

ICC 2/23/2005 -- Phil Long Notes

Event is being recorded for note takers.

Jerry – intro: looking for a vision document developed after a year or so of presentation, may not be a next big thing – maybe plural

Observers: Phil Long, Mark Silis, Oliver Thomas

1. Pet Donaldson – xmas and meta media
2. David Clark – network design
3. Jeff Puliver – VOIP. SIP working group, founded VONAGE
4. Michael Bove - Consumer Electronic Research Lab at the Media Lab, PI for building distributed Learning Environment for NASA
5. Bob Metcalfe – MIT'68 – trustee VC
6. Andre ? – graduate student Architecture; research in IS use w/ goal to understand wireless use
7. Joost Bonsen – graduate student from Sloan school – Founder Study (econ. impact on MIT graduates) co-founded MIT innovation club, prototyping new things; new media impact on K-12. “How Toons” – cartoons to show kids how to build things.
8. Vijay
9. Wanda Orlikowski – Sloan – looks at what people do with technology in the workplace.
10. Eric Klopfer – Teacher Ed. Prog. Dir. – Games and simulation in science and math learning. P2P & location based simulation.
11. Henry Jenkins – CMS prof. Dir. – Ed Arcade/formerly Games to Teach. Media literacy and digital literacy project. Housemaster of Senior House. Living in a ‘test bed’.
12. Martin Greenwald – Research physicist – Plasma Physics. Improving remote participation and control of large experiments.
13. Steve Lerman – Housemaster in graduate dorm. iLabs PI
14. Dennis Baron – IC strategist for IS&T

Vijay remarks –

- State of Maine story - interactive teleconferencing binging bad teaching to the masses. Dystopic vision

1. Real time collaboration
2. Qualitative difference in the real experience

Simon – Facilitator Role

Interacting ideas around 3 different categories:

1. Community
2. Education
3. Research

Goal is to get sets of ideas around new ways of communicating to effectively in each of these domains.

1. Impacts on Research, Education, Community
2. What are interesting new enabling technologies?
3. Common themes and ideas

How Comm. Tech. impact the presenters worlds?

Steve Lerman – Dep. Director of MIT SMA Program. Cooperative research and graduate education program with two Singapore Universities. Extensive use of digital infrastructure:

- Teach students from IT to Singapore

Observations –

- Make what is possible, awkward and expensive today, easier and cheaper.
- Infrastructure operated by service organization (AMPS) today; an hour of class time costs \$1-2K. in current dollars. The primary reason there is need for the service organization mediation is to insulate faculty from the “tech mess”.
- Making it easier. Better, more intuitive interfaces & significantly more reliable equipment.
- Capture & processing of digital video
- Audio capture working
- Infrastructure of network more reliable necessary to make the model scalable

Q. how much would be saved if DVD's were mailed and real time wasn't used?

SMA – collaborative research program research

- Research interaction is awkward at a distance. Need to equip both sides.
 - How can faculty member at home interact with graduate students?
 - A video conferencing from home program started – but requires significant tending
 - DORMS – information isn't unavailable but its not easy to get at; he keeps face book of his students but he can't do this where and when he needs it; it isn't hand.
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IDEAS

- DL
 - Asynch vs. Synch
 - 1: many, 1:1
 - Making tech easy
 - Getting info seamlessly on different devices
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Henry Jenkins – Need tech. to connect multiple locations together – may not be sophisticated.

- Getting conference call in a classroom was \$200/hr. plus 4 hours of staff time. Need to be realistic, EASY AND CHEAP!

Areas of potential value:

- The guest lecture
- Communications to new prospective students globally to find out about graduate programs
 - use chat rooms now.
- Whatever they do is as good as the connection at the other end.
- Getting Harvard students connected to Stella has been a challenge.

Research-

- Connecting to research collaborators is an ongoing problem to be solved.
- Making research collaboration easy his vision – a global media culture that was truly global with nodes in every part of the world, all with potential for research.
- Collaboration in real time
 - Working in teams with faculty at each node

Multiple people interacting across multiple nodes.

Ideas

- Getting basics working today at MIT
 - Limitations imposed by external world
 - Symmetry – we aren't broadcasting to remote locations with a low bandwidth back channel. It's equality in level of participation that is sought.
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Martin Greenwald –his research is exploiting fusion as a practical energy source.

Nature of the kind of research on-going and its implications:

The Tokama Experiment:

- Involves >100 local staff
- Collaborators from 35 institutions from 12 countries- strong collaboration
- Not run in “batch mode” – in contradistinction to many large scale physics experiments
- Each experiment costs either \$2K or \$10K & collects 1-1.5 GB of data
- Workflow to prepare each “shot” is highly collaborative – requires analyzing, & processing data in each shot prior to the next shot

National Fusion Collaboratory

- MIT
- Princeton Plasma P
- General Atomics
- Berkeley

- Arizona
- Wash

Essential to have collaborative computing tools in real working environments
Working in teams with faculty at each node.

EU ITER Experiment – a \$10 billion investment

10yrs. in construction, not in US.

Experiments will cost: 1 million/shot to run

Remote participation and collaborative research is a given.

Ad hoc Communication technologies used

1. H323
2. Access Grid
3. PTT

Need

- Agile session management
- Directory services
- Convergence of comm. Tech.
- Ease of use
- Structured communication – fixed facilitation but higher reliability, ease of use and transparency
- Better context during their participation
- Integration of small and large groups
- Floor control – the flow of meeting process is still awkward

Shared Application

- VNC with enhancement
 - Meeting place
 - Picture Bot
- } commercial apps.

Need to support any number of users – “X” native sharing with unlimited participants

Note: *the last time high energy physicists took up the collaborative challenge they created the WWW; expectations if they re-engage in development now is equally high (comment by Bob Metcalf)*

Joost Bonsen - spirit of Athena continues

- Emphasized extra curricular element that drive technological innovation
- Value of clubs – e.g. SIPB created first campus web site
- Incoming Sloan classes one of first users of Yahoo, Groups
- Clubs as a test bed
- Ultra mobility next theme
- Leverage personally owned devices
- Leverage place and distributed computing
- Keeping essentials delightful

- Plugging in to get power remains a challenge
- Finding time to meet
- Auto archive things discussed, in informal settings
- Version control of documents to enable better collaboration
- Devices students have and use are banned from the classroom
- Unifying what students have by the enabling service environment
- Make personal devices intelligent enough to know when to engage you
- “coach ware” – knowledge of surroundings prompts contextually grounded interface plus supportive data presentation
- Minimize technology presence but maximize computational benefits
- Serendipity tools – so much happens in ad-hoc endeavors that technology could e.g., a Social Google screen responds to ad hoc requests in group setting
- Connect person seamlessly to place based as well as disbursed events
- Vertical connections anchors
- Project Mercury proposed as next Athena
- How to make it seamlessly easy to stay connected?
- Staying connected reliably to save money

Michael Bove –

- Linking spaces – iCom
 - 24 x 7 lab collaboration
 - 10 institutions around the world
 - Multipoint –
 - can subscribe to lists; use if for screen announcements when you’re not logged in

Smart Architectural surfaces

- VR Caves are unmaintainable – have elves that live in them to make their 5 minutes of uptime work each week.
- Smart room of cheap commodity elements that are reconfigurable
- Tiled wall units which are Unix PCs with screens; you can snap them out and use them on the fly. Tiles cost \$500 each.
- Need synthesized representations to do more effective video conferences
- Infrastructure will emerge from interaction among portable devices that people bring
- VIRTUAL INFRASTRUCTURE (big idea)
- Only good backbone access is built in
- Projection from your laptop for small images

BRAINSTORMING EXERCISE
RESEARCH

COMMUNITY

EDUCATION



Dave Clark – Technology

In 3 years IT tools will look like those we see today, but in 10 they will be unrecognizable

- a few things like the Internet happened in dog year
- Future not defined by technical possibilities but what will be invest in
- Personal terabyte today
 - 10tb in 5yrs
 - 100tb in 10yrs
- Is connectivity continuous or intermittent?
- When will a paper be convenient to read on line?
- Everything is going parallel computationally
- PC form factor is a mature object
- When will we get rid of the display? Will everyone mutter to their computers?
- Letting devices synch with the environment
- How discrete can computing and displays become?
- What is an “open computer” test? (the analog to “open book” exam)
- What do we do when computational devices are embedded in the body?
- What are we teaching students when mass storage and computational tools are a part of a person personal equipment attachments?
- Do we tell everyone to turn off their technical devices and teach them?

Bob Metcalfe –

- start doing old things the old way → then old things in a new way → then finally, we do new things in new ways.
- Assumption – all info will be stored forever (big idea)
 - More expensive to delete things then store them
 - Issue of storage formats
 - Archive backups
 - Assume online is location for storage
- Versioning of information – provenance of origins
- VOIP - paving way for video over IP
- Displays everywhere
 - Video “fill-in-the-blank”
- Tele-presence can make *not* being their better than being there; not simply asymptotically approaching the quality of face-to-face
- Attendance in lecture approaching 50%
- Video internet is coming – video-zation of the internet – happening NOW

- Mobility – cell phone your dual mode – 802.g & WiMax looming; maybe next there will be versions for mobile devices
- SPAM – solution wrongheaded – filtered solution bad; requires someone reading it to filter it
- Legal solutions don't make sense
- All email should be encrypted
- Permission based email systems
- Security left out of the Internet; time it was built back in
- Economics left out of Internet because it was built by grad students
- Tools of economics must be built back into the Internet
 - Selling, buying/pricing, markets, ownership
 - must get past “everything is free”
- Clusters – still all over MIT
- An Internet full of grids of clusters is the future
- We need to start combining sensors with simulations
- Pools of clusters are needed to make sensed spaces more useful
- Blogs – millions all over the world; with the addition of video they are becoming an emergent medium for teaching; developing areas are:
 - Tools for interconnecting blogs
 - reputation among blog posters
 - trading information posted across blogs

Jeff Puliver- 3D real time holographic imaging across campus and the world.
Missing point if we aren't making collaboration more “real”

- VoIP moving to become a replacement for or simply substitute for regular phone services
- Traditional telecommunication industries don't want to innovate
- end-to-end IP is essential

(so-called “Puliver memo” issued by FCC)

Calls himself the disenfranchised Founder of the VoIP Coalition

- Net freedoms assumed but this may not be guaranteed by the telecommunication industry. This might be regulated away.
 - Freely accessing, connecting, using network services at risk

Language of children reflects the change; “Here's my brother, my sister, my mommy & my daddy.com”

- Need to engage the kids on campus to help observe the future

VOIP- “Presence” will be huge impact; making presence increase the effectiveness of connecting calls

- Voice can be enabling to anything; de-emphasize technology & re-emphasize the services & functionality it represents

Dave Clark- made prediction VOIP will follow interoperability vs. innovation curves
Networking guys found it not “cool” to do applications- they were sniffing packets & funding was for hardware development

PARTIAL SUMMARY OF IDEAS

- Opportunity for MIT to step up to build visionary application not technology
 - Ask where the applications might come from
- “Virtual Infrastructure”- integrating with personal device
- Strong collaboration
- All information will be stored
 - Corollary-expression: production must be captured- capture with replay
- Commonality between research & teaching collaboration
- Abstraction- focus on application
- Making being at MIT worthwhile & valuable- may be making the physical place unique (re-emphasis on architecture and physical environment)
 - Technology enablement forces asking the reason for being in the classroom in the first place-why get together? Must answer the question.
- What community ”is” is itself changing- how do we incorporate physical space into the interaction?
 - How to make place matter more?
 - One answer: MIT is the place you “see the future” & use it. (Big idea)
 - Need strong prototypes to explore these possibilities.-expensive-
- Stabilize what we have now-
 - take a moderately ambitious step into the near future & make a list of what should be built into the infrastructure
- Manage the process
 - experiment → demo → prototypes → production services
- The problem is what do you do if you are successful?
 - ITSPARC will address how to decide what experiments become sustainable
- Early days of future-variable uncertainty about its value and utility. Crystal ball was cloudy then. Even back then ease of use with common training was an issue
 - What do we assume is common?
 - What do we have to train students to do?
- Athena pushed hard to standardize as a means of achieving ease of use
 - what wouldn’t be delivered if we are made standardization decision for “X”

Daya Newman :

- Content- educational content is “added value” to the students
- Customization - want to customize this information based on my personal preferences
- Interactivity & gestural interfaces are critically important
- Community- how do we emphasize community through these technologies & not further isolate them?

- the negative side: their physical presence being constrained, restricted or filtered
- Physicality of community is important not to lose

[Dava's demo]

Research

- research notebooks
- collaboration tools
- capture & enhance the material, activities, or performances of activities (suggestion of activate that worked before; animating your diagrams)
- Advanced directory services
- Sharing applications
- Scientific e-notebooks (what is the best practice here - work with the vendors)
- Reconfigurable spaces
- Social dimension of Athena- there were students throughout the Institute who could work & develop new tools
 - Cultural support structure assisted those who wanted to speed things “up” on Athena
- We pay a price for our insistence on diversity- Is this a time for the adoption of particular standards?
- Question- what is the “exit strategy” that directs MIT work away from the current status quo?
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[Note to add “Cross Cutting technologies” as 4th category to education, research and community]

END OF NOTES