



Formative assessment of the effectiveness of collaboration in GCB



Xing Hang¹, David Villegas Castillo², S. Masoud Sadjadi², and Heidi Alvarez³

1 Computer Network Information Center (CNIC), Chinese Academy of Sciences, Beijing, China

2 School of Computing and Information Sciences (SCIS), Florida International University, Miami, FL 33199, USA

3 Center for Internet Augmented Research and Assessment (CIARA), Florida International University, Miami, FL 33199, USA

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Collaborative platforms

□ Motivation

- Need for quality collaborative tools
- Importance of understanding the effectiveness in using these tools

□ The team

- Two students, from FIU and CNIC, plus two advisors

□ Goal

- Provide a more convenient and efficient collaborative platform for our researchers, improving global research collaboration

Introduction to GCB

- Global Cyberbridges (GCB) is a model global collaboration infrastructure for e-Science between USA and international partners.
- Objectives
 - Integrate cyberinfrastructure into the whole educational, professional, and creative process of diverse disciplines.
 - Create a global community of scientists and researchers capable of collaborating with their counterparts through the integrated cyberinfrastructure.

GCB - Participating countries



Florida International University



Computer Network Information Center



The City University Hong Kong



The University of Sao Paulo

GCB Projects

- *Computational Modeling & Simulation of Biodegradable Starch-Based Polymer Composites*
- *Grid Enablement of Hurricane Simulation Application*
- *On-Demand Weather Forecast Visualization via Efficient Resource Utilization in Grid Computing*
- *Collaborative Platforms*

Effectiveness of collaboration.

□ Why?

- Lack of understanding of how to use Cyberinfrastructure (CI) to solve research questions
- Inadequate adoption and use of CI

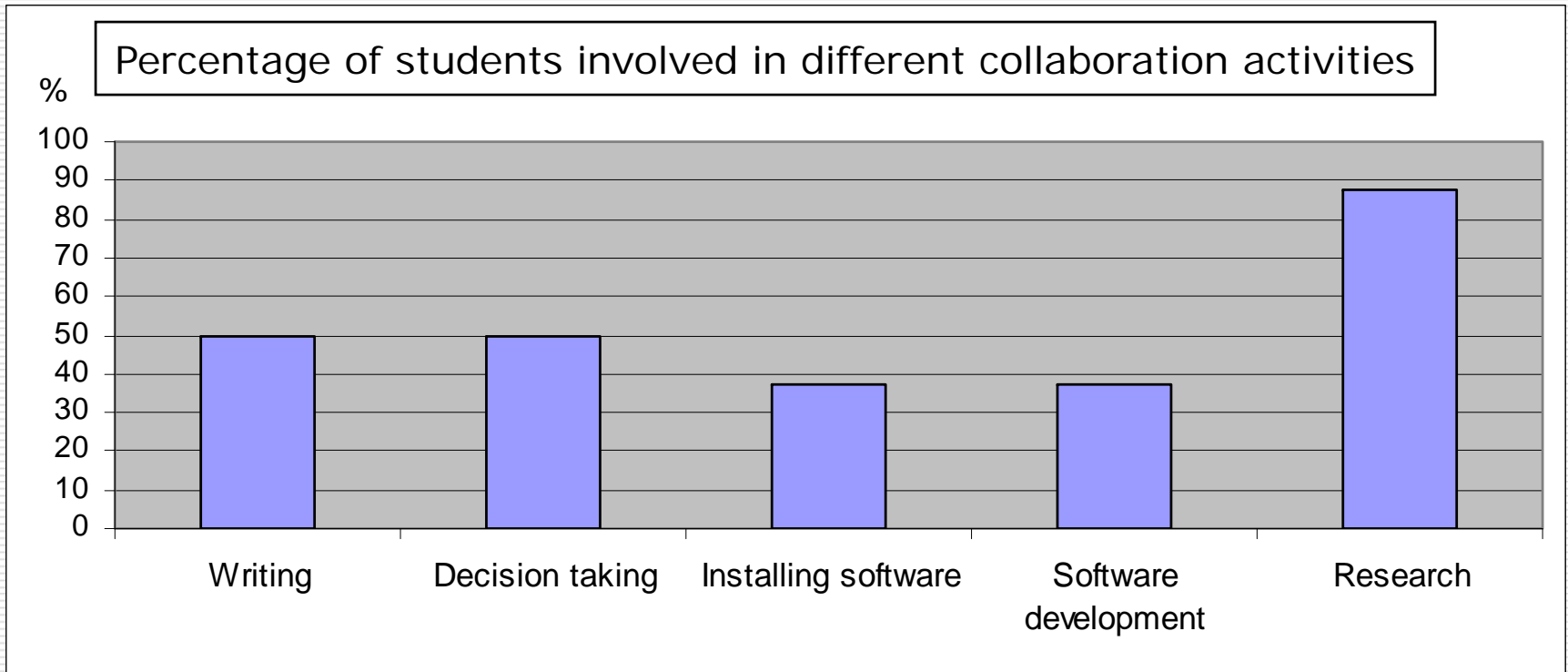
□ GCB Case Study

- During year 2007, 10 participants from USA and China carried out four different projects working remotely

Assessment

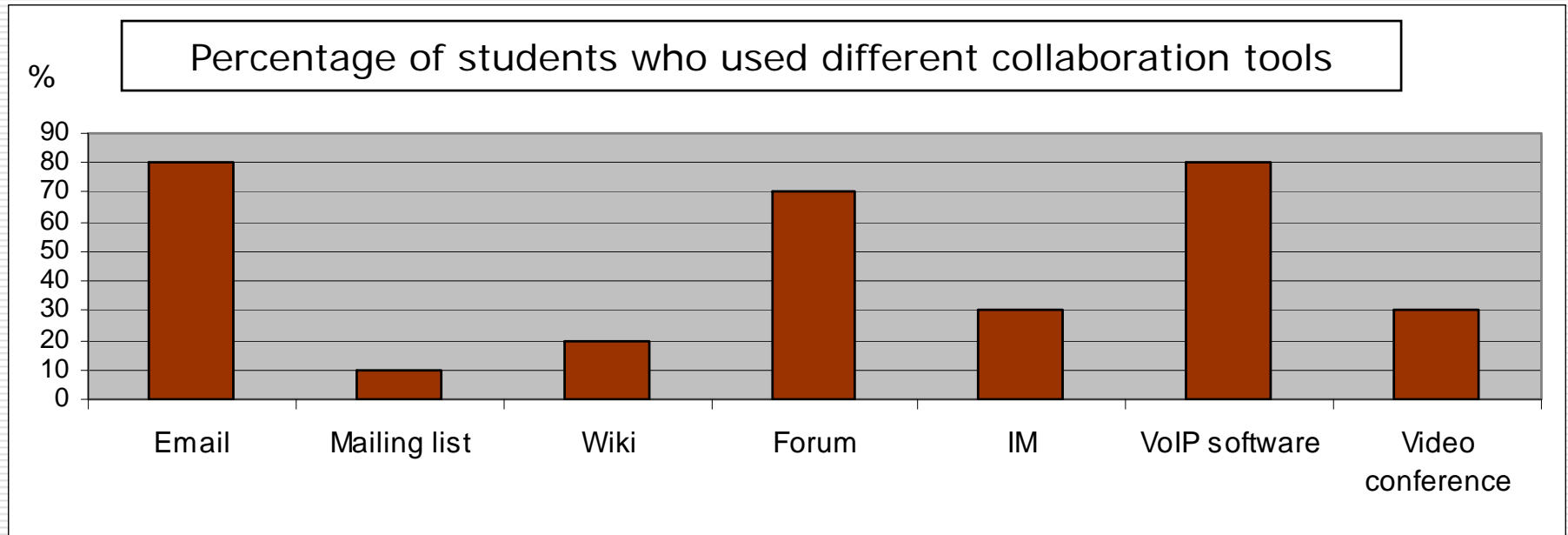
- Observe, participate and study distributed and interdisciplinary collaboration of teams
- Articulate key challenges and requirements
- Methods
 - Observations of teams' progress
 - Conduct and analysis of survey
 - Individual interviews

Survey results (I): Main activities in research



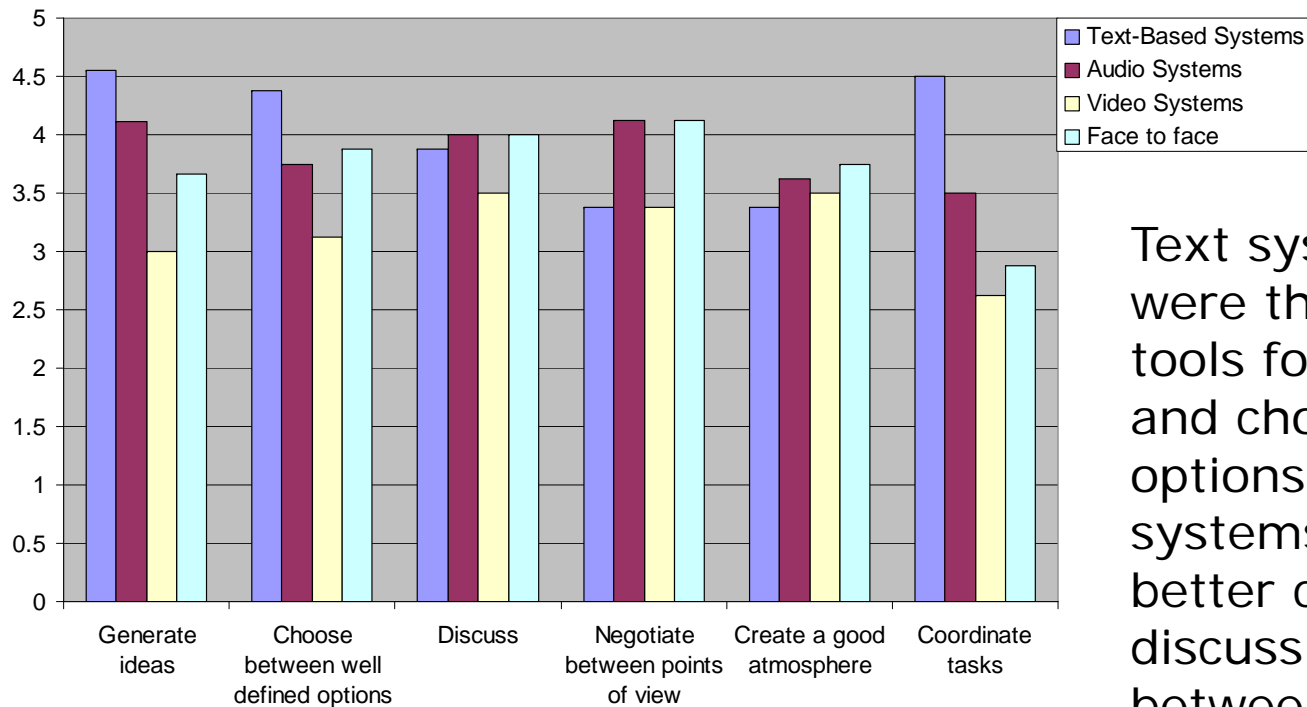
Individual research was one of the most popular activities, while only half of the students considered writing as one of the principal duties for collaboration

Survey results (II): Used tools



80% of researchers selected VoIP and e-mail as the most commonly used tools. The forum was also one of the principal tool of choice, since it was deployed at the early stages of the project. Other tools such as the Wiki or the Video conferencing software were not as popular, due to unfamiliarity for the first or technological issues for the later.

Survey results (III): Tool effectiveness



Text systems (IM, e-mail) were the highest rated tools for generating ideas and choosing among options, while audio systems were chosen as better candidates for discussing or negotiating between points of view.

Video systems were only high rated for creating a good working atmosphere. We believe that they did not have a good rank for other categories due to the difficulty of using them in comparison with audio tools.

Survey results

- ❑ Most common activity is research, normally performed individually
- ❑ Other common activities are writing documents and taking decisions
- ❑ Most used tools in GCB are e-mail and Voice conferencing.
- ❑ Video conferencing is not as extended due to technical and social difficulties

Individual interviews results (I)

- Problems with Video teleconferencing systems
 - Technical problems
 - Difficult to set up
 - Occasional delays, loss of signal
 - Inflexibility (e.g., need to manually focus on the person talking and low quality in capturing slides)
 - Social problems
 - Invading the privacy!
 - Loss of anonymity

Individual interviews results (II)

- Lack of effective technologies
 - Level of familiarity as a leading factor (e-mail, voice systems)
 - Need to integrate different technologies (users/passwords for wiki, forum, conferencing systems)
 - Need to find a balance among synchronous/asynchronous systems.
 - Time difference makes it difficult to communicate using synchronous tools
 - However, they help greatly by improving the collaborative interaction by allowing people on one side to work while people on the other side are sleeping

Individual interviews results (III)

- Requirement of effective tools for visualization of complex phenomena
 - Deployment of SAGE tile-based display
 - Need to improve its efficacy
 - Addition of sound
 - Integrate with existing tools
 - Improve user interface



*Display at University of Illinois at Chicago
<http://www.evl.uic.edu/cavern/sage>*

Suggested improvements and conclusion

- Improve level of familiarity
 - Using existing tools
 - Training users beforehand
 - Need of new interaction metaphors
 - Bigger screens
 - Tactile input
 - User friendliness
 - Projects such as SAGE need to be made friendlier to researchers
 - Social problems need to be taken special care
 - Language barriers
 - Cultural differences must be addressed
 - People from different cultures socialize in different ways: It is important to understand it and work out protocols that make all the participants comfortable in the collaboration.
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Next steps

- Future plans based on the present assessment
 - Set the requirements for effective collaboration tools
 - Define the needed training for multidisciplinary researchers in order to use the tools effectively
 - Develop a integrated tool, based on our experience for research collaboration.

Questions?

Contact

David Villegas - dvill013@cs.fiu.edu
Florida International University

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