ties
- ✓ An alternative course is the use of technology to supplant social ties
- ✓ Therefore:
 - Think of this as organizing without the work of organizing
 - Questions of who to trust, who is permitted to use resources, who pays -- are managed by middleware



4. Conclusion

- ✓ Group work is an inevitable fact of organizational life – so the earlier lessons continue to apply
- ✓ What has changed is that geographically-distributed work now encompasses a broader continuum of activities, from intensive team projects to crowdsourcing
- ✓ Emerging modes of contribution and participation are not as amenable to intentional technology choice or organizational design
- ✓ Full exploitation of emerging paradigms will require:
 - More research on “choice architecture” and the design of incentives
 - More research on mechanisms for delegating aspects of organizational work to systems, such as trust relationships

