Collaborative Education via the Access Grid

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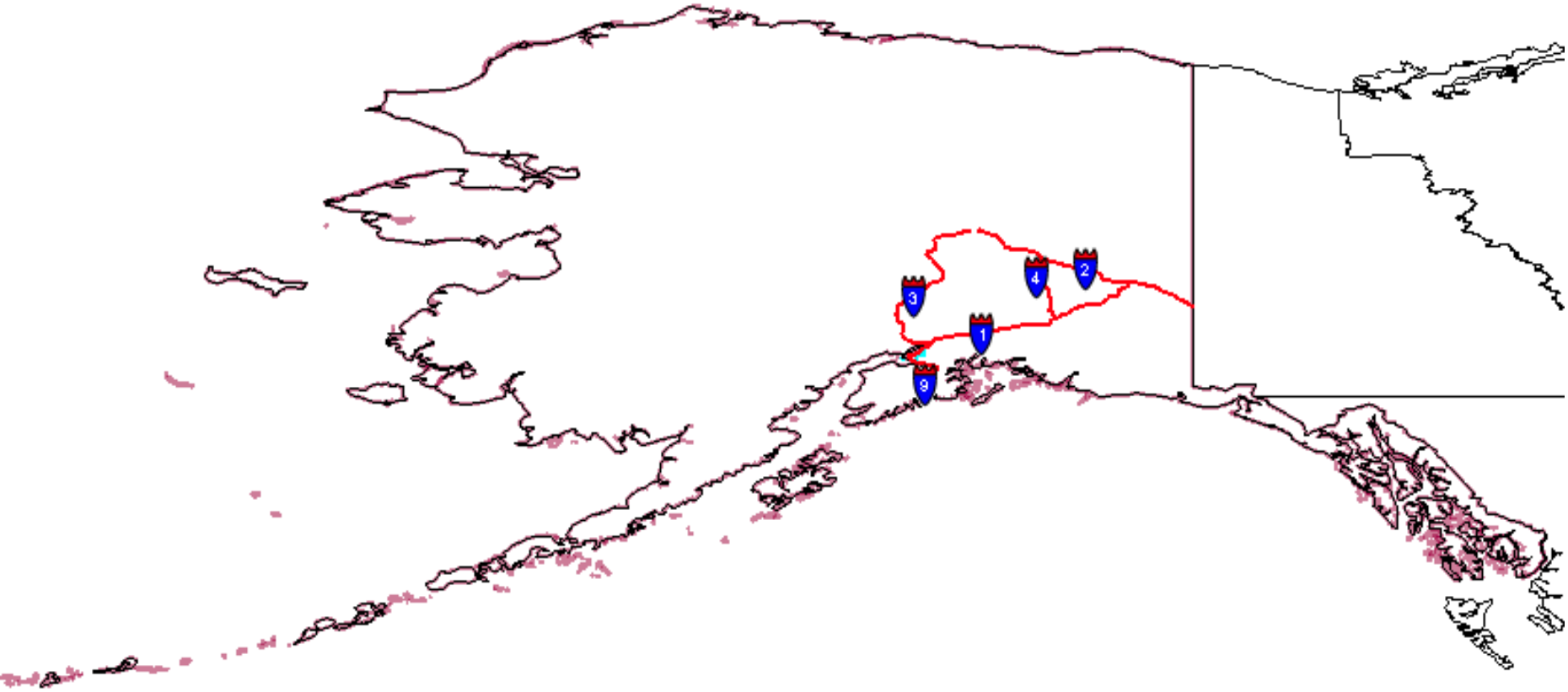
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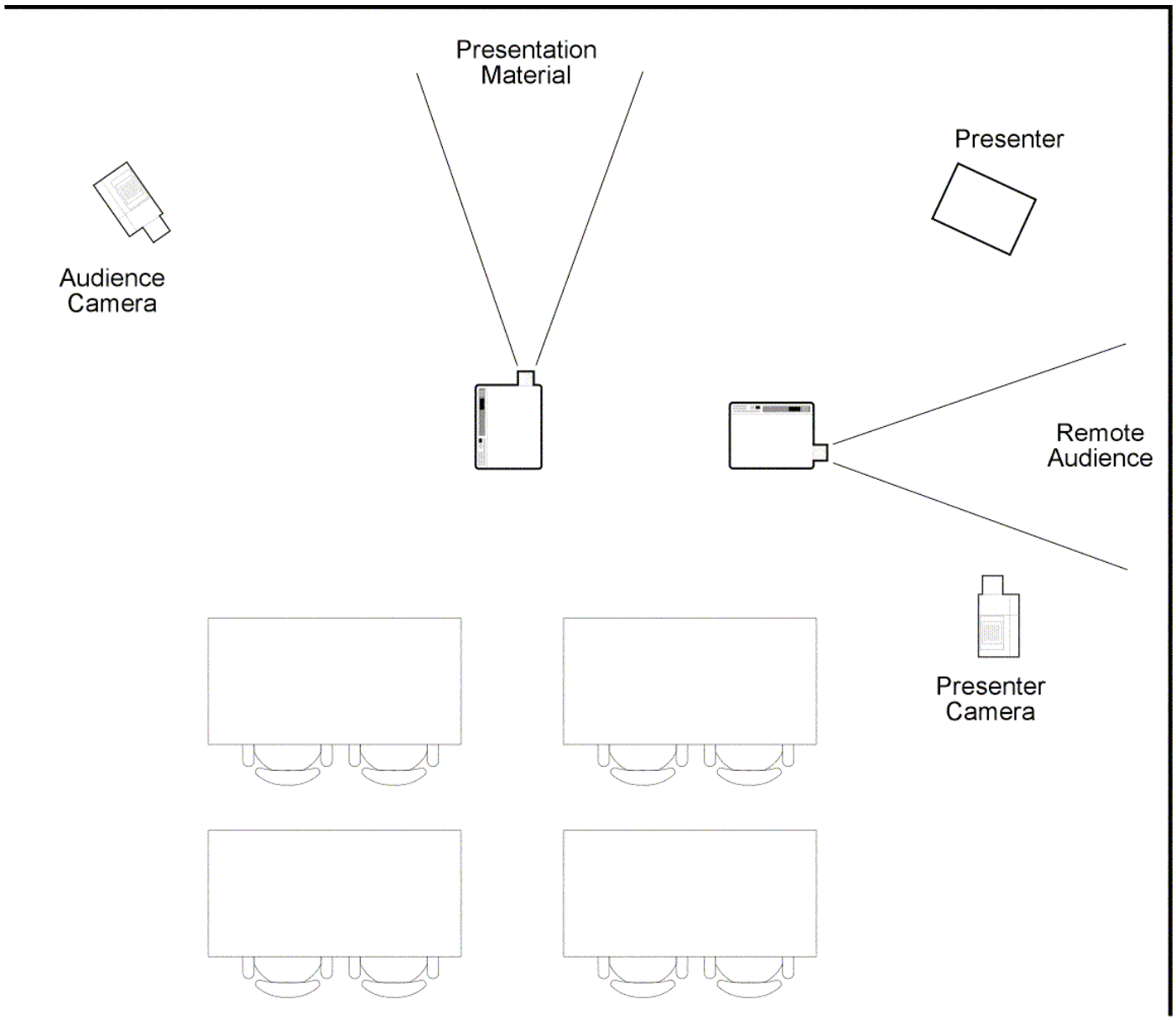
ARSC Access Grid

Fall 2001: Collaborative MPI Class with UAF, UM and UNM

Applications: Distributed PowerPoint, VNC

ARSC Access Grid

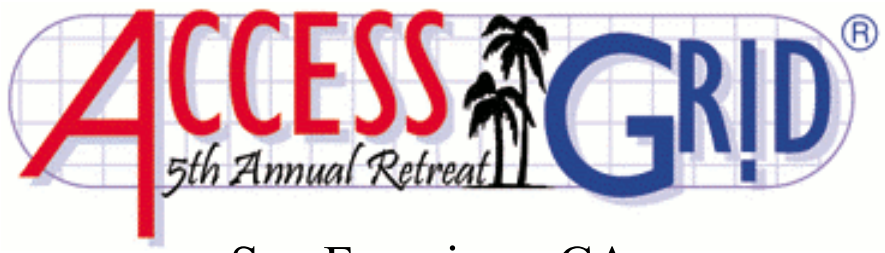
- **Valerie Naranjo music workshop**
- **Collaborative Neuroscience class with UM, MS and UAF**
- **German Language Lab with Montana Tech**
- **Japanese Language/Cultural Exchange with Hokkaido University**
- **Unified Parallel C Workshop**


Presentation
Material
Presenter
Audience
Camera
Remote
Audience
Presenter
Camera

ARSC Access Grid

Lessons Learned

- Participants need several sessions to be at ease with the technology
- Presenters need to treat the remote audiences as local
- Pay attention to camera angles
- You need a very good network person on site
- Practice… Practice… Practice
- Patience… Patience … Patience



San Francisco, CA
April 26-29, 2005

Distance Education

Monika Rabarison

Jackson State University

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Access Grid at JSU

- Internet2 Member
- Joined the AG community in 2002
  - –Personal Nodes on PCs and Laptops
  - –JSUvisNode
  - –JSUeNode

JSUvisNode

- Three-computer room node
- Research Meetings and Activities
- To be a Mobile Node

JSUeNode

JSUeNode is a four-computer room node

Collocated with a Fakespace FLEX (immersive visualization system)

Research collaborations, meetings, seminars, conferences, and academic lectures

Distance Education at JSU

- Polycom
- TANDBERG
- WebCT
- CLI Virtuoso
- TANGO: fall 1997-spring 1999 with Northeast Parallel Architectures Center(NPAC)
- Access Grid

Distance Education via AG

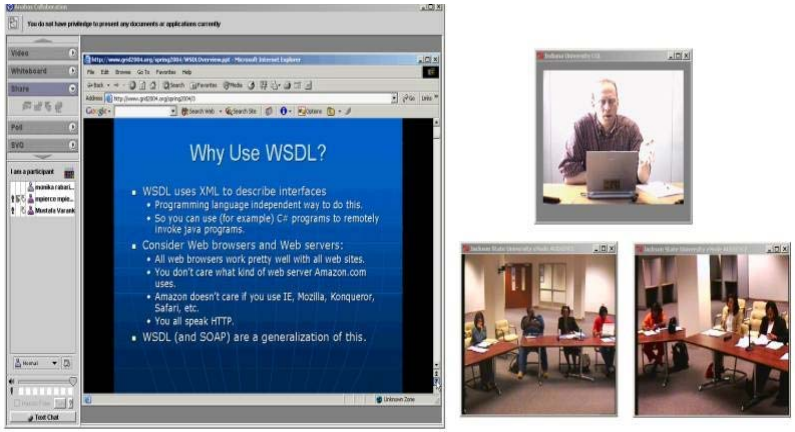
- Community Grids Laboratory (CGL), Indiana University
- Department of Computer Science, Jackson State University

  –Spring 2004 using AG 1.0.2

  –Spring 2005 using AG 2.3

Spring 2004

"e-Science, e-Business, e-Government and their Technologies"

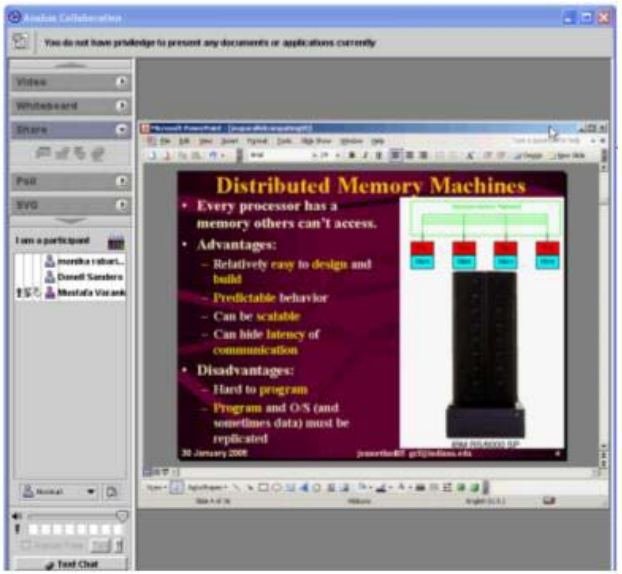


- 3 faculty members at CGL
- 4 graduate students enrolled for credit
- 1 student + 2 faculty members as auditors
- 2 faculty members as on-site class proctors

ACCESS GRID 5th Annual Retreat

Spring 2005

"High Performance Computing"



- 2 faculty members at CGL
- 2 graduate students
- 13 undergraduate students
- 1 on-site mentor
- Occasionally some remote guests

Class delivery

- Twice a week
- Course materials, assignments, and each lecture available online prior to the class
- Wiki to allow students to ask additional questions or find answers
- Lecture presentation:
  - Distributed PowerPoint (DPPT) with AG 1.x
  - Shared Presentation with AG 2.x
  - Anabas

Anabas?

- CGL team finds DPPT and Shared Presentation not very interactive
- Anabas(http://www.anabas.com)
  - Shared desktop display
  - Point to any part of a slide presentation
  - Open a browser
  - Show execution of a program

Anabas Collaboration

You do not have privilege to present any documents or applications currently

Video

Whiteboard

Share

Poll

PDA

I am a participant

Monika Rabari...

Geoffrey Fox

Normal

Hands Free Talk ?

Text Chat

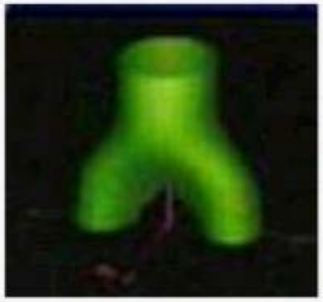
Microsoft PowerPoint - [PowerPoint Slide Show - [jsusourceapps-05.ppt]]

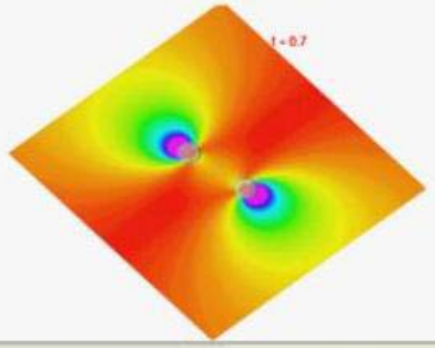
File Edit Browse Window Help

Type a question for help

General Relativity

- This field evolves in time complex partial differential equations which have some similarities with the simpler Maxwell equations used in electromagnetics (Sec. 8.6).
- Key difficulties are the boundary conditions which are outgoing waves at infinity and the difficult and unique multiple black hole surface conditions internally.
- Finite difference and adaptive meshes are the usual approach.





Slide Show 10 of 36 Default Design

ACCESS GRID 5th Annual Retreat

Grades

- Assignments
- Final Project
- Class Participation

"Can they see us?"

"Can they hear us?"

Challenges

- Infrequent networking issues: multicast, firewall, router settings
  -  Unicast Bridge (easier with AG 2.3)!
- Teacher on travel
  -  Telco bridge!
- Camera view of presenter
- Camera view of students
- Audio level
- Lighting
- Keeping microphones on or off ?
- Displaying local video streams?

Evaluation and Future plans

- Evaluation at end of spring semester of 2004:
  - Ease to interact with the teachers
    - Most appreciated
  - Improvement on audio and video synchronization
    - For more realistic attendance
- Get more departments to use the AG for Collaborative Education

"Challenging Minds, Changing Lives"

http://www.jsums.edu

Distance Education

Mike McMahon
University of Nevada, Reno

UNR CSE AGN

- Dual 2.8GHz Xeon system running Windows XP Professional
- inSORS Access Grid software
  - IGPix for presentation and picture viewing
  - Electronic (software) whiteboard
  - URL sharing
- 3 projectors (20’ x 5’ screen) and 4 cameras

Artificial Intelligence

- Taught from UNR to a student in DRI-South as well as students at UNR
- Obstacles:
  - Instructor slides that incorporated video
  - Instructor websites
  - Tracking whiteboard use by the instructor
  - Instructor dislike of not being in control

Astrobiology

- Will be taught by faculty of UNLV and UNR to students at both locations. Some speakers from DRI will join.
- Collaboration will be the largest hurdle:
  - Quickly figuring out how to share information (web resources, videos, etc.) as the instructors lecture
  - Get students used to the videoconferencing system. They cannot feel intimidated or that they're attending a presentation.

Collaborative Education Model

Cindy Sievers
Los Alamos National Laboratory
Panel discussion for Access Grid Retreat San Francisco, CA
April 26 – 29, 2005

What is Collaborative Education?

- Instructors at multiple locations, students at multiple locations
- Collaborative effort between institutions/partners

Why Collaborative Education?

- Benefit to all participating institutions
  - Universities are able to offer a more diverse curriculum
  - Partners are able to recruit highly qualified students
- Maximize student participation
  - Students from remote locations benefit
- Maximize resources from multiple locations
  - Industry partners may have diverse areas of expertise
  - Universities have educational resources

Planning

- Large amounts of time and effort in planning stage
- Institutional Planning
  - Coordination between institutions is essential for success
  - Involvement of decision makers (i.e.Provost, curriculum development, managers)
  - Access Grid person needs to provide input on technical limitations
- Curriculum planning
- Facility planning

Administrative Issues

- Budget Issues
  - Who pays for staffing?
  - Tuition?
  - Associated internships?
- Student Issues
  - Tuition
  - Credit
  - Requirements for degree program
  - Location

Staffing Issues

- Management staffing
  - Oversee programmatic efforts, budget
- Remote Instructor status
  - Adjunct professors, visiting professors, lecturers
- AG node staffing
  - All remote sites need to be staffed by trained operators
- Administrative Staff
  - Scheduling, record keeping

Technical Issues

- Must be production quality
- Back up plans
- Coordination of AG nodes based on needs of instructors
  - Hardware selection
  - Software selection and installation (vnc, shared apps, etc)
- Node Op training
- Testing and Certification of participating sites

Human Factors

- Instructor communication with remote students
  - Virtual office hours
  - Web site
- Homework
  - Often done via web
  - Shared apps
- Student to student interaction via AG
- Student to instructor interaction via AG

Summary

- Collaborative Education benefits all participants
- Requires large amounts of planning and coordination
  - Administrative Issues
  - Staffing
  - Technical Issues
- Human factors play a large role in success of collaborative effort
- Unique nature of collaborative environment can yield surprising results

AG 101 @ LSU

Examples of Educational Use of the Access Grid @ LSU

John I. Quebedeaux, Jr.
Louisiana State University
AG Retreat, San Francisco 2005

Classes

- Art Course
  - LSU / Brazil
- Statistics Courses
  - LSU / LSUHSC
- Computational Neuroscience (NSF)

Access Grid Environment

Human Aspects

- Instructors
  - Presenting
  - Tools
  - Adoption
- Students
  - Interaction

Access Grid Tools

Document Camera (aka overhead)

VNC

Shared Apps

Smartboard

Advantages

- Access to many instructors/experts
- Special topics / enough students
- Interaction done productively
- Multiple sites / Locations simultaneously

Disadvantages

- Technology can not make a bad lecture good
- Technology issues
  - Firewalls (VNC)
  - Network connectivity (unicast and multicast)
  - Audio from untested sites

References

Neuroscience Course:
http://www.psc.edu/biomed/training/courses/Fall_2004/compneuro/index.html

LSU Ags:
http://lbrn.lsu.edu/portal/staticpages/index.php?page=LSUAccessGrid
http://www.lsu-eye.lsuhsc.edu/Research/accessgrid.htm

LSU-CCT: http://cct.lsu.edu/

LBRN: http://lbrn.lsu.edu/

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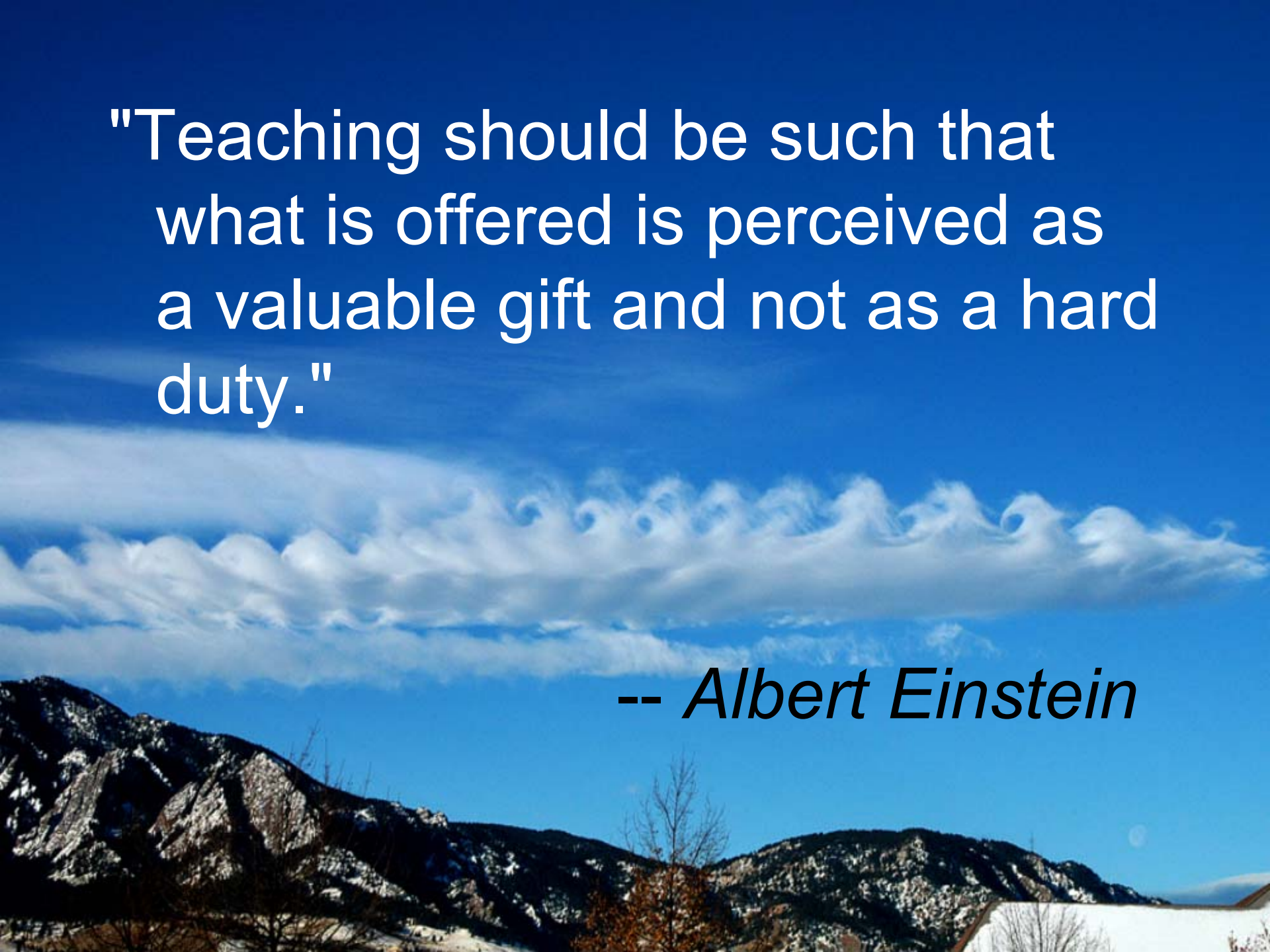
"Teaching should be such that what is offered is perceived as a valuable gift and not as a hard duty."
-- Albert Einstein

MANCHESTER 1824

The University of Manchester

Further Maths A-Level on the Access Grid

A Case Study

Michael Daw
Research Support Services,
Manchester Computing

Access Grid Retreat, San Francisco, April 2005

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Contents

- Before we came along
- Core requirements
- Key project facts
- Plan
- Teaching
- Whiteboards

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Before We Came Along

- A-Level Further Maths tuition by Maths Dept
- Tutors drove to schools in deprived areas
- Why?
  - Altruistic = schools couldn't resource this themselves
  - Selfish = enables University to pinpoint bright students

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Core Requirements

- Save need to travel up to 80 mile round trip
- As effective as face-to-face tuition
- Basis for future course delivery by University
- Widening Participation
- Need for effective whiteboard sharing – especially important in Maths

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Project Facts

- DTAGMATHS – Distributed Teaching over Access Grid of Mathematics
- http://www.sve.man.ac.uk/Research/AtoZ/DTAGMATHS
- Funds from:
  - Distributed Learning Fund
  - Manchester Computing
  - Maths Dept.
  - inSORS Integrated Communications (thank-you!)

inSORS®

Carlton-Bolling College

- School – Carlton-Bolling College, Bradford, Yorkshire
- Key workers: Samina Ali (Maths), Javier Gomez Alonso (CWD)
- Others: David Hume (DL), Bill Lionheart (Maths), John Begg (Maths), Celia Mulqueen (CBC), Ben Chalcraft (CB City Learning Centre)

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Deliverables

1. One year's course – A-Level Further Maths
2. AG for teaching Evaluation Report
3. AG for teaching Guidelines
4. Shared whiteboard tools Evaluation Report
5. Shared whiteboard tools Recommendations

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Teaching

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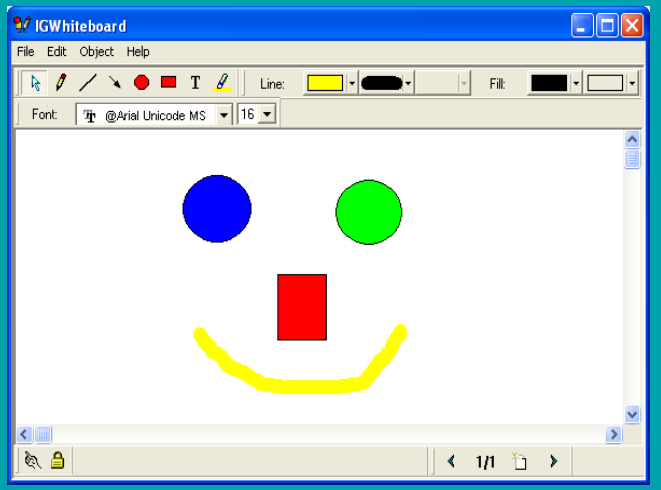
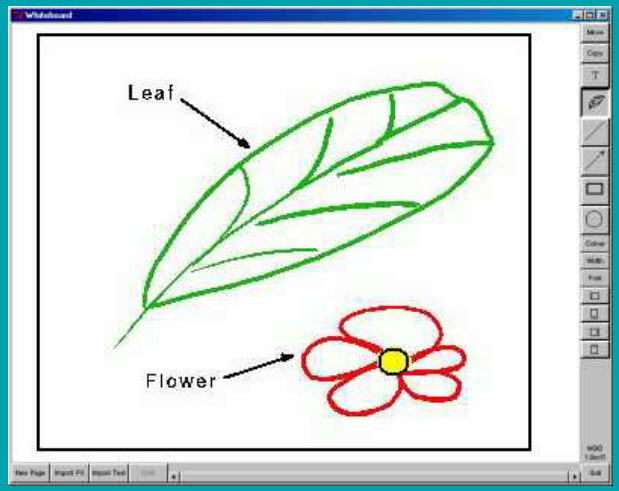
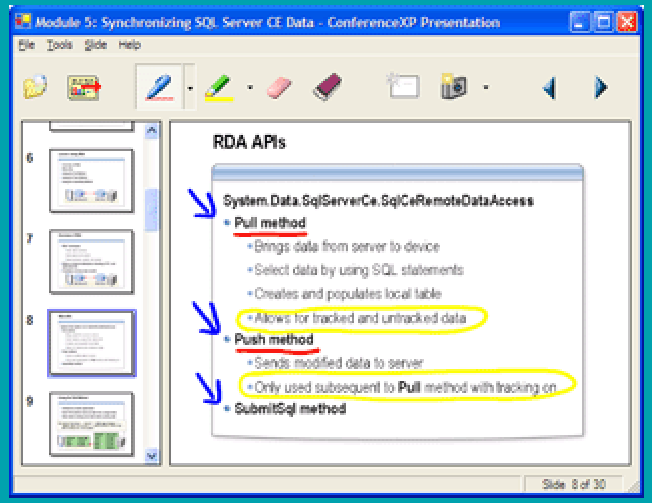
Whiteboards

- UCL WBD
- InSORS IG Whiteboard
- Microsoft ConferenceXP







Combining the strengths of UMIST and
The Victoria University of Manchester

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Research Support Services
Manchester Computing

http://www.sve.man.ac.uk/General/Staff/daw

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