



The final team meeting was held in Calgary May 23-24 2002.



[1st Milestone Report](#)

[2nd Milestone Report](#)

[3rd Milestone Report](#)

Insite Central Team



Note: This site is best viewed with Internet Explorer.

[Top](#)

[Research >](#)

[Upcoming Events](#)

[Administration >](#)

The InSite project was initiated in July 2001 as a one-year project, funded jointly by the CANARIE-ANAST program and by a number of [Canadian universities](#).

The project aims to demonstrate how broadband video-conferencing technology can assist collaborative research goals. We propose a rigorous and thorough evaluation strategy based on a knowledge management theoretical framework to deepen our understanding of broadband applications in a research setting.

The sheer size and scope of the project will require the collective skills of a great number of technicians, researchers and graduate students from various disciplines and institutions across Canada. In this sense the project is in itself a model for collaborative research using high speed networking technologies.

In addition to testing new broadband applications, the project will also determine improvements to maximize their potential, and produce a "best practices" reference guide for collaborative research teams.

For a complete description of the project please see the [project proposal](#) to CANARIE or a [summary article](#) written for the Canadian Journal of Communication.

Note: This website is a work in progress. If some of the links are not active, it means we have not reached that point in the project. We will be continually adding and changing material as the project progresses.

Project Updates

June 30 2002 - Project completion date.
Milestone Reports are due. Partners have two weeks to submit fourth milestone claims.

June 17-Final Team Meeting

June 1 2002 - Andrea Matishak, project manager, had a baby! Good timing Andrea.

May 23-24 2002 - InSite team fourth milestone meeting. Participants will debrief project and brainstorm for the final report.

May 2002 - stay posted for InSite team fourth milestone meeting. Participants will debrief project and brainstorm for the final report.

March 31 2002 - End of third milestone. All equipment must be purchased by this date.

March 1 2002 - Absolute final day for partners to submit milestone reports and claims.
Please direct any questions to Andrea Matishak.

Nov. 10-16 2001 [Supercomputing Global Conference](#) - Access Grid project will be participating in this "first ever global technical conference on the Grid".

Nov. 9 2001 - CANARIE site visit to University of Calgary.

Nov. 2 2001 - Central Team to submit InSite Milestone Report and Claim to CANARIE.

Oct. 26 2001- last day for Partners to submit their milestone reports and claims to Central Team.
Please direct any questions to Andrea Matishak.



[1st Milestone Report](#)

[2nd Milestone Report](#)

[3rd Milestone Report](#)

[Top](#)

- Research >
- Upcoming Events
- Administration >
- Technology > ■ Training > ■ User Log ■ Lab Bookings



Video-conferencing Contact Information

Please contact the individuals below if you are interested in setting up a video-conference at the any of the InSite locations.

University of Calgary - Central Team

Internet Research Studio

(403) 210-9471

Available facilities: Access Grid, Polycom (MCU), Vi-Go.

[To book research studio click here.](#)

Technical contact:

Doug Bowman

Mediavoice Communications Inc.

bowman@mvoice.com

(403)265-4215

(403)813-3693

IP Address: 136.159.143.18

Simon Fraser University

IP Addresses:

192.75.242.26

(604) 291-5211

Technical contact:

Robert M. Schölander

robs@sfu.ca

(604) 291-5211

Cell: (604) 807-6023

Athabasca University

Available facilities: ViGo

IP Address: 131.232.8.70

Technical contact:

Terry Anderson

terrya@athabascau.ca

(780) 497-3421

University of Saskatchewan

IP address: 128.233.67.170

Phone number: (306)966-6917

Technical contact:



[1st Milestone
Report](#)

[2nd Milestone
Report](#)

[3rd Milestone
Report](#)

Chika
cbo448@mail.usask.ca

Sheridan College

Available facilities: Access Grid

Technical contact:
Andrew Bolyea
andrew.bolyea@sheridanc.on.ca
(905) 845-9430 ext. 8198

Ryerson Polytechnic

Available Facilities: Access Grid
(416) 979-5000 ext. 4530

Technical Contact:
Many Ayromlou
mayromlo@ryerson.ca
(416) 979-5000 ext. 7642

[Top](#)

- [Research >](#)
- [Upcoming Events](#)
- [Administration >](#)
- [Technology >](#)
- [Training >](#)
- [User Log](#)
- [Lab Bookings](#)

[Back](#)

Milestones	End Dates	Management Tasks	Research Partner Tasks	Deliverables
First Milestone Project Start July 1, 2001	September 30, 2001	• Plan team meeting • Prepare applications training • Establish protocol for user support • Establish protocol for technical support • Assess technical needs of each subproject • Begin background research • Assist in planning for all partner tests and tasks • Letter of Agreements signed by Partners • Ongoing Project Management • Site visits TBA	All Partners: • Establish network connections • Attend First Planning Meeting See Individual Partner Project descriptions (Appendix A) for full milestone tasks.	• Detailed schedules and deliverables created for each partner project • Project website created • Planning Meeting of all partners • Wiring of institutions • Technical Research plan • Applications report • First Milestone reports from each partner project
Second Milestone	Dec. 31, 2001	• Update website as required • Assist in planning for all partner tests and tasks • Ongoing project management • Ongoing applications support and training • Compile Mid-Project Report • Site visits TBA	All Partners: • Ongoing Network use • Mid-Project evaluation • Mid-Project meeting video conference See Individual Partner Project descriptions for full milestone tasks.	• Second Milestone Reports from each partner project • Mid-Project Meeting video-conference • Attend CANARIE Advanced Networks Workshop

Third Milestone	March 31, 2001	• Update website as required • Assist in planning for all partner tests & tasks • Ongoing project management • Plan for Public Presentation of Results and Final team meeting • Site visits TBA	All Partners: • Most broadband application use and testing should be complete • Coordinate Public Presentation with Central Team	• Mid-Project Report Due technical and user evaluation • 3rd Milestone Reports Due
Fourth Milestone Project Completion	June 30, 2002	• Evaluate final project technical and user/researcher evaluation reports • Plan final Team Meeting • Collect reports from partner projects and integrate into central team report	All Partners: • Final Project Meeting and debriefing • Public Presentation of results • Final Milestone reports due • See Individual Partner Project descriptions for full milestone tasks.	Final Report: Applications Report User Evaluation Network Report Overall Summary Report • Model for networked research groups • Public presentations/demos • Publish Papers in scholarly newsletters (AUCC, University Affairs)
Post Project				Presentations and Reports to Federal Granting Councils and at an international conference (not funded by the project)

[Back](#)



[1st Milestone Report](#)

[2nd Milestone Report](#)

[3rd Milestone Report](#)

[Top](#)

[Research >](#)

[Upcoming Events](#)

[Administration >](#)

[Technology >](#)

[Training >](#)

[User Log](#)

[Lab Bookings](#)

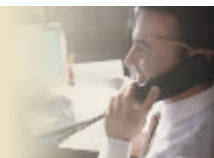
Enter a few keywords to search our site, or read our [search tips](#) to make advanced queries.



InSite Project
collaborative research

current category ▼

Contact Us



home

project updates

video-conferencing

milestones

search

contact us

site map



[1st Milestone
Report](#)

[2nd Milestone
Report](#)

[3rd Milestone
Report](#)

[Top](#)

Research >

■ **Upcoming Events**

■ **Administration >**

■ **Technology >**

■ **Training >**

■ **User Log**

■ **Lab Bookings**

InSite Central Team

Lead Applicant and Primary Investigator:

Dr. David Mitchell

University of Calgary

mitchell@ucalgary.ca

(403) 220-6460

Primary Investigators:

University of Calgary

Dr. Edna Einsiedel - collaborative research

einsiede@ucalgary.ca

(403) 220-3924

Dr. Terry Anderson

Athabasca University - technology and human factor evaluation

terrya@athabascau.ca

(780) 497 3421

Senior Research Associates:

Linda Goldenberg

lfgolden@ucalgary.ca

Mark Wolfe

mwolfe@ucalgary.ca

210-9471

Lead Network Technician & Node Operator:

Doug Bowman

bowan@mvoice.com

(403) 813-3683

[Lab Bookings](#)

First Milestone Report – Central Team Summary

1. Recap the Scheduled Milestone Deliverables for your Project

Management Tasks

Plan Team Meeting

The First Planning Meeting took place on July 19 and 20th. Representatives from each partner project attended the meeting. Please see Appendix D for a copy of the schedule and the materials that were distributed at the meeting.

Prepare Applications Training

Establish Protocol for User Support

Establish Protocol for Technical Support

Some of this work has been accomplished in the form of the “Guide to the Project” document that was distributed to all partner projects (See Appendix B). Some of the more technical support information, however, has not been established, because the Central Team has not been able to find a dedicated technician to support the project. Presently, David Jager, of the Network Services department, is assisting us in network issues and troubleshooting. The time he can devote to the project, however, is limited. To date we have interviewed several candidates, sought out potential partnerships or secondments with a number of private sector firms (IBM, Axia Netmedia, Nortel) and attempted to negotiate a shared position with both Netera and the Com Media department at the U of C. Presently, we are seeking a potential partnership with Telus to provide us with a part-time technician.

Our research associates, Linda Goldenberg and Mark Wolfe have created a baseline survey which will give us specific data and questions to incorporate into the user logs. User logs will be filled out after each time session, or each time the technology is used for a video-conference. These logs will be made available on the project website in the second milestone.

Assess Technical Needs of Each Partner Project

During the First Planning Meeting and throughout the first milestone a series of formal and informal consultations took place with each Partner Project to establish their technical needs. The majority of projects were able to secure network upgrades (if necessary) and purchase the equipment to be used for the project (See individual partner project Milestone Reports). Considerable consultation regarding which VC package would be most appropriate took place at several stages and with each group. The Sustainable Forestry Management Network is the only project that has not made a definitive decision about their technical needs and is using leased equipment at this time. All of the groups also have enlisted the support of a technician(s) to assist with their VC requirements.

Begin Background Research

Considerable background research has taken place in the following research areas:

- Knowledge management
- Evaluative measures
- Collaborative research
- Video-conferencing
- Human Factors

Please see attached reports in Appendix B. Some of the research that has taken place has not been consolidated into reports as yet. For example, to install our Access Grid Node, a good deal of research on human factors has taken place to optimize the configuration and construction of the room. Dr. Andrew Paskauskas, the lead researcher from Sheridan College, has reported on the progress of the Access Grid research in his Milestone Report.

Assist in Planning for All Partner Tests and Tasks

The Central Team is available as a resource to all partner projects. On an ongoing basis during the first milestone, the Central Team advised on equipment purchases, network upgrades, accounting and planning for the project in general. In September, Mitchell and Matishak met with RISQ in Montreal. One of the purposes of this meeting was to establish a link for the SFM Partner Project that wanted to access a VC facility for one of their researchers. In addition, during our site visits to Ryerson and Sheridan we were able to advise and assist both groups in a number of ways.

Letters of Agreement Signed by Partners

The Letters of Agreement were drafted for each partner project as well as for Ryerson Polytechnic and Athabasca University. Although Letters of Agreement, or subcontracts, are not a requirement of the ANAST program, the lead institution, the University of Calgary as well as the other institutions involved in the project wanted to have such agreements in place. Each Letter was customized for the participant in question. The Letters of Agreement were forwarded to each of the partners at various stages during the first milestone. In one case, the Risk Project could not open a research account until they had received the Letter of Agreement. Initially, the Office of Research at the University of Saskatchewan indicated that a letter from our VP Research would be sufficient to begin the project for Michael Mehta, however, this did not suffice in the end for some reason. At any rate, many of the institutions wanted to make minor adjustments for the letters. We are waiting for them to be signed and sent back to us.

Ongoing Project Management

As indicated above, project management has been ongoing since the start of the project. Some of the project management tasks have included: organizing the first Planning Meeting; keeping track of purchases, travel, labour, and administration; coordinating and providing content for the website; providing a “Guide to the Project” comprehensive reference document; writing an article for the Canadian Journal of Communication; and writing and compiling the

Milestone Report. In addition, the project manager is also overseeing the construction and installation of our Access Grid lab along with input from the Primary Investigator, David Mitchell. The project manager has also been the central point of contact for the partners, associate researchers, and primary investigators as well as the University of Calgary Finance and Research personnel.

a. Network

Negotiations with the University of Calgary Network Services Department began over a year before the InSite project was approved. Last spring, it was agreed that we would have 2 - 100 Mb lines installed into our lab for video-conferencing purposes. The cost for this was built into the budget and used as a benchmark figure for the other partners. Once construction began, however, it was brought to our attention that a 100 Mb line might not be enough bandwidth if all of the Access Grid nodes were connected in a session. The Argonne Labs recommendation indicates that it takes 10Mb of bandwidth for the first three sites to connect and 2 Mb for each additional site. With potentially 70 sites participating in a session this would require a bandwidth of 144 Mb. At that point, several questions were raised:

- Could the two 100 Mb lines be ‘summed’ to allow 200 Mb bandwidth
- Could we have a 1 Gb line installed
- How would we connect to the Netera Gigapop – though the University’s main Black Diamond switch or directly

These questions took some time to answer. It was first determined that the Black Diamond switch did not support multicasting. Although the manual indicated it was possible, it was not operational. David Jager worked with network technicians at the University of Alberta to fix this problem. Second, Gary Finley of Netera was away on holidays and he needed to be consulted regarding the routing of the fibre. Finally, the cost of installing the Gb line was much higher than the original estimate so Andrea Matishak, David Mitchell and the Network Services personnel had to establish a way to cover these costs. At present, work is underway to have the connection and fibre installed by the beginning of November.

b. Equipment

The Central Team has not bought any equipment out of the CANARIE budget for the first milestone. However, a great deal of equipment has been purchased for the construction of our Access Grid lab. We stalled in buying the MCU because we were unsure of which model to purchase. Ken Hewitt of Netera approached us with a plan to jointly purchase an MCU to be shared among a number of projects. We were supportive of this idea but it did not get final approval from CANARIE as it would mean that CANARIE money would be matched with CANARIE money. We were also unsure whether to purchase a used MCU from another project or a new one. We decided that the used one was not worth the potential risk. We now have plans to purchase the original 8 port MCU as soon as our technician comes on board. Originally, we were going to be purchasing a ViGo unit, however, we decided to allocate the funds to Dr. Terry Anderson instead so that he could have access to the equipment from his office in Edmonton.

c. Equipment testing

Using the U of C existing video-conferencing labs, we have been able to test the connection with a number of our partner projects. The Risk Society project out of University of Saskatchewan tested their equipment with us on Oct. 5th. We had excellent audio and video quality for this test. We also had a video-conference session with the SFM Network. This will be reported on in the Second Milestone Report as it occurred on Oct. 12.

d. Attendance at First General Meeting

The Central Team disseminated a significant amount of information at the First Meeting. Our intention was to communicate the goals of the project, administration, technical requirements, and research plan. The Meeting was also an opportunity for each of the Partners to ask questions and discuss how they were going to carry out their part.

e. Site Visits

On Sept. 10 Linda Goldenberg and Mark Wolfe carried out a pre-survey at Ryerson Polytechnic to establish baseline communication information. Many Ayromlou completed the survey. On Sept. 11 David Mitchell, Andrea Matishak, Ron Rankine, Many Ayromlou, Andrew Paskauskas and Walter Winchell met at Ryerson to discuss the Access Grid project. Due to the events of Sept. 11, however, our meeting was cut short and the UofC participants rented a car to return to Calgary. Linda and Mark also made a trip to Saskatoon to complete a baseline survey with Michael Mehta and his research assistants. Linda and Mark were not able to complete the survey with the SFU Innocom Team because Adam Holbrook was away in South America during September and part of October. In addition, Mark and Linda did not complete a survey with the SFM group as the group was unsure whether they wanted to continue with the project. They have since decided to pull out of the project. This will be reported on in the Second Milestone Report.

2. Schedule

a. Discuss any variances between the SOW schedule and the project.

Variances are discussed above. The website is the only issue not addressed above. We hired an external web designer to assist us with the website. We have an operational website at this time but it is not uploaded to the site where it will be permanently. The website can be viewed in its temporary location at www.ucalgary.ca/~garnvik/. We are presently working with the University to have our own domain name www.insite.ca registered for the site. In addition, the website is still having content incorporated on an ongoing basis.

b. Please provide a detailed schedule for your next milestone

October 22 – attempt to establish connection with London School of Economics for Robin Mansell and Manuel Castells presentations

October 25 – video-conference between SFM network and Central Team to demo video-conferencing equipment and allow SFM management to ask questions about project

November 7 – Site visit to SFM Network to establish whether they are going to participate in the project – final opportunity.

November 9 – CANARIE Site Visit to U of C

Nov. 10 – 15 – We will be having a technician from Sheridan assist in the set-up of our Access Grid Node.

Nov.14 – We will be participating in the SC Global conference if our lab can be completed by this date (p.s. note that we were almost operational but due to receiving the wrong video cards could not participate – will report in Second Milestone Report).

Nov. 19 – Video-conference between U of C and SFU – topic: Presentation on Wireless Communications for Innocom Innovation research project

Nov. 27-28 – David Mitchell to participate in CANARIE Workshop

Nov. 30 – User logs completed and installed on Website

Nov. 30 – Website to go ‘live’ for project

End of November – have technician hired and trained for Access Grid lab

End of November – complete installation of Access Grid and commence testing with other sites.

December 17 - 21– Carry out individual video-conference meetings with each Partner Project in fulfillment of Second Milestone meetings.

Please see individual partner project Milestone Reports for their milestone forecasts.

First Milestone Report

Ryerson Polytechnic University – Access Grid Project

1a) Network

Please comment on the status on your network connectivity to CA*Net3. If you have had a network upgrade, please indicate the specifications and whether your new connections have been tested. Please comment if you have been having any problems with connectivity.

The current status of our network is as follows:

- 1x4Mb Uplink to CA*Net3 (Onet Gigapop) which can go up to 16 Mb in Burst mode.
- From the above we have been allocated 2 Mb for Multicast applications (through a tunnel setup with Onet)

When we started the project (Day 1 of operation) we managed to saturate the entire CA*Net3 uplink. The university shutdown all Multicast traffic coming in or out of Ryerson. Upon further requests Ryerson's Computing and Communications Services Group (CCS) has allocated the above mentioned 2 Mb for this application (Multicast).

Since that point, we have had problems with video reception with even one person (camera) at the other end. Audio seems to fare better as it is light weight. We did a full system test with Sheridan College AG group and aside from incoming video (at about 4-5 frames/sec) we encountered no other problems. Audio quality is fair (better than telephone quality) and seems to fair well in full duplex mode.

1b) Equipment

Please list the equipment that has been purchased for the project in this milestone.

- 4 Dual Pentium III machines @ 800 MHz each (Audio,Video,Display and Control machines as per AG Documentation)
- 1 8 port Getner Echo cancellation Box (As per AG Docs)
- 1 Getner Telephone conferencing Box (As per AG Docs)
- 3 LCD Projectors
- 3 Mics
- 1 MM100 Balanced audio/Unbalanced audio converter (As per AG Docs)
- 2 Fostex Self powered Monitors
- 1 19" SVGA Monitor
- 1 4 channel Digital KVM switch
- 1 Wireless mic for operator
- 3 Panasonic CCD security Cameras
- Multiple Lengths of cable (XLR2XLR,VGA Extender,PowerBars,RCA2RCA,

Basically our setup is complete and functional as described/specified in the AG Documentation.

(Note that only a small portion of this equipment is being financed by the InSite Project)

1c) Equipment Testing

Indicate whether you have been able to do any equipment testing to ensure that the equipment is operational. Please state the date of the tests and the outcomes.

- We have been in operation since early October.
- We have done 2 full systems Tests with Sheridan AG Group:
 - Friday Oct. 19 Full test --> Partial operation (Our audio setup was completely wrong i.e.: wiring was not done correctly). We did trouble shooting throughout the weekend (20-21 Oct).
 - Monday Oct. 22 Full test --> Full operation - Audio and Video both ways. Everything worked out perfectly (except low frame rates on video). The setup was further refined during Monday's test conference (Getner settings) to get rid of Hum and remote echo problems.

1d) Attendance at First General Meeting

Please list the participants who attend the InSite first general meeting. Please comment on whether you found the meeting to be useful and any additional comments you might have on the format or outcome of the meeting.

Ron Rankine and Many Ayromlou attended the first general meeting from Ryerson University. We found the meeting useful generally since it gave us an idea of how the funding was going to be done and all the issues related to equipment purchasing, staffing, etc. The demonstration portions were not really useful in terms of the information they presented, since our specific project (AccessGRID) had little to do with point to point conferencing and/or h.323 specific issues.

1e) Site Visits

Please discuss any site visits that took place with the Central Team during this milestone.

We had one site meeting during this milestone. All participants were present (UofC, Ryerson, Sheridan). But since the meeting took place on **September 11th, we did not get much resolved technically. We have had** two other meetings with Sheridan AG Group in October where we have solved some of the technical issues they were facing and some of the problems we are having here at Ryerson.

2b) Please provide a detailed schedule for your next milestone

Include proposed video-conference events, technical testing and any research milestones that you anticipate for Milestone two.

In Milestone two we have the following schedule:

- Marcel Video conference meeting (Mbone meeting in which we are going to use our accessgrid setup to facilitate our end), on Nov. 1, 2001.
- Further testing with Sheridan before SC Global conference on a weekly basis. We will not actually participate in SC Global, but we're using the event as a milestone for our testing schedule.
- Integration of GBC (Gesture Based Control) research with AG will take place during this Milestone.
- Upon completion of UofC's AG setup we will participate in testing our three nodes.

First Milestone Report – ISRN Cluster Study Project

1. Recap the Scheduled Milestone Deliverables for Your Project

Please comment specifically on the categories below in terms of milestone deliverables. State any variations in deliverables from those originally planned for this milestone along with justifications and the intended course of action to remedy the situation if required.

a. Network

*Please comment on the status of your network connectivity to CA*net3. If you have had a network upgrade, please indicate the specifications and whether your new connections have been tested. Please comment if you have been having any problems with connectivity.*

All connections at the Centre for Policy Research on Science and Technology (CPROST) at Simon Fraser University have been upgraded to 100 Mb. We have successfully tested the ViGo video-conferencing units over the CA*net3 between CPROST/SFU and the Netera facility at the University of Calgary.

b. Equipment

Please list the equipment that has been purchased for the project in this milestone.

The following equipment has been purchased:

- 3 ViGo teleconferencing units
- 3 PC computers and monitors to support the ViGo units
- Associated network routers
- 1 high-resolution digital video-camera for use with the ViGo units in a conference room setting

c. Equipment Testing

Indicate whether you have been able to do any equipment testing to ensure that the equipment is operational. Please state the date of the tests and the outcomes.

September 1: First successful test of work-to-workstation facilities on the 100 floor level of Harbour Centre

September 26: upgrading of CPROST/SFU network connections to 100 Mb at the 100 floor level

September 28: first successful test transmission to NETERA facilities in Calgary (used all software facilities including whiteboard)

October 3: Successful linking of second ISRN investigator to system (Richard Smith), including all software facilities; operational use of whiteboard feature.

d. Attendance at First General Meeting

Please list the participants who attended the InSite first general meeting. Please comment on whether you found the meeting to be useful and any additional comments you might have on the format or outcome of the meeting.

Participants:

Adam Holbrook

Robert Scholander

Christina Horvath

The meeting was very successful. It gave us sufficient information to make the final determination as to which equipment we needed and what technician arrangements needed to be put in place for a successful connection between CRPSOT/SFU and the University of Calgary. The meeting included a demonstration of the ViGo equipment which gave us confidence that videoconferencing by CA*3 would be a viable technology for use in managing the Innovation Systems Research Network (ISRN) cluster studies project.

e. Site Visits

Please discuss any site visits that took place with the Central Team during this milestone.

Site visits took place during the first general meeting.

2. Schedule

a. Discuss any variances between the SOW schedule and the project.

Discuss the intended courses of action to remedy the situation (if applicable).

No variances to date.

b. Please provide a detailed schedule for your next milestone

Include proposed video-conference events, technical testing and any research milestones that you anticipate for Milestone Two.

We expect to carry out the following technical testing:

- Installation and testing of equipment at the ISRN project office at the University of Calgary
- Testing of multiuser videoconferencing with the multiplex bridge at the University of Calgary

Operation milestones and events:

- Oct. 10 – First operational use of the videoconferencing system
- Nov. 19 – Scheduled ISRN seminar that will include participation by ISRN researchers at the University of Calgary through the videoconferencing link

**Quarter 1 Milestone Report
RIM Project
University of Saskatchewan**

1. Recap the Scheduled Milestone Deliverables for your Project

- Installation of technology at various nodes (U of Saskatchewan, U of Alberta, U of Calgary, U of Guelph, U of Ottawa).
- Perform any necessary upgrades to the networks and testing with project partners.
- Participate in communications audit and needs assessment.

a. Network

Most of the network upgrades and improved access to CA*net3 were made at the central site of the RIM project (U of Saskatchewan). These include running new cabling to a closet on the 11th floor of the Arts Building, putting in a new switch, and running dedicated 100 megabyte lines to the Principle Investigator's office (Room 1018) and a classroom (Room 1011) across the hall. The PI's office is where smaller videoconferences will occur (limited space for up to 3 or 4 people), while the classroom can hold up to 25 people. The classroom is also in the process of being upgraded (from other grants held) with a data projector, computer and possibly a smartboard. We have now tested the U of Saskatchewan connection several times. It seems to work well, but requires some adjustment to improve stability.

Our U of Ottawa node is in the process of looking into improving their connectivity to the CA*net3. At the moment, they can only run videoconferences at speeds of 15 frames/second. In a recent test with our U of Ottawa partner, the trace router test shows that links (hops) between the U of Saskatchewan and U of Ottawa are not optimally configured, and may not be going through the CA*net3. My network person, Gary Berg, is in communication with a network person from the U of Ottawa to work this out.

The status of the U of Guelph nodes is undetermined. We may eventually be forced to drop the U of Guelph as a node. There is not enough interest at this institution to get the necessary upgrades to the network done. Our new research director for EM-com (a partner of the RIM project) has just moved from Health Canada to McMaster University. We may wish to make McMaster University a new node to replace the U of Guelph.

The U of Alberta and U of Calgary nodes will borrow or rent access from other projects on a videoconference-by-videoconference basis. No upgrades are needed.

b. Equipment

For the University of Saskatchewan node, the following equipment has been purchased:

- Polycom H.323 unit
- 27 inch Sony television with S-video jack
- Bretford multimedia cart
- Polycom Viavideo

No equipment has yet been purchased for the other nodes.

c. Equipment testing

Tests:

- U of Saskatchewan node to Central Team for ANAST project – 5 October 2001
- U of Saskatchewan node to Central Team for ANAST project – 19 October 2001
- U of Saskatchewan node to U of Ottawa node – 29 October 2001
- U of Saskatchewan node to U of Calgary (Learning Commons) for a guest lecture by Dr. Mehta – 29 October 2001

d. Attendance at First General Meeting

- Dr. Michael D. Mehta (PI of RIM project): I found the meeting tremendously valuable. It would have been useful if we could have spent more time learning to use the VC equipment.
- Mr. Gary Berg (Network Services, U of Saskatchewan): He found it useful to meet other network people, so that if problems should arise, he can draw on their experiences.

e. Site Visits

- 10 October 2001: Visit from ANAST central team (Linda Goldenberg and Mark Wolfe). Linda and Mark administered a set of questionnaires for baseline purposes to my recently hired research assistants Chika Onwuekwe and Kelly Bronson. We also spent some time together going over the logistics of the RIM project, and discussing some of the social and cultural issues that arise with the use of VC.

3. Schedule

Discuss any variances between the SOW schedule and the project.

Everything is on track. As mentioned, we would like permission from CANARIE to substitute the U of Guelph node for a McMaster node. Our chief scientist, Warren Foster, is now on faculty at McMaster.

Please provide a detailed schedule for your next milestone

During the second milestone, the RIM project plans on getting together at least three of its nodes for a VC on a risk issue (most probably associated with our project on endocrine modulators). In November 2001, the PI and his research assistants will coordinate several tests with other nodes, and spend some time getting participants comfortable with the technology. We will probably hold one or two planning and technical VC meetings in the month of November. If possible, we would like to hold a major VC in the month of December.

**First Milestone Report
Sustainable Forestry Management Network
11-07-2001**

Submitting a Claim

This milestone SFMN will not submit a claim for labour, travel (to first general meeting), and technical support associated with CA*Net3 videoconference experiment of Oct. 25, 2001. These expenses will be submitted for the 2nd milestone, once Project Agreement between Canarie – InSite and SFM Networks is finalized.

Recap the scheduled milestone deliverables for your project

a.) Network

U of A is connected to the CA*Net3 backbone, an upgrade was unnecessary. Initial inquiries to Computing and Networking Services, UofA revealed that it would cost roughly \$4,000 to cover fibre, connection to the video network and a data switch. Additional costs would be for running cable to the system in the building. Requires further inquiry to verify estimate, find out who would handle the work, whether there are additional/hidden costs.

Inquiries at the Université de Montréal are underway, difficulties have been encountered in finding the right contact. Some buildings on campus are hooked up to the CA*Net3, the challenge is to decide which building would be useful for the SFM Network's purposes. From there negotiations with the Université de Montréal to finance local infrastructure with support from CANARIE- InSite should be investigated.

b.) Equipment

To date no capital expenditures have been made. Expenditures will be withheld until the SFM Network is satisfied that purchase of capital equipment would be beneficial to the Network. To test equipment and use the CA*Net3, the SFM Network will make use of available services on campus on off that provide videoconferencing services through CA*Net3.

c.) Equipment testing

Oct. 25, 2001 a SFMN management team meeting was organized connecting the UofA, Université de Montréal and UofC. The UofA and Université de Montréal connection was provided by on campus technical services and facilities. To incorporate a third site, the Uof C, the multipoint meeting required the use of bridge (Ottawa). Simultaneous with the video-conference, a teleconference was necessary to hook up meeting members from other remote locations. To hook up the teleconference with the videoconference a machine called the 'gentner' was used (routed the teleconference directly through the videoconference audio). The outcome was substandard. The video and audio quality was low (choppy and static). The teleconferencing through the gentner, made it difficult to hear people on the telephone. The Montréal participant's participation in the meeting made difficult, as a result he returned to his office after about 40 minutes to participate

via teleconference. The technical support for the Cyberport facilities at the UofA were substandard (once the conference was linked the technical support person left the room and could not be located for support). The connection required that people yell to be heard and repeat themselves, participation by myself was limited due to having to operate the camera and look for the technical support person. Although agenda items were eventually covered and decisions made, it was through perseverance with the technical difficulties which did more to hamper than facilitate the meeting. Overall, it did not meet the management team's expectations as to what the technology is capable of with respect to a multi-site connection through a bridge. Since our Network is national, having a quality multi-site link is considered important.

d. Attendance at First General Meeting

- Dianne Korber, SFM Network
- The meeting provided much essential information. However I still had questions that have remained unanswered. Such as:
 - o who supports the costs and handles the negotiations of non-UofA connections to remote university's backbone and if necessary upgrades?
 - o What happens when the project ends, what access will UofA have, and who will operate the UofC hub (bridge), and at what cost?
 - o Related to above, who supports the costs of non-UofA technical persons for remote sites?
 - o What role does the InSite team provide in terms of support in providing appropriate contacts for technical support at remote sites?

e. Site Visits – none took place

2. Schedule

- a. Discuss any variances between the SOW schedule and the project.

Stated Deliverables:

1. Management team video-conference (Alberta and eastern site, possible 3 sites) using available video-conferencing equipment on campus and CA*Net3.
2. Investigation into upgrades and equipment

Deliverable 1. has been met (Oct. 25, 2001) with three sites connected.

Deliverable 2. is partially met. Investigation into necessary upgrades at the UofA and Umontréal have been done, costs associated with a fibre connection to offices has been done at UofA, but are still under investigation for Umontréal. Upgrades at sites beyond these two sites will not be investigated until warranted. Unable to make contact for equipment costs with Tim Gainer (or anyone there) – ongoing.

b. Please provide a detailed schedule for your next milestone.

Original Stated Deliverables:

1. Management team video-conference (3-4 sites) using combination purchased and borrowed video-conferencing equipment.

2. Seminar presentation via video-conferencing and videostreaming (webcast)
3. Purchase and installment of equipment for 2 – 3 sites.

Changes to Stated Deliverables:

Where SFM Network signs the Project Agreement:

1. Purchase and install equipment for UofA, SFMN office site.
2. Possibly conduct 2 site v/c for management team meeting (UofA and Umontréal),. Until bridge is operating out of UofC it is unlikely that anything more than 2 sites will be attempted again.
3. Conduct research group meeting, 2 sites (UofA and Umontréal)
4. Continue investigation into upgrades, equipment, facilities for Umontréal site.

Please Note: The SFM Network has pulled out of the project.

Second Milestone Report

PROJECT: InSite

MILESTONE #: Two

DATE: March 20, 2002

1. Deliverables

1.1 Recap the scheduled milestone objectives

1.1.1 Update website as required

The website is now resident at its final location www.ucalgary.ca/insite. We decided against obtaining our own domain name as this was an extra expense and would have taken additional time to arrange. Instead, we opted to have the site listed as a University of Calgary site as this was free of charge while still providing an easy URL for people to remember. As it is a work in progress, certain elements of the website are still to be added such as the “how-to” technical portions and ongoing reports.

1.1.2 Assist in planning for all partner tests and tasks

We assisted all of the partners at some point in helping to purchase equipment, setting up video-conference sessions, and administration. The Sustainable Forestry Management Network was quite hesitant and tentative in setting up their own video-conferences and a good deal of coaching and explaining was necessary to get things going. This may be because there was no ‘technician’ per se to assist the Forestry team and our liaison, Diane Korber was not familiar with the technology at all (see below for further explanation). The other projects were quite comfortable in coordinating their own efforts after the initial set-up phase was established and partner connections were made. For the most part, contact with satellite researchers at other institutions was considered outside of the responsibilities of the central team and something that each partner project had to organize on their own.

1.1.3 Ongoing project management

Coordinating, compiling and writing the First Milestone Report was a significant administrative effort in the Second Milestone. As described in the First Milestone Report, three of the institutions did not submit any claim information because they wanted to have contracts in place. The project manager had to request a good deal of additional information from the two institutions that did submit a claim. As a result of this work, a revised set of accounting instructions was circulated to the various accountants and administrators responsible for compiling the claims. In the future, training meetings should be set up from the outset for the people compiling claims, particularly if more than one institution is involved. This is not easy to do, as despite repeated attempts to get information, the researchers did not forward the names of these people to the central team. In many cases, the

accountants are located in different departments and are most likely not known to the researchers, and vice versa.

The other significant project management task was revising and securing the contracts. Contracts for all partners are now signed and in place and all institutions have submitted a claim for the second milestone period. While the ANAST program did not require that subcontracts be signed, the University of Calgary's legal expert, as well as the Project Manager, deem this to be essential to any multi-institutional project that receives CANARIE funding. While this task was labour intensive, it was the only way of communicating in an official way, the budget, logistics and requirements of the project to upper administration. We have heard a number of stories about how researchers were not aware of what was expected from them in terms of reporting when working on a CANARIE contract project and at the end of the day, the institution was held accountable for funds that could not be collected. When multiple researchers from different institutions are involved in a project, it is very important that the "Research Services" department of their institution be made aware and become involved especially in terms of submitting claims (see above note regarding submitting claims).

In addition, the project manager was closely involved in the construction, ordering and organization of our video-conferencing facility – the Internet Research Studio (formerly the ICTUSER Lab). While much of this work was not characterized as 'InSite' work, this task represented a significant responsibility for the project manager. The completion of the Studio was essential to the continued progress of the project (see Section 2).

1.1.4 Ongoing applications support and training

As we did not have a technician dedicated to the project in Milestone Two, the central team did not accomplish significant applications support and training. Originally we were relying on Netera to partner with us for training and technical support. Once the project was running, however, Netera indicated that they did not have the funds or the people to assist us. Various attempts were made to partner with different groups for the use of a technician: UofC Com Media department, Axxia NetMedia, Telus, Nortel were all contacted to make some sort of secondment arrangement. Due to the uncertainty of the world markets at that time, as well as the tight budgets within each organization, we could not interest anyone in sharing a technician with us. The need for a partnering arrangement was necessary as our SSHRC funding had been cut back and we did not have full matching funds to hire a technician until the end of the project. In late November our Associate Dean, (Research) for the Faculty of Communication and Culture, secured further matching funds for the project and we were able to obtain a technician without a partnering arrangement. This person, Scott Lidstone, started officially in January 2002.

1.1.5 Compile Mid-Project Report

This report represents the mid-project report.

1.1.6 Site visits TBA

CANARIE program managers visited the Central Team in November 2001 to discuss the progress of the project.

David Mitchell, Andrea Matishak and Terry Anderson visited with the Sustainable Forestry Management NCE team at the University of Alberta also in November to discuss their further participation in the project. While the Central Team members thought that the meeting went very well, we learned afterward that the Forestry NCE did not want to continue participating in the InSite project. The reasons for this, from our point of view are:

- There was no real 'champion' of the project within the Forestry NCE
- Some of the employees of the network were in fact quite hostile to the initiative for reasons we could not determine
- An interim director had replaced the original director who had expressed interest in being involved in the first place. This interim director expressed concern about the risk of being involved in the InSite project given that they were expected to provide 50% of the funds (see Letter in Appendix A).
- The person who we were relying on as 'champion', Dianne Korber, had neither the technical understanding, nor the power within the organization to convince others of the need to participate. She, herself, was also a new employee who had replaced our original contact in the Network.
- Both of the demonstrations of the equipment that the Forestry NCE had arranged did not turn out well. The video and audio quality was quite poor and meeting participants were clearly frustrated and unimpressed by these demonstrations.

Perhaps the last point is the most important reason why the Forestry NCE decided not to participate. The various researchers, administrators and others involved in the decision did not have enough faith in the technology. This group did not exhibit any of the characteristics of 'early adopters' that would be necessary to see the value or vision of using technology that is still in the development stage.

Mark Wolfe and Linda Goldenberg visited the Risk Issue Management project at the University of Saskatchewan. They conducted some formal interviews and questionnaires with Michael Mehta and his research assistants to gather baseline information about the project (see Milestone Two Evaluation Report, Appendix B). An attempt was made to visit the Innocom Project at Simon Fraser University, however, conflicting schedules prevented this from happening.

1.2 Deliverables

1.2.1 Second Milestone Reports from each partner project

Please see Appendices D-G.

1.2.2 Mid-Project Meeting video-conference

For logistical and practical reasons, the Central Team had separate video-conference meetings with each of the Partner Projects. These took place in January on the following dates:

January 9 – Innocom Project Meeting

January 10 – Access Grid Project Meeting

January 14 – Risk Communication (Royal Society) Project Meeting

January 18 – Central Team Group Meeting

The agenda for each of the meetings was as follows:

- Review of Milestone 2 from Central Team
- Review of Milestone 2 from Partner Project
- Commitments and Deliverables for Second Milestone
- Evaluation and Knowledge Management
- Administration
- Look Ahead – third milestone
- Other Issues

(See Appendix H)

These meetings were very effective in bringing the Central Team up to speed on each of the partner projects and informing the partners of Central Team requirements. The meetings also helped to establish a 'virtual rapport' that resulted in the continued use of the technology for ad hoc or scheduled meetings during the third milestone.

1.2.3 Attend CANARIE Advanced Networks Workshop

David Mitchell and Andrew Paskauskas participated in the CANARIE Advanced Networks Workshop.

1.3 State any variations in deliverables from those originally planned for this milestone, along with justifications and the intended course of action to remedy the situation if required.

No significant variations in deliverables from those originally planned with the exception of technical training. At the project outset, we envisioned having a dedicated technician for the project that could assist the other partners in any VC training or troubleshooting. Unfortunately, because we couldn't hire such a person until the end of the second milestone, most of the groups were self-trained. As a result, we have not billed for any training or troubleshooting in the second milestone. In the third milestone,

our two technicians Scott Lidstone and Doug Bowman (who we've hired one day a week on a contract basis, not through Netera) have been troubleshooting and testing for us on a regular basis. They will also be compiling training reports that will be made available on the website.

1.4 State any organizational, personnel, subcontractor, legal, regulatory, commercial or other changes that may directly or indirectly affect the feasibility of the project

The second milestone posed a number of challenges for the InSite project. A number of upheavals for the central team as well as the partner projects complicated the progress of the research:

- The Forestry Sustainability NCE pulled out of the project
- Construction of our video-conferencing facility and ordering of equipment was delayed on several occasions
- Andrew Paskauskas left his position at Sheridan College so we lost our lead researcher for the Access Grid project
- Finding a dedicated technician for the project proved difficult
- Several central team members had personal setbacks

Despite these setbacks, each project as well as the Central Team managed to meet milestone deliverables and make progress in terms of the overall collaborative effort.

Separate reports are attached to discuss the knowledge management and evaluation aspects of the project in Appendices B and C respectively.

2. Schedule

No revisions to the schedule are required. Each partner project and the central team achieved their milestones and delivered their proposed deliverables to date. While the central team did not offer as much technical and training support as originally planned, we are now progressing well in terms of producing technical documents, arranging technical cooperation and troubleshooting as required. This aspect of the project will be discussed further in the Third Milestone Report.

The Third Milestone will conclude at the end of March and the Claim and report will follow by May 1.

3. Budget

Please see separate Budget Report for detailed explanations of the Second Milestone Budget.

The most significant aspect of the budget is the fact that we are underbudget with respect to purchasing equipment, travel and labour. Part of this situation will be remedied with the Third Milestone Report as this is the last opportunity that participants had to purchase equipment. Travel costs were under the estimated budget amounts in some cases because not as many people attended the first organizational meeting (at the beginning of the project) as had been budgeted (3 people were budgeted for, and in most cases only 2 came from each institution).

Lower claims in the labour category are partially due to matching issues, as in the case of the central team. For the most part, those working on the project are claiming as much as they are eligible to claim. Reports from the partner projects, as well as the central team indicate that most people are working *more* hours on the project than they are eligible to claim.

A preliminary discussion took place between the Project Manager and Colleen Bretzlaff to inquire whether there was any possibility that the project deadline would be extended. As we will not spend our total budget in the next several months, there will be funds left over. In addition, as this project was originally conceived as a two-year project, additional time would give each project more opportunity to use the technology now that they are comfortable and organized to use it. As anticipated, the first six months of the project have been dedicated to purchasing equipment, setting up connections and becoming familiar with the technology. This means that there has been less time to actually *use* the technology in the research environment. We will continue to inquire about the possibility of an extension.

Appendix A: Sustainable Forestry Management Letter

Appendix B: Second Milestone Evaluation Report

InSite Broadband Collaborative Research Project

Milestone Two – Evaluation Report and Update

PART ONE: INTRODUCTION AND BACKGROUND

As a multi-dimensional, complex research initiative comprised of diverse, multi-dimensional research projects, the *InSite* Project continues to evolve in a variety of ways as each Partner Project involved pursues and achieves its objectives. Broadband is in place and fully operational in each Project.

The pulse of the *InSite* Project is dynamic and erratic. A purpose of this Report is to provide a current description of the research context and activities of each Partner Project to this point in time, and to articulate the variety of ways that broadband is advancing collaborative research in each.

This Evaluation Report is mainly a qualitative description, based on site visits and personal interviews, and addresses the following question:

Now that broadband is installed and operational in the Partner Projects, how is it advancing research in the specific research contexts?

Research is really about obtaining information, with the type, amount and collection method determined by the purpose driving the research. Therefore, understanding the research context and purpose is of the utmost importance in order to fully realize the advances possible through broadband.

Structure of this Report

Discernable phases have emerged at this halfway point of the *InSite* Project, and broadband has a different role in the research process in each. In order to incorporate a dimension of time, which is consistent with process evaluation, this Report conceptualizes the Projects as having passed through three phases:

- Phase 1: Pre-Broadband Phase
- Phase 2: Acquisition, Installation and Testing Phase
- Phase 3: Implementation in Research Project Phase

These phases do not necessarily correspond to Milestone reporting dates, and are overlapping, transitional, iterative and at times indistinguishable. However, the purpose of mentioning them is to lay the foundation for future development of a knowledge management approach to evaluation. Because it seems reasonable to suggest that structures and processes involved in research activities would be different in kind, quality and quantity during each phase, a phasing approach may ultimately provide a framework for mapping the flow and transfer of knowledge. Naming and categorizing the phases at this point is arbitrary; these are preliminary conceptualizations for the purpose of exploring possible future development.

In this Report the phases are at times collapsed in favour of an integrated discussion of a particular research context or activity. This more directly addresses the *InSite* Project objective: “*of evaluating the advancement of collaborative research and development amongst nationally dispersed research teams or organizations using broadband technology*”, without trying to fit discussion or activity into a phase.

Overview of Evaluation Activity to this Point

The evaluation activities to date have consisted of both quantitative baselines (C/K Audit and Perceptions Questionnaire), site visits, personal interviews and videoconferencing. The majority of data underlying this Report and discussion was obtained during Phase 1 (Pre-Broadband Phase) and Phase 3 (Implementation Phase), with the majority of activity in Phase 2 (Acquisition, Installation and Testing Phase) appearing in the main InSite Milestone 2 Report.

The User Logs developed and appearing on the website do not form part of this Report.

The initial stages of planning the evaluation strategy included developing evaluation instruments to gather baseline data and provide a framework for future questionnaires and interviews. The following section sets out the foundation and rationale developed for the instruments (we will be returning to the instruments in the next evaluation phase, the current Report being qualitative in nature).

The Pre-Broadband Phase

The Pre-Broadband phase is the time before broadband was acquired, installed, tested and used in the research contexts. During this phase the Partner Projects organized their respective research projects, and oriented towards the arrival of broadband. This phase varied considerably among the Partner Projects, as is discussed within the context of each unique Partner Project below.

The Pre-Broadband Phase of evaluation initially set out the following objectives:

1. Completion of a C/K Audit
2. Completion of a Perceptions Questionnaire
3. Completion of personal interviews and site visits
4. A Process Model for each Partner Project.

All objectives but the Process Models and one site visit were completed. The Process Models (a “roadmap” for each project) objective was eliminated as it became evident the dynamic research contexts were not conducive to a predictive or restrictive approach, and little would be gained from further pursuit. This strengthened our commitment to process evaluation, and the value of retrospective evaluation done “after the fact” to understand the processes after they have occurred. Site visits to two Projects (Access Grid at

Ryerson and RIM at University of Saskatchewan) were completed, but due to budget constraints a site visit to the third Partner Project (Innocom/ISRN at Simon Fraser University) was not undertaken.

Milestone One Overview and Summary provides complete details of the rationale behind the development of the *C/K Audit* and *Perceptions Questionnaire*. For ease of reference, the following table provides a brief summary of the major categories and objective of each category in these instruments:

Summary of Categories and Objectives of Communications/Knowledge Audit ("C/K Audit")	
Category	Objective
Part One: Structure and Processes	To map formal and informal structure and processes
Part Two: Pre-Broadband Technologies	To outline technologies currently used
Part Three: People	To map the history, workplace context and the formal and informal relationships between the people involved in the Project
Part Four: Knowledge/Information	To map the existing information and knowledge resources and their flow within the Partner Project
Part Five: Collaboration	To measure the existing degree of collaboration in the pre-broadband environment

A Perceptions of Uses and Benefits of Broadband Technology in Collaborative Research instrument (later abbreviated to *Perceptions Questionnaire*) was also developed, and the following table summarizes the categories and objectives.

Summary of Categories and Objectives of <i>Perception of Uses and Benefits of Broadband Technology in Collaborative Research</i> (“<i>Perceptions Questionnaire</i>”)	
	Objective
Part One: ICT Familiarity and Receptiveness	To determine the familiarity and receptiveness of information and communication technology within the Partner Project
Part Two: Specific Broadband Technologies to be used	To specify the specific broadband technologies selected for use in that research context
Part Three: Anticipated Uses of Broadband Technology	To specify the initial perceptions and anticipated uses of broadband, and its anticipated contribution to advancing the research in that research context
Part Four: Areas Amenable to Enhanced Capabilities Through Broadband Technology	To specify the areas perceived appropriate for use and evaluation
Part Five: Perceived Benefits	To identify the benefits perceived to arise from broadband as they relate to the project level, social level and individual level

It is important to note that *InSite* Project Evaluation Instruments were designed to provide *indicators, not measurements* per se, and were to form the basis of semi-structured interviews. They were not designed nor meant to be “stand-alone” documents. At all times we were cognizant of the dynamic nature of the Partner Projects, and the need to remain situationally responsive to them as they evolved. The instruments were quite detailed, and were designed to provide a stock of questions for further evaluations as the projects progressed. As well, developing the evaluation process itself is one of the objectives of the *InSite* Project, and we wished to explore different approaches to

evaluating multi-dimensionality. For these and other reasons, including theoretical development of multi-dimensional evaluation, a qualitative and interpretive approach provides a great deal of flexibility.

In keeping with the approach of process evaluation, the instruments and interviews also were meant to serve the purpose of encouraging reflection and thought on the role of broadband prior to its arrival in the research environment.

Central Relevant Concepts and Dimensions:

We followed a particular line of reasoning and premise in the Pre-Broadband Phase and this continues to underlie the evaluation approach, which is basically that *function creates form*. In other words, the *function* of the research project creates the *form* of the *structure and processes*. This *form*, determined by its *structure and processes* and having regard to its *function*, is evolving and determines the definition of *collaboration* and *advancement* at any given time in a particular research context. There is a mutuality of shaping inherent in this conceptualization, with the form and its structures and processes both shaped by and in turn shaping the research context in terms of collaboration and advancement.

Early in the *InSite* Project the following interrelated concepts were identified as central and important to examine:

- “*collaboration*”
- “*advancement*”

Throughout the evaluation process the focus has remained on examining these concepts within each unique research context specifically as they relate to the role of broadband technology.

In general, the concept of “*advancement*” is tending to cluster around two areas:

- (1) *efficiencies*, in terms of time and money, and
- (2) *new capabilities*, in terms of activities that would not be possible without broadband are envisioned, noticed and at times being carried out. These *new capabilities* tend to be related to *collaboration*, made possible through broadband. This Report also provides some rudimentary conceptualizations around the new capabilities emerging.

Conceptually, there are two central forms emerging from the *InSite* Project and Partner Projects related to advancement and collaboration. In addition to the *technical infrastructure*, *human infrastructures* or networks are being developed. This refers to the expanding infrastructure of people connected through broadband, creating a “living” network of knowledge and expertise, and creating a number of linkages, including:

- institutional linkages
- interdisciplinary linkages
- interpersonal linkages
- international linkages
- intercultural linkages

While these occur within any research context, broadband in providing additional depth and breadth.

The next section of this report discusses each Partner Projects in terms of these central concepts and dimensions. To maintain the integrity of each research context, when appropriate the phases are collapsed and discussion proceeds on an integrative basis. The main focus is on *new capabilities*.

PART TWO: DISCUSSION OF EACH PROJECT

This section discusses each Partner Project in order to provide an integrated picture of each unique research context, and the role of broadband in *advancing* research and *collaboration* within each project.

Policy Forums for Risk Management (“RIM”, or Risk Issue Management Project)

Main Site: University of Saskatchewan

The RIM Project is concerned with the timely and efficient connection of top-level risk experts in Canada for discussion and decision-making.

The RIM project can be conceptualized as having two levels of development relating to broadband: (1) a *technical infrastructure* or network and (2) a “*human*” *infrastructure* or network. Both these infrastructures are required to advance the following research functions:

- (a) Expert Panels and Decision Making
 1. In times of national crisis or potential crisis involving risk to Canadians, such as bioterrorism, experts (including geographically dispersed experts) must be connected immediately for the purpose of making decisions of paramount importance to Canada and Canadians. In this case, *timeliness, technical stability and immediate access* are critically important requirements that cannot be compromised. “*Advancement*” in this context is in terms of those factors.

2. There is a great deal of uncertainty associated with risks such as bioterrorism, making it impossible to know in advance what experts may need to be brought in, and within what time frame. “*Advancement*” in this context takes on two forms: (1) in terms of a human infrastructure, “ad hoc” groups essentially create “*living*” *data bases* of experts or knowledge upon which experts can draw; and (2) extension of the technical infrastructure to more universities and experts to support the ad hoc groups or human infrastructure.
3. In terms of expert panels that are not operating in crisis mode but rather managing emerging risk issues, RIM organizes expert panels for discussion and decision making within a longer time frame. The expert panels cover such topics as genetically modified foods, particulate matter, endocrine modulators and applications of biotechnology. The expert panels are comprised of a variety of experts, depending on the topic. Again, the concept is one of *advancement* through developing both the technical infrastructure and the human infrastructure.

(b) Public Participation

4. The RIM Project involves public participation and open public forums with respect to emerging risk issues through involving the public in discussion, debate and dialogue, and has future plans for this in issues such as applications of biotechnology. Broadband is capable of “*advancing*” this aspect of research through increased participation.

The above description is quite detailed in order to provide a conceptual basis for the notion of a *human infrastructure*, and its relationship to the technical infrastructure, advancement and collaboration.

A Major Barrier or Obstacle Identified

Within the conduct of its activities, RIM reports expert *access* to technology as a potential barrier to advancement of their research objectives, which could have detrimental consequences to Canadians. The RIM Project has strict confidentiality requirements, but we have been informed that in one case an expert scheduled to participate in an expert panel on endocrine modulators was denied access to equipment involved in a corporate sponsorship (pharmaceutical). Ostensibly this resulted from scheduling conflicts, but raised a concern about the possibility of different agendas operating. In this context “*advancement*” is access to a readily available MCU in a central, neutral location such as the University of Calgary (where it could be used extensively for other projects as well), rather than having to compete for time and access under uncertain conditions.

RIM Project Activities

The RIM Project has held two expert panel videoconferences, and a number of technical trials. The Research Assistants report substantial time and effort involved in locating appropriate locations for expert participation. In some instances there was substantial inconvenience to experts in travelling to locations in various institutions, and a number of scheduling issues arose. As mentioned, access is critically important in this research context, and supporting the objectives of RIM through a neutral and centrally located MCU would contribute to addressing this obstacle.

RIM Project Structure

The C/K Audit, Perceptions Questionnaire and personal interviews with a Lead Investigator and the Research Assistants indicate the project is highly structured, with many top level, influential expert Canadians involved as participants. There are several levels of collaboration operating: (1) expert or “top” level decision making people, including the Lead Investigators, (2) the ad hoc expert groups, (3) the public and (4) project level co-ordination. There is a clear “power center” or organizational center, being one of the Lead Researchers.

The experts involved in the RIM project are the leading experts in Canada in risk and risk issue management, and their professional relationships preceded and will extend far past the *InSite* Project. They view CA*Net 3 as a potential valuable resource for policy processes that will benefit all Canadians, such as the independent report on biotechnology for the Canadian Government being compiled by the Royal Society of Canada.

The following table summarizes the “*advances*” to this point in time and the direction of future advances through broadband technology within this research context:

Advances – New Capabilities (RIM Project – Risk Issues Management)	
Defined in terms of development of: <i>Technical Infrastructure</i>	Defined in terms of development of: <i>Human Infrastructure</i>
Achieved: • Equipment acquisition, installation and testing • Technical stability	Achieved: • Creation of “expert” infrastructure • Creation of institutional linkages • Creation of interdisciplinary

	linkages • Creation of interpersonal linkages • Creation of technical knowledge sources and linkages
Future Possible Advances: • Access to MCU	Future Possible Advances: • Creation of “ad hoc” infrastructure • Public participation • Further institutional linkages • Further interdisciplinary linkages • Further interpersonal linkages • U.S. Contacts

At this point in time, the RIM Project varies somewhat from its original description primarily in that focus and activity have shifted to the growing endocrine modulator project and activity on that project will be extended. A new objective for the project is to look for U.S. contacts.

RIM Project Phases

The RIM Project moved through the three phases of (1) Pre-broad, (2) Acquisition, Installation and Testing and (3) Implementation in Research Project Phase smoothly. Qualitative data would suggest this is as a result of several identifiable characteristics of this research context, such as:

- Clear purpose and use for the technology
- Clear project objectives and goals
- Stable and established research environment
- Well established expert history and connections
- Strong leadership in Lead Investigator
- Substantial technical expertise in Lead Investigator

The RIM Project demonstrates a research context that benefits and advances significantly from broadband on a number of levels.

Other Broadband Activities

As the *InSite* Project progressed, RIM Project participants and the *InSite* Central Team engaged in a variety of other activities not originally planned, which contributed to creating institutional, interdisciplinary and interpersonal linkages, for example as:

- Educational purposes, through delivery of two lectures to the U of C, thereby connecting approximately 100 U of C students live and direct to a content expert not otherwise accessible
- Several sessions focused on discussion in “human factors”, including experimenting with most effective camera angles, etc.
- Demonstration of technology to U of A guest at U of S, and discussions with U of C instructor regarding use of videoconferencing in education and associated issues
- Evaluation interview (C/K Audit and Perceptions Questionnaire) through vc
- Discussions regarding development of concepts and linkages relating to broadband
- Connection of Dr. Mehta with U of C PhD student colloquium

Upcoming Evaluation Activities

Now that the technology is operational and reasonably stable, Milestone Three evaluation activities for the RIM project will focus on:

- obtaining quantitative data on usage and efficiencies (time and cost - User Logs)
- the human infrastructure and linkages made in the project.
- the issue of access, and the need for a MCU.

Access Grid Project

Main Sites: Ryerson and Sheridan College

The Access Grid Project focus was twofold: (1) connecting large groups on the Access Grid, including foreign connections and (2) human factors research in collaboration. Although the research context and focus has shifted somewhat, these remain at the foundation of the project. Evaluation activities have shown an emerging phase of

“visioning” in this project which is very strong, and which has been identified as a major area of interest for the next evaluation phase.

This section starts from describing the Access Grid from a qualitative point of view, to explicate the context from which “visions” are derived through its form and current function, and for the purpose of explicating the continuity between the original focus and the current focus of the Project.

The data underlying this discussion is qualitative, derived from a recent *InSite* site visit to Ryerson and Sheridan College, and interviews with a Lead Researcher and technician in person and through videoconferencing. The phases of (1) Pre-Broadband, (2) Acquisition, Installation and Testing and (3) Implementation in Research Project are collapsed and discussed in an integrative fashion. There have been two site visits by the *InSite* Central Team, and although the CK Audit and Perceptions Instruments were completed, they are of limited use owing to a number of changes in the research context, including personnel.

Physical Appearance of the Access Grid and “Visioning”

The Access Grid is a multi-dimensional virtual space (the text equivalent would be a MOO). People enter the main “hall” and go into different “rooms” just as though they are entering a real building and going into a real room where a meeting is scheduled. The visual effect can be dramatic and complete. For example, The U of C has a dedicated room with four wall-mounted cameras, each positioned in a different location. The result is a view of the entire room and its occupants from several angles. To conceptualize the dimensionality with four cameras, if a person were dancing in the room, the front, back, left and right sides of the dancer could all be seen at the same time. The multi-dimensionality would increase with the number of cameras installed, creating an unlimited number of dimensions.

The potential of this multi-dimensionality suggested and continues to suggest a number of capabilities to the researchers and technicians. These include visions for gesture-based research for manipulating objects in a collaborative virtual space. A finding in a recent site visit is that the researchers believe a research agenda based on a collaborative problem-solving method with a clear purpose would provide a clear objective and goal around which to organize. Because of the close association of the institutions with applications such as animation, this is an area of interest in terms of “visioning” that is emerging and targeted as of interest for the next evaluation to see if advancement in that direction has occurred.

The technicians are also interested in creating a multi-dimensional interface for the Access Grid and, although this activity is outside the scope of the *InSite* Project, is a direct offshoot of visioning flowing from this project.

Research Context – Then and Now

The Access Grid Project underwent substantial change and several challenges during the first half of the *InSite* Project. The original plan called for:

- the installation of three Access Grids, in Calgary, Ryerson and Sheridan College
- to establish linkages with foreign institutions such as Singapore
- to investigate human factors on the Access Grid.

Much of the original plan has been achieved, some has been altered but remains in line with the original project objectives, and some objectives are new and innovative, and have evolved out of “visioning” and a desire to explore new potentials. These are discussed below.

Installation of Access Grids and Current Use

Installation of the three Access Grids has been completed, and connections and testing with various Canadian and American sites occurs on a daily basis, primarily at the level of equipment testing and adjustments. The technicians at all three sites (Ryerson, Sheridan and U of C) are extremely active and innovative, and are establishing invaluable connections with other technicians through unplanned and unscheduled activities.

For example, most Access Grids are left on at all times with people coming and going. At approximately lunchtime every day technicians from various places, usually the U.S., are likely to show up in the virtual “lunchroom” and talk “techie”. They also go to this virtual space when they need help with their systems and for assistance with sound tests, etc. The techie culture evolving on the Access Grid is one of sharing and tinkering, and from this fertile ground is emerging collaboration and a highly specialized, human infrastructure of expert technical knowledge – truly a human infrastructure and valuable resource. Also emerging from the collaboration occurring in this largely unstructured specialized space are visions of ways to develop and utilize the shared space, and flowing from this is the “visioning” stage discussed earlier.

Access Grid Research Activities

One of the broad objectives of the InSite Project (as stated in the Statement of Work) was to see if and how broadband could improve collaborative research through real-time simulation and modeling. The Access Grid researchers responded to that notion, and have approached it in several ways.

For example, the “Marcel Project” was a concept that arose from a meeting in Souillac, France of a group of international art and industry experts who agreed on the importance of fundamental artistic research in the development of telecommunications networks. This international group believed there was a need for a permanent high bandwidth network for artistic experimentation. They perceived a realization of this through a

number of activities, one being creating a virtual artwork by artists working collaboratively in real time in various locations. This objective was originally conceived as occurring through the Access Grid, but although pursued this did not transpire due to a number of problems external to the *InSite* Access Grid Project. The European contacts did not have Access Grid connections, and this created the technical problem of getting the Canadian Access Grid technology to talk to the European technology. Addressing this issue is no simple matter, and would go far beyond the involvement originally anticipated and the scope of the *InSite* Project.

The *InSite* Access Grid Project has all but abandoned the Marcel Project at this point in time for this reason, along with the fact that the French institution involved is currently undergoing a strike.

However, the *InSite* Access Grid Project has not abandoned the objectives of a foreign connection or real time simulation embodied in its anticipated involvement in the Marcel Project, and has accomplished the following:

- The Sheridan College Access Grid connected with the UK on November 9, 2001, and is in the process of pursuing a connection with Germany
- In terms of investigating the area of real time simulation, the Access Grid was involved in a virtual “music concert”, where musicians in different locations played in real time from their locations, thereby creating a “virtual concert”. This activity *advanced* broadband research in this context by allowing an examination of the audio delay through the music.

These activities, while somewhat altered, are still consistent with the original project objectives and have been achieved.

In terms of researching human factors through the Grid, a mutual interest in this was realized between the Access Grid Project and the *InSite* Central Team in a recent site visit. As a result, there will be discussions between interested researchers at U of C and Sheridan College through the Access Grid around exploring these factors. Of particular interest is diversity in videoconferencing behaviour and protocol, including cultural diversity, individual differences, gender, and so on, as well as technical issues involved in the visual appearance of the Access Grid. This is another example of linkages created through broadband.

In terms of connecting large groups, the Access Grid Project has organized a number of successful large videoconferences, including the SCG Conference and the CANARIE videoconference meeting of November 29, 2001, which are discussed in the *InSite* main report and are not reiterated in detail here.

Advancement and Collaboration within the Access Grid Project

The following table summarizes the “advances” to this point in time and the possible direction of future advances through broadband technology within this research context:

Advances – New Capabilities (Access Grid Project)	
Defined in terms of development of : <i>Technical and Human Infrastructures</i>	New applications and possibilities defined in terms of “visions”
Achieved: • Installation and testing of three Access Grids (U of C, Ryerson, Sheridan) • Foreign connection (UK, Nov 9) • Simulation (virtual music concert) • Creation of technical expert human infrastructure • Creation of institutional linkages • Successful connection of large group videoconferences	Achieved: • Simulation (virtual music concert) • Vision for gesture-based research and object manipulation and creation • Vision for connections with animation • Vision for problem-based research agenda • Vision for multi-dimensional, interactive interface • Vision for technical possibilities for a machine proxy for multi-cast to another location
Future Advances: • Foreign connections (Germany) • Increased connections in Canada and US	Future Advances: • Discussions relating to human factors research – U of C and Sheridan • Further visions for gesture-based research Further visions for simulation research

Access Grid Project Phases

The Access Grid moved through the three phases of (1) Pre-broad, (2) Acquisition, Installation and Testing and (3) Implementation in Research Project Phase in a way that essentially collapsed the conceptualized phases. This is probably due to the nature of the research context, specifically that it is a technical environment within which the InSite Project is only one of many projects and technologies. Qualitative data suggests there was and continues to be blurring in making clear cut distinctions between activities involved in the *InSite* Project and the other projects participants are involved in. An area of focus for the next evaluation is making these distinctions clearer.

Upcoming Evaluation Activities

Now that the technology is operational and reasonably stable, Milestone Three evaluation activities for the Access Grid Project will include:

- obtaining quantitative data on usage and efficiencies (time and cost) from User Logs
- exploring the continued development of the technical expertise infrastructure
- exploring several activities referred to above under “visioning”
- exploring human factors discussions
- putting clearer edges on defining *InSite* Project activities in order to speak directly to the role of broadband in this particular research context

Of particular interest in the next phase of evaluation is the continued development of the technical expert human infrastructure.

InnoCom/ISRN Project

The InnoCom/ISRN project aims to understand the innovation process of a number of industrial clusters across the country, and to use communications technology to link each of the research nodes. This *InSite* Partner Project (InnoCom) is one of five sub-networks involved in the ISRN (Innovation Systems Research Network) Project. The InnoCom project focuses on two industrial clusters:

- wireless (with a Lead Investigator in Calgary)
- biotechnology (with a Lead Investigator in Vancouver)

The InnoCom Partner Project involves two stages:

- (1) compiling data from industrial clusters and constructing a relational database on selected examples of the innovation process
- (2) creating simulations and forecasts of innovation pathways and providing tools for strategic analysis.

The Project is currently in stage (1).

InSite Evaluation Activities to Date

A Vancouver site visit was cancelled due to budget constraints, and has been rescheduled to February 7, 2002. Because of a variety of unforeseen circumstances, scheduling issues

and personnel changes, we collected very little data in the initial phases of this Project. However, a subsequent lengthy interview with the Calgary Lead provided substantial qualitative data, primarily about the *wireless* focus, and provided both retrospective and current activity reports.

Research Context and Activities to Date

Right from the onset the Lead Investigators identified the role of broadband as one of creating efficiencies in terms of time and cost. Specifically, they were interested in organizing their distributed teams and collecting data through broadband, thereby reducing the time and money spent on travel and associated expenses.

The Calgary Lead Investigator described the wireless focus as comprised of a large, distributed research team, and broadband as the enabling technology for that research initiative. Broadband was used to organize the distributed team, and enabled the collaborative development and refinement of data collecting instruments. This provided clarification and integration of the instruments not otherwise possible. For example, the distributed team realized the term “photonics” was conceptualized differently in different parts of Canada, and through collaborative effort integrated and clarified this term on the instrument.

The InnoCom/ISRN Project has also organized videoconferences for educational purposes.

New Capabilities

The two Lead Investigators are in frequent contact with each other as well, and from the strong collaboration between these two has emerged a situation where the two research contexts are in effect “scaffolding” each other. Specifically, both research contexts include interviews, with two types of questions (closed and open-ended). The researchers take the approach that two interviewers are appropriate (but not always available in the same place at the same time). This led the Lead Investigators to contemplate the extension of CA*Net 3 over wireless to connect to a portable device such as a laptop. This would enable interviewers to “roam”, which they perceive to be a large advance.

Future Activities

During February, 2002, the Innocom/ISRN Project will undertake a major conference in Calgary.

Upcoming Evaluation Activities for Milestone Three

Milestone Three evaluation activities for the InnoCom/ISRN Project will include:

- obtaining quantitative data on usage and efficiencies (time and cost) from User Logs

- interviewing the Lead Investigator of the biotech focus for more detailed data on how broadband is advancing that project
- the extent to which the Lead Investigators have explored the wireless idea
- exploring other unforeseen advances that may emerge from the collaborative
- obtaining any available information on the second phase of the project through interviews

Of particular interest in the next phase of evaluation is the explication of the efficiencies realized.

Conclusion

At this point in time in the *InSite* Project, evaluation activities have included:

- obtaining baseline data from the C/K Audit and Perceptions Questionnaire, which we plan to return to later in the project for comparison purposes and with a view towards refining these instruments
- site visits to each site (except the Vancouver site of InnoCom/ISRN, which will occur on February 7, 2002)
- in-depth interviews with Lead Researchers at each site
- in-depth interviews with Research Assistants at each site
- in-depth interviews with technical personnel at each site
- an analysis and description (as summarized in this Report) of the different research contexts, with preliminary discussion of:
 - the role of broadband in each, given the specific purpose of the research
 - how broadband is *advancing* research in each context
 - the types of *collaboration* occurring
 - some initial conceptualizations for theoretical development

The evaluation goals for the next Milestone include:

- quantitative data on use (User Logs)

- focussing on the areas of interest identified in each Project through interviews and personal contacts
- continued development of the evaluation procedure consistent with a process evaluation approach
- a “revisiting” of the initial evaluation instruments (“C/K Audit” and “Perceptions Questionnaire”) for further analysis and refinement
- targeting further areas for theoretical development
- targeting areas for development of “best practices”.

As stated, the purpose of this Evaluation Report was to address the following question:

Now that broadband is installed and operational in the Partner Projects, how is it advancing research in the specific research contexts?

This Evaluation Report has provided an overview and qualitative description of the research contexts and activities to date to address this question, and identified areas of interest for further study in each Project.

Appendix C: Second Milestone Knowledge Management Report

Second milestone report – Knowledge Management

Mark Wolfe

January 21, 2002

Overview

One of the objectives of the KM component of the *InSite* project was to augment the evaluation process by capturing knowledge generated and shared informally by participants that otherwise would not be captured. This was premised on a long ethnographic tradition and wide acceptance in the KM, organizational learning, and evaluation literatures that key on an embedded or "interactive content analysis" approach to workplace research. Because the evaluation process was designed to measure change in processes and perceptions, it was crucial that the on-line chats capture data from project outset.

Technical issues – However, myriad technical glitches and other unforeseens have precluded the server being set up and put into operation to host the on-line and collaborative workplace software. With final technical problems presently being ironed out, we expect the Teamwave on-line server to be running within days. The server will run 24/7 continually through project end.

Website – most sections of the KM pages on the *InSite* website are in place. This includes and on-line tutorial for downloading the client software, as well as a link to download the KM framework. Future pages will include updates on the progress of this portion of the project, as well as transcripts of on-line data captured.

On-site visits – To accelerate the use of the on-line software by project partners in the West (the research and technical people at Sheridan and Ryerson are already well-acquainted with this communications format), I will be making on-site visits to the Universities of Saskatchewan and Simon Fraser within the next two weeks. I'll be assisting technical people and research assistants (RAs) with any problems getting the software up and running, and will conduct a demo session with Calgary technical people on the server while on location. Further explication of the role of this activity within the context of the evaluation process will be carried out.

KM and Evaluation

Analysis of transcripts were to have comprised standard and non-standard communications analytics, including cluster and conversation/discourse analyses, drawing on small group research, organizational communications and, to some extent, GDSS and other mediated communications frameworks (i.e. email and chat) for identifying and applying constructs. The non-standard approach was/is to analyze transcripts in the aggregate for concept emergence. The idea here was/is to test the nature

and extent to which work groups in the mediated collaborative research domain were/are self-organizing and the role of communications strategies and practices as factors of that non-linear dynamic.

For Milestone Three

The lost opportunity to capture data from project start-up is critical but not necessarily fatal. To make up for this gap in the KM data, I'll also conduct in-depth interviews with RAs and technical people – if not during the site visits, then on an on-going basis until project end. I'll need to be cognizant of time demands on these people in the time left, so sessions might be better if they were brief and frequent as opposed to periodic and laborious.

Given the type and range of formal research instruments in place, and a rigorous schedule for intense interaction in the coming weeks using the on-line chat and video-conferencing sessions, I am confident that empirical validation of knowledge management processes will be forthcoming. It is fully anticipated, however, that data capture will continue after project end.

Appendix D: Risk Issue Management Project Second Milestone Report

Second Quarter Milestone Report –RIM Project

1. Recap the scheduled Milestone deliverables for this quarter

- RIM PI and his RAs to coordinate several one-to-one VC tests with other partner nodes.
- Bring together at least three nodes to discuss a risk issue.
- Hold one or two planning VC meetings in November.
- Hold a multicast VC in December.

a. One-on-One VC with partner nodes

- U of Saskatchewan node to central team in Calgary –5 October 2001
- U of Saskatchewan node to central team in Calgary –19 October 2001
- U of Saskatchewan node to U of Ottawa –29 October 2001
- U of Saskatchewan node to U of Calgary for a guest lecture by Dr. Mehta –29 October 2001
- U of Saskatchewan node to U of Guelph – 9 November, 2001: Equipment test with the technician at the U of Guelph
- U of Saskatchewan node to U of Ottawa – 22 November 2001
- U of Saskatchewan node to U of Calgary –23 November 2001
- U of Saskatchewan node to U of Ottawa –30 November 2001
- U of Saskatchewan node to U of Calgary –4 December 2001
- Multicast to U of Ottawa, Guelph, Calgary and Saskatchewan – 12 December 2001
- U of Saskatchewan node to U of Calgary –19 December 2001

b. Quality of the VC tests

During the trial test of 9 November with Guelph, the image quality was not very good. Also, a few minutes into the VC, the connection failed. We had to reconnect. The quality of output was much improved during the 12 December 2001 multicast.

c. U of A – Locating a partner

Dr. William Leiss is checking into acquiring a partner for EMCOM at the U of Alberta.

d. McMaster Node/Private Service Provider

Further to our last report on the above, we are looking at the possibility of locating a private VC service provider in Hamilton. From e-mail exchanges with our chief scientist at McMaster, it may be difficult getting university buy-in for a permanent node. Until a provider is located, Dr. Warren Foster will make a 1.5 hour journey to Guelph to attend VC meetings with other partners.

e. Experiences for RAs – Chika Onwuekwe and Kelly Bronson

On 21 November, Kelly and Chika spent time on their own learning to use the VC equipment at the U of S. On 22 November, they successfully held a VC test with the U of Ottawa.

During the November test with the U of O, it was noted that there was less stalling than had occurred when we tested with the U of C in October. The RAs have also become more comfortable with the equipment. They agreed that conducting a VC test run on their own was helpful. They now coordinate VCs with other partner nodes.

f. The First Multicast VC

As noted in 1(a) above, a multicast VC was held with the U of Ottawa, Saskatchewan, Calgary and Guelph. We were not able to get all partners to attend this multicast due to timetabling difficulties. The connections were made through the MCU at U of Ottawa.

The audio and video quality was good. At one point, however, the image from Guelph became pixilated and subsequently, we lost connection with Guelph and all other nodes. The technical assistant at U of Ottawa confirmed by phone that it was a temporary failure. Each site was subsequently redialed and reconnected. It took about 8-10 minutes to get each site reconnected. For the next multicast, it was agreed that in the event of any failure, partners should stay at their VC locations for redial/reconnection. We have phone numbers of contact persons at each node.

g. Time Zones

To ensure that partners have the correct time for a VC, we plan to always use each partner's time zone when scheduling VCs. This will avoid any confusion.

2. Schedule

- ***Please provide a detailed schedule for your next milestone***

During the third milestone, the RIM project plans to have two or three multicast VCs to discuss risk issues (relative to our endocrine modulators project). The

discussion will focus on breast cancer. Both interactive and informative procedures will be used in making expert opinion available to the public. One of our partners in the EmCom side of the project, Dr. Krewski, has just been appointed Canada Research Chair at U of Ottawa. The National Academy of Science in the United States is considering providing more funding to Dr. Krewski for his project. We envisage that this might happen soon and enable us link up, through CANARIE net, researchers in the U.S to join in the breast cancer discussion. There is little expert opinion available on breast cancer and associated risks. Thus its discussion in this project is timely and within our broad risk scope. Already, we are completing arrangements to hold a multicast in January. During the same period, we intend to hold several one-to-one VCs with all partner nodes. The partners appear comfortable with the equipment. We will probably hold a planning and technical VC meeting during the third milestone.

- ***General Comments***

Everything is on track. As earlier noted, we are working on finding a private VC service provider in Hamilton to make it easier for our McMaster partner. No new equipment has been purchased. Dr. William Leiss is looking into the possibility of getting a partner for our U of Alberta node. Also, the appointment of Dr. Dan Krewski, our EmCom partner as Canada Research Chair will broaden our reach in the discussion of risk issues.

Appendix E: Innocom Project Second Milestone Report

Milestone Report – Partner Projects

Second Milestone

October 1 – December 31, 2001

1. Recap the Scheduled Milestone Deliverables for your Project

Please comment specifically on the categories below in terms of milestone deliverables. State any variations in deliverables from those originally planned for this milestone along with justifications and the intended course of action to remedy the situation if required.

a. Network

*Please comment on the status of your network connectivity to CA*net3. Please comment if you have been having any problems with connectivity.*

The SFU and U of Calgary partners are completely connected to CA*net3. At SFU all of our connects are operating at full 100Mb capacity. There have been problems at the U of Calgary end (Dept. of Chemistry) both with software and the requirement to install a new computer in Dr. Langford's office. There are also suspected problems with routers – both ends share routers with other users, and it may be that high utilization by other users momentarily reduces available bandwidths. There are also clearly time-of-day problems as Vancouver – Calgary traffic on CA*net3 peaks around 1pm Pacific time each weekday.

However, as of January 2002, the majority of problems appear to have been solved – there is still a noticeable delay between video and audio.

We do not expect that the U. of Toronto connection will be made during the life of this project (i.e. before July 2002).

b. Equipment purchase

Please list the equipment that has been purchased for the project in this milestone (up to December 31st, 2001). If you still plan on buying equipment (in the 3rd milestone) please indicate why you are buying it at this time and what you have been doing in the interim to facilitate participation in the project.

No more equipment purchases are expected unless we have to replace some routers (see above) or if the University of Toronto connection goes ahead in the later part of the project.

c. Equipment testing and use

Please list the date of any equipment testing or use and the reasons and details for the usage. Keep in mind the following points:

- *Who participated in the video-conference*
- *How did participants react to the use of the equipment*
- *What was the quality of the video-conferencing (video and audio)*

- *In general, does the use of the equipment enhance or change communication between researchers and other project participants in your project.*

Please see attached logbook.

It is clear that video conferencing is far better than simple teleconferencing, for all of its technical glitches. The only subjective issues are the poor quality images coming from the ViGo cameras and the lack of synchronization between video and sound.

The videoconferencing system is having a positive effect on the management of the ISRN/InnoCom research project

d. Second Milestone Meeting

Please comment on the date, participation and outcome of your Second Milestone Meeting with the Central Team.

The second milestone meeting took place 9 January 2002 via videoconference. The meeting was an unqualified success. Three CPROST/SFU personnel (Holbrook, Crowden and Scholander) participated. See also reports by the central team.

e. Site Visits

Please discuss any site visits that took place with the Central Team during this milestone.

None.

2. Schedule

a. Discuss any variances between the SOW schedule and the project in your second milestone. *Please discuss how partner project milestones were met. If a milestone was not met, discuss the intended courses of action to remedy the situation (if applicable).*

As planned we were able carry out installation and testing of equipment at the ISRN project office at the University of Calgary and linking it to CPROST,

Operational milestones and events:

- Oct. 10th First operational use of the videoconferencing system
- Nov. 14th First operational conference to Chemistry Dept., U. of Calgary
- Nov. 19th Scheduled ISRN seminar that included participation by ISRN researchers at the U. of Calgary through the videoconferencing link
- First attempt at research interview for ISRN – terminated due to system problems

Testing of multiuser videoconferencing with the multiplex bridge at the University of Calgary did not take place due to lack of availability of equipment.

b. Please provide a detailed schedule for your next milestone

Include proposed video-conference events, technical testing and any research milestones that you anticipate for Milestone Three.

- *We hope to test multipoint videoconferencing when the Calgary bridge is available*
- *SFU Academic Computing services and Instructional Media Services have each asked to borrow our equipment to try it themselves for their programs (outside the CANARIE project)*
- *The equipment will also be used in conjunction with wideband wireless Internet equipment from Prof. Anderson's Telematics Research Lab (CPROST/SFU) to test the operability of a wireless videoconference link in the Vancouver area*

Expected events include:

Jan 9: Second milestone meeting by videoconference

Jan 29: Video-conferenced seminar from Calgary to Vancouver

Feb 7th: Site visit

See attached log (note: Excel document so not in electronic copy)

Appendix F: Ryerson Second Milestone Report (Access Grid Project)

Milestone Report – Partner Projects

Second Milestone

October 1 – December 31, 2001

1. Recap the Scheduled Milestone Deliverables for your Project

Our projected Milestone 2 deliverables were outlined as follows:

- Marcel Videoconference meeting (Mbone meeting in which we are going to use our accessgrid setup to facilitate our end), on Nov. 1, 2001.
- Further testing with Sheridan before SC Global conference on a weekly basis. We will not actually participate in SC Global, but we're using the event as a milestone for our testing schedule.
- Integration of GBC (Gesture Based Control) research with AG will take place during this Milestone.
- Upon completion of UofC's AG setup we will participate in testing our three nodes.

a. Network

- We had intermittent Network problems mostly due to upgrades to the campus routers. No specific problems that could be associated with CANet3.

b. Equipment purchase

- No additional equipment was purchased during this Milestone.

c. Equipment testing and use

- We have been working on outlining the configuration of a mobile multicast router to facilitate multicast tunneling on Ryerson subnets that would otherwise not have multicast available to them. This would help other faculty in other departments to "patch-in" to accessgrid using everyday desktop PC's and Eyeball cameras. We are currently testing the Generic Tunneling Protocol provided in Linux 2.4 series of kernels. This would involve defining a fixed tunnel end point at one of our central campus routers (Cisco Box) and having a movable tunnel endpoint on the laptop. As of today we have not been able to establish a tunnel between the linux laptop and the cisco router. Further testing is underway to solve this problem. As an additional step once the connection is established and the bugs are worked out, we would like to automate the movable ends ip discovery by writing a script that would dynamically configure the cisco router with the new ip and tear down any old existing tunnels.

- We also discovered a way of "patching" single desktop machines

(running Linux or Windows) into the accessgrid. This will enable users/faculty members, who might not necessarily have the time to attend a conference in the designated AG room, to participate. We have only been able to demonstrate this on a linux platform, since rat version 4 (the audio tool) needs to be compiled for windows as of this writing (version 4 is needed in order to hear other participants in AG). This operation involves removing (copying) the entire AccessGrid software distribution (located in /usr/local/ag by default) and moving it to the miniature setup. Once the Software has been replicated on the miniature AG setup one can easily bypass the AG Interface and run both the audio and video tools on the same machine using addresses published on the following page:

<http://venues.accessgrid.org/AG/venues.php>

- We conducted our 1st Marcel Video conference meeting (Mbone meeting in which we are going to use our accessgrid setup to facilitate our end), on Nov. 9, 2001. For this first attempt we only managed to connect to our counterparts in London, England. The French and the Dutch parties will be ready sometime in the near future.
- We had further testing with Sheridan before and after SC Global conference on a weekly basis.
- Integration of GBC (Gesture Based Control) research with AG is still in the works. Although we have had some success with controlling QuickTime Videos and Panoramas through our system the ultimate goal of transmitting the control signals over AG and controlling a remote process is still sometime in the future. We have a preliminary (read very early alpha) of what we are calling the midi2mbone translator server and are testing it in house. In time we would like to get the client side written and do a full test of encapsulating and transmitting midi over mbone. Since the client will provide a hook for other socket enabled applications to hook into, any socket aware application can be made to receive the midi signals generated by our GBC system. A fully working scenario would be as follows:
 - 1) Turning motion of a persons head is captured using a camera that is hooked up to a video capture enabled G4 Mac.
 - 2) The Mac will analyze the video and generate midi notes that correspond to that head movement.
 - 3) These midi notes are fed to a linux PC running our midi2mbone server.
 - 4) The midi2mbone server will encapsulate the midi notes into Multicast packets and transmit them to a predefined AG Virtual

Venue (eg: The Test Room).

5) Another linux PC running the midi2mbone client will extract the encapsulated midi notes and provide a hook for a socket enabled application to hook into.

6) The GEM/PD software will be used to hook into the midi2mbone client and generate 3D OpenGL Graphics depending on the incoming notes OR the midi notes are transmitted from midi2mbone client via serial port directly to a Parallax PIC Based "Robot".

d. Second Milestone Meeting

- We have tested our three nodes (Calgary, Sheridan, Ryerson) on two separate occasions (January 8,9 2001) and the connection has been fine. We held our second milestone conference on Thursday (January 10, 2001) between the three AG Nodes. Despite severe audio problems we managed to have the meeting. A decision was made to do a number of audio test sessions in the following weeks to ensure proper audio settings at the three different sites.

e. Site Visits

- We had no official site visits during this Milestone.

3. Schedule

a. Discuss any variances between the SOW schedule and the project in your second milestone. N/A.

b. Please provide a detailed schedule for your next milestone

- Further work to detail the procedure of building a single PC Accessgrid node.
- Weekly technical group meetings on every Tuesday.
- Weekly meetings on every Wednesday.
- Further research into development of GBC system and the development of the software needed to "glue" the two systems together (AccessGrid and MIDI).
- Outline of procedures to reduce bandwidth usage by AG nodes in a sub optimal environment, where bandwidth and its usage is an issue.

Appendix G: Sheridan Second Milestone Report (Access Grid)

Milestone Report – Sheridan College Second Milestone October 1 – December 31, 2001

1. Recap of Scheduled Milestone Deliverables

Quarter Two Milestones

a. Network

The network connectivity at Sheridan for CA*Net3 is currently at 10 Mb/sec. It is anticipated that Sheridan's connectivity will be upgraded to a GigaPOP (at a min. OC-48 level) within the next few months with the assistance of the ORION Project (Ontario Research and Innovation Optical Network), an initiative of Ontario's Ministry of Energy, Science and Technology. A full description of the ORION network was included within the milestone one report. There are no implementation dates yet scheduled.

b. Equipment purchases

The following equipment was purchased by Sheridan College:

5 – Polycom ViaVideo desk-top video conferencing units

See attached invoices.

During Milestone Three we anticipate the purchase of a lap-top computer to allow using one Polycom unit in a mobile environment. We have tested the Polycom units at Sheridan using desk top computers and they work well, within their inherent capability. We were successful in using the Polycom to allow Dr. Paskauskas to participate in the Canarie Networks Conference from Mt. Allison University on November 29th and also for a meeting with the Netera Alliance at the University of Calgary on January 25th.

c. Equipment testing and usage

The following dates indicate specific testing and conferencing activities, much of which related directly to our participation in the November SC Global 2001 conference:

- October 1 - Access Grid (AG*) session with Boston Univ.
- October 9 - AG* mega-cruise test session, for details, refer to:
http://thebrain.ncsa.uiuc.edu/showcase/SCGlobal_CruiseSchedule.html
- October 11 - AG* mega-cruise test session, details are posted at:
<http://scv.bu.edu/~jtvh/scglobal/megacruise.html>
- October 19 - AG* mega-cruise test session – focus on audio

- October 22 - AG* test with the University of Illinois
- October 26 - AG* tests for Distributed Musical Performance
- November 1 - AG* Nanocruise test
- November 7 - AG* Tests for SC Global
- November 8 - AG* tests for SC Global
- November 12 - AG* final Tests for SC Global Conference
- November 14 - Major AG* activity in connection with SC-2001
- November 16 - Conclusion of the SC-2001 conference activity
- November 29 - Sheridan's participation at the Canarie Advanced Networks Workshop, in Mississauga, together with Mt. Allison (via PolyCom), the University of Calgary and Ryerson University.
- December 20 - AG* Test attempt with University of Calgary

We did encounter, as anticipated, a certain level of technical difficulty with our equipment, especially during the start-up phase(s). Incremental improvements were made, especially with respect to the audio equipment to improve the operation, quality and reliability. Many of the sites we contacted were impressed with the overall quality of the audio from Sheridan.

During the above period, these tests validated the efficacy of the Access Grid and Polycom equipment and prepared them for use in milestone 3 amongst the Canadian Access Grid nodes.

The Sheridan activity in connection with the Super Computing - Global 2001 conference hosted in Denver, Colorado, led to a significant amount of activity during this milestone period, especially in testing and preparation. Many participants from remote locations, literally around the globe participated in these tests and events. Many of them were rather familiar with the technology and therefore reacted quite positively and with aplomb. Generally the quality of the audio/video was very good, with the caveat that when the network, particularly at the Sheridan end, was overloaded the system performance was excessively compromised. This was severe enough for us to take the decision to re-locate temporarily at the University of Toronto's Information Commons to continue our testing and finalize the presentation for SC-Global 2001.

We did not have very many opportunities during this period to assess the human factors aspect of our communication, but did notice that for most of the remote sites there was little concern for maintaining eye contact, for example. We did, in the course of our preparation for the conference, have the opportunity to use the technology for one on one and one on several participant meetings and in these instances the eye contact was much better and of less significance as a general problem.

d. Second Milestone Meeting

The second milestone meeting was held on January 11 using the Access Grid and involved Sheridan, Ryerson University and the University of Calgary. Due to the departure of Dr. Andrew Paskauskas from Sheridan College to a new administrative research post at Mt. Allison University, Sheridan Sr. Research Associate, Walter Winchell and Andrew Bolyea, Sheridan's assistant node operator, participated in this forum from Sheridan. Walt participated in the meeting from the node at Ryerson University, while Andrew Bolyea was at the Sheridan node in Oakville.

This meeting went well with the exception of extreme QOS loss in the return audio feed from the University of Calgary. With the aid of a speakerphone we were able to conduct a satisfactory meeting.

e. Site Visits

A member of the Central Team's evaluation staff, Linda Goldenberg from the University of Calgary visited Sheridan on January 21 to review the progress on the project and facilities. Linda also visited with Ryerson University during this period.

Schedule

a. Variances between the Schedule of Work (SOW) and the Project

The Technical testing of the Access Grid between the Canadian sites was implemented for Sheridan and Ryerson University. The University of Calgary site was not functional until January 3, and full audio deployment followed approximately two weeks later.

Connection to U.S. Access Grid sites

Sheridan was instrumental in this regard in contacting the access grid organization and maintaining contact with this group which provided the impetus for an invitation to be a member of the Super Constellation team for the SC Global 2001 conference. In this regard we were connected to all of the AG* sites around the globe, through the Argonne National Laboratories (ANL) room venue system.

Presentation of results at SC Global 2001 conference: Mid-November

Sheridan's role in the Access Grid technology was show-cased late this past Fall at the November Super Computing 2001 (SC-2001) Conference held at the Denver Convention Center, in Colorado. Sheridan was selected to be among 28 institutions to participate as a (Super) Constellation site, providing both a live distributed panel discussion on On-Line Digital Property Management and a multi-media Distributed Performance presentation into the conference from some of its researchers, as well as providing an opportunity for those in the Toronto/Niagara areas to participate in the conference.

SC-2001 was the first application of the AG* technology to a major conference of this type. Sheridan researchers participated in the conference, by transporting the node to the University of Toronto's Information Commons within the Robarts Library. The University, in connection with ONET was able to supply a substantial amount of IP multicast bandwidth to enable our full participation in the conference proceedings in Denver. We also had the fortune of onsite technical participation from Canarie's engineering group who were monitoring the bandwidth utilization during the conference and estimated that between 40-60 Mb/sec were utilized. The two Sheridan presentations were conducted on November 14. The conference webpage: [www.-fp.mcs.anl.gov/scglobal](http://www.fp.mcs.anl.gov/scglobal) describes the event in detail and Sheridan's production plan for SC-2001 is posted at www.sheridanc.on.ca/accessgrid

Presentation at Canarie's Advanced Networks Workshop

Following the SC Global conference, on November 29th Sheridan participated in Canarie Advanced Networks Workshop at the Toronto Congress Centre, located near Pearson airport in Mississauga. We were afforded excellent connectivity on CA*Net3 due to Canarie's sponsorship. The demonstration included participation from Dr. Andrew Paskauskas at Mt. Allison University in Sackville, NB and Dr. David Mitchell from the University of Calgary (both engaged via Polycom technology), together with Ron Rankine and Manny Ayromlou of Ryerson University, via the AG*. An overview of Sheridan's participation in the AG* was presented along with a review of the recent participation at SC-Global and a discussion on the concepts for further research in these areas.

Meetings between team members

Several informal meetings, discussions and conference telephone calls took place during the second milestone period and a formal meeting was held on January 10 using the Access Grid technology (refer to **second milestone meeting**).

Linda Goldenberg from the University of Calgary visited Sheridan and Ryerson University during this period (as reported in **site visits**).

b. Schedule for third milestone

It is anticipated that bi-weekly video conferences will be implemented between the three currently operating Canadian Access Grid nodes, Sheridan, Ryerson University and the University of Calgary. These will include full technical testing schedules and planning strategies for moving the project ahead, including discussion and planning strategies for the Singapore AG* implementation, etc.

Additional areas for inclusion in the next milestone(s):

- Additional user tests between Canadian and International sites(s)
- Human factors analysis (development and testing of proof of concept)
- Implement collaborative media production trial stated in Human Factors Research Inquiry

Prepared by:

Walter H. Winchell
Sr. Research Associate
Lead Researcher – Sheridan College

Appendix H: Sample Agenda from Second Milestone Meetings

Agenda – January 10, 2002

Access Grid Project Milestone Two Review

1. Review of Milestone 2 from Central Team

What happened in the last three months?

2. Review of Milestone 2 from Ryerson and Sheridan

What happened in the last three months?

3. Commitments and Deliverables for Second Milestone

- technical testing and research of Access Grid between Canadian Sites
- connection to US Access Grid Sites
- Presentation of preliminary results at SC Global 2001 conference
- Presentation at CANARIE's Advanced Networks Workshop
- Biweekly meetings between team members

4. Evaluation and Knowledge Management

- update from Linda and Mark
- surveys, user logs, TeamWave etc.

5. Administration

- Update on claims process
- Time logs and invoices
- Second Milestone Report (primer on Access Grid – Aaron & Many)
- Website

6. Looking Ahead - third milestone

- User tests between Canadian Sites and International site(s)
- Human factors analysis (development, test of proof of concept)
- Implement collaborative media production trial stated in Human Factors Research Inquiry
- Biweekly meetings between team members

7. Other Issues

