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# A Web Enabled CyberCollaboratory for Asynchronous Team Projects

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## Abstract

This paper describes the development and implementation of a WEB enabled CyberCollaboratory that can be accessed via the Internet asynchronously. The asynchronous architecture (access is possible from the location and time of an individual member's choice) would enable faculty to provide collaborative learning experiences and team project assignments resulting in an enriched educational experience for students. Students would learn team work methodologies, techniques for group problem solving and consensus building, and have the opportunity to work with diverse team members thus enriching both their social and educational experience.

## Introduction

The University of Illinois at Springfield (UIS) serves a community of relatively older students with an average age of 31 years. Many of the "older" students have full time jobs and attend classes in the evening. Providing these students with the opportunity to work in teams presents a challenge to both the students and educators. In order to work on group projects students must coordinate meeting times outside of the class room or conversely, precious class room time must be allocated for team meetings. Consequently, while industrial and governmental sectors rely more and more on team work often this learning experience is denied students at UIS simply because classroom hours are already filled to capacity. Meeting coordination also poses a major problem for students who are geographically dispersed and have full-time employment.

For our purposes the term CyberCollaboratory refers to the software architecture planned for implementation at UIS. The CyberCollaboratory consists of an extended functionality "tool kit", NOTES as the "middleware", and DOMINO™ as the Internet/WEB interface. More specifically, this architecture consists of a tool kit of Expert Systems, Group Decision Support Tools (UIS-GDSS) and commercially available applications such as MSProject and EXCELERATOR, a computer aided software engineering (CASE) tool.

Our objective in building the CyberCollaboratory is to provide distance learning students and commuter students with an opportunity to enjoy the benefits of cooperative learning without having to coordinate meetings or come to campus. Cooperative learning has a long history of positive outcomes. Students who have the opportunity for cooperative learning demonstrate better analytical skills, more thoughtful evaluation of readings, and more of a feeling of belonging to the school or team (Bligh, 1972; Kulik and Kulik, 1979; Wagner, 1992). Collaborative learning in and of itself is an effective method for promoting learning (Kimber, 1994).

The main thrust of this project is to develop a robust approach with broadly extensible procedures, from which *many* team projects and group decision problems can be formulated and applied in a variety of classroom contexts. In keeping with the desire for general applicability, and with the need for interactive tools, a CyberCollaboratory that can adaptively structured (Poole and DeSanctis, 1992) by each CyberTeam is currently under development.

## WEB Enabled Asynchronous Groupware

An *asynchronous* CyberCollaboratory will provide the additional benefit of enabling students and faculty to participate from the location of their own preference at the time they prefer (Dufner, Hiltz, and Turoff, 1994; Hiltz and Turoff, 1992; Dufner et al., 1995). An asynchronous group support tool such as the CyberCollaboratory can be used to enrich the classroom experience and serve to prepare the student for

entry into the new, flatter, leaner, *distributed* team oriented corporate culture of today where they will be employed.

Ideally strategic decision making, decision making, and planning in high velocity environments such as those existing in the real-world today are based on quick but rational decision processes that are often iterative in nature, and extend over a period of days or weeks. In addition, decisions are often made by groups or teams because of the complexity of problems facing organizations. Thus the real-world revolves around consensus building and collaboration.

Students in today's classrooms at our university often do not have the time to work interactively as a group (Carlson, 1994), solve problems as a group, develop consensus building skills and group problem solving experience. Thus using and extending Lotus NOTES as a CyberCollaboratory would provide students with the opportunity to have "hands on" experiences in working together guided by facilitators who understand decision making processes and team work.

### **Potential Applications**

The Lotus NOTES asynchronous platform extended with a tool kit of software functionality is designed to provide opportunities for asynchronous team work and collaboration. Some possible applications for the CyberCollaboratory are shown below in Table 1.

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- Planning/ case analysis
  - Software design, analysis and product development
  - Budgeting and allocation tasks
  - Financial analysis and trading applications to standardize decision making
  - Risk assessment
  - Portfolio management
  - Project management
  - Team learning /group projects
  - Teaching and educational enrichment (promising students can be given access to outside assistance through cooperating Universities and businesses)

Table 1: CyberCollaboratory Classroom Applicability

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### **Conclusion**

As we move toward providing more distance learning, enabling students to experience a full range of learning opportunities is more challenging. CyberCollaboratories can be the platform where team building, team work techniques, and specialized skills can be taught. Students who are distributed geographically and may come to campus only infrequently can be provided with the opportunity to learn collaboratively, to develop relationships with other students, and to learn how to use cutting edge technologies. The development of technologies such as a CyberCollaboratories can extend our ability to teach and learn in much the same way the microscope changed our ability to learn about and understand the human body (Jessup and Valacich, 1993). The opportunities awaiting us in CyberSpace indeed vast, exciting, and unknown.

A software architecture diagram is shown on page three of this document. Additional information and tables regarding this project were removed from this paper due to the page limitation. Please contact the authors should you wish to receive additional information about the CyberCollaboratory research and development.

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