Creating a Collaborative B2B Environment in the Classroom:
Evaluation of Methods Utilized in an International Simulation over a 4-Year Period

Yvonne Lederer Antonucci[1]
Management Information Systems, Widener University
Chester, PA 19013, USA

and

Michael zur Muehlen[2]
School of Technology Management, Stevens Institute of Technology
Hoboken, NJ 07030, USA

Abstract

As businesses of the 21st century continue to expand their relationships with partners and customers enabled by information technologies, Universities need to prepare and expose students to the organizational and technical issues that enterprises encounter when developing business-to-business (B2B) systems. Understanding the issues and the ability to establish, develop, and manage B2B environments are skills needed in this 21st century spirit of e-Business. This paper explains how to create and conduct a collaborative B2B environment in the classroom based on the experiences of a 4-year cooperative curriculum between two Universities. In addition, the analyses results of the collaboration methods utilized over that 4-year period are presented. These results have implications on what collaboration methods may be or may not be successful in conducting a B2B simulation in your curriculum.

Keywords: collaboration methods, business-to-business relationships, curriculum development

1. INTRODUCTION

Business practices of the 21st century continue to focus on e-Business relationships between organizations. In fact, several research organizations recently revised their forecasts of worldwide business-to-business (B2B) spending to be much higher than predicted in 1999, including the Gartner Group who predicted worldwide B2B spending would reach 7.9 trillion by 2004 (Intelligent Enterprise, 2001). As a result, the ability to support B2B collaboration between trading partners may be as important as the ability to deploy appropriate technology in maintaining a competitive advantage (The Economist, 1999). Universities need to prepare and expose students to the organizational and technical issues that enterprises encounter when developing and deploying these business-to-business (B2B) relationships. Understanding the issues and the ability to establish, develop, and manage B2B

---

[1] Yvonne.L.Antonucci@Widener.edu
[2] mzurmuehlen@stevens-tech.edu

environments are skills needed in this 21st century spirit of e-Business. The question remains of how to give students practical experience with B2B environments in the classroom.

This paper explains how to create and conduct a collaborative B2B environment in the classroom based on the experiences of a 4-year cooperative curriculum between two Universities. In addition, the analyses results in the form of student perceptions of the collaboration methods utilized over that 4-year period are presented. These results have implications on what collaboration methods may or may not be successful in conducting a B2B simulation in your curriculum.

2. HOW TO CREATE AND DEPLOY A CLASSROOM B2B SIMULATION

There are several aspects to a classroom B2B simulation that need to be planned and established. Initially the instructor must identify areas within a course or an entire course that would be enhanced with a B2B simulation. Then collaborative partners must be identified that have similar courses or goals. Once your collaborative partners have been identified and they have agreed upon the goals and objectives of the collaboration, you are ready to set up a collaboration Framework. This includes not only how B2B groups will be assigned, but also developing the appropriate collaborative methods for communication and negotiation.

Establishing Collaborative Partners

Generally collaborative partners can be within the same classroom, between two classes of the same university (cross-departmental), or between classes of two (or more) different universities (inter-organizational). It is our recommendation that the established partners should be from two different universities in order to give the students the highest level of e-business exposure. Finding a collaborative partner is tightly coupled with similar interests and/or goals. Our collaborative partnership began from a mutual colleague introducing us based on our similar teaching and research interests. If you experience trouble identifying a collaborative partner, we suggest posting a request on the ISWORLD mailing list.

First and foremost, it is important that the partners involved agree upon the goals and expected outcomes of the collaboration. As there are many methods to establish a partnership as described above, we established an international partnership between a US University and a German University. Each university already had similar courses utilizing similar software systems. In addition the goals of these classes were already similar, focusing on process analysis and design in an ERP environment, and the collaboration possibilities were identified as enhancing the e-business curriculum of the classes in each university. However, we needed to establish a common activity between our universities involving a B2B environment.

We decided that our classes could do a joint class collaboration project during the 10 weeks that overlapped our fall semesters. This group project was built into the course grade evaluation for each class. The Goal of the collaboration was to expose students to the design of inter-organizational processes and the implementation of those processes within the construct of an enterprise system. The intention was not to replace existing courses, but to seamlessly integrate curricula of the partners. Initially one business-to-business case scenario was developed for the first B2B collaboration in 1999. Subsequently, four more scenarios were developed and deployed in 2000, 2001, and 2002, providing these classes with 5 different project cases.

Each of the cases represented a typical business scenario where part of a business process was outsourced to an external service provider. The scenarios covered different industries, such as finance, manufacturing, or IT, but the complexity of the business processes given to the students was designed to be at a similar level. Each business scenario was documented using a plain-text outline of 1-2 pages, but no implementation details for the business processes were given, in order not to impede the creativity of the students. The classes were divided into project groups; each project group was composed of 8-10 students, 4-5 from each university. Each university then assumed a role of either the customer (client) or the provider (vendor) (see Figure 1). The project involved the negotiation, analysis, design and implementation of B2B processes which were divided into 8 milestones with common

due dates between the two Universities. The students from each participating University negotiated and resolved inter-organizational issues prior to implementing the desired business process. Once the implementations were complete, student groups from each University posted their proposed business processes as images and PowerPoint presentations on the web site, at which time the students were able to evaluate each other's process. This demonstrated how the collaboration worked and gave the students the opportunity to evaluate similarities. At the end of the semester, each team presented their solutions. Thus, the groups from each University simulated the geographical dispersion of participants in a B2B collaboration and the project goals were designed to expose the student to issues of B2B environments. Depending upon what you decide to be the emphasis of your course, students should be required to deliver documentation of specified milestones throughout the project.
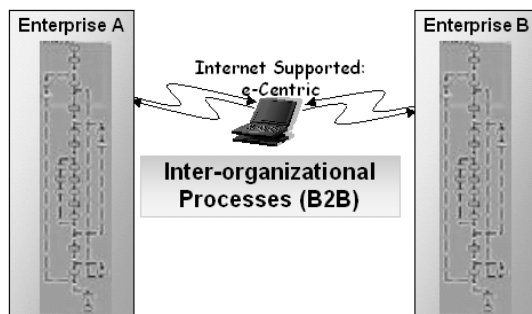

Figure 1: B2B Collaboration Simulation

Another partnership method we are beginning to establish is between two different classes of the same university. One class is a Marketing course (front-end) that is focused on CRM and the second class is an MIS course (back-end) that focuses on process analysis and design. The CRM portion of the business-to-business scenarios is the established common goal of the two classes, where the outcome is an integrated process with CRM interfaces.

Establishing a Collaboration Framework

Establishing B2B Groups

Whether you establish a partnership within the same classroom, between two classes of the same university (cross-departmental), or between classes of two (or more) different universities (inter-organizational), groups must be established for each case (or activity) you choose to utilize in your collaboration. At least two groups per case should be established, one to represent each role in the B2B relationship. If your partnership is between two different universities, then within one case the first university would have a group to represent the customer and the second university would have a group to represent the provider. We recommend that the group size be 3-6 students per class, per group. Larger groups are difficult to manage. If your class size is large, we suggest having 2 groups assigned to each case.

Developing Collaboration Mediums

Once you have established the groups and project goals, the next step is to develop effective collaboration mediums for your classes that can also be monitored and measured by the instructors for evaluation purposes. There are several studies that evaluate the effectiveness of various collaboration mediums in virtual teams (Massey, et.al. 2001; Jarvenpaa et.al. 1998). A continuing challenge these studies reveal is how virtual teams can build the necessary trust between the trading partners without a face-to-face interaction (Jarvenpaa, et.al. 1998). We have developed and utilized several methods and have found that the combination of a web forum and group web sites to be most effective, with the addition of posting student pictures to add a level of personalization. Students were required to utilize these mediums to establish contact with their virtual partners and negotiate process details. We have also utilized other methods such as on-line video conferencing in an effort to provide electronic face-to-face meetings, which were not as effective due to our 6-hour time difference. Remember that any interaction medium utilized by the participating partners must be able to be monitored and analyzed by the instructors for evaluation purposes.

Development of a Web Forum: We recommend developing a business-to-business web site for the students to utilize as an on-line forum for collaboration, allowing the students to non-verbally communicate and discuss project details. Students should be required to utilize this web site to establish contact with their virtual partners and utilize the global web-based discussion forum with

the goal of negotiating and resolving various case questions, process details, and Business-to-business related issues. This forum should be provided from a central web site that is available 24/7. The purpose of a web forum is to provide a medium where the students presenting the client can communicate with the students representing the outsource provider. Obviously this is very beneficial for communication between students of different universities, but we also recommend that this be set up for the other possible partnership configurations. This medium allows the instructor to monitor group interaction. It also provides any-time, any-place communication for the students (which is especially useful for partners in varying time zones).

The web forum we had set up contained a section for general announcements for all students and also one for each class internally (see Figure 2). It also contained a section with each of the 5 cases, one for each paired team to use for communication.

Figure 2: Web Forum Main Page

Each of these gave the students the ability to post topics and to continue their discussion in a threading format (see Figure 3).

A forum web site could also be set up where there is a portal page (see Figure 4). The forum also can include student pictures in order to provide some level of personal communication.

A web forum can be set up with little effort on a dedicated web server that supports scripting through mechanisms such as CGI or PHP. Especially for PHP (a freely available server-side scripting language) a number of freeware bulletin board packages are available (for example Phorum), while commer-

cial packages rely on Perl and CGI (for example Ultimate Bulletin Board). Each of these systems can be configured through a web interface, easing remote administration by instructors, which can create new sections, moderate postings and administer user rights. Complex packages, such as Invision PowerBoard allow the instructor to set up moderation roles for either group leaders or teaching assistants that are allowed to move misplaced posts or edit offensive content.

Figure 3: Forum Web Page Threading Capabilities

Figure 4: Forum Portal Page

While each bulletin board package provides different functionality, the steps for setting

up collaborative discussion forums can be generalized as follows:

- Install the forum software and get acquainted with administrative features. Make sure the forum is accessible both from in- and outside your institution. Change the password of the administrator account and adjust the appearance of the forum to match the general appearance of the course.

- Provide moderator accounts for all instructors and teaching assistants and provide them with instructions how to use the forum software.

- Create general discussion areas for the individual courses and post welcome messages for the students.

- Encourage the use of the discussion forum by the students and provide incentives by posting class notes within the forum exclusively. Typically, students are able to register themselves within the bulletin board software. The instructor should provide guidelines for account labeling and nicknames, to make student posts easily identifiable for both instructors and student peers.

- For the setup of discussion areas of individual cases and/or scenarios, two alternative setups are possible:

  - A general discussion forum is provided, where individual scenarios are discussed in individual threads. The advantage of this setup is the immediate visibility of where and when online discussion takes place. The disadvantage of this setup is the handling of different discussion topics within individual scenarios, which may clutter or fragment the individual threads. The single forum setup is recommended if the student teams are small (3-4 students) and communication topics are handled sequentially.

  - Independent discussion forums are provided for individual scenarios. The advantage of this setup is the freedom of the student teams to discuss individual topics, without losing oversight. The disadvantages of this setup (mainly for the instructor) are ongoing discussions, which are not immediately visible to both instructor and competing groups. This setup is recommended if the groups are larger and scenario development occurs in parallel.

Development of Other Collaboration Mediums: In order to resolve some of the case questions, there may be a need for students to exchange files or diagrams. If your web forum does not have the capability of attachments, then an alternative method of file exchange needs to be provided. The natural medium for these exchanges may be the use of email, however we advise against the use of email. Remember, the instructor must be able to monitor and evaluate group interaction. Personal emails make this very difficult to do. The instructor will also want to see the attachments. For these reasons we suggest setting up an alternative to email such as allowing student groups to create web sites for their project activities. The students were encouraged to negotiate with their counterparts from the other university and create a project web page for the exchange of files and information, which complemented their use of the web forum.

The literature points out that collaboration between remote participants can introduce challenges of building trust without a face-to-face interaction. With this in mind, we have used videoconferencing in our B2B collaboration with great difficulty. One of our largest obstacles was a time difference between partners. It was very difficult to coordinate student schedules. If you are able to coordinate videoconferences, we do recommend the following:

- Have students summarize these meetings and post to the web forum in order for instructors to grade; or

- Have the instructors observe the collaboration; or

- Tape them (or record them) – therefore they can be reviewed.

Evaluation of the Collaboration

Throughout the project it is important that the instructors monitor the student interaction. We suggest that the instructors view the web forum weekly in order to direct or re-direct the groups as appropriate. It is suggested that the project grade be partially dependent on the quality and timeliness of

the students' interactions. This will provide incentive to keep the groups engaged with their counterparts.

By creating project milestones, the instructors can require a deliverable for each milestone throughout the term. A final report and/or implementation along with a group presentation should be the final deliverable which includes the results from each milestone. If your groups are from two classes of the same university, a common presentation time could be arranged. If you have two different Universities involved, we suggest that all presentations be recorded and exchanged. Video recordings would be preferred, however we have found that a PowerPoint presentation with sound is also useful. We had one student group that arranged to have their counterpart available during their presentation of their implemented process, and were able to have their counterpart participate in the presentation (in spite of time-zone differences) via web connections.

3. ANALYSIS OF COLLABORATION METHODS AND DISCUSSION

To evaluate the students' perceptions of our B2B collaborations and the various collaboration mediums used, a survey was conducted at the conclusion of the courses. A total of 110 students have participated in our collaboration partnerships over a 4 year period, of which there were 86 valid surveys; 57 from the US university and 29 from the German university. The data was analyzed using SPSSTM. There were no significant differences between the student demographics of the two universities, ensuring that the two populations were similar in age, gender, and background knowledge. In addition a majority of both populations had no

prior collaboration experience;

- 90.2% of the US students and 90% of the German students had no prior B2B collaboration experience, and only

- 9.8% of the US students and 10% of the German students had participated in a B2B collaboration prior to this class.

We first wanted to evaluate the students' perceptions of the overall B2B collaboration. From the analysis of the combined classes, a majority of the students felt the interaction between the universities added to their understanding of B2B sites (53.5%) with only 19.8% disagreeing. In addition 64.7% of the students were able to see a benefit from the B2B venture. Table 1 shows the detailed percentages of the responses of each category from strongly disagree to strongly agree by both the US and German students. A further analysis of possible differences between the US and German students and/or possible differences between semesters, revealed no significant differences.

Next we evaluated the students' perception of the collaboration methods utilized during the B2B interactions. Because the B2B web forum was assigned at the primary collaboration medium for the project groups, several questions were included in the post-course survey and a 5-point Likert-type scale was used to assess the effectiveness of this collaboration medium as perceived by the students. Overall the students agree that the forum is advantageous for simulating B2B commerce, understanding international issues, and collaborating on similar projects. They also agreed that the forum should be used in other classes and should have some modifications. One modification they agreed included using video to enhance the B2B interaction, which corresponds to the literature concerning the use of face-to-face

Table 1: Percentage of students reporting their perceptions of the collaboration
(US and German)

Item	N	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev
(A) The interaction between the universities added to my understanding of B2B issues.	58 / 28	10.3% / 0%	10.3% / 17.9%	24.1% / 32.1	39.7% / 46.4%	15.5% / 3.6%	3.40 / 3.36	1.18 / .83
(B) I see a benefit from the B2B venture.	57 / 28	7% / 7.1%	8.8% / 14.3%	15.8% / 21.4%	47.4% / 35.7%	21.1% / 21.4%	3.67 / 3.50	1.12 / 1.20

Table 2: Percentage of students reporting their perceptions of the collaboration Forum (US and German), with ANOVA between US and German responses.

Item	N	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev	Sig.
(A) The forum is advantageous for simulating B2B commerce.	57 / 27	3.5% / 7.4%	1.8% / 25.9%	21.1% / 44.4%	54.4% / 22.2%	19.30% / 0%	3.84 / 2.81	.88 / .88	**.000**
(B) The forum is advantageous for understanding international issues.	56 / 29	1.8% / 0%	17.90% / 13.8%	30.4% / 41.4%	33.9% / 37.9%	16.1% / 6.9%	3.45 / 3.38	1.03 / .82	None
(C) The forum is advantageous for collaborating on similar projects.	56 / 29	1.8% / 0%	5.40% / 20.7%	16.1% / 31%	51.8% / 44.8%	25% / 3.4%	3.93 / 3.31	.89 / .85	**.003**
(D) In the future, forum should be used in other classes.	58 / 29	1.7% / 6.9%	6.9% / 17.2%	29.3% / 24.1%	32.8% / 41.4%	29.3% / 10.3%	3.81 / 3.31	1.00 / 1.11	**.037**
(E) In the future, the forum should be utilized the same way without additions.	57 / 29	12.3% / 17.2%	24.6% / 37.9%	28.1% / 34.5%	31.6% / 6.9%	3.5% / 3.4%	2.89 / 2.41	1.10 / .98	**.05**
(F) The B2B interaction would be enhanced with the use of video.	55 / 27	3.6% / 18.5%	16.4% / 18.5%	18.2% / 18.5%	38.2% / 29.6%	23.6% / 11.1%	3.62 / 2.85	1.13 / 1.43	**.01**

collaboration mediums (Jarvenpaa et.al. 1998). There were some significant differences found between the German students' perceptions of the forum and the US students' perceptions forum as shown in Table 2. The US students tended to have a higher agreement that the forum was advantageous for the B2B simulation and should have less changes, however they tended to have a higher agreement for the inclusion of video.

After the 2nd year of the collaboration partnership, several other forms of collaboration methods were being utilized. As a result additional questions were included in the post-course surveys for the 2001 and 2002 collaborations to have the students evaluate and compare these methods. Table 3 summarizes the percentage of US and German students' rankings for six collaboration methods. The methods include the Forum, the use of email (despite the specific guidelines to not use email, several students continue to use this as a collaboration method), the establishment of a group web site, the use of the Widener electronic reserves (eres) system that allows students to post files in a protected environment, NetMeeting, and Teleconferencing. There were no significant differences in the rankings between the US and German students accept for the 2001 where the German students ranked the fo-

rum higher than the US students. The overall Average rankings of collaboration methods are as follows:

1. Forum, with a mean response of 1.4875;
2. Own web site, with a mean response of 2.3625;
3. Email, with a mean response of 2.42;
4. the Widener eres system , with a mean response of 3.74;
5. NetMeeting, with a mean response of 4.123;
6. Teleconferencing, with a mean response of 4.4025.

When asked to assess their perceptions of how effective each of these methods were for the B2B collaboration, a majority expressed the forum, email, and their own web site were effective (see Table 4). However the Widener eres was marginal, with Netmeeting and Teleconferencing not being effective in this collaboration. The obvious explanation for the ineffectiveness of a real-time connection or a teleconferencing session in this collaboration is the substantial time differences of the partners involved. Overall there were no significant differences

Table 3: Percentage of students ranking their perceptions of collaboration methods effectiveness – 2001-02 only (US and German).

"Please rank the collaboration methods in the order of the most useful/effective to the least useful/effective."	year	N	Rankings							Mean Rank	Sig
			1	2	3	4	5	6	7		
(A) The discussion **forum** (web site) provided by the instructors.	2001	14 / 10	35.7% / 90%	28.6% / 10%	21.4% / 0%	7.1% / 0%	7.1% / 0%	0% / 0%	0% / 0%	2.21 / 1.10	.012
	2002	17 / 12	76.5% / 91.7%	5.9% / 8.3%	11.8% / 0%	5.9% / 0%	0% / 0%	0% / 0%	0% / 0%	1.47 / 1.17	--
(B use of **email**.	2001	13 / 7	40% / 0%	30% / 33.3%	10% / 33.3%	10% / 33.3%	0% / 0%	10% / 0%	0% / 0%	2.30 / 3.00	--
	2002	13 / 9	7.7% / 0%	61.5% / 100%	23.1% / 0%	0% / 0%	7.7% / 0%	0% / 0%	0% / 0%	2.38 / 2.00	--
(C) our own **website.**	2001	11 / 10	27.3% / 10%	27.2% / 60%	27.3% / 20%	18.2% / 0%	0% / 10%	0% / 0%	0% / 0%	2.36 / 2.40	--
	2002	14 / 6	21.4% / 16.7%	42.9% / 50%	21.4% / 16.7%	7.1% / 16.7%	7.1% / 0%	0% / 0%	0% / 0%	2.36 / 2.33	--
(D) the Widener electronic reserves (**eres**) system (password protected).	2001	12 / 9	0% / 0%	16.7% / 11.1%	33.3% / 33.3%	33.3% / 33.3%	16.7% / 11.1%	0% / 11.1%	0% / 0%	3.50 / 3.78	--
	2002	11 / 4	0% / 0%	9.1% / 25%	18.2% / 25%	36.4% / 25%	18.2% / 25%	18.2% / 0%	0% / 0%	4.18 / 3.50	--
(E) **Netmeeting.**	2001	10 / 4	20% / 0%	0% / 0%	0% / 100%	10% / 0%	70% / 0%	0% / 0%	0% / 0%	4.10 / 3.00	--
	2002	9 / 2	0% / 0%	0% / 0%	22.2% / 0%	22.2% / 50%	44.4% / 0%	11.1% / 50%	0% / 0%	4.44 / 5.00	--
(F) **Teleconferencing.**	2001	9 / 4	11.1% / 0%	11.1% / 0%	0% / 50%	0% / 0%	0% / 50%	77.8% / 0%	0% / 0%	5.00 / 4.00	--
	2002	9 / 2	0% / 0%	0% / 0%	11.1% / 50%	11.1% / 50%	33.3% / 0%	44.4% / 0%	0% / 0%	5.11 / 3.50	--
(G) **Other.**	2001	2 / 3	0% / 0%	0% / 0%	0% / 0%	0% / 0%	0% / 0%	0% / 0%	100% / 0%	7.00 / --	--
	2002	3 / 1	0% / 0%	0% / 0%	33.3% / 100%	0% / 0%	0% / 0%	0% / 0%	66.7% / 0%	5.67 / 3.00	--

Table 4: Percentage of students reporting their evaluation of collaboration methods – 2001-02 only (US and German).

"I feel the following was an effective medium for collabo-ration:"	N	Did not use (0)	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev
(A) The discussion **forum** (web site) provided by the instructors.	31 / 23	3.2% / 0%	6.5% / 4.3%	3.2% / 13%	6.5% / 4.3%	35.5% / 43.5%	45.2% / 34.8%	4.00 / 3.91	1.34 / 1.16
(B) use of **email**.	31 / 22	35.5% / 18.2%	6.5% / 4.5%	3.2% / 9.1%	9.7% / 22.7%	25.8% / 36.4%	19.4% / 9.1%	2.42 / 2.82	2.08 / 1.65
(C) our own **website.**	31 / 23	29% / 26.1%	3.2% / 0%	0% / 8.7%	9.7% / 4.3%	32.3% / 26.1%	25.8% / 34.8%	2.90 / 3.09	2.06 / 2.07
(D) the Widener electronic reserves (**eres**) system (password protected).	31 / 22	45.2% / 36.4%	3.2% / 9.1%	0% / 22.7%	12.9% / 4.5%	16.1% / 18.2%	22.6% / 9.1%	2.19 / 1.86	2.18 / 1.81
(E) **Netmeeting**.	31 / 22	77.4% / 81.8%	9.7% / 9.1%	3.2% / 9.1%	6.5% / 0%	0% / 0%	3.2% / 0%	.52 / .27	1.18 / .63
(F) **Teleconferencing**.	31 / 22	83.9% / 81.8%	9.7% / 13.6%	0% / 4.5%	3.2% / 0%	0% / 0%	3.2% / 0%	.35 / .23	1.05 / .53
(G) **Other**.	19 / 14	89.5% / 92.9%	10.5% / 7.1%	0% / 0%	0% / 0%	0% / 0%	0% / 0%	.11 / .01	.32 / .27

between years responses or between US and DE student responses, however just for 2001 there was a significance between the US and DE web site responses (.027). The German students felt the website was more effective as a collaboration tool than the US students for 2001 (means: German=4.50; US=2.79). However in 2002 there was no difference (means: German=2.00; US=3.00).

eoconferencing sessions, however the time-zone difference will still remain a deterrent.

5. ACKNOWLEDGEMENTS

4. CONCLUDING REMARKS

The new business paradigm incorporates the interactions of businesses worldwide; therefore Universities need to present opportunities for students that give them the environment to build those B2B international skills. This paper presented the joint curriculum development between two geographically dispersed Universities that have established a B2B relationship. A description of how to create and deploy collaborative classroom B2B simulations is provided. Various collaboration methods were analyzed in the form of students' perceived effectiveness of those methods in B2B collaborations. The two universities are about to embark on a 5th year of this collaborative partnership. The changes planned incorporate the possibility of utilizing Internet2 for scheduled vid-

6. REFERENCES

Antonucci, Y.L. and zur Muehlen, M. "Deployment of Business to Business Scenarios in ERP Education: Evaluation and Experiences from an International Collaboration." In Seventh Americas Conference on Information Systems, (Boston, MA, 2001), AMCIS 2001 Proceedings, 998-1004.

Beximco, "B2B: The Big Bazaar; The Phenomenon," Beximco Research Brief (an ERC Research Magazine), No. 8, February 2001.

Intelligent Enterprise. "The B2B Market 2 B," Intelligent Enterprise, February 2001.

Jarvenpaa, S. L., Knoll, K., and Leidner, D. E., "Is Anybody Out There?: Antecedents of Trust in Global Virtual Teams," Journal

of Management Information Systems, (14:4), Spring 1998, pp. 29-64.

Kalakota, R, and Robinson, M., e-Business: Roadmap for Success, Addison-Wesley, Reading, MA, 1999.

Massey, A. P., Montoya-Weiss, M., Hung, C., and Ramesh, V. "Global virtual teams: Cultural perceptions of task-technology fit," Communications of the ACM, 44(12), 2001, 83-84

Survey Business and the Internet: "The Net Imperative," The Economist Newspaper Limited, June 26, 1999, http://www.economist.com/editorial/free forall/19990626/su9828.html

Warkentin, M.E., Sayeed, L., & Hightower, R., "Virtual teams versus face-to-face teams: An exploratory study of a web-based conference system," Decision Sciences, vol. 28, no. 4, pp. 975-996, 1997.