

Appendix A -

Study 1 - User Preferences and Requirement in Distributed Meeting Rooms

Informed Consent Form

Experimental Instructions

Post Task Questionnaire

Transcription and Mockups by Participants

 Interview Questions

 List of Codes used in Content Analysis

VIRGINIA POLYTECHNIC AND STATE UNIVERSITY
Informed Consent for Participants of Investigative Projects

Title of the Project: Developing Heuristics to Optimize Configuration of the Video-Mediated Meeting Environment
Investigators: Delia Grenville, Dr. Brian Kleiner

Purpose of this Research

The purpose of this research is to investigate two types of organization interventions which can help groups that are physically distributed improve their performance during collaboration activities.

Depending on the experimental session you are participating in you will be asked to:

- Mock-up your preferred meeting room for physically distributed teams
- Participate in a virtually collocated meeting where you are involved in setting up the meeting room
- Participate in a virtually collocated meeting where you will receive feedback on your performance from the meeting facilitator

(An X has been placed beside the options in your session)

Procedures

Meeting Room Mock-up

You will view online training materials on virtually collocated meetings. After you have viewed the materials, you will be asked to use foam pieces to design a multi-purpose meeting facility for small and large groups.

After you complete the experimental task, you will be asked to complete a several post-experimental surveys. There is no time limit for this exercise, however, the anticipated time to complete the experimental session is approximately 1 hour.

Virtually Collocated Meeting

You will be randomly assigned to a team. Each team will participate in a short training exercise. The purpose of the training exercise is to familiarize the team with software, hardware, and equipment available in the meeting.

If you are participating in a meeting where your team is involved in setting up the meeting room, you will be asked to move light furniture, such as microphones, lap tops, and mobile chairs and mobile tables. In all other sessions the room will be set up for the meeting and no changes to the room arrangement are required.

The experiment will take approximately 3 hours. You will be asked to interact with team members to solve a collaborative task which includes video teleconferencing, brainstorming, information sharing, and creating a collaborative document. During some sessions, performance feedback may be provided to you. After you complete the experimental task, you will be asked to complete a several post-experimental surveys.

Risks

For your safety, casters have been placed on all of the furniture possible in the room that can be moved. In addition, a technician (or the researcher) will be available to help with room set up.

The furniture selected is standard meeting room furniture, therefore, there are no apparent risks to you beyond those encountered in everyday life.

Benefits of this Research

Although there are no direct benefits from your participation in this research, your participation may increase your understanding of collaboration in a virtually collocated team. If you are interested in receiving a summary of this research, please provide your email address and indicate in the box at the bottom of this form that you are interested in receiving summary data.

Extent of Anonymity and Confidentiality

Every effort will be made to keep the results of this research strictly confidential. Only the investigator and the research team will have access to individual data and video recordings of the experimental sessions. Your written consent will be required to release any data identified with you as an individual. You will be identified by a subject number only during analysis.

Compensation

Students participating in this research will be compensated for their time at a rate of \$8 per hour.

NSWC employees are participating on a completely voluntary basis. There is no monetary compensation for NSWC employees participating in this study.

Approval of Research.

This research project has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Industrial Engineering

Participant's Responsibilities and Permission

I _____ (print name) voluntarily agree to be a participant in this study and know of no reason why I can not participate. I have read and understood the informed consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Signature

Date

Should I have any questions about this research or its conduct, I will contact:

Delia Grenville (540) 552-1704, e-mail: degrenvi@vt.edu
Research Investigator

Dr. Brian Kleiner (540) 231-4926, e-mail: bkleiner@vt.edu
Faculty Advisor

Tom Hurd (540) 231-5281
Office of Sponsored Programs

Yes, I would like to receive summary data on this research.
My email address is _____

Study 1 - Experimental Instructions

Note: all italicized sentences are spoken by the experimenter.

Soliciting Subjects

Group 1: The experimenter will post an invitation to participate on various campus email lists in addition signs will be posted on campus. Participant qualifications: available to participate in one session, absolutely no previous experience in television classes or video teleconferencing meetings in a dedicated meeting room, no other experience required. Must be prepared to answer short questionnaires after experimental task and to be videotaped during the experimental session.

Group 2: The experimenter will send an organizational email and make phone calls to employees identified as participating in a VTC meeting in Dahlgren Decision Support Center (DSC) in the last year. Must be prepared to answer short questionnaires after experimental task and to be videotaped during the experimental session.

Group Assignment

Group 1: All students from the Virginia Tech Campus will be randomly assigned to experimental slots.

Group 2: All experienced VTC participants who are Dahlgren employees or Contractors will be randomly assigned to experimental slots.

Administrative Paperwork

Participants will be asked to complete the informed consent form and a short demographic survey. Upon completion, the experimenter will collect these forms from the subjects.

Training Instructions

The experiment begins the introduction to session. The participant is seated at computer workstation. The experimenter will introduce herself to the participants and introduce the training exercise.

Hi, my name is Delia Grenville and I would like to welcome you to the Conference Room Design Experiment sponsored by the Macroergonomic Laboratory at Virginia Tech and the Decision Support Center at the Navy Dahlgren. You have been selected to participate in this session because you fall into one of two groups that we have targeted for this study: Twenty-five people who have never used video teleconferencing in a decision support center or have never participated in a distance learning class. Twenty-five people who have used video teleconferencing in the Decision support center or Aegis training center at NSWC in Dahlgren. [Pause for confirmation]

In this experiment, you will be asked to use foam pieces to design the ideal meeting room for a video-teleconference and decision support center. By now, you have heard both the terms video-teleconferencing and decision support center

more than once but may not know exactly what these terms are referring too. Let's take a moment to define these two terms.

A video teleconference or VTC meeting is a meeting that takes place between a group that is located in two or more different geographical locations. The groups use telephone lines and other forms of digital information transfer to transmit both image and sound to their remote team members. Like the telephone, video teleconferencing allows team members to talk to each other as though they were in the same room. The added benefit however is that the team can see their long distance team members as well as hear them.

A decision support center or a groupware supported meeting can take place between groups located in the same place, groups who are different places. Sometimes these meetings even take place with groups whose team members meet at different times. In all cases, team members join the meeting that is taking place by entering a secure meeting space designated for their team in the computer meeting groupware. Team members can use the software to share ideas, brainstorm, vote on relevant issues, and collaborate in a variety of ways. [Pause for any questions].

Tour of the DSC

Next, I will be leading you through a series of online training exercises on distributed meeting rooms and how to use the Room Design kit. All of the training exercises will take about 20 minutes to complete.

You will start by taking a tour of our model distributed meeting room called the Decision Support Center.

You can begin the tour of the DSC now by going to Step 2 of the online training exercises and clicking on the DSC tour link. [Tour takes 4-5 minutes. Copy of tour is attached.]

Do you have any questions about the DSC facility that you just saw?

For Group 1 - No VTC experience only

The experimenter now directs the participant attention to the TV monitor. You just saw the virtual tour of the DSC and are aware of the equipment in the meeting facility.

Before we go on, let's observe a team interacting in the Decision Support Center in Dahlgren. Next, you will see a short clip of people meeting in the DSC. Are you ready to begin the clip? If you have any questions, please ask them. The clip will be stopped so your question can be answered and then played through once we have stopped talking.

(Clip is about two minutes long).

In this short clip, you will see a distributed team interacting from two different places in the DSC. The team in this particular meeting met 6 times in this meeting facility over a two month period. [Intro text on video. The clip begins]

Do you have any questions about the clip you just saw?

The experiment begins to provide more explanation for the interactions in the video clip. *In the clip you just saw, the team had a variety of technology available for use in the meeting room.*

- *A document reader*
- *An electronic whiteboard*
- *Networked laptops*

In this meeting, as in many of the meetings in the DSC, team members made presentations from the podiums, reviewed and discussed power point presentations, and excel spreadsheets. Some documents were only available in hardcopy format and a document reader or overhead camera was used to share information.

Summary Sheet

Team members left their own office space to work in the meeting room you just saw. They didn't expect to be able to reconfigure the room and in reality the room itself was not designed for teams to have that kind of input.

This list was provided on the summary sheet

- *How should the desks be arranged?*
- *Should we use laptops? Or, desktop computers?*
- *Should the CPU be accessible on the desktop or placed below the work surface?*
- *Do we need privacy shields so others can not see when we are typing or what we are typing?*
- *What type of microphones should be used?*
- *What type of lighting is needed?*
- *What color should the furniture be?*
- *What color should the wall coverings be?*
- *Where should the cameras be located?*
- *Where should the white board be located?*
- *Where should the document reader be located?*
- *Or should we even use a document reader maybe we should have a camera fixed at the podium?*

In this study, your task is to answer these questions when designing what you believe is the ideal or optimum Video Teleconference and Decision Support Center meeting room.

For Group 1 Only: *Let's watch the clip again and consider the following questions.* The participant will be handed a summary sheet with the list of questions. The experimenter will refer to these questions again when reviewing the VTC Room Design Kit.

Meeting Types

Participant is now shown slides on meeting types [Step 3].

As you read in the presentation you just reviewed, there are a variety of meeting held in this type of facility. When an organization makes an investment in this type of facility, they expect the room to be able to support many types of teams. Groups can have different goals such as arbitration, collaboration, design or strategic planning. Groups can range in size from small to large.

The experimenter now moves to the table where the Room Design Kit and foam board are located. The participant is asked to examine the VTC Room Design Kit. A parts list is on display beside the kit.

Let's walk through the design of the DSC using the Conference Room Design Kit.

The experimenter walks through the VTC room kit tour with the participant

Are there any questions? Well, before you begin the experimental session and working on your design, you will view the VTC meeting room presentation. Here you will see more than a dozen examples of rooms to help give you some ideas of how these rooms have been designed by real-world organizations.

Participant views room tour. Eighteen examples (each slide is preset to change every 20 seconds).

The Experimental Session

If there are no other questions, you may begin. If you need me for any reason, I will be in the control room.

The experimenter leaves the room. The participant sits at the table and works on his design with VTC Room Kit and places his/her design on the grid layout.

When the subject has completed his/her design, he/she is asked to complete the workstation preference questionnaire and post-task survey.

Retrospective Interview

The experimenter sits at the table across from the participant.

Now that you have completed your design. I'm going to interview you and ask you questions about your room. The interview will take about 10-15 minutes. The interview will be video taped. But, the camera will be focused on the room you have designed and your hands while describing the design. Before we continue, let's take a look at the monitor so you are comfortable with the camera set up.

Participant and experimenter look at the monitor. Once the participant and interviewer are reseated, the interview begins.

- 1. If your room design is selected by a real-world team, describe to them why you made the choices you did...let's start with...Why did you select the table configuration in your room?, Seating?, Cameras?, Roomware?, Lighting? Etc.*
- 2. What was the greatest challenge you had designing the your room?*
- 3. What was the easiest part of designing the room?*
- 4. What changes would you make to your design if you were in a smaller room and the room were to be used by a smaller group?*
- 5. Were there any issues that you would have addressed in your design but could not due to limitations such as time or the room design kit.*

Thank you very much for your time. If you have any questions later on, I would be glad to answer them. Please contact me anytime by email.

Study 1 - Post Task Questionnaire

SECTION 1 - In the following section, rate the importance of the location of equipment in the physical space.

In a VTC meeting,

1. Rate the importance of selecting the **position** of the **public display(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

2. Rate the importance of selecting the **configuration** of the **tables, desks, or workstations**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

3. Rate the importance of selecting the **position** of the **electronic whiteboard(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

4. Rate the importance of selecting the **position** of the **document reader(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

5. Rate the importance of selecting the **position** of the **camera(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

6. Rate the importance of selecting the **position** of the **computer(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

7. Rate the importance of selecting the **position** of the **lights**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

8. Rate the importance of selecting the **position** of the **speakers**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

9. Rate the importance of selecting the **position** of the **microphones**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

SECTION 2 - In the following section, rate the importance of the type or kind of equipment in the physical space.

10. Rate the importance of selecting the **type** of **public display(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

11. Rate the importance of selecting the **type** of the **tables, desks, or workstations**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

12. Rate the importance of selecting the **type** of the **electronic whiteboard(s), document readers or other roomware**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

13. Rate the importance of selecting the **type** of the **computer(s)**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

14. Rate the importance of selecting the **type** of the **lighting**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

15. Rate the importance of selecting the **type** of the **seating**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

16. Rate the importance of selecting the **type** of **microphones**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

17. Rate the importance of selecting the **type** of **flooring**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

18. Rate the importance of selecting the **type** of **wall covering**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

19. Rate the importance of selecting the **color** of the **furniture**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

20. Rate the importance of selecting the **color** of the **wall coverings**:

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

SECTION 3 - In the following section, rate the importance of the changing the physical space to accommodate different types of work.

21. Rate the importance of being able to **work in privacy** during a group meeting

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

22. Rate the importance of being able to **reconfigure the room** easily to allow **for individual** or private work

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

23. Rate the importance of being able to **reconfigure the room** easily to allow **different groups** to work in the space.

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

SECTION 4

What were the greatest influences on the design you created

24. Past meeting experiences::

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

25. Video clip shown in the presentation:: **(For Group Non-Experienced users only)**

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

26. Presentation of eighteen example meeting rooms::

1	2	3	4	5	6	7
Very Unimportant	Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Important	Very Important

SECTION 5

Mark in order which equipment you think is most important for meeting participants to be able to arrange in a video teleconferencing meeting room. Assign the number one (1) to the equipment you think is most important. Assign the number eleven (11) to the equipment you think is least important. There are a total of eleven choices below.

Audio/Visual Equipment	
Public Displays	_____
Cameras	_____
Overhead Projectors	_____
Microphones	_____
Speakers	_____
Computer Equipment and Roomware	
Computers	_____
Whiteboards	_____
Document Readers	_____
Workstation	
Privacy Shields	_____
Tables/workstations	_____
Seating	_____

Ranking of Questionnaire Data

Audio/Visual Equipment

		Ranks		
	GROUP	N	Mean Rank	Sum of Ranks
CAMERA	Naive	25	24.7	617.5
	Experienced	25	26.3	657.5
	Total	50		
DISPLAY	Naive	25	21.22	530.5
	Experienced	25	29.78	744.5
	Total	50		
MIC	Naive	25	30.1	752.5
	Experienced	25	20.9	522.5
	Total	50		
OVERHEAD	Naive	25	22.02	550.5
	Experienced	25	28.98	724.5
	Total	50		
SPEAKER	Naive	25	26.16	654
	Experienced	25	24.84	621
	Total	50		

Test Statistics

	CAMERA	DISPLAY	MIC	OVERHEAD	SPEAKER
Mann-Whitney U	292.5	205.5	197.5	225.5	296
Wilcoxon W	617.5	530.5	522.5	550.5	621
Z	-0.39136	-2.10673	-2.25423	-1.70671	-0.32264
Asymp. Sig. (2-tailed)	0.695531	0.035141	0.024182	0.087875	0.746971

Computer Equipment and Roomware

Ranks				
	GROUP	N	Mean Rank	Sum of Ranks
COMPUTER	1	25	22	550
	2	25	29	725
	Total	50		
DOCRDR	1	25	24.78	619.5
	2	25	26.22	655.5
	Total	50		
PRVCY	1	25	26.74	668.5
	2	25	24.26	606.5
	Total	50		

Test Statistics

	COMPUTER	DOCRDR	PRVCY
Mann-Whitney U	225	294.5	281.5
Wilcoxon W	550	619.5	606.5
Z	-1.71387	-0.35404	-0.67972
Asymp. Sig. (2-tailed)	0.086552	0.723306	0.496679

Workstation

Ranks				
	GROUP	N	Mean Rank	Sum of Ranks
PRVCY	1	25	26.74	668.5
	2	25	24.26	606.5
	Total	50		
SEATS	1	25	27.1	677.5
	2	25	23.9	597.5
	Total	50		
WORKSTN	1	25	24.78	619.5
	2	25	26.22	655.5
	Total	50		

Test Statistics

	PRIVACY	SEATS	WORKSTN
Mann-Whitney U	281.5	272.5	294.5
Wilcoxon W	606.5	597.5	619.5
Z	-0.67972	-0.78146	-0.35161
Asymp. Sig. (2-tailed)	0.496679	0.434531	0.725127

Reliability Analysis for Post Task Questionnaire

Reliability Analysis for *Position of Equipment* Scale

All Items

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

		Mean	Std Dev	Cases
1.	PDISP	6.6122	.5329	49.0
2.	PWHTBRD	5.2857	1.1365	49.0
3.	PCAM	5.9184	1.0961	49.0
4.	PLITE	6.0408	1.0599	49.0
5.	PSPEAK	5.6531	1.1466	49.0
6.	PMIC	6.0612	1.0490	49.0
7.	PTABL	6.6327	.5662	49.0
8.	PDOCRDR	4.5306	1.3709	49.0
9.	PCOMP	6.3061	.7417	49.0

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
PDISP	46.4286	23.2083	.5367	.7104
PWHTBRD	47.7551	20.0638	.4806	.7001
PCAM	47.1224	20.7347	.4320	.7094
PLITE	47.0000	20.0000	.5406	.6890
PSPEAK	47.3878	19.6173	.5234	.6913
PMIC	46.9796	19.3121	.6330	.6715
PTABL	46.4082	24.2049	.3092	.7300
PDOCRDR	48.5102	21.1718	.2534	.7549
PCOMP	46.7347	24.4906	.1645	.7455

Reliability Coefficients

N of Cases = 49.0

N of Items = 9

Alpha = .7365

Reliability Analysis for *Position of Equipment* Scale

Corrected Item-Total Correlation (removed position of tables, computer, document reader)

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
PDISP	28.9592	15.3316	.5513	.7583
PWHTBRD	30.2857	13.0000	.4423	.7669
PCAM	29.6531	12.8563	.4909	.7528
PLITE	29.5306	12.6293	.5528	.7361
PSPEAK	29.9184	12.4515	.5129	.7480
PMIC	29.5102	11.7134	.7107	.6935

Reliability Coefficients

N of Cases = 49.0 N of Items = 6
Alpha = .7770

Reliability Analysis for *Type of Equipment* Scale

All Items

RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	TDISP	5.8400	1.0759	50.0
2.	TTABL	5.6800	1.0388	50.0
3.	TWHTBRD	5.0600	1.3463	50.0
4.	TCOMP	5.7800	.9100	50.0
5.	TLITE	5.8200	1.0437	50.0
6.	TSEAT	5.9800	.9366	50.0
7.	TMIC	5.6200	1.1586	50.0
8.	TFLOOR	4.7800	1.0554	50.0
9.	TWALL	4.9200	.9864	50.0

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
TDISP	43.6400	29.9086	.4305	.7945
TTABL	43.8000	29.6735	.4753	.7887
TWHTBRD	44.4200	26.5343	.5613	.7784
TCOMP	43.7000	33.6020	.1613	.8216
TLITE	43.6600	28.7596	.5613	.7779
TSEAT	43.5000	29.6020	.5547	.7801
TMIC	43.8600	27.4290	.6065	.7707
TFLOOR	44.7000	29.0306	.5265	.7823
TWALL	44.5600	28.6596	.6154	.7720

Reliability Coefficients

N of Cases = 50.0 N of Items = 9

Alpha = .8051

Reliability Analysis for *Type of Equipment* Scale

Corrected Item-Total Correlations (removed type of computer)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
TDISP	37.8600	27.3473	.4530	.8131
TTABL	38.0200	27.3669	.4744	.8100
TWHTBRD	38.6400	23.6229	.6240	.7897
TLITE	37.8800	26.8016	.5285	.8029
TSEAT	37.7200	27.6343	.5170	.8049
TMIC	38.0800	25.0955	.6171	.7900
TFLOOR	38.9200	26.8506	.5154	.8047
TWALL	38.7800	26.3384	.6213	.7914

Reliability Coefficients

N of Cases = 50.0

N of Items = 8

Alpha = .8216

Reliability Analysis for *Color of Environment* Scale

All Items

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
CFURN	4.9200	1.2588	.5482	.
CWALL	4.8000	.9388	.5482	.

Reliability Coefficients

N of Cases = 50.0 N of Items = 2

Alpha = .7033

Reliability Analysis for *Ability to Reconfigure or Regroup within Environment* Scale

All Items

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	15.2400	14.5535	3.8149	3

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PRIVACY	10.4200	8.0037	.5203	.7405
IRCONFIG	10.2200	6.8282	.6719	.5691
GRCONFIG	9.8400	6.9535	.5668	.6948

Reliability Coefficients

N of Cases = 50.0 N of Items = 3

Alpha = .7546

Reliability Analysis for *Importance of Fixture Criteria* Scale

All Items

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
PDISP	86.8400	112.2596	.5156	.8802
PWHTBRD	88.2400	106.5535	.4099	.8823
PCAM	87.5400	107.6004	.4246	.8810
PLITE	87.4200	105.2282	.5579	.8761
PSPEAK	87.8200	103.5792	.5808	.8751
PMIC	87.4000	105.2245	.5649	.8758
TDISP	87.6200	107.4241	.4373	.8805
TWHTBRD	88.4000	98.2041	.6865	.8702
TLITE	87.6400	103.8678	.6288	.8735
TSEAT	87.4800	107.6424	.5051	.8781
TMIC	87.8400	99.9331	.7364	.8686
TFLOOR	88.6800	105.8955	.5214	.8774
TWALL	88.5400	104.3759	.6443	.8732
CFURN	88.6600	106.3922	.5505	.8765
CWALL	88.5400	107.6412	.4053	.8819
PDOCRDR	88.9200	105.0547	.4106	.8833
TTABL	87.7800	108.0527	.4261	.8808

Reliability Coefficients

N of Cases = 50.0

N of Items = 17

Alpha = .8838

Study 1 - Transcriptions

Interview questions for each participant

Question 1: If your room design is selected by a real-world team, describe to them why you made the choices you did. Let's start with...Why did you select the table configuration in your room?, Seating?, Cameras?, Roomware?, Lighting? Etc.

Question 2: What was the greatest challenge you had designing the your room?

Question 3: What was the easiest part of designing the room?

Question 4: What changes would you make to your design if you were in a smaller room and the room were to be used by a smaller group?

Question 5: Were there any issues that you would have addressed in your design but could not due to limitations such as time or the room design kit.

List of Codes Used for Content Analysis

I am using the **circle end** of table so the **smaller group** could **work together** [10] and feel isolated but that didn't seat many people.

So I wanted to open it up a little bit so they could all **see the displays** [1] over here. That gave them enough **privacy** [3], but so they could **see each other** [2], which I thought was important. And these tables are back here for **extra people** [4] observing.

This is my podium and microphone up here and these are the three display boards and **the speaker would be in front** or below, so it **sounds like it is coming from people** [14]. And I would have the boards elevated some so the whiteboard and the document reader and the overhead could be below it sort of and using the blue ones are the projectors onto the boards and this is a little workstation back here.

I had to use some extra chairs and the pink dots are some cameras.

I have **laptop computers** because there would be **less space taken** [7] up and feel more open, rather than having them tower below you.

I don't like the **real hollow sound** [14] (microphone). I'd have **the microphone close** [14] enough to get that. I'd have the speakers back here.

Lighting, I think it would be important to have all the workspace done. Just have dome lights coming down, illuminate the person, so there isn't a shadow in your face.

Working out the desk configuration. I like the **circles design for brainstorming**. You don't want to be in a big U. One of the slides had a **big U**, but I **didn't want people competitive** because then they **take charge**. That's why I made the circle and it opened up the spaces.

The displays and these extra things have to go in the front.



Design 1

I have them emphasized to **focus on the center (location of displays) [1]**. This would be a podium and these three regions would be the squares. The tables themselves are **arranged stadium style** and each curved to look at the 2 focus regions.

Off to the side will be the whiteboard. Both are identical units so the person could just get up and choose which to use. Microphones are located on the center of the table. I chose for the first two sections, each having **writing on the desk if you wanted to have small conferences [in design]**, more intimate. If you need the extra space, there would be wall lighting on the back as well as lighting in each region.

Over to the side you have monitors, so they could get a little **vision of everything going on [1]** in the whole region. I ran out of seats, but the seats expand around quite a bit.

You would want to be able to have the user of the facility to **be able to see at least two screens at once [1]**. I would make it so that these two screens would have the same image. I would want the focus to be on these two or these two.

Establishing, **focusing on a wall (location of displays) [1]** having central viewing.

Turn off the perimeter lighting and I had talked about staining the walls a dark color, so when you turn off the lighting they would disappear

I used laptops because I think they have the lens **security with vision [3]** because it's hard to see from an angle. Plus they provide lighting unto themselves. I'd also use laptops because they are more accessible being on a desktop they are smaller and **take up less space [7]**.

I chose the flooring to be a forest green basically because I chose the tables to be a wood so it gives a more natural surrounding, a far more



Design 2

1. I put a big table in the middle figuring that most of the time that would be ideal. You have people sitting close enough together and as they wanted to or needed to. I put tables on the outside to have **more people in the room**, I left spaces apart so you **have easy access to the table** [16]. I put two people at each table so you have some **degree of privacy** [3] without needing shields. This is just a table for extra stuff.

The main table should be well lit. I also put lighting on the outside around that to kind of center everything. I put the overhead project with a table next to it right up front. This would be your document reader with displays and whiteboard. I put another screen over here so you can have a camera out in front of here so you can project things here. Also **people on this side of the table might be able to see it better** [1]. These are your main displays across the front; this is the technographer. I put one microphone per seat and I oriented them towards the front of the room. **I figure most of the time that is where they would be facing** [1]. I would use darker colors in there, just to keep the focus of the cameras on the people.

2. Probably deciding what kind of table to use and how to arrange it.
3. What side all the tables face, putting seating around obviously the **displays have to be seen** [1].
4. Probably just use the main table, or make it smaller. Or do smaller horseshoe tables.
5. The only thing I wasn't sure about was what other presentations I could do or would be used. I didn't know what special items would be used.

Out of all the configurations I saw, I thought the “U” shape was **the best way to see everyone [2]** with out having people around here (pointing to open mouth of the “U” shape) where you would see everyone but **I don’t know how they would look at the cameras [11]**. Which would also be awkward for these people (pointing at the rounded bottom of the “U” shape) looking that way. **Then this** (pointing to the row running parallel to the bottom of the “U” shape) **is for extra people [4]** but if there is going to be another row, this is the best way to have it with them **looking directly on**, but I am just saying that if it’s anywhere else it is further out of the seeing area. This should also be **stadium seating** because for someone that is short **I don’t want them to be blocked by the seating [1]**.

I don’t really care where the whiteboard goes because there is going to be a camera on it anyhow. I kind of put it near the close to the facilitator, just in case, they have the most control of the room, so they have more use for that. The projector of course is going to be on the public display.

I had two public displays; I don’t know that it is necessary to have three, if you can just get by with two it’s just easier to look at than having three of to try to focus on.

That is a camera in the middle.

There is this camera covering the whiteboard. I didn’t know if you needed a camera on this side looking this way.

I think the microphones should be the **wireless it’s just easier then bending over [13]** to talk into them. The lighting, I think, should go above each station, each computer, and personally I think lighting is the most important thing.

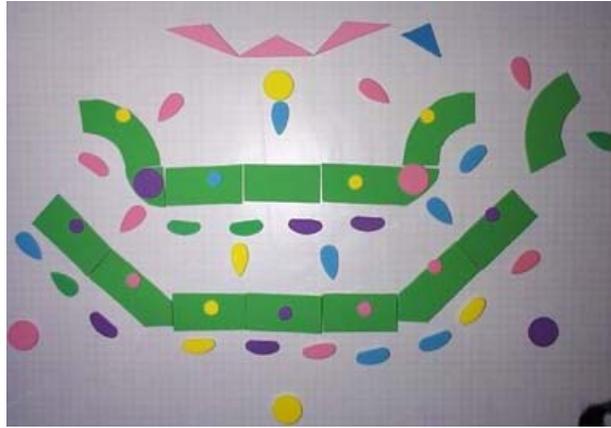
I don’t know. I think it was the displays and stuff because you can’t just put that anywhere.

I think the lighting.

I was thinking that maybe you could use laptops and add some people across here but that would make it bigger. I can’t see how else I would do that.

I always think about height and that you should be **high enough to see over the people in front of you to the public display [1]** and that **they would be able to see me [2]**. So you can’t really show that here but I think that is important.

I just think that the color should be light. Something that you want to be around so something warm and bright, brightness to keep you awake and a comfortable chair.



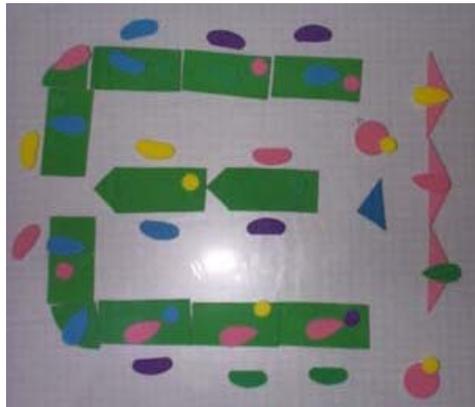
Design 4

The design I chose is like a “U” shaped table but I put two tables in the middle so that when **the conference isn’t big they can move to that [15]**. Also I think a “U” shaped table is very good b/c it allows everybody that is sitting around to have **good view of the public display [1]** and things like that. I put the camera here, and I don’t like the document reader because you can’t always use those things. I prefer each person have a microphone rather than them sharing microphones. This is a microphone and light bulb and there is a light just about every table. The three items in front are displays with lights on them. The computers would be laptops. I don’t know what people like and don’t like (talking about color) but for myself I don’t care too much as long as they aren’t distracting.

I wanted to **accommodate as many people as I can [4]**. At the same time, I **wanted them to have a view [1]**, and so I liked the example of the “U” shaped. You cannot expect every person in the room to have this preference to how it is shaped so I think it is better to use a common set up.

The seats.

[*For a smaller group*], I would make this a circle [move tables] with a kind of a “U” shape. (Shows what she means with other pieces on the tray). (Now referring to her original design) Maybe I would take these back (motioning to the “U” shape) and put these sideways [move tables] (motioning to the tables in the middle).



Design 5

Basically these are four tables, four tables (pointing to the blue shapes on the left and right in the front) and an elevated table (pointing to the long blue shape in the back). Over here (pointing to the blue square in the back corner) is the technology advisor he/she has room, and that's the monitor that only he/she can see (pointing at the red square beside the blue one). These are all seats here, I had to use circles for seat b/c I ran out of the others. I chose this design to give a combination of **both privacy [3]**, almost individuality for each member of the group but also **give a feeling of group togetherness [10]**. I feel that other designs, which were like horseshoes, were **too much away from interacting with the other group [11]**. I picture that these are **not cameras but** that there is actually another **group on the other side [11]** and you had to design a room which would make that work in a group setting. That is why this doesn't fill up almost like a circle itself which makes the group interact too much on it's own.

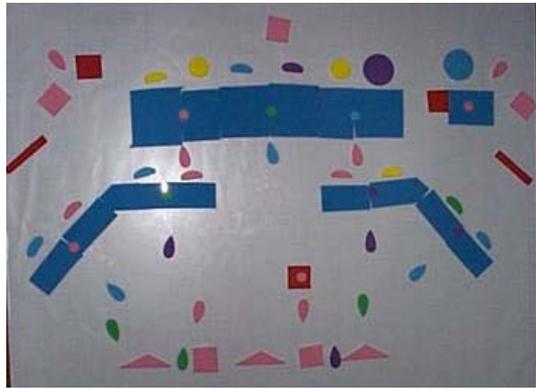
I used the standard. I have a microphone with the overhead projector, there is no station there but it's easy to access since it's in the middle. There is a microphone for each person here. Almost to give the idea that if you need to speak it's there but not that you have to speak all the time. There are lights shining on the displays. I am not exactly sure how lighting works but to give you the general idea these squares are cameras and this gives you the pan of the room, these give you the back pan of the room, and there is one up here (pointing to the square in the middle back), that makes five in all. Lighting, there are lights shining out this way to aid the cameras, and as well as shining on each microphone [location of microphone]. These are each electronic whiteboards, I have one on each side because I didn't want these people over here to think **they couldn't express an idea c[13]**. Likewise I didn't feel the same way about a document reader I feel that that can be done by anyone and that is why I put it up here. There is lighting there too. I didn't put anything too special in. I imagine that the room would have doors. These are **free standing displays; I think everyone can see it where they are [1]**. The privacy shields aren't necessary. I thought that if I were working at a workstation I feel that in order to be apart of the group I wouldn't want to lose individual focus and sometimes it is one person's idea that sparks the rest. Either laptops or desk tops as long as the CPUs are on the bottom. Recessed monitors so they can look up and down. They should have sliding keyboards, so there is no distraction.

Lighting, I wasn't sure how to do that.

I saw in the video had a lot of running out. She [the technographer] had a lot of stuff to do. I put her out here so that she would not be distracting. That was the easiest part putting her off in her own position.

I would say to keep the displays. Just make it one kind of horseshoe, but not a complete horseshoe (talking about the tables). Just have like six chairs or so. I wouldn't change the lighting, get rid of the back row [move tables] and keep the technological advisor back. Everything would just be brought in.

Not really.



Design 6

1. First off, **most video conferencing is done with small groups of people** [11] which is why we have the center table with lighting and a microphone at each station. The outer ruin is mainly for people **who are there for observational purposes** [4] and a microphone every 3 of 4 persons and it's not lit very well. **The center table is lit extremely well.** [8] They are going to be the ones on camera most of the time. The camera is over here in the corner right where the operator is sitting. There will be access to the computer. The two displays are up front. They can choose where the camera is pointed. Make sure the camera can focus on one particular person whoever happens to be speaking. There is a podium off in the corner it's own microphones and light, it's right by the whiteboard but I don't think that is used terribly much. For computer workstation, the **microphones are booms so they can move out of the way** [13]. I think that keyboards can be recessed, keyboard drawer or something. I think with monitors either in the table or with latches so you can raise them up, computer monitor racks or something. Dark colors are better. I am no interior designer but definitely dark, dark green maybe. Also carpeting to minimize noise for the microphones and such. Plus people show up better with a dark background.

2. Just trying to figure out all the stuff to be done in it. I doubt it will be used for **video conferencing all the time mostly for smaller meetings** [5]. So yeah screens are useful but you aren't going to use them all the time or cameras. And you aren't always going to have 50 people there at once; it would be more like 10.

3. The table design, I think. There are only so many ways to fit people in a closed area. Everything else is based off of that.

4. First off, I would want to get rid of all the outer stuff. Take away some of the seating here and make it smaller table, keep most of the proportions the same. Still 1 mike and lots of lighting. I still think you need two projection screens. One for video, one for power point. Camera in the same place.

5. Maybe people being closer together. I don't like having a big "U" shape. I like the idea that you can reach out and smack'em. Is basically the idea I like but there is no easy way around that.



Design 8

The table configuration is basically a “U” shape, which I saw on a lot of the designs and it would make a U so that **everyone focuses on the subject [1]**. I put the speaker station down in here for a person making a presentation or whatever. This would be an overhead projector that can project onto one of these screens. This could be a document reader or something like that. There would be projectors up high projecting on to here. I put microphones for **every two people** because hopefully no two people will be speaking at the same time. Right here I put the technographers desk. That would be mainly because they have a whole overview of the area and I saw on the video that the technographer had to get up and walk out of the room, so I left a little space here for that. The lighting should be at an angle, so it is shining towards the people so that the cameras can see them but at a low enough angle that it is not shining in their eyes. I put a camera here and a camera here and you should have another here focusing on the presenter but I ran out of dots. That way you can get a picture of this side and this side. This here might be an electronic whiteboard or something like that. Trying to keep it down there. This here **a workstation for a person to put the papers on or do any work that they need to do [7]**. I think a laptop for every person simply because **I think tabletop computers are pretty bulky and it would be hard to peak around [13]**. Generally the color of the room I would want to be blue, blue tables, blues and mild colors. You don’t want them to be distracting.

There were a lot of environments to account for sometimes you wouldn’t be working with a large group of people and you wouldn’t need quite as many seats. I pretty much had to pick for a large room and if you wanted to make it smaller I would just take some of the tables out here [remove tables].

Where to put the person making the presentation.

I would have liked to have done more of privacy and if you wanted to work individually but when you try to do that you take away from the group atmosphere.



Design 9

Well, I thought this was a pretty standard table configuration, where **you can view the monitors [displays] [1]** up here and you can put cameras up here so that **you can see everyone [2]** in the room. I think it is important to have everything well balanced. The **desks can be changed around as need be [9]**.

It is a communication room.

For the displays, I am figuring about 3 displays, will be plenty but depending on how many locations you are going to do the VTC with. You can have a couple locations on there with certain presentation materials needed.

Just chalk boards or whiteboards.

I guess that's an overhead projector. It can be moved off to the side.

I thought it was important to show that **everyone had a light for them and so you can see everybody. [3]**

There would be a couple up here.

Do you want to talk about the computers or anything?

I like the flat screens, but make them recessed. I think recessed is the best because it **allows you to see in front of you. [1,2]**

The microphones on the desks. And they are just standard.

I think they should just be kind of neutral so that they don't catch anyone's eye or anything.

- Probably deciding where to put the desks because I wanted to do something original, something for teams but that was pretty difficult. I just figured that this way they can move things around if they needed to. [move tables]
- Where the monitors are.
- I would do it all different. I would take out the tables and put them in the middle and have people facing one another and have the cameras kind of diagonal. [move tables]
- Yeah the movability factor. I think it would be cool if it were all mechanical, so these could be motorized (pointing to the desks) so they can move into the center for group work or something like that. But it is kind of hard to do that.



Design 10

I did a horseshoe shaped table because it seems like it makes the most use of the space for a **significant amount of people** [4] in a group meeting and then arrange it so that they **can all see each other** [2]. This desk right here is not symmetrical. This desk here is for the technology, person coordinating the cameras and technology are here **for a smaller meeting** [12] and actually that could be able to be moved. That is and what have you. So that is why the U shaped table is there. These two back tables another option for using the room. And also if there are participants that are not as involved in the meeting, **I suppose they could be sitting there too** [12]. And the U shaped tables being used. And this is suppose to be a small rectangular table for another small group meeting in which these may not be as suitable. I figured this space wasn't being used anyway, so that is another option for using the room. This is actual seating back here in case people are sitting in a meeting but don't need to use the workspaces at all. I guess I ran out of seats. I think you might want to make these portable seats, so that you can move them between tables. Although, I guess these seating could be in a row. Then I have them seating around the U shaped table, obviously. Here you could either have seats or seats or portable seats that could be brought in, it depends on what is needed.

Here is where I have the cameras and the big overhead projection thing. These are the projection screens up here. Here I have podium and this is the whiteboard and this is the document reader. I figured I'd have that all in one space it makes some sense because they would be likely to be using the whiteboard or the document reader. This is the little train that the person dealing with the technology can look at and see the camera position and what have you. And these are lights here and lights back here also, to lighting these tables and spread the light around the room eventually. [presentation station]

The computers are going to be recessed in the tables so they don't block the eye site of people across [1, 2, 13]. And then that also **provides privacy** [3] **without having these obtrusive screens** [13]. I think you definitely want to stay away from making it very visible so it's creating an atmosphere of "I need to make sure no one else can see what I am doing." I think wood tables....I would prefer wood tables and something you can see the grain on because I think that makes a nicer environment. Wood is good. And I would have carpeting definitely instead of tile, that is a nicer atmosphere to work in. I think I said a deep blue, because blue is supposed to be a calming color so blue and blue rug. The chair is a dark green. I guess I'm trying to stick with natural colors. The walls, I think I said beige, because not just plain white that would be too glaring, something light but not real bright. I don't think you would want any yellows that would be distracting.

Trying to figure out where to put all the hardware, presentation stuff after I had sort of set the room because initially.... It seemed like the horseshoe was very much the best way to utilize your space. So after I had done that it was a challenge to fit the other things around that shape because that seems to take up a lot of space in the room and then they trying to work in multiple presentations. So getting those so they didn't **block each other** [2] and **everyone can still see** [1], was a challenge I thought.

Technically the seating once you get the table the seats basically have to go around that.

I already said about the table... options with smaller groups, but if the whole thing had to be smaller, I'd probably try to use....I'd have to eliminate some of these other tables ... smaller so then I'd try to make sure the tables **were movable so they could configure them differently** [9], but that would entail moving the computers. Because they are recessed into the tables.

I'd try to stick with the horseshoe, I think and eliminate some of the peripheral stuff here.

Not particularly, although I'd consider if it's possible to have something real different like beanbag chairs you know real basic and informal because this stuff seems pretty high tech, but fairly corporate so I would suggest something fairly un-corporate in the traditional sense.



Design 11

1. I put it in a horseshoe shape so that **each team member can see and be seen by the camera** also those that **are watching can sit around the back area** where even though they can't vote **they can still see what is going on [1,2]**. I also put a microphone between each person. The facilitator has their own microphone and I left the other team members to share. Here is the projection display for in the front. I put the whiteboard on the opposite side of the facilitator; I thought she should know exactly what was going on. I left a monitor on a side where only she can see it. I put these 3 cameras; I thought they should come down from the ceiling instead of staying there all the time. Then I put lights in the same dimensions in where the microphones were. There is an overhead again at the opposite end of the facilitator. I thought again that she should be able to have a view of what was going on. As far as the monitors, I felt they should have the **protective shields on them [3]**. And the seating should be a darker color so that it doesn't reflect light. I thought they should be desktop computers, I think some should have protective shields on them just because if there is something you just want to communicate to one person.

Something like that could involve the facilitator if they just needed to tell them something so they definitely have one. I haven't really seen any for laptops so I thought that desktop worked better. The back 3 are just tables here.

2. Making sure the facilitator could see everything that was going on in fact I had a hard time figuring out where to put the whiteboard so that she was able to see it, like if it were on the right hand side she couldn't see it so I thought to put it on the left hand side.

3. The microphones. Putting them where they needed to be.

4. Probably, I would write a more circle shape or smaller horseshoe. Maybe something like one or two rows in the center.

5. There was one thing that I didn't, there is like a different (gentlemen) between this side and this side. I wanted another piece so that the tables could be rounded rather pointed. I guess that was the only thing that I couldn't distinguish.

1. I like the oval configuration, open at the end like a horseshoe kind of. I wanted stadium type seating arrangement because what I visualize is additional seating around so that the room will have more flexibility for as far as group meetings go. I have here two cameras and an overhead projector. Here are the public displays. These two are recessed into the wall and this one is slanted. This document reader, this is the podium. As you can see two people can sit at each work area except here, this is for the technology facilitator. Each station has a microphone, which sets up on an arm or stand. There would be comfortable seating that they could adjust for their height or whatever. They could have arms and be ergonomically correct for comfort levels because who knows how long a meeting will last.

There is lighting directed toward each station so that the people at the off site locations can see who is here. there are ceiling mounted microphones here & here in the center of the layout. Perhaps to **help pick up the sound say from the other site** say if the microphone wasn't working it would pick it up so they could still hear [14]. The computers I would choose to recess the monitors into the work site **with privacy shields**, [3] I would also use a keyboard tray here at the work area so that the work surface for **people to write** [7] notes if they wish or to put out materials related to the meeting. I would use neutral colors, something that wouldn't be given off by the camera or glaring or excessive, comfortable for everyone's eyes in each location. I suggest a neutral color like beige, gray, or even a soft green color. For wall covering I would thing something acoustically appropriate, to muffle outside noise, say in a hallway outside the room. But it would allow people at the other locations to hear. Carpet would also help, a neutral color again here that would coordinate with the wall color. The chairs I suggest a light blue color.

2. Keeping in mind the **need of flexibility** [9], because sat this afternoon it is used by 5 people, then next week a group of 20-25 or more. People are going to use it for different purposes and different number of people to make it flexible as possible because this is supposed to be a **multipurpose room** [5] and I want to get the most for the buck basically.

3. The role of the tables and the configuring, what layout would make it most effective for use. To try and make the room for reality & to play with it and make adjustments with it, which would make it more live able.

4. If it where a smaller room size then I would take some of the work area out so that maybe set it up smaller oval [4]. I can see a group of 5 people using this front part of the room not the back part.

5. The only thing I could think of would be to show the outside spaces here and chains along the back wall for people who just want to attend. They could just sit in the next row of stadium seating, too.



Design 13

Interview 14 - Naïve User

1. I kind of tried to design a **multipurpose room** [5], these are the tables. Ten tables for like executive authority. I put seats here, this is like first floor, second floor, third floor so they can participate and they can ... and at the end of the meeting this manager or technographer here can turn off all the microphones here. These are the screens that they are going to see [1], the other group. These are the lights, I put like 3 way lights [8]. These are the cameras. I put three was cameras, so you can tape here and tape there and here. This is the overhead projector. This is the whiteboard. And, I put a curtain **there so it is multipurpose** [5]. If you want to use the overhead you can use the curtain. This could be on the wall. There is some extra technical stuff, maybe turning on the microphones or lights or something for the person.

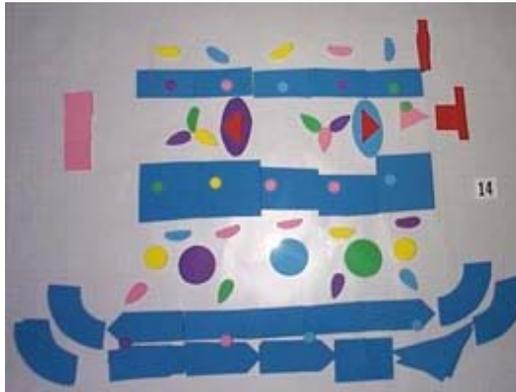
These people here can't see the screen very well so I put one big TV and two little TV's, so these TV's can change based on what they have there. I also put two cameras here if they needed to focus on somebody and other people can't see and I put 4 lights there. No computers for the back but for here I put desktop but not by top ones. I am not an expert buy it shouldn't glare so I thought about a dark color for it, I guess some type of reddish color, for the tables gray, & for the chairs another dark color.

2. I guess making it multipurpose [5] because if it were just 10 people using it for meetings then it would be ok, but because it has to be multipurpose it makes it difficult.

3. I knew what I had to use, like cameras, lights, and such.

4. I would just take off this back part here and use this only.

5. I wanted to make another floor here and for the cameras I would try to use something different because I ran out and for the TV sets, too.



Design 14

The most important, in my opinion, **are the displays, wherever they are, should be accessible to everyone [1]**. So it **should be visible [1]**. I did this pattern (pointing to the pink “display” shapes) to make it possible for these people (pointing at the back table configuration) to be able to see it from everywhere. I also used this section (pointing to the back table configuration) as two level. Because they cannot see easily if there is not two-levels. One of the things you cannot see here are these tasks from this display. The tasks on this display should not be very big if they are too big then you should be able to change the magnitude. The “U” shaped tables are preferable and I tried to have two level tables this part for important people, like if you are attending a conference with PhDs and others you would have those that have more opinions (lower level) usually are seated here (pointing to the “U” shaped) with microphones and the ones who will not take part regularly in the upper level without microphones. For lighting, I tried to have less light because sometimes people don’t like having light on your face will make you a little nervous. So less light on your face. The technographer who is working the cameras or something should be able to see around or something so you try to isolate him not to be there in the meeting but still be able to keep people for observation. Also there could be a case where the meeting has a facilitator or lecturer so there is a table here for this kind of activity.

This is a seat for the lecturer, this is a projector and this is light for the lecturer (pointing that the shapes just in front of the “displays”) if that is needed and **these tables should be moveable [9]** (pointing to the green objects near the “projector”) in the case that you don’t need them. Three public displays and two whiteboards. The whiteboards should have some light.

Computers are good with big monitors. For the privacy thing I really don’t believe in it. I think that the **people who attend the conference should be dedicated [10]** to it and nothing private. But in the case that something is going on with strategy and they don’t want anyone to see their strategy then maybe some flat screens on there. Most important thing, which maybe useful, are laptops, they have less wires and I know some people bring food and they set it done on the wire and the system would crash. So laptops for the stations that would need lots of wires. Cameras I think we don’t need them; people do not seem to like cameras.

Make the displays, choosing the table to **make the displays visible [1]**.

Selecting the microphones.

This upper part could be eliminated and maybe some “V” shaped [move table].

Actually I wanted to know what is the entrance to the room. Because this is important that it is in the back.

I configured the room in such a way that wherever anyone is sitting they will be able **to see the displays up in front [1]**. If they were the circular tables, there would be positioned where you would always have **to turn around to see the displays [1]** and it would be uncomfortable. So this is in such a way that you have **everything facing forward [1]** and everybody will be able to see what is going on, they can see all three of the displays, they can see the whiteboard. These back here are the entrances; I think it is important to have the entrances in the back rather than the sides or the front so that if someone has to leave they don't have to interrupt the meeting.

The lighting is in such a way that everyone has adequate lighting around them. This seat here is for the technographer sitting in the back space there. So that they can have a good view as to what is going on with the people and everything. This is here is the CPU so they can do whatever it is they are doing. These are cameras. These are video cameras. This is a podium up here. I didn't put a camera back here because I didn't think she would need one. The cameras are in such a way that they can be focused on who is talking you can. There is a camera focused on the podium and also on the whiteboard. The microphones are positioned so you have one every few people. I ran out of seats so these are seats here. The microphones on the ones that sit on the bench and kind of come out. I put this as the control room. The back two tables are if you had a smaller group you could use these. I would want laptops. **I think desktop computers take up too much space**, they kind of get in the way and obscure vision for some people [13]. I think laptops are smaller, more compact, and easier to move around.

I guess coming up with an idea. Once you see all of the other examples it's hard to know what you like and what you don't like. Coming up with something new.

Figuring that everyone needed to face forward.

If you have a small group that wouldn't need the middle then you have the smaller tables **[in design]** in the back to use.

I think the questions weren't very defined like I didn't really know what was needed. I think a list of things that I needed would have been helpful. I know on that sort of thing they had what was needed.



Design 16

Well, I will talk about the typical meeting when you want to decide about a project. Here is the chairman or president. I put the microphone here and I want the vice president here so they can discuss **something in private when there aren't using the microphones**. Here is for a person who is left-handed. These tables have things like paper, pens and glasses of water, so if one should be left handed then this would be the best place for them. The technographer doesn't need to see the stuff here, she just gives orders, so she better be in a place close enough to the person who is going to be giving the orders. These are some people like assistants to these people, and keeping close to them documents and stuff or keeping for them whatever they want, but they don't need to have actual access to all the activities here [*administration station*]. They also have a table or show that helps them to know where they are. These are two doors to the room. The room is not symmetrical because I think it makes it more serious. This is a fax machine and this is a small storage or shelf. This is the public display which is on all the time. This is the place to do the slides and this is where we get them. This is the electronic whiteboard. Two people share a microphone.

There are two cameras, one on the displays and one on the people. They can pan so they can cover wherever people move. **Each person is level so they can see** [1]. This is her stuff, like her computer and papers. I choose these shapes to show that they are all separate and the room **can be reconfigured for whatever they** [9] want to do. They are laptops. Very light brown is a serious and relaxing color for the walls same for the floors, for the chairs I would prefer something exciting and serious like red brown, and oak tables.

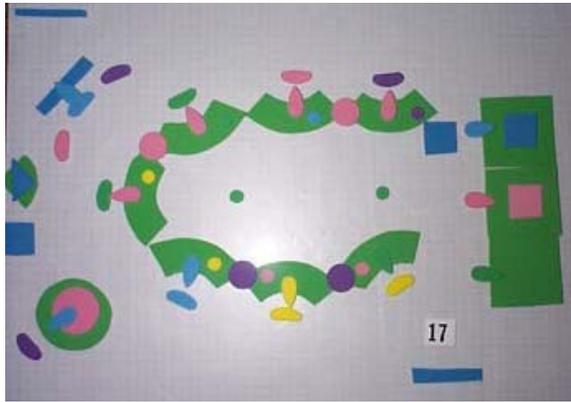
When I looked at the examples over there I found the boat shaped one **the most private** [3]. I tried to do something like that but later I came to the **idea of reconfiguration** [9] so I decide to have separate parts.

The public screen.

They can easily move these end tables in the middle, even if they don't use them they have place for them. So **you can move the whole thing closer to the screen**. [1] They can make almost any shape.

No, not really.

Just that I really like this **part about having the slides to show them if you want**. [1] It is for the best interest.



Design 17

First I looked at all the pieces and I decided that given the available situation best design would be **a square table**. **If you need the design to be for other uses [5]** then the best is a square table because everyone can use a square table. As opposed to the curved ones or the ones that come to a point you might not find use for those. I like the “U” design because whenever speaking **you want to be able to see the person [2]** without having to turn around, which is also why the displays are in the front so **everyone can equally see the displays [1]**. The projectors are up in the air so there is a clear shot. Over here is seating for everyone, there is no microphone because they probably don’t have anything to say. I put microphones, one per two people; I figured that would be the best. I put the technographer in the back so he or she could easily see what was going on to the displays in front, and who needs questions and who needs what. That way if they are in the front everyone sees them and it causes and distraction. This way they are easily ignored. These are for the overhead projector, the whiteboard, just in front so everyone can see. Computers depends upon the company, if they use IBMs or Macs, if it is going to be laptops or desktops depending if it is for singular person use or if you need a lot of memory range. Probably the best for convenience would be laptops because they are mobile you can just pick it up and take it, store them away a lot easier. I don’t really know much about decoration being a guy, but I figure that it should be comfortable, with the chairs, sound, lighting, and color. These are cameras and projectors.

Coming up with a layout where **everybody can see everybody [2]**. I thought that the circular would be good but unless you find out how to have a 360-degree TV the people in the front are going to have to turn around.

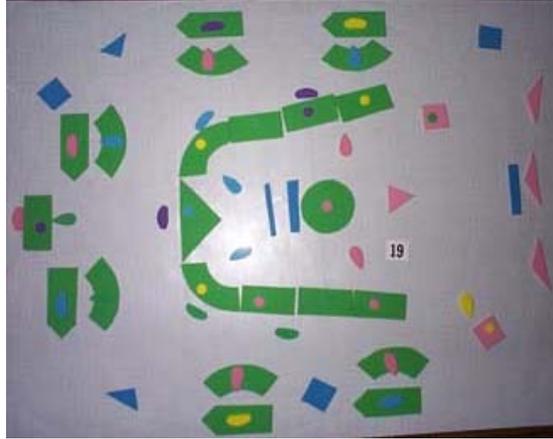
Putting the lights in.

I would probably **move some of the exterior seating**. Possibly [move tables] make this a “U” shape or “T” shape where it is just one side.

Picture Not Available

I tried to do this in an easy order, first order of business you want to be sure to include everyone who may participate in this. Number one is to be flexible, think of people who can't get in and out of certain locations, so you want things to be easily accessible. So to begin with I would like to have a table that has a slightly wider angle, so that if there is a person with special needs like in a wheelchair. Also there maybe an issue with neck and back problems, so I wanted the main portion of the room not in a horseshoe but in an extended "C" so there is less strain of the person while they are typing to participate in the meeting when it's a high level meeting & you will be there for a long time so it's important to be comfortable. Lighting that can be adjustable to raise or lower like screens to help shield the monitors, also like laptops where you can adjust the angle according to your height and your like, so it can be accommodating. Also contains microphones that should be adjustable to reclining to accommodate different body types. I also added in the center a smaller more private round table, it's a little smaller for small groups. 3 projecting screens to allow to easy visibility I asked for stadium seating for the seating along the wall way so it's easy for them to see because they are a different height. That's what this is; these would be in stadium seating. These are small tables on wheels that you can share. I didn't have enough to show a large row of seats but you can put in as many seats as you would like. These are tables you can slide around that way also if you need special accommodations you can slide that table in front of you. Many people may come to participate but not have computer access or not need it, but they may want to take notes or have handouts. I moved the administrator to the back of the room the way if the participant along the back have comments to make the administrator can feed those to the leader of the meeting. I have cameras at different angles one in the front shows front view, middle shows middle and back views and the one in the back shows from back to front. Speakers in the back to project also one across the front to help. 3 projection screens I've added a flip chart, a podium and a microphone, overhead & document reader & a white board with a microphone and light. This designates the over all projector and I would like it to come from the ceiling. I tried to leave the entrances & exits as open as possible. I would also like these tables moveable but you already have these tables moveable too. A light gray blue, a medium blue gray for the chairs and a carpet of the same color, as far as the tables, there will be coffee & such there so something laminate or plastic, easily whip able, medium or dark blue so you can lay down you paper work & see it.

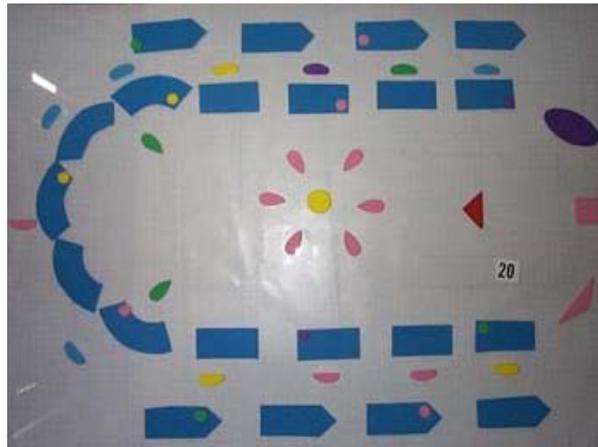
2. Trying to picture colors that would not be distracting & that wouldn't cause problems with the cameras, filming and projections.
3. The room configuration.
4. In terms of a smaller room the moveable tables could easily be accommodated on that level and if it's architecturally possible to have the tables portable & rearranging them.



Design 19

Interview 20 - Naïve User

1. I have "U" shape stadium seating because I had the impression that the second row needs to be displayed a little bit higher so they can have a better view & why I used the "U" shape was so everybody can see each other and the displays. I put one microphone at every table. Here I chose a big screen, I chose here a slanted display screen, and here a... (looks at paper in name). These are the lights; I put in a circle so they can spend out the light on every table. Here are the cameras and these are the seats. This here is a projector on the floor. This here is the big projector on the ceiling so it is retractable. The purpose of the one on the floor is so if you have a short presentation it's easier to use. It's an overhead projector. I thought the laptops are the best because they are smaller and don't take up that much space. The color of the room would be a light green at best, the floor would be a neutral color and the seats too and the table a lightwood color.
2. How to place the display & how many would. I need to make sure they have a perfect view.
3. The configuration of the table.
4. If it were a smaller group I wouldn't design the stadium seating here it's not necessary. And they may not need the big TV screen and I'm not sure about the cameras, but the table would be the same.
5. No.



Design 20

Interview 21

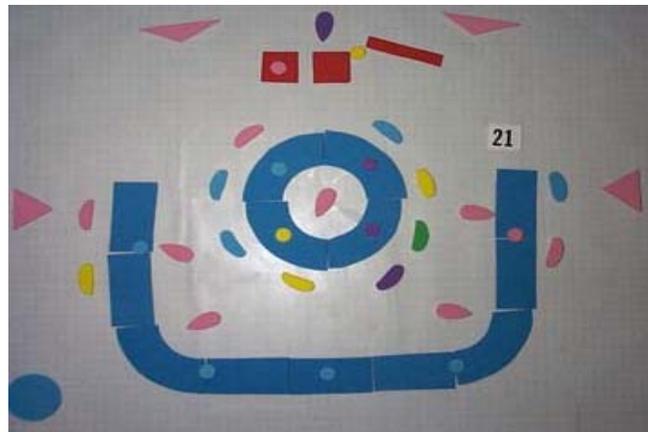
I put a circular table **for when they have smaller groups** [], so they **can all see and talk to each other** [2]. Then a bigger group in the stadium seating. They can be up here and still see down. These people who are just **watching can sit more in the back** [4]. I have the displays **so everyone can see** these and then people on this side of the table can see over here. This is the white board, the document reader, and this is a podium with a microphone. This is a microphone between the whiteboard and document reader too. This is the technician. The computer, I thought it would be **good to have them down in the desks and covered with glass** [7,13], Then, they **would have room to write and stuff**. It's more private then desktops but **I think privacy shields make it less of a group effort** [3,10]. Colors not too dark, I'm not really sure which ones are the best but whatever ones make it so it sparks your imagination more maybe lighter cream colors and carpet definitely. The cameras I didn't put on here but I would guess put them in the corners in the front. The **microphones I think I would much rather have them worn**.

Trying to put everything where everyone can see and still be a part of a meeting.

Figuring out the way, I wanted the tables.

I would just get rid of the outside ring here.

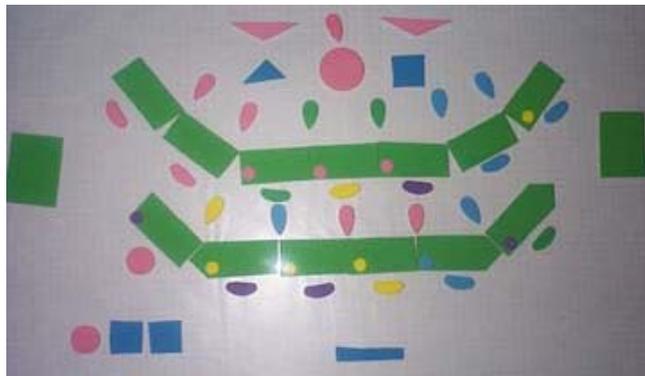
Not that I can think of.



Design 21

I designed it so this is on the same level as this floor here. Then this will be stadium seating so it's a little bit higher **so they can see [1]**. It's staggered so they aren't directly **looking at someone else's computer [3]**. This can be the back corner where the network technician is so they don't bother anyone during the meeting. Then back here is a printer, fax machine and copier, so if somebody needs to print something they can care of that. Extra chairs just in case there is anyone else in the meeting. They can see at a higher level than that. I put the lighting in between the table so it's shining down, it should illuminate everything but not cause a glare on the computer screens. Tables on both sides for water and food, whatever stuff they need. The microphones would be in the tables (like the one that is on the table currently) because if they were lapel they may forget to take it off or something. This should be a smooth surface but I couldn't do that with these but none of these edges that people can get jabbed on. This will be the podium with a light on for the speaker presentation, then two wall displays. The overhead projectors will be on these. This can be the flip up, just clear projector. Then this can be the document reader projector. Computers, I didn't like the laptop idea, I liked the recessed computers, but the only problem with that is some people can't cross their legs underneath them and I think you should watch out. I know I like to cross my legs a lot. Another type of desk is the ones with the ledge for people to put their feet on. Color, I thought nothing too bright but maybe the wall could be not a gray color but maybe beige. Then a blue floor and blue chairs. No pictures on the walls to catch peoples eye. Maybe a molding or something, just professional and nice. Workstations should be a nice wood. Cameras, I didn't think that was very important, **as long as everyone can be seen [2]**.

2. Thinking about the size probably. I put this for as many seating arrangements as there were chairs available. That's why I put the extra chairs back here, just incase.
3. The set up. Everyone can see everything with the stadium seating.
4. Take out the center one and more them closer here so there are just four in a diagonal. In a "C" kind of, so everyone can still see.
5. I guess I explained everything I thought of.



Design 22

1. I thought it should be stadium style seating. The computers should be laptop computers because it would save more space on the desk top and the people above cannot see the people's below. The meeting's supervisors or whatever should be more flexible, they could either sit on this side in case there are people here ... and they can also switch places in the teleconferencing so they can all view the screens. The screens will be here. Three screens, one for the center and two for each side. The white boards, I have two white boards pointing at an angle so everyone can see it. I thought the technician should stay here because any of these people can signal her for help and also the people in the center. These are the microphones, two people per microphone. I don't think they should be flat microphones, more like the long arm adjustable ones. These are the people and these just show the computers. The lighting should be; I don't think it should be slanted facing the people. I don't think it's good for the cameras but if the light is in someone's face they can't view anything also. So lighting should be above here and also here. The cameras should be at an angle, facing these people then one facing these people then two in the one facing these people and one on these. These are the supply rooms. These are chairs for this table. If these people do need laptops then you can move some from here. Speakers or anyone who needs water can get it here. This is a projector. The projector can use a television screen, and if you need a television screen any of these can be one. The technician and the meeting's supervisors should have table computers. The carpeting should be..... I think the wall should be gray because of the back ground so it won't be too light or too dark. The tables I think cherry finish. Also I think the people need writing space in between, so the microphone should be placed out then have the monitor and writing space. The seats are also cherry.

2. Trying to decide where these people should be because the seating, whatever the shape of the room, usually rectangle, the seating can be circular or whatever that isn't a problem. But where to put these people so they can be heard and seen and deciding how accessible the screens should be to the room.

3. The seating.

4. If it were just 4-5 participants I would make it more of a circle so it closed and more personal depending on the type of meeting. Or it makes sense just to use the center table.

5. No not really.

6. Asks a question about the importance of a document reader because she did not think they were important.



Design 23

1. I put a “U” shape with separate workstations. Most everybody on this side **can see the public display [1]** here. There is only one public display because for the meeting size for up to 20 people or so they might lose focus. Just one focus would be enough. I prefer **microphones for each person**. Sometimes they are quickly engaging in discussion and that can get annoying for two people to have to try to speak simultaneously out of one microphone. The **cameras should be located so they can see all three sides of the “U” shape arrangement**. **Lighting can be for each individual**. For the speaker this part here would have it’s own individual lighting and a microphone in the ceiling. This is a document reader and an electronic whiteboard. This is just a camera here because I didn’t have enough of the triangles. This right here would be the technographer and they can see the display so I thought they would have their very own monitor to show what was on the display. This is a projector here, which I would prefer to be somewhere up. This is a desk with refreshments and another one with fliers, paper, pens, and notebooks. Computers should be laptops. I don’t think there is a need for a privacy screen, depends on the type of meeting. I think most of the meetings wouldn’t need it. I prefer a light white color.

To decide the arrangements and number of people.

The lighting maybe.

I would take out one table from each side and make it smaller.

Nope.

I have a preference for lapel microphones. I couldn’t show that there.



Design 24

1. I wanted a semi circle shape to give it a **group feeling** [10]. I didn't want the person that controls it (pointing to the blue piece in the "back" of the room) to be in that group. If they were sitting there (pointing at the end of the "U" shape) then this person might be distracted or feel uncomfortable. For the microphones, I put them near the person but not so they have to reach. I want the microphones to be accessible to them. The lights I put some light but not a lot of light. It should be enough **lighting but not to bright so it would** [8] interfere with the seeing the board or the projection. I wanted **privacy from one person to the other with the computers** [3]. I want it to be just one display, but a big one. Big enough so people wouldn't have a problem seeing or turn their heads to see it. I just wanted dim lights over here. I also put camera in all the corners of the room so that they could get every angle. Maybe one on top. The triangle is a projector. Also the seating I would step it up so it could be above. I chose computers that were underneath the desktop. I would put a light color of the walls, pastel or off white. A light color for the carpet, and the chairs a dark color with the desktop too.

2. Making the seating so **everyone would look at the screen** [1] comfortably.
3. The display.
4. I would probably either make it a square shape or make it into a small circle.
5. No I don't think so.



Design 25

The primary table that I constructed was not really U shaped but more of a semicircle. I think that the participants should be limited to a certain number. What I have over here is just an alternate configuration depending on the need, but I think this is probably best for **group communications** [10]. The way that I have the microphones situated I want 1 microphone per participant. I would like to see lapel microphones because that way the participants, once they have them set, **they do not have to think about the microphone again** [13] throughout the course of the meeting. To **protect privacy** [3] you can have a protocol either handing the microphones over at the door, whenever you take a break, or putting them down. So I don't think that there is a problem and I think wireless would be best if the situation could allow for it.

Lighting, I think there should be overhead lighting and lighting on the tables, so that the participants **can adjust it as well** [8]. I would like to see a lighting station for each part it's kind of hard to show it right here, I ran out of room.

Right but the dots really go on the participants, I should probably move them over here so you can see that better. But, these are lapel microphones. Wireless lapel microphones. And there should be a dot for every other person but I ran out of dots.

This is the technology station where the technographer can control the groupware. The technographer is facing the group so that he or she can see what is occurring. I don't have something to represent [this] but the facilitator or leader or presenter would be free to roam in any direction that they need to.

This is the facilitator, so the facilitator can move behind this is podium with a document camera; I don't think a document reader is necessary just based on experience. Just as long as there is something unobtrusive as necessary that gets the job done, so maybe having a camera on that podium and if they need to they can go through their own presentations that way.

Here is a microphone on the podium but again the facilitator or presenter is going to have a lapel so that would just be back up. Then, these are the displays and I think two displays directly in front of the table would be ideal, with 2 more displays that can be brought in as necessary. These are mobile collapsible displays and then the little blue squares are electronic whiteboards so you can take a display away and put a whiteboard here, so **it is re-configurable** [9].

I'm not sure exactly what you mean, but I think what I was looking for was mobility and changeability [9] and **making technology as unobtrusive** [13] as possible. For example, with the microphones you don't have to think about it once you have them adjusted.

Oh I don't even have the cameras represented. But what I have here is a table for 12 people, which I think, is a good groups size, not to exceed 15. I think that in our organization we have a tendency to over fill rooms and when you are in a decision-making meeting or a distributive meeting usually your key players are the ones that you need there. I find that usually doesn't exceed the number of 15. So, I think we over staff the meetings and it's hard to manage the processes that way.

The cameras, this is hard to show but they would be mounted up high looking down on the participants. Catching an angle this way and this way. There would be another camera back

here that would be specifically focused on the displays and the presenter. Then, I mentioned that there would be a camera right here for the documents.

The workstations that I think would work best, from a users standpoint, would be laptops because the lids can be closed and the computers can be pushed away when the technology is not needed and a discussion is what really needs to take place. Again, it's more of changeability and mobility and not really having the technology interfere with the group process.

I think the color of the room should be neutral. Grey is a color that I think works well for wall coverings, for chairs and carpets. I think something dark that makes it feel rich but yet is still neutral. I think like navy blue for both the chairs and the flooring, and I think the flooring should be carpeted if possible. The tables I think that the dark wood makes a nice showing.

For me it was breaking out of the models that I use everyday and thinking beyond the models that I use in the DSC.

I think the easiest part was making the decision for the microphones.

I'm thinking. I don't know, I guess I would take some tables away, I'm not sure how I would configure the tables. Probably, if it were only 4-5 I would just have a rectangular table. To make it more of a close knit group setting. [move tables]



Design 26

The way I have it set up is this is the technographer station, this is the back and this is the front of the room. This would be kind of like the stadium seating but I would like the raising in the floor on it. But these would also be **movable where they could swing around if it needed to be a circle**.^[9] I guess these would have to be able to be turned too it all depends how you would set up the monitors for the PCs. I like the recessed monitors with the kind of like the teleprompters use but raised a little bit more. I put them up here mainly for VTCs, only if it's a small VTC but I haven't decided if I like that or not.

The microphones I put on the seats but they should really be on the peoples heads. I like the little headsets that people use now. I think those are one of the big issues about meetings are the microphones. I have issues with the microphones and people speaking in them.

Lighting itself, I like the lighting to be focused on the tables. I don't see a reason to have it in front of the displays they are always turned off at least in my experience. They are never used in less all the lighting is turned on for people to mall around. I like this on a raised area this technographer station, to kind of over look the seating.

The room, I like the sound soaker walls because they are multi purpose. They can also be used to hang things up for the meetings plus they help with the sound issues. Electronic whiteboards, I do like but I don't see them used frequently, but I do like that offer. I wouldn't have them out, I would have them off to the side along with the document reader and the overhead projector just in case it is needed for the meeting.

I saw the Panama City VTC center. I saw where theirs was the stadium seating and then the M & S Focus center. I had seen the stadium seating and of course any movie theater. You do **view the public displays** ^[1] and the screens a lot better but I know they are not always used if it's a **meeting for the collaboration** ^[10] and stuff like that it's not needed in that sense.

Cameras, I like the ones that are actually in the DSC because you can pretty much get everything. You can get the rear, plus they have the left and the right and two in the rear to kind of catch this way. That pretty much gets the angles of the room if need be.

Trying **to make it multi purpose** ^[5] because you want the room to be able to be used for different things. I tried to set it up to be like that because I kind of like the separate seating but you also want them **to feel like a group** ^[10] if need be and that was kind of a challenge. And for them to be **able to see the public displays at any angle** ^[1].

I picked a neutral color because I didn't know with the VTC area, I know it helps to have a little light but I like the neutral colors like a beige or a darker beige. The tables, I liked cherry wood but I would put plexiglas on top of it to protect the wood. The seating and the flooring I picked for both a dark blue, I think the blue hides stains.

The easiest part was that I have been in the DSC [a facility], but that also might be the hamper too. It doesn't give me the freedom of just using my mind because I was going by that. But I think just to know what to look for with the displays and having to know where to look for the **obstacles that might come up with having to see the displays.**

^[1]

Probably be able to take some tables out or to kind of consolidate. [move tables]

...I know that few VTCs are just one on one or maybe just a small group. I know when they see it from the other angle, when you have to put the camera at a wide angle it gets more fuzzy. As opposed to homing in on just one or two people.

...Well, these would have to be in a way too if you had the laptops sitting straight this way. I guess if these were able to be turned these would have to be able to be turned too some how. So I don't know if the whole thing should be able to be turned or how.

...I'm not too big on them. On watching the tape I didn't care too much for the privacy [-3]. I see the reasoning behind them but none of them were really...pretty.

I think the microphones. I don't know how you would have done them different but I think it's very important with the microphones and the lighting too.



Design 27

I just used a U shaped design basically. To some extent that's the set up where I experienced my VTC, I guess that worked fairly well. It's open, it's flexible you can **look at the equipment displays** [1], the speakers, fairly easily. It allows people to move fairly easy. I have 3 displays, that does depend on the size of the room, a lot depends on the size, how constrained the room size is. I just assumed that there was plenty of room. Openness is fairly important when you have a room full of people. So to allow lots of flexibility I used three displays. I also used two whiteboards and I'm assuming they are all mobile, not fixed. So you can actually move them around maybe one have up in front of the room and one maybe towards the opposite side in the back that can be moved if it has to be for it to facilitate folks at the meeting. And the speakers (microphones) I selected both tabletop and overhead. It's fairly flexible to me as long as the speakers are **adequate and you can hear** [14].

The lighting here on the table itself where the speakers are and the podium up front with an overhead light for the workstation.

(Interviewer: And what are these over here?)

It's just work services to support the room.

(Interviewer: Administrative people kind of?)

It could be, but I just put them there for flexibility and for use of people who bring things to the sessions to be able to use. **They could use it for side conversations or what not.** [12]

(Interviewer: These tables over here same thing?)

Same thing.

(Interviewer: This over here?)

I think they are actually side displays, something that allows someone looking across here an easier view to the screen versus looking this way all the time.

(Interviewer: And this one over here?)

It's an additional workstation, in case you have someone in the rear versus someone up front.

(Interviewer: So the technographer can be in either position)

Right.

(Interviewer: What is this blue thing over here)

I'm trying to think. I guess the overhead projector should be kind of located in the middle of the room.

I have some experience with laptops I chose a recessed desktop or tabletop, both of these are just so you can glance down while you are typing. The screen is easier to see then a laptop screen. They are recessed; one for convenience or viewing and the other thing is **for additional privacy** [3] with out putting up shields or anything like that for a fairly clean design.

Basically a wood design medium color, a non-glare, and walls medium color, nothing dark, a solid color, and sound proof.

- Taking the space and establishing the basic design and the seating and tables and the displays.
- The workstations.
- You wouldn't need as many displays for one thing, whether they are fixed or movable. In fact, you might prefer a display that is moveable if you are going to have a small group. You may want something like laptops that are moveable if you have a small space. You wouldn't need more than one workstation at the most, I wouldn't think. You wouldn't need a whole lot of table space you would go for some other stack configuration maybe. L shaped maybe, it depends on the size of the room. I mean you could even go with circular. In fact, circular is not all that bad of an idea when you have a small number of folks. You can actually communicate with out a big space or a number of microphones; reduce the number of microphones and furniture. [**move tables**]
- The actual VTC room, I didn't take into consideration the control room and break out room and things of that nature.



Design 28

Well, I chose this particular design because it is kind of close to circular but not exactly circular. I guess one of my major points is I like to see who I am talking to. **Face to face contact, eye-to-eye contact** [2]. And I think you can get that better with a circular table design then you can with any other type of design. Not too crowded access space for any need to get inside here. Proper lighting shining down in everybody's area. Microphones in front of everybody or close to everybody.

One of the things that I would like so that you don't have to turn around and look at the presentation, you **have screen all around the room** [1] that people can make the choice at which one they want to look at.

I prefer the laptops they have a lot of power and they are small. I prefer them recessed inside the table to give **you space to work on** [7] papers, to write.

Room color, furniture: That's not really a big thing for me. I would have to look at the colors themselves to get an idea. Nothing comes to mind immediately.

Yes a whiteboard.

- Actually the table design was the most important.
- Probably the placement of the displays.
- I would guess just make it such that the table can be made smaller. [move tables]



Design 29

Well, we have a couple of displays up here, actually 4 displays across the front and two located in the center. Just for dual presentations or whatever. That's our camera so it's nice and in the center of the room. This display is also a whiteboard, so it's kind of a whiteboard slash display all in one. This over here is the table with the document reader on it, doesn't really have to be that close. The big round things here, which I will remove, are speakers and this is where they are hung in the ceiling. These little red squares are extra panels so you can actually move your document reader anywhere or put extra microphones, it's pretty much versatile. These are the lights, which are mounted overhead; they are just kind of in front of the tables here. They are mounted pretty much straight down, maybe a little bit in front of the people. You have one microphone for every couple of people, every two people or so. I kind of wanted it in the middle of them, like that. More speakers across the back there. These are the little people sitting there. I kind of thought that you could put people in a group collaboration type environment [10] on this side of this table, but otherwise for VTC **everyone would be just facing the camera there.** [11] Then some wall lighting on the sides for a kind of indirect lighting and the same back here. This table is just bigger than that one so you could put people on the other side. You really wouldn't need the microphones on there because they are all sitting around the same table.

Well, **this is my VTC room of the future** [11] where you have the conference table and this is just a screen here, I don't know if you have ever seen that picture, but it's basically this whole wall is a screen and you come and sit down and it looks like the people are on an extended part of the table over here. It would be like cutting this table in half. I just kind of threw that in there.

- Well, I figured that it is kind of **hard to do both the group collaboration** [10] and the **VTC in the same room** [11] because they require such different things. I mean first of all VTC you all have to be facing forward and with the group you all have to be facing each other somewhat of the time, and facing the screen. I guess there could have been tons of different designs. I'm sorry what was the question?

Because I felt more like **the group collaboration** [10] can work around the room more than the VTC can, I mean if you have to put them both in the same room. With **the VTC you have to be able to be seen by the camera** [11] or else it doesn't do you any good.

Yes that is one and I thought I had another one but I guess I didn't. Also the document camera, which you can use.

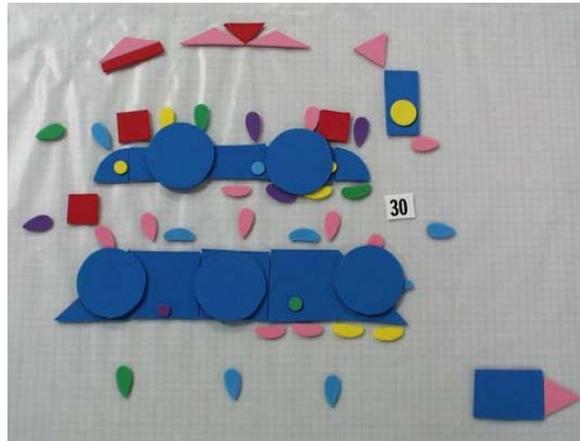
I like the idea of laptops because they are small and you have your CPU on the desk. If you have to use a tower type system I would put it under the table but accessible. [13]

They are blue in here but that doesn't really make much of a difference. I think a grayish wall and I like the wood tables. Wood, obviously, when it is well kept looks very nice. Kind of a **neutral skirting maybe, otherwise the cameras have a hard time doing their thing.** [11]

- Probably the tables just figuring what to do with them and where to put them. Just trying to figure out the design of the tables and where they should go.
- Probably the screens and the microphones.

- Probably something like that, with the smaller just singular table, with the screen at the wall.
- I am sure there were, I just cannot think of them at the moment. Oh and these are rear projection screens up there. Except for this, this is the new type of whiteboard where it is like a plasma board.

No, just that I think it is important to **have the versatility of the boxes around the room, like the inputs and outputs. That way you can kind of be a little bit more flexible with where you put things.** [9]



Design 30

The key to this room is the **room's ability to reconfigure** [9]. The center portion, which is a pentagon shape, has five seats per table each table is a break away table. So at anytime if you wanted to **break up into five different groups** [12] you could and spread out throughout the room and you each have your own little mini conference room. Where you can speak **or talk in privacy** [3] about what your particular deal is or whatever matter you are discussing. That was the big reason for me designing it like this because in the initial **configuration everyone is one big group you** [10] can come together, you can have a central speaker or you can talk amongst yourselves and no one is slighted because everyone is facing the same direction. So there is no feeling of being slammed because you are a lesser party or something to that effect. You will **notice there is no actual head of the tables** [6] so there isn't anyone that is in charge per se.

At the corners or actually the sides of the rooms are the cameras and the speakers. At what I consider the front of the room is where the podium is for the speaker with microphone lighting and the whiteboard and the two public displays. Mounted to the ceiling, which you can't tell from this, are the two projectors, which would be focused on the public displays.

In the center portion of the table, which remains in place even if these break away, are the microphones and the lighting for each of the specific tables. In the back you have your technographer, who is actually running the show, has their own lighting and their own microphone, which they can turn on or off depending on their desires. As well as a document display item machine, which they would run and which would be under the floor if necessary to be focused onto one of these projectors. Also each of these tables would be using laptops, in my mind, and these laptops of course would be portable but at the same time be able to hook into a LAN with in the room. They could be controlled by this guy [the technographer] to be shown up **on public display for everyone to see** [1]. So you could bring a canned brief or something to that effect and share it with the rest of the crowd. At the same time at anytime this guy [the technographer] can focus one of the four cameras on any party in the group, because the cameras are mobile they can be controlled remotely to focus individuals that maybe speaking or at the same time to focus in on here or the public displays. So someone that is remote to the room can share in all of the goings on that are occurring with in the room.

The colors of the room I made the floor a basic light gray. The walls are painted blue; I think those are just kind of suitable colors that allow whatever you are doing to go fine. I had, of course, **mobile chairs able to move along with the desk configuration** [9]. So if you need to move your things it would not take very long.

I worked with a VTC room that had a similar configuration, it was a triangle so you could only have three to a side so it could have up to nine people in it at a time, you could break out into nine. For the decision place we are talking about it would seem like you have up to 28 people, I think in two, fourteen people conference rooms so I went with I went with 25 which was a larger number. More medium for what I consider meets the needs of the situation.

Just figuring out what the pieces were. I needed more seats, but I figured you would get the idea with the five on each side. Then I think it would have been better if maybe each of the little pieces you could either write on them or make them disposable or something, or actually just use a piece of graph paper and just write it out maybe, not nearly as colorful maybe but it would certainly allow you to look at it and say, "Oh I know that is a camera and that's a speaker." Where as now it's a piece of foam.

No.

This was a camera and a speaker, camera and a speaker, etc. I had one on each side but I didn't have four shapes that were the same.

The table itself I thought was very easy, but once I had to start putting in the peripherals it was [more difficult]. For instance, I forgot about the speakers themselves. I knew I needed speakers but I had forgotten about them, but I had already placed the cameras and well I said the cameras can go in the same place as the speakers and that would work fine.

Just go to a different shape on the center portion because you can expand or contract this to your basic shapes that you see in geometry. Like I said if you go to a triangle for nine people or a square for sixteen and on down the line. I don't think you could ever go less than nine but I don't know that you would go much beyond 25 either. So I think 25 in here with a large group is probably the optimum size.

No, it's hard to do a three dimensional situation in two dimensions, but I think if you just explain it like we are doing after words then it works fine. Because you know that these are ceiling mounted and these are ceiling mounted and probably all four of these are ceiling mounted. Versus everything else is probably on the floor, like this would be mobile and it's a whiteboard. This group may be wanting to use it now and this group later or this whole group as a whole may want to use it.



Design 31

Ok, first is the table configuration. The reason why I went with this type of layout is it uses all the tables and it **still allows you to move stuff around** [9] for a different type of meeting. For instance, this configuration would be more of a **VTC type of configuration** [11]. Then if there were going to be a regular standard meeting then you could just move these table from here, and they of course would stay there, over to here and then swing this table around and the microphones are just table top microphones so they can just slide along with them. **You can make a circle or broom type configuration.**[9]

The lighting I positioned here, rather than a little ahead of them, it is more of a direct lighting straight down versus a little ahead because there are complaints about light being in their face [location of lighting]. Front screen projection rather than rear screen because off to the side it is kind of hard to see. The technographer would be over here in the corner. Document reader along with the technographer. Cameras positioned right next to the screens with one in the back for pointing at the podium. One light shining down on the podium. Microphones placed, I didn't have enough seats so double, and one person or two people would share one microphone. Indirect lighting, wall washes. Whiteboard off to the side and mobile to be able to be moved wherever. That's about **it just that it is mobile and can be reconfigured** [9] at any time depending on the type of meeting. The types of computers that would be used would be laptops. The only reason being is laptops are very portable and if a meeting doesn't call for a laptop then you can actually put the laptops away very easy versus **a whole entire computer taking up a lot of space** [7]. The LCD panels kind of give for **a little privacy** [3] because it is kind of hard to see what someone has on their laptop from an angle. That kind of gives it a little bit of privacy. But the regular presenter would be using a regular standard PC, only because it is a little bit more powerful than a laptop.

Colors of the room would be kind of darker colors. The walls would be a dark charcoal type. Floor would probably be black. Dark color chairs and wooden tables. Sound dampening.

I guess coming up with a mobile design [9].

The lighting, setting up the lighting was fairly simple just from seeing the past.

I would remove sections of tables to allow the tables to be in a little closer [**move tables**].

Actually, no.



Design 32

The table configuration is laid **out to accommodate the VTC aspects [11]** for purposes of the two cameras, which are here and there is one from behind. So I have a total of three cameras. That allows pretty good view on the other end of everything that is going on in the room in there selectively. The **horseshoe shape allows the individuals that are in this room to interact with one another [2,10]** . So it's a compromise between the two requirements. **Also to view the public displays [1]** which are along one wall. They can also be viewed by the third camera participants and their reaction to what is on the wall.

I have forgotten what all these things are. I think I had a technographer up front, that is this one. So she can monitor what goes on in the room, as well as control the displays and other equipment that is being used. I have accommodations for wall displays on either of the two side walls. They **have spot lighting [8]** for them so that the ambient light in the room at a whole can be kept at a fairly low level, so that various displays are visible by the participants [1]. There is **spot lighting every couple** of people around the horseshoe for the same reason. The room would also **have a high level of lighting** when you are not using the displays and you are just interacting with one another. So **there are two different lighting systems,[8]** in my mind.

This red along here and here are what I consider additional seating. I ran out of the other symbols so that's the peanut gallery. **To accommodate that many of those types of individuals who don't have a control station [4]** as you possibly have room for. My experience has been that there are all types of meeting some of which require everybody to have a workstation, but more often there are primary participants and the peanut gallery, individuals who just observe what is going on or they are just supporting one of the people who are operating a workstation.

Then these indicate break out rooms [12] which we have found to be very handy, either while the other activity is going on in the main area, or when they break up into smaller sections. These are non-directional microphones that can **pick up everything that is going on in the room [14]**, as well as the microphones that are placed in front of the individuals who have a workstation.

That's this guy and this guy, one sort of toward the front of the room and one at the back.

These are additional tables also supported by the same workstations as these guys. And **seating around them for subgroups [12]** that either are participating in the same fashion here or perhaps doing different things while everything is going on here. I have no experience with that but it seemed like it might be a good option if one has enough room. This is the support area also with some sort of overhead lighting for, you know, the sign in and the donuts and comments of work kind of things. **Additional displays that need to be visible by everyone [1]** in the room include an document reader type device, which in my experience can be located anywhere it wouldn't even have to be in the same room. And an electronic whiteboard if possible if not then you may also want paper easels in addition to electronic whiteboards. But at least an electronic whiteboard, which is viewable by as many people in the room as you can manage. And this is the facilitator or the person leading the discussions, who I haven't shown the podium here. Typically they don't need a podium or they use the end of one of these tables.

That may have been the overhead projector. You need to have flexibility so that you can be able to use electronic material or transparency. I guess if you have a document reader then you really wouldn't need that it will serve the dual purpose, the document reader will.

In my experience if you can afford it a **microphone for every individual is a good idea. Some people can be heard well other don't project well.**[14] And a flexible directional microphone, such as we have downstairs, I think is a good idea. Plus I think I have shown a couple of non-directional for use in the VTC link as well.

Computers, I **have a personal preference for them to be as small and unobtrusive as possible.**[13] So a desktop system makes it look very cluttered and less of a collaborative environment. It is just a personal hang up I have. So the smaller the better, if you can sink it clear down into the surface of the table that's ok, but I think laptops kind of serve that function. That's kind of a compromise. So the less bulky they are the less obtrusive they are the better I have never seen a need for privacy screens [-3]. Typically, if everyone is doing their own thing they do not pay attention to and it is not easy to see what others are doing. So I have never seen a need for that. **The less cluttered it is the better.** And the keyboard drawers if those could be implemented. I think those would be easier then trying to reach the keyboard of the laptop that would just seem to be a handy feature.

The color, I am not sure a specific color, I would have a preference of a medium shade for the walls. Darker of the same color for the carpeted floor. And ergonomically designed chairs that matched the carpet. Somewhat of a plush environment so that people feel comfortable and want to be there. It kind of makes a difference. If you had stark white walls, it's a lot less attractive environment. The chairs need to be as comfortable as you can possibly afford because a lot of these meetings go on for several days and spending a long amount of time in a chair, the more comfortable it is the more they will tend to get done I would think.

Trying to come up with something different then the one we already got downstairs. This one looks a lot like it but **I think just trying to think through the compromises between a VTC kind of application and a DSC application I think they have different requirements** [10,11].



Design 33

I tried to **focus on ease of use and flexibility of the design** [9]. I tried to create a pleasant place to work in that it could be sized for the meeting and for the method of VTC whether we have a speaker.... A **focus center or whether its more of a collaborative or teaming arrangement where everyone is equal** [5, 6, 9, 10]. I tried to think a bit about how technology can be utilized to facilitate the ease of use strategically placing the cameras, the lighting, the microphones those things that make the session productive or not. I think there are a couple of different aspects. One is it a pleasant environment? Do you want to be there? And then secondly "Are you accomplishing the purpose that you are in the space for. **Since meetings seem to be small to large, informal to formal, many different methods of preparation of having ideas that are pre prepared that are ready to go by use of the team members or the speaker to free flow, brainstorming** [5]. So the idea was to create an environment, yet **maintain flexibility. I'm not hung up on symmetry** [9,-17]. It was more of the functionality that I was concerned with. So what I did is basically created, started with the visual information centers that we were going to be utilizing and I decided to place three public displays here, here, and here, initially and the idea again would be fixed displays large meeting format, a smaller meeting format and then in fact there is a mobile public display and it could be a retractable or some other means, but a smaller display which then could be used more in just one area of the room. The room is completely equipped with workstations. This oval table is equipped all the way around so you can use it on one side which is the way I have it laid out here with a public display and support either whiteboards or paper those kind of things. Again, the room was conceived with three different positions for a podium. Here in the center of the room with the public displays on both sides. Here in the corner of the room utilizing primarily this area, yet no one... the only people who would have their back to the speaker might be a couple of people up in this area or a more of a horseshoe or u shaped format, where the podium would be here. So the podium and this is to **indicate some type of integrated light/sound system that would be in place and could support just relocating the podium from this position to this position to this...**[8,9] again it just depends on how you want to structure the room and the oval table, again, it is completely equipped with workstations and that's what these are trying to represent. **Overhead lighting and sound systems focused on this work area and it can be turned on** if you are using the u shaped or if you are using the whole oval **you can turn on both sides**[8]. Lighting around the room to focus on proving areas of focused lighting or the use of any whiteboards, writing material, and that kind of....and that's what this is and this is on both sides of the public display and centered here with also this lighting being able to support use of that in a larger format. The room can also be reformed into a u shaped conference space by ? this table in. I had no way to really form it to that surface. If I was doing this I would design a table that then would come in and blend right in to this table and give you the shape. Again workstations all along these permanently installed and then of course these chairs could come to this side, around the outside anyway you want to do it, designed for a **small team area just in this corner, or a training, or directed information flow** [12, in design] in a U shaped around the table, or using the whole oval for a more formal meeting, again, drawing on one public display where no one would have their back to. You would also have **another public display** [1] available if you wanted to have supporting information or you wanted to go into team areas, lets say.

The microphones again are integrated over the table. No there are no desk microphones perceived in this arrangement. Again, you could lapel microphones or other techniques could be utilized... I personally don't like lapel microphones. You can't tell if they're energized. And I think it's important that people can **speak and know that they are off microphones, so that's an important thing to...to be able to give privacy** [3]. The only areas **I would put privacy hoods** [3] on would probably be this complex right back here. Normally I don't think a large

group is in the business of a lot of private information. **They are really there to share ideas, collaborate, work with others [10]** but there are forums made where you may want private information. Peer review type of activities, brainstorming, where you might be concerned about privacy. In which case that I would only have recessable monitor covers or something like that that would be used just in one corner. Those are microphones. Those are our embedded microphones in the table. That didn't seem to be practical to me in this arrangement. Again, **that's a technology question, it's more important to have good sound capture.[14]** And **not be concentrating on where is the microphone.[13]** I think its preferential to have more of an omni pick up, but again you need to know the microphone is on, etc, etc.

They must be quality. The monitors must not be taxing to the individual to read, now whether we go to the simple built in mouse, a track ball kind of activity. I've used both mouse devices where you have to move it around...physically move it or tract balls, which are stationary and you just have to... **I think that would be even a better use of space, if a tract ball kind of device was built in and you could even have a cover over it. Its just another device you have to keep track of, more wires.** You don't need that anymore, but **you do need some flexibility to maneuver around the screen. The use of wireless keyboards should be considered. And not built in because they can get in the way of chairs and damage clothing, if you aren't careful. The technology today can support wireless keyboards,** and again, the technology should have the room set up for the number of people that are attending. Those are basically what services do you need.

In the questionnaire, I just think light pleasant environment, pastel, I'm not really hung up on the color, per say. But it needs to be a pleasant work environment. I think the floor probably needs to be a bit darker than the rest of the room, but that would be my only real concern. Functionality I think is far more important than any particular color scheme, but it must be pleasant. You must feel like you want to be there and enjoy it

Flexibility.[9] Assuming I have to tailor the room to the **multipurpose [5]**, multi-size activity and also where I have a focus center for the presenter and **also the ability to collaborate [10]** and so it was how do you achieve that... that scale factor and make it functional.

The easiest part... probably, because I started with public displays, **I wanted adequate and flexible [9]** and so I elected to take on two walls, two areas of the **room with public displays [1]** and then I built around that.

Well, I was designing a room that small it would probably be just around an oval structure so that **I would have flexibility in terms of people seeing each other [in design]** yet camera angles being adequate to cover the room.

Probably, if I had more experience or knowledge of the technology ... that is available or evolving, then if I had more of that knowledge, it might would... it probably would have affected the way I approached the problem. My experiences have been limited to basic theater seating kind of VTCs U-shaped VTCs and these roll around polycon kind of activities which are barely acceptable but I think the technology can bring a lot more productivity if the designer was aware and could design for that.

Yes, they can be. This table was the one that I was really trying to give you the **perception it was movable [9]** by just breaking it out. And, but, yes, those can be mobile, but If they're mobile, I think you would probably loss the functionality of the workstation because you would have a problem connecting them all up. Now, again, technology is, I would put a router at the end of

one table and then feed all tables off of that one router, so I'm not tied... I've only got one wire to the floor someplace or the ceiling.... But, I think they would be heavy and hard to move and be functional. You may want, again, multi-structured rows of tables for a much larger form, but generally, if you do that, **you end up with the back row syndrome.**[10] They're not connected. And you need to be careful... personally, **I think you need to be careful with that.** [10] I did not put any exterior or surrounding seating because of that. People there should be engaged and if they aren't engaged, they don't need to be there... so.



Design 34

What I was trying to do here with this room is to set up a configuration where individuals are in a circle and **can see each other easily** [2] for communication and then the back circle would be for additional people that you **could rearrange depending on whether you had a small team** [1], say 15 or whether you would have 30. , it's important to me in a meeting whether you're using groupware or whether you are all looking at a presentations, to be able to see the presentation. So, I've chosen recessed workstations so that **everyone can see it as well** [2] as **the public display** [1] with the option to project onto it what you are also seeing on your workstation screen so that **everyone can always see what everyone else is seeing**,[1] whether you are in quote back of the room, or whether you are in the front part of the room or in this case it would be the middle. I would want to have plenty of lighting so that if you have the need to do so, if the room is dark, that you can have plenty of lighting on one another, so that each other can see each other well ... and you would have to have plenty of seating. But one of the most critical things to me about this kind of setup is that if you could be in a room that has windows all around it. One of the things that I dislike about spending so much time in conference rooms in meetings whether it's group ware or projection or VTC or whatever is that they rarely have windows and so it's always very dark feeling particularly for presentations where you're looking at a screen. It's dark and I don't think that facilitates communication. I'd like to,, have a situation where your screens and so forth were recessed so that you could see the material, but you could still have the light coming in the window if it doesn't interfere with that. But more importantly you could see each other and you could here each other and everyone could see everything.

Microphones are critical, I believe, to have more microphones than you think you need so that **everyone can always be heard** [14].

Camera locations... now I presume in this case the camera is in order to project on a VTC. I personally don't care where the camera is located as long as anyone who needs to be seen is seen. I'll leave that to the engineers.

Yes, desktops. Of course I realize that does limit your flexibility, but **maybe there is a way to deal** that. Perhaps **having a flexible unit** [9] in your table so that you could make your table configuration smaller or larger or concentric circles or whatever is necessary.

The primary thing to me is to have light colors so that the room feels light and bright. The particular shade doesn't matter. I mean, I realize light colors are more difficult to keep clean, but I think it's important to have light colors and to have wood and that sense of warmth when you're meeting each other.

Well, using this particular kit of materials, there wasn't, enough of the pieces for me to do what I wanted to convey for a large meeting. Other than that, you know, I had no way to show windows, but just about everything else was fine.

Probably the fact that I've had so many years of experience participating in similar sessions, and so I already had in my mind what things I like, or what things I think facilitate and help the meeting or don't.

I think I would keep the same idea even **if it were 4 to 5... that you would be in a circle [move tables]**. I like the idea of not feeling like someone's at the head and someone's at the foot and someone's at the **back and someone's at the front, but the idea that we're all equal and we're in this together** [6].

I think I addressed that already.



Design 35

First and foremost, let me say that the design is kind of a fixed design. I'm less interested in having the participants arrange the room or move the furniture.

I would like to **provide them with a workspace [7]** that is self contained and they just use it. And, it provides standardization over time. But, I chose a six sided partially enclosed center piece here and then starting about midway. To follow the shape of the angles of the inner ring. I would like to have the outer ring raised as partial stadium format. So they over look it. Centered is a general utility table that sits actually down below eye-level so individuals **can actually look and see one another [2]** as things are going. Two public displays up in front that allows all but these two individuals to see the display. These position (the ones where the displays could not easily be seen) would probably one of the fewer populated positions. What I'm trying to do is **maximize inclusiveness [10]**. The opportunity **to have cross dialogs to the greatest extent possible [10]**. I would like to put the technographer way back here. Kind of in the center to monitor activities all the way around to have all the controls for the audio visual as well as the lighting and environmental conditions back in here and have full multimedia control station. I've got lighting that in essence projects onto the work surface here whether it is directly overhead or kind of behind what I would like is not to have light shining into their eyes but actually presented from the back. Actually, I have a preference for workstations rather than laptops. Mainly, it's because of the features of having that larger keyboard or that utility there. I would like to see a separate screen somewhere of the order of 17 or more inches. I would like to have recessed into the desk so I can look down and see what I'm doing so I can look over it. Having privacy screens is not a major concern to me. I'm looking at a facility like this providing a group dynamic. I think there are some ground rules that you can establish up front to encourage that kind of dynamic to occur. If you are going to be hiding things or there are going to be proprietary things that's occurring. Then what you are getting cross dialog.



Design 36

Well, with the table configurations, want everybody looking in the one general area. And normally there would be a focal point [1] on one side of the room. Ok, I have multiple large screen displays. I don't think that one large screen displays enough to ... properly present, at least large amounts of data effectively. If you have multiple projectors then you can ... correlate multiple subjects and you can also use planning tools at the same time while everybody's looking at what's going on in the planning tools as well. Alright, well this is... the seats were actually two seats per table. The way **that I have the lighting is more unobtrusive** [8]. I do have some front lighting that, can be used for VTC so that if [11] ... you know the camera up front, that lighting will be proper. Also if you need a dark environment where you may not be VTC, but you are more in a darker environment where you are just using computer screens, you're not writing or anything, then the lighting would be somewhat non reflective off of ... off of your computer screen. That would be a table for a large...I actually put that on last. I was looking for an overhead projector. Normally this would be... it wouldn't be there because you don't use large screen projectors that much anymore. At least I don't. I never use them. I have been in a few meetings lately where they have been used, but it doesn't need to be there. It's more of a the ability to actually show. Yeah. Well, of course we didn't have enough of the right seats or tables. This would be a little bit bigger of a room then what we actually have here. So there would be a little bit of overflow. So that if you wanted to use this as a large presentation room, you could do that as well.

Electronic whiteboards are good. We didn't have any of those in there. The electronic whiteboard could be rolled in pretty much anywhere.

I prefer laptops. I prefer laptops myself on the desks. But then there may be requirements for larger screens. And if there are requirements for larger screens then having an offset... having enough room to where you could actually put a monitor and offset is **so that you don't block the view** [1].

Well, I chose the stick type microphones, yeah well, because of the technology... The way that the technology is going, it's not going to be too long before everybody is talking on a local area network so it can be recorded. So we're actually doing telephone type messages via the local area network.

I don't pay particular attention to colors. I think ... you don't want it to be ugly but you don't want it to be subtle at the same time.

Speakers and sound systems. Of course you want the speakers to be semi-close to where the theoretical sound would be coming from so speaker mounts would be relatively close to probably either the large screen displays or again, it's the focal point of the room.

Well, overall I don't think there is any one best design for all of the different meetings that they had listed because there were, certainly, technical environments that this would not be feasible for before... a lot of the... the meetings and the group... the group planning, I think this would happily suffice. Normally there is somebody leading the group in the meeting and that would be the focal point of this room diagram. A lot of...a lot of... and this is of course based on if you have a large amount of room to deal. If you don't have a large amount of room, you have a small room, then of course you're dealing with...

I think the design would probably be more flat. I still think... you would still... you would still have the front of the room. Well, this would actually be raised for each section. Right, you would actually have... there would probably be a foot distance in between the sections. I don't think that you probably want **to configure the room to do other things** [9].

The easiest part of designing the room? Probably, the table layout and the large screen display.

Well, I think the new technologies that we're dealing with will probably drive a lot more remote capabilities. And I think ... it's just necessary, at least from a corporate enterprise type situation. And you'll find that the networking is going to provide certainly if you have public displays on a single network you can get fairly good feeds that even though they may be still frames **you can still see who's... who's in the room and who's talking** [2]. And, you're gonna...you certainly have good voice. So.



Design 37

Ok, one of my pet peeves with **video teleconferencing which is intended to be captured** here is the concept of **power seats** [6]. I am very much... vehemently opposed to one or two seats being the clear seat of preference for the primo dog or dogs in the room. As a result, what I have tried to do was to design a scheme where there are few primo seats. For instance the **deliberate intention for symmetry** [17] here doesn't suggest that, you know, if you are the number one person in our organization where would you sit. I'm trying to make it difficult for you. And, the point being, you'd probably want to be in the inner circle so to speak and yet there is no clear primo seat. That was one of the main reasons. Certainly, as random as this may be and I do apologize. But for instance I did want to have the ability for a clear field of view. Part of this is just for the entertainment value of your audience. But for instance, if you were seated sorry... along this axis here. If you were seated here, you'd be facing in this direction. So these people would be looking along this axis. And what I wanted them to have was the public displays in the back, whether it's one, two, or three wide, I'm not sure I have a very strong opinion how many screens you need. Certainly flexibility would be valuable. I tend to think two is relevant. I would say two... I would prefer perhaps, you know, two public display screens or maybe using the appropriate little doodle. **So that when these folks look forward, they can see this in a non obstructive manner.**[1] I've tried to suggest that there might be a , over head projector that could be displayed on one or more of these screens. Then I'm suggesting that they , if there is a speaker or podium that these people could have a shot at this. Now, if we do it right, one speaker would have **the opportunity and the flexibility of being at any of three locations in the room.** [9] And such that people would only have to moderately turn their heads to listen to what you have to say. But anyway, that sort of symmetry is captured in... in each, ... each direction. I've got it right here. And so basically if you were a facilitator you could wonder around here and talk and, you know, **there is a lot of flexibility in this... intended to be flexible.**[9]

What other things to say? I was suggesting of this as essentially I was thinking of a of a notional ceiling mounted , display screen . What's coming to mind is when I get on airplanes there's like 20 nineteen inch monitors during the...you know, running down the airplane, you know, every five feet there's one of these monitors in the ceiling. Just **so people who are further back or have a harder time seeing** if you can't see the speaker or **perhaps the public displays system their might be a ceiling mounted unit that would be a little visually closer to you.**[1] And that could be mounted even as far forward as here as it would make since so that this collections could see, obviously and these people and these people, so.

Ok, microphones are... Let me ... tables that have microphones. My tables discussions was, again, I'm not sure whether you want three tables or two. I didn't know, I was just doing this to be representative. And also you could, obviously, put more if your room would allow more to be had so that you could make this as large or accommodate as many people as you think would be appropriate. , but again, **symmetry was the issue** [17] I didn't want to pull a left room right room. This kind of gives you something different then just a polarized view of the world. You could probably do it with just five or six, perhaps. Ok, microphones. I'm of the opinion that sound quality matters a lot. That's where I'm coming from. And I really do think, from my experiences, that having a microphone on or near the person's head is very appropriate. And I understand there is hygiene issues and you don't really want to do that all the time. And yet, the sound quality is just so much better if you do have an ear looped microphone that can , mount on you. , short of that, I am also kind of a person who believes maybe the speaker... so the microphone to pick up the audio should be on or near a person's face or throat or voice, you know, pick up the voice. But the microphone typically can be mounted on the table. So, for instance, speak here, listen here, kind of a concept might work. I don't know. **I am frustrated**

by a lot of the speaker systems even the ceiling mic systems. You know, they're non directional, so you don't really get the... the quality.[14] I'm not enamored of the one mic per table that you have to bend left and right. **It's just too much jockeying around and so forth.**[13] So I do believe that... my belief is it would be nice to have every individual have dedicated microphone each. Which suggests that the control panels to make that all work and mix and switch is very complex, but if you can pull off the sound, you've got a really good thing going.

My notional concept, as I indicated here, was that I'd kind of a like to have the large monitors slightly recessed in the table and I wasn't of the strong opinion where the CPUs are or should be. Perhaps now with the Windows 98 or Windows 2000 you might even have one CPU per table and two screens or something like that or two keyboards if you could pull that off. I'm not sure what the limits of computer science will allow us. But , but it is ... one of two things seem to be important to me. I guess I'd say this, is that I only think ... my intuition would be and **it's indicated here is that I want to downplay technology in the room.**[13] To me, one of the things is people are important. The computers are not as important.

And when I get into my discussions of coloring and so forth, it's simply of the nature that everything that is not important, in my mind, should be as dark as possible. Call it dark, dark blue, black. I'm gonna use black as a metaphor. So, in my opinion the tables should be black, the computers should be black, the monitors should be black, the keyboards should be black, the carpet should be black. I'm not interested in those, therefore I want to downplay them and give them a sense of depth, which the darker colors tend to give you.

I tend to be very strongly of the belief what should be well lit should be, for instance, the people and the people's faces. , so I am suggesting there be some good lighting. Maybe direction lighting, maybe even two... two lamps a piece, so that whether it's over head pointing at the people, which gives these kind of a prolonged shadows underneath people's noses and eyes and things like this. I'm kind of a person who prefers the forward lighting so the faces become a little more prevalent. So you know, my view is when you walk in here is a very, **very dark room that has a tremendous degree of flexibility and variability and lighting potential.**[8] I can light up the room very bright. I can focus the light just on these people. I can focus it on these people or this quadrant or that half of the room. I can have overhead lights that illuminate each table. I... to me, I don't think you can go overboard with lighting.

That's ... you know, I think I've just outlined a multi-million dollar investment in acoustics. I'm also suggesting a multi million dollar investment in the lighting constructs. Lighting and sound are incredibly important. I'm impressed, by my own experiences, by how powerful that can be on the mood of a meeting. And again, it gives you the focus. It gives you the focus. If you want that speaker to speak, then darken the lights, illuminate the speaker and make sure that the brightest thing in the rest of the room are copies of whatever that speaker is speaking to. , so that your eyes just naturally gravitate to the light and I want these elements to be the brightest elements in the room.

A couple of the beliefs that I have on cameras is that you should be **able to see the people who are speaking clearly** [2,11] . I think you might want to have a number of cameras that are showing the whole macro environment similar to the actually the decision support center because, you see, I've got three mounted cameras on the walls. You want to do that. **You still want that for the group effect** [10] . But I do think you need to have... argue at **every table should have it's own camera that can get the field of view of the , two or so odd people at each of the tables** [2,11]. So what, again, you have in the background is a control problem in near biblical

proportions trying to make sure you can switch between the ... the various speakers. But, to me, **if I can't see that speakers face and I want that speaker to fill the whole frame** of the ... the, I mean not the face per se [2,11]

Yeah, but at least a good upper torso and head shot of the speaker. I don't see what the use of this whole camera construct really is. So as a result I am talking in this mini example, which again, I may have fewer than I'd like to have, but I'm talking three... nine tables. I'm talking nine cameras plus maybe another two to four in the periphery here. So I'm talking about camera setup... to capture what I'm after here. Now one of the things I find distracting in video teleconferencing and situations is that, the camera is located in one location and then the , monitor... the display is in another location. I always naturally gravitate toward looking at myself to see how I'm projecting. But when I do that I get a side shot of myself and I'm not looking at the camera so one of the important things to me too is to be able to have the... **So the point was I was conceptually considering either ceiling mounted or something but maybe a able to swivel video that shows what you look like when you're speaking.**[11] So that if these people are speaking, they're looking at the camera, but maybe in the background right behind the camera there is a picture of themselves what the rest of the world is seeing of them so whether it's ceiling mounted or on the... on the lower element... I'm not exactly sure how that works out but. But you really...again to me, you want to have the camera and the picture what you're transmitting to be within the few degrees of each other in the field of view.

Some of the questions were related to whiteboards and document readers and such. There is a question of whether you want to have the people handling all their documents or whether you want to have the technographer handling all their documents. I'm suggesting maybe a little bit of both construct. I'm also a kind of person who believes that technology breaks and even if you have one elm of document scanner, reader, projector here, buy the second one. Because when that one breaks you have another one. Or when fax machine breaks you have a back up and I'm kind of a believer in having an emergency back up plan to to any document station. Again that's experience with decision support center down in this particular building is , **things break. And plan on them breaking. Expect them to break, but again I want them out of the way** [13] . But I kind of like the concept, and I don't know if this makes sense. But they are also on the axis here as well, so they actually see what other people see and they are a little more close to the environment of them then necessarily. You know, separate shield of glass behind them between them so that they don't understand the acoustics situation or they don't understand the lighting situation. So ...minimized but basically all I want the user to have is a keyboard, a monitor that they can't really mess with, **potentially removable privacy shields** [3] because tables are for some degree of notional privacy all by themselves and the recess screens will also give you some degree of privacy. So the only person you're really concerned about is maybe the person immediately to your left or to your right and as a result I was thinking one patent able idea was just to have a screen that pulls up... the screen doesn't have to come up very high. Built into these tables and then when they're not needed they go back down so we're very flexible. So aside from the speaker, the microphone, the potential use of the ... privacy shield and the keyboard, I don't think the participant should have access to anything else. And it **should be downplayed so that you don't have to have access to anything else.** [13]

So, that's, I think, the majority of it. I do think **being able to reconfigure would be nice** [9] . So, , hence I am a person who does believe the tables should be portable, they should not be bolted to the floor, they should be able to be picked up and relocated or, again, I'm not exactly sure how the physics of this would work out, but when push comes to shove you should be able to move things away. Another virtue here... the other idea that can be patented and then a virtue. One virtue of this too is that one thing I find with the age decrepit middle managers here is that

these older guys can't type so as a result they are kind of hand strong. And what I'm thinking is if you have an old guy who can't type here, I'd like to provide either someone who is younger or has typing skills immediately adjacent so that the team collaboration where this person who can't type can lean over very conveniently to their neighbor and say this is what I'm trying to get across. And this person can act as essentially a clerk typist recorder to get the ideas into the environment, you know, quickly and easily with some degree of discretion so they're not distracting the other people in the environment. So that's one of the thoughts that went through the mind as to why the separate tables and , the other idea that can be patent, I think is that, in theater they have the construct of liking screens. I don't know if you've ever seen them, but they are essentially a very paper thin sheet of silk or whatever with a panorama or vista on it. And then maybe behind it another one, or another one still. And the point is, you see in the audience, what you choose to light. As a result I'm thinking of at least a two fold version. One which is mostly dark, that you wouldn't really notice. And again, when you walk in, it's mostly dark. But if you're video teleconferencing to the world, perhaps what you have is the ability to back light another screen and , so what you have is a very bright wall with perhaps a Tahiti Islands vista so that when you're looking at somebody there's something interesting behind them rather than just something dull and boring or worst yet, computer equipment with wires hanging or something of that nature. Visual appeal makes some sense to me. Even if it's just tropical jungle or something or something or... or space. I don't care what it is, you know, outer space, you know, stars and some planets, you know, something seems appropriate so that you can have that option of flexibility for transmission purposes. , it could also be handled by having some large decorative tastefully done paintings on the walls and the point is you can choose to illuminate them or not Depending on what mood you are trying to display over the screens. So the walls are very important to me, but I think I would go as elaborate as across the wall on at least some of the walls so that you have the flexibility of creating a visually appealing transmission of what's going on within the room.

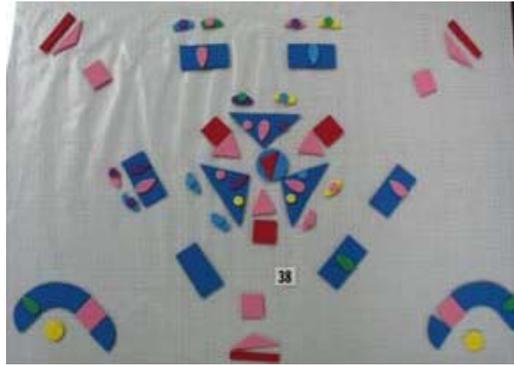
Whiteboard, I don't care. Put them here or whatever. I am also a fan of potentially now that we're moving to flat panel screen technology, to have the ability of a flat panel screen that's kind of ceiling mounted and then pivots down for viewing and then disappears when needed, so then the... the whiteboard is available for all other times. Something like that seems like we might be on the verge of reaching that technology today.

I would say time, strangely enough the issue is time. I never thought about this before I walked in the room. I mean, it's not like a thought about this. This is just all of the top of ... I enjoyed thoroughly the eighteen examples , very... very good examples and they got the creative juices flowing, but on the other hand I would say if you let me go home and think about this I might come up with slightly different, you know, configuration. So the point is I wanted to get you something in a timely but I also want to go home and think about this for a week and try to come up with something more incredible. So, that's just the way I work.

Tables.

Well, the , the smaller participants, I think could see, is that I would put them in just one little triangle quadrant and then deactivate the other two. [**in design**] So I can handle this a little more, you know, if I just had 4 people I might just activate the back tables or just two or 4, you know, and this seems to be flexible and that was one of the design criteria that you read as a precondition was. I wanted a table, you know, as configured but I got... 18 seats currently configured, but, of course, you could add more as needed. But here you've got something that you could use 2, 6, or 18 people as needed, , and again, I think there is symmetry to the... If you

activate two of them and so forth. And so the scalability, I think this is a very scaleable design for whatever it's worth. Personal opinion subject to debate.



Design 38

One of the things I wanted to do was **give people space... work space.**[7] So I chose the single circular tables to give them space for whatever documents they may have. I do like the idea of having **front displays so that everyone can see** [1] . And then you've got a front piece for a moderator. So those are all important design elements. Well, one of the things... I haven't got computers. But I'd like to have multiple monitors possible at each workstation and share the work. Of course, whatever anybody has on a monitor should be displayed on those front pieces. This **would work well for small groups.** [-4] You can... using a good bit of space. It **doesn't scale up well for larger groups** [-4], but for a **small design team working for on collaborative plans** [10] , it would work quite well.

Yeah the microphones. I don't know . It's nice to have directional so they don't pick up all the noise. And so I certainly got it on the desktop and flop it around a little bit.

Yeah the lighting is important only in terms of... Actually it doesn't really need to be on the desk, I don't think. I think it could be ceiling mounted as long as you've got a no glare situation and it's not shining in you eyes. I'm not a lighting expert, but , if you position it properly so you don't get either one of those conditions...

Well that's not real important. I just made it a neutral beige. You don't want it to be distracting. The chairs should be comfortable, ergonomic chairs, I guess.

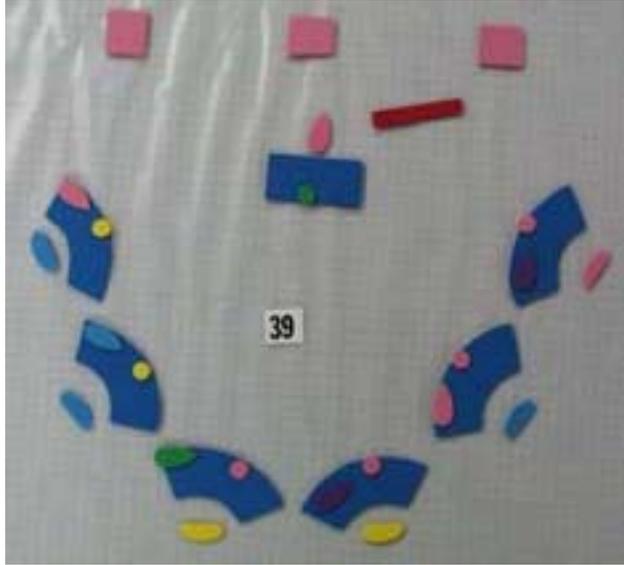
Yeah it's like a whiteboard or something **like that.** And that's movable. Put it out of the way if you want to or **just move it in.** I didn't put a document reader or anything like that, but honestly that can go in the corner or something like that.

Greatest challenge. Well, honestly, I didn't have any great challenges with it. I realize this would not meet all the needs of all the different kinds of business. But, , so I just ignored that and designed what I would like. One of the things I always dislike about any of these things is people are so crammed together. I mean, that's... invade my personal space. I... I would much prefer something like this. I do recognize the cost issue, the space issue too. That's the way I'd like it.

I mean, I always liked the... I think the way the DSC is set up. It's pretty good for the space limitations. The number of people that need to sit in there. I think the horseshoe design so that everybody can see forward is about the best. Now I did mine in an expanded horseshoe because I did mind using as much space as I could. But the horseshoe shape is probably optimal for anything like this.

I've already got... I've got 6 plus a moderator or something so ... I mean, they would just use the same space. It's specially designed for that [-4] .

I couldn't talk about the monitors. I think, you know, the computers are not that important. What is really important is the monitors, I think. I'd like fairly large flat screen displays. You know, either dual or rather large wide screen because I think that you should have a large display space or something particularly for design work.



Design 39

Well, I preferred a circular configuration because I thought that was beneficial for **everybody to be able to see everybody** [2] else and conversations and all that kind of stuff. And then I had the public displays. I wanted them **overhead mounted** [1] and so that everybody in the circle. And then I was trying to minimize invisibility through the circular arrangement. And then this two seats at everyone. I just ran out of seats. And, I thought it was important to have individual private lighting for people to adjust as they saw fit. And adjustable seating so that they can be comfortable... I wanted whiteboards and then cameras on those so that they could be displayed on the public displays when they were in use. Let's see, this is for the overhead projector and the control person. And then, I put this back here to kind of as a separate area for like faxes or things like that. When , video teleconferencing they only had hard copies so that they could fax things to the other side to the remote locations.

I put whiteboards here and here so that it would be accessible to both, you know. This side of the room and this side of the room and the yellow is the camera that would show it on the public display.

These? Oh, I was thinking of those as microphones in the overhead because I was thinking that, you know, some people may be intimidated by microphones on the... on their desks and they might move them away. But if you had the overhead microphones, you would still be able to pick up what they were saying, that kind of thing.

Not so much the types but I did think huh. I didn't think it was that important to have it **any kind of privacy shields** [-3]. But I did think it was important to have the computers... , the CPU's on the desktops because it was more accessible to... then, you know, put things in and it provided a little bit of privacy if they were... if they were worried about it. But I didn't think that was a critical piece for them to be private. If they were in a group then you don't want to be private, but, you know.

Now, I can't remember what I said. But I think I said I'd, you know, wall coverings like ivory to pale yellow coloring and gray carpeting, and blue furniture... and wooden desks.

What I worried about the most was making sure that **my arrangement had equal visibility for each person** [1] . And I was shifting things around a little bit to see if... if... It was hard to figure out the angles on the 3D to the 2D. So whether, you know, whether these people here would be able to see just as well as the people on the end and in the center.

The easiest part. Well, once I figured out where I wanted the tables to go, putting all the accessories around them seemed to be pretty easy.

Well, that's what I did have a thought of you know, they have a smart track systems that their planning for ships and they **allow you to reconfigure rooms very easily** [9] so that your electrical outlets and all are... are available and you can... And, so I was thinking that I should... I didn't know what piece to use, but that's what I wanted to do so that you **could reconfigure this in a smaller group** [9] , you know, and rearrange so that like this part... you could do that kind of stuff.

I can't think of any now. I guess it would have been... it would have been easier if I had the 3D part of it, you know, put ... there were probably other things that I would have thought about in that level.



Design 40

Ok, just based on past experiences What I've got here is five displays, large screen displays that would normally be recessed back, when you have 5 there is no reason to be able to... these would be catty corner here, these would be straight up front. Doesn't matter whether they are recessed or actually out. Just make sure they are fixed up high. This is a 22 by 26 seating arrangement. The microphones would be at each station instead of every two people, everybody needs to have their own microphone etceteras so you basically would have a seat and a microphone. **The computers are recessed with privacy [3]** so people can work independently. Other people can't... well they can look around if they wanted to, but it gives you a little more privacy. Podium down here for main speakers. Control station over here. I'm not sure which you would refer to it as, but typically uptown we have somebody who will be sitting over in a corner or could be actually back here in the back, out of the way. But I've seen it typically in Pentagon, it's easier to have the person here and in case somebody **preloads** their software or their programs up, they can actually take the disk and walk over and give it to the lady that's running the show. She also controls these various large screen displays. I picked the large podium because a lot of times she... two microphones and two speakers etc. A large work area for people who want to talk about presentations so they can walk back and forth in front of **displays**. These tables right here are recessed down into the floor and these are up approximately 3 feet/ 4 feet up so these people are looking down on top of these people here. **It gives you a greater viewing, and accessibility to the large screen displays [1]**.

On the outside, here, I've got white lights... all the way... they should go all the way to the back. And then you've got a white light, you've got a blue light, you've got a white light, you've got a blue light, you've got a white light, and it goes like this back and forth across. So **if you want to really dim the lights [8]**, you can have the control where you can turn off all the white lights and you got blue basically as a pale blue, dark blue, so you can still have enough light so people can see what they're doing, but its dim enough so you can really capture the... the presentations and the large screen displays and it doesn't put you to sleep and you are still able to use your, ... your PCs.

Laptops are no good as far as I'm concerned are **too slow for video conferencing [11]** and when you're trying to put large amounts of information out during VTCs. You need PCs. You need, top of the line Pentium 600s or whatever. Something that will give the capability to put the information up quick. People can see it. Not having to worry about loading stuff up. What else do I have here.

Cameras. I forgot to put the cameras. The cameras ideally would be located on top pointing down at each one of these things here, out of the way of all the participants. And that's also controlled over here by this lady. What did I forget? That's about it.

The colors of the room. Typically I like white all the time because if you have white lights and then you have blue and white, blue. I'll take a blue carpet. I'd like to pick wooden adjustable, blue cushion chairs to go with the blue carpet. Oak type tables. It doesn't really matter. As long as you can, in some ways, reconfigure. And most of the ones I've seen are **reconfigurable so there basically a table [9]** here that connects to this one and this one and this one and this one, but I just got the basic set up for a 22 by 26 seat ... audience. That could be expanded all the way out. And if you expand it out another tier you ideally probably want to either keep 5 large screen displays if they were spread out enough, but I've seen as many as 7 large screen displays.

Finding all the pieces. No, just, like I said, I've gone to several meetings. I mean, it was almost on a daily basis and I already kind of figured out what I... what I'd ideally design.

Four or 5 people? Four or 5 people, I'd just take out the back tier, take out these cameras here. I'd leave, well, if you had 4 to 5 people, you probably don't even need a control person. You'd just have a single station here. I still like to have the podium out here in the thing and the blue/green lights in this basic configuration. Four people is kind of hard to design for, you'd ideally at least 10.

Not really. You're gonna have a control room back here in the back and that you'll... this... this computer here would be controlling. But typically all your hardware stuff would be back here somewhere. And, oh... the other thing. I was thinking about that. The capability for collaborative planning. Each one of these computers should be hooked up to a LAN and some kind of collaborative planning tool, **decision making tool to where... and there's a lot of tools out there in the market where this computer can talk to this computer. This guy could send this guy an email or document or send it to everybody independent IP addresses. When you do that, you can actually do work while you're at a meeting. [10] Typically we didn't do that during VTCs because you're limited to time but, after the VTC, we'd get together and we'd go over document basically and everybody would have access [5,11] to the document or certain people would have edit and rewrite so we could... capabilities so it would go to the central person. Usually the guy that ran when you didn't have anybody down here would be sitting back here. So this guy would delegate, ok, and typically this would be your top rif-raffs and these would be the little... the... the colonels and captains back here. But, but typically you could actually edit and send your... your stuff back and forth. Yes, because each one of these appears out of capability of (??) each one of them, each one of them. Right.**



Design 41

Now, I've never actually seen ... This is the support center environment but I have been in VTCs like this. It's a stadium seating arrangement which is hard on here. I stopped purposely at just the two rings versus a lot will go up to three because I thought, behind, if you needed to, you have the ability **to bring in, seats and stuff like that for people who don't necessarily have to participate** with the software [4].

I actually found no more than two participants per table unit with a shared microphone at each.

Because the screens in the workstations would become shield and they're gonna become recessed somehow.

Well, I think it's just my inability to... I just kind of started doing it and then just sort of moved it... Basically I was just sort of working back to front, starting in the back I had the control rooms and things like that with lighting in the first tier back here and it's all recessed lighting. And then mounted cameras here into the back to be able to project up here to work, ... to the display. I had a lot of lighting in the room, mostly because I wanted to be able to take it in units, you know, if we don't need the back, just get rid of that and so on. I wanted to give them **more flexibility in the lighting**. [8] Track lighting up here was... I thought about track lighting versus the recessed lighting. It's just ... there sometimes in meetings when you just need more light.

The square things here are speakers. I found as a participant at these **meetings sometimes it's difficult to hear in these rooms** [14]. And so I kind of thought of a design that I would have a say in. I would want **more speakers for people to hear what people are saying** [14]. And so I have a fair amount of those. The room, just as a general note, would be able to handle things like lapel mics and things like that which almost goes with the room. ... design it in here. Then I played around in the front a bit. I kept bouncing back and forth.

My whiteboard was here and then here. I ended up with the document reader here near the technographer station. And I had the technographer off in the front of the room with their own light and (??) and all that near the document reader, because she is going to be the person who can (??). The whiteboard, which I am not very fond of, but people in these meetings are comfortable with that. I put one there. Portable, long, near the podium again, with microphone and light for the, people who will be at the podium. I thought a bit, and I didn't do it, about putting individual document readers at centralized locations at the workstations as well, to me, that was... and you get rid of that and allow the participants to just put it on (??). The angle, I don't know. It wasn't a perfect, but, you know, the more I look at it, it's almost not a bad time to just kind of bring it in, versus squaring it off. It almost makes it feel more like it's drawing you in than walking into a door and having to move far left or far right to get where you're going. My, speaker. Yeah, I tried to put five in. Again, just back up more than anything else. If anything goes, you probably wouldn't lose audio. The monitors were recessed because, again, with the stadium seating... Yeah well, you can do it either way. You can do it with laptops or desktops. but either way it has to be recessed because of the stadium seating, I wanted to give some **privacy to the front row participants** [3]. they, you know, (I think something about anonymity) and with a little bit of a recess... then you can recess either or, I think if I were investing in a recess station I would probably have regular CPUs vice the laptops, (??) laptops going portable.

Yeah the colors. I sort of favor darks in my woods and floor coverings and more naturals in my wall coverings just because if people need to pin things up, or it's just a more neutral world that

way. But the darks definitely for floor coverings, it's just a maintenance thing as well. I know at home. And the dark wood for the same reason. I don't know if I would go with a real high gloss wood because of fingerprints and stuff like that.

Placement of lighting was very difficult. I sort of knew I was going horseshoe and I was going stadium. That was just a matter of getting coordinated with my little foam thing, but I had to think about...and I sort of played with the lighting a fair amount. I wanted it to sort of... I don't think I portrayed it right. I wanted to be able to achieve if necessary almost a cascading affect on the light. Not bright and glaring, but just the ability to manipulate the lighting as necessary. Speakers, microphones, those sorts of things are pretty easy and same thing with placement of technographer and podium and stuff like that. But it was the lighting. I think that was....

Again, that was one of the reasons I went to stadium. You know, two person desk unit if necessary, I'd go as low as eight. Or as many as twenty odd in this room. And again, I don't think I would go to a third tier in here. I... I don't like that.

Well, no... no, not in this design. I think I've got.... No, I'm done.



Design 42

First, of all I'm gonna [expect] a **lot of interaction** [10]. I don't like too many people involved so I've sort of limited it to a reasonable amount with a small U that's not deep down the sides so **there can be interaction and the cameras can** [11] catch people at about the same level, rather than having a long U. I've found that those haven't worked. We had two different rooms and they used on the other end and I preferred the one that looked like this, more like the training center room. Kind of a large video display in the center, where **you can see the people at the other end** [1] and it's large enough that you can catch a number of people at the same time on the screen. But I also like having at least one, display at either side where you can put viewgraphs from the table. I do like the idea of the projection table, but I like it closer to the podium or the person going to speak so that there's interaction between the person on the podium and the table that the graphs or whatever you are using is.

Whiteboard is important to have. Location is not as important. Other than it be movable so that you can get it where at least people in the one room can see it. I like the lighting over top, not on the table. I like to **keep the tables as clear as I can for being able to put in use for your own writing and keeping notes** [7] and keeping your own documents that you may have brought with you. The idea of the microphones. I've been in two or three different video teleconferencing rooms and if you don't have your own microphone. It's been a problem. Sharing it doesn't seem to work. So, once you place it, then you can speak into it. I found most of the problems have been in repeating. When you talk into a microphone, it's not in the right location for you. So, one per person. And that could be done if you're going to have any layering, stadium seating with a small group behind the main actors. It's very similar to the training center with the exception on the ... you can overlap just a bit.

I do not like the laptops. if you're going to have screens, I prefer larger screens. As you **get older, your eyes aren't as good** [4]. But I think, with the new thin screens that they come out with now, those can be put someway in the table. **The rest of the equipment can be below** [13]. But I also like the full size keyboard. So...

Oh, those are the cameras and the cameras should be noticed everybody is kind of facing the cameras. You can move them. But they should get the up front views. I don't care for the ones [angles] where the long sides where you're looking down the row of people. I found myself, especially wasn't when the video wasn't that good, [11] asking the question, who is that person, who is that person. Whereas **if lighting is good and you have fewer people and they're all about the same distance from the cameras, it makes it much better** [11].

I tend to like the light grays and light blue combination. And, ... or light gray and **light**. I don't like pure white. I was really impressed with the AEGIS conference center and the one at Panama City is very similar to that. I like the marble type and I don't know what material it is, but it's a marble like substance. If you're gonna sit any length of time, chair's got to be comfortable.

I don't know, I thought of the speakers ... **or the microphones right away. That's been that and having two small videos. I wanted to make sure the video was large enough... the video receiver was large enough and the microphones were one per person.** [11] And that the lighting was out of the way and that we didn't try and make it too big an operation. **Like once, it gets too large ... you don't get communication between the two ends as much so.** [10] And, I mean, even this might be too many. I've got (he counts to himself). I've got about 14. That's probably the limit ... I would prefer something smaller than about half of that.

Speaker, podium and the desk with video ... where you put the view graphs and having them close together [presentation station]. One of the problems I've found in different rooms is, if you're not close to where you can help in handling the viewgraphs. If you're not set up ahead of time and practice ahead of time, most of the times we don't do that. We show up and it makes it easier if you're close to the person that's going to support you. Yeah, I would have somebody there in the room so that if something goes wrong, they can handle it quickly. And also, they can support you.

I don't think you have to make changes to this one because I've already down to, you know, the order of 14 and I think you wouldn't have to make any changes for 4 or 5.



Design 43

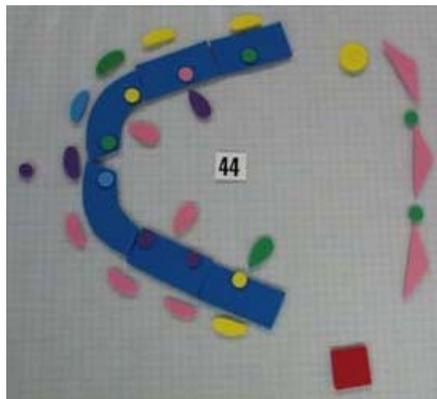
Ok, well this design is based on a design that I was part of two years ago, I guess it was. So it's a modified U kind of widened out at the front to give a **better view of the displays at the front** [1], to give a little bit more room in the front. But otherwise, seating around the side. Lighting up in the ceiling, . Not, not in the participants' eyes. That's important. Down on the desk area individually controlled microphones, flat on the table, in fact, wait a minute. I selected microphones. The idea would be to make the microphones disappear. But keep them as, you know, keep the quality of the sound as high as possible. Be able to **pick up everybody's voice** [14]. So, it doesn't really matter as long as the microphone is, you know, pretty much invisible. **Camera positions: one in the back primarily for the podium. Two in the front for picking up the participants** [11]. And these could be off to the sides. It really depends on the quality of the optics. And they would be the zoom would be controlled. Then, there's document readers and other peripheral stuff can be off to the side. Other than that, it's pretty straight forward.

The color of the room? Well, the color should be try to keep them earth toned. Carpet darker, tables darker, mahogany color. Walls a little lighter subdued though. Everything is subdued. Tabletops should not be reflective at all. What was the other question? Type of computers. **Preferably the computers should disappear as well** [13]. They should be built into the table and if not in use, gone. And the way to do that would be to have a basically the table itself would be in front of the participant, would have a hinged part on it. And it would flip up, keyboard would be there and the monitor would you could bring it up, or just slide up in front of you. Then when not in use, you slide it down, flip the keyboard over, you'd have a flat table.

Well, just the general layout. I guess the relationship of the participants to the cameras and the display surfaces.

Oh, it was all pretty easy. I went through a couple of different design options prior to this one, but it seemed like this one was the best. the ... just the layout. The participants were able to all **see each other, view each other** [2] and they were positioned relative to the cameras... allow them to be... Cameras basically are... are represent the other participants in remote areas.

Well, you could certainly shrink this down very easily. That would be the main one. Yeah and if you got down to 4 or 5 you could even make it circular.



Design 44

Interview 45 - Experienced User

What I was trying to do was the inside piece would be for smaller meetings [in design] and ideally this would be stadium seating. This would be raised a little bit for larger meetings. The one thing I was trying to keep it from getting was too long. Because what I've seen in some of the places is when you get these really long sides on the u-shaped ones, **it gets really hard to see who you are talking to sometimes if you are on the other end.** [2] So what I wanted it to be a little bit more compressed that way.

One of the other things I was thinking about was public displays. I was trying to decide between 2 and 3. I like 3 because if you are in a video conference. **It is helpful to see yourself as well as the other side** [2,11]. This way you end up not talking to people in the room you talk to the cameras or to the screen. So, I ended up with 3 so you could show people in this room as well as people on the other side and **still be able to display something** [11].

The rows of lights are just meant to represent rows of recessed ceiling lights. There are three of them.

I had three cameras. I put the document reader closer to the lectern or speaker. I put the whiteboard next to the technographer stations

I would think laptops ... **privacy** [3].

Two persons per microphone. But, I'm not so sure. If I had thought about it more I think lapel microphones would have been better. But I think if you can actually get the right quality microphone you can do it that way

Color- no strong preferences, just light room.

Trying to get what I thought was a reasonable number of seats without letting the tables get too long. I wanted it a little more compact.

Selecting the U-shape. That's how you get the people close. Document reader had to be near the speaker.

I tried to accommodate that with the T in the middle.



Design 45

1.

Past experience has said that theater style is not good, everyone needs to be visible and able to see each other so that is why it is in a “U” design. Then there is what I call back up seating on each side so that if there are other people in the room that are part of the meeting but not the main participants. You know if you have to bring some one along they have microphones and speaking capabilities but they are not the main players in the room so that is why there is back up seating there.

I also have a microphone for each person because in the past it does become difficult; you end up leaning over to the next one. It’s not as efficient.

Starting in this corner, this is the technologist that would be sitting over here with a microphone just in case they need. They don’t need to be in the main part of the room and that is why I have them in this corner. In this corner this is the document reader, this person is to sit here with a microphone so they too are out of the way and don’t need to be up in the front of the room.

Again I have the “U” shape seating. Ceiling lighting, I don’t see that that needs to be on the desktop to crowd the desktop.

The computers should either be laptops or recessed PCs with a glass top. So I don’t see a need for privacy screens. I don’t even think privacy shields are necessary if you are in a group meeting, I don’t know why you would need a privacy shield.

These are chairs back here because I didn’t have anything to mark as seating. These two red triangles I have marked as podiums so that if someone is on one side or the other or you have duel speakers you don’t need to be all crowded in one spot.

These are microphones I didn’t have any small ones to show as microphones. Ceiling microphones would be fine or attached to the podium itself. Here what I’ve done is two different configurations. One is for public displays but also the white board back here and any other board you need to communicate whether it’s with another location or another capability to be able to put more than one area so you have numerous boards.

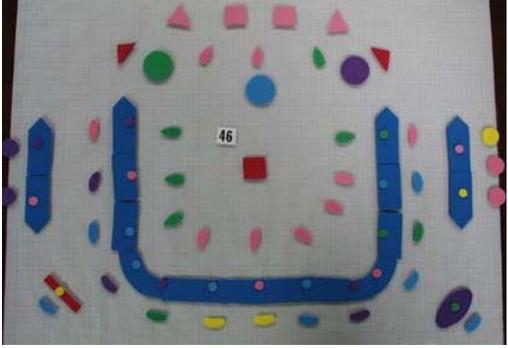
In the past where I have had it is over to the side and depending on the configuration of the room if there is any interior holes or anything you are looking around. If everything is here then everyone has the right angle to look to the front of the room. This is the over head camera coming down for the display. Colors should just be cool, unobtrusive nothing flashy. Definitely carpeting to cut down on the noise level. Natural wood colors for the table tops so nothing is distracting. I wasn’t sure about cameras or whatever they need to be able to see everyone.

2. Trying to remember all the past experiences to decide what would be the best seating arrangement. I have been in a lot of meetings where you’ll have a second row, like a theatre design. And no matter how much you tell the people sitting in the front they do not need to turn to the back, they need to focus to the front because you can see everyone on the screen, people still continue to do that. So I was trying to come up with a mechanism that had all the main players in one setting and then back up members on the side.

3. Microphones with every person.

4. I don’t know. I thought about that when it asked about individual settings. The room is for groups no matter the size so to me if you have a small group, just stay around here. You don’t need to spread it out if you just contain yourself you don’t need to rearrange the room at all.

5. I can’t think of anything.



Design 46

I wanted it to be **multipurpose** [5] so I have designed a central area that small teams could work in [in design]. This is supposed to be a circular configuration with some type of microphone per person with some type of central display that could be viewed. It may need to be multiple so everybody could view, but its low so that you have unobstructive viewing from each member to other members. The outer ring would be to support a larger meeting [4], would be stadium seating so they could be unobstructive viewing to the front displays [1], knowing that if you had a larger meeting, you would probably not see people at the front of the circular design. Multiple front displays to support any type of presentation driven off of PC's, document readers, whiteboard, VCR's, decision support software and those type of things.

Cameras. Multiple cameras **in the front of the room that could support VTC meetings so that you could capture the audience in general, in a general pan, or zoom in on particular areas of the table** [11].

The capability to have some type of podium with a speaker at the front with their own microphone for the larger group configuration, some type of supporting structure here that would support the speaker then doing overhead projectors or document presentation from that. [Presentation station]

I just showed, kind of, some rear lighting. There would, obviously need to be some type of front lighting. Obviously we need to be able to be dimmed to make the front presentation boards more clear so that you wouldn't have a glare on those.

Workstation preferences would be recessed in the table **for unobstructive viewing of other participants** [2]. That's particularly important on the center area. If you were looking at having **collaborations** [10] or **doing things where eye contact** [2] and those type of things are very essential, I like the concept of a retractable keyboard, such that if you are not using the computer, **you have the desk space available** [7] to layout documentation or those type of things. I like the monitor **recessed into the table both for vision** and for **some privacy** [3] that it would afford, if it was kind of semi recessed, particularly in the stadium you may need to have some type of privacy shield that was retractable or whatever, if that wasn't an issue for some type of meeting.

No big preferences on room color. I guess I'm not the human factors, but obviously, you know, you don't want it to be wild red. Something somewhat muted. You know, maybe bluish or gray with the opposite being kind of floor coloring and some matching colors for, you know, furniture or chairs and stuff, but you know, muted and blues and grays probably compared to, you know, reds and oranges or something.

Trying to come up the configuration that would be multipurpose [5]. And trying to have the functionality that would, both support small group discussions, arbitration, those types of things, while supporting a larger meeting that would be maybe more of a VTC, where you... the closure of people within a shape was not as important.

To me is one microphone per person, where you can control that... that capability as opposed to sharing.

I like a table mounted, with a flexible neck and something that you could control whether it is on or not. I hadn't thought a lot about whether or not, this type of facility were used for training. Or, whether or not, it might be beneficial to have **some type of earphones such that you could**

hear something [14] at your own pace, if everybody wasn't on track, if you had electronic instructions that... that might be valuable, as well.

If it was basically more for arbitration and decision support and not for VTC, then I would go for a closed configuration type of table. And, **if it had to be VTC, as well, [5]** then it would be something that **could be reconfigured to be both [9]** closed and open to the front.

I didn't think about it that way. I just thought **about if I needed a larger VTC audience, [11]** you wouldn't necessarily seat people in this area. You would have the back half of the stadium seating.

Nothing outside of what we have spoken to. I mean, the little foam things don't, you know, point to saying what something is, but, I think nothing else then what we've talked about.



Design 47

This would be called an arena. Since one of the things I experienced down at Student Support Center we have with the u-shaped **table is crowd control and getting people in and out**. Hence **you need more access** [4] U is split.

Also second thing I noticed at the meeting is usually one or two top dogs. When they really have a meeting, there is really, there's not, everybody isn't always neutral, or everybody isn't always even. **There is always going to be four senior people and they are going to be given the prime spot.**[6] When there are deputies inside they need to be close, but not too close. And then usually senior people always have staff or other people underneath of them and they tend to sit right behind. And the same with... we also have, what I would normally call, a peanut gallery. **We have chairs in the back because now and then you need large meetings.**[4] We've had up to seventy some people. They can't all sit at tables, but they still need to come and be part of the event hence, side chairs and everything that could be stacked and gotten rid of.

This is all one level, so it's not stadium seating but these would be more recessed computers or flat panels. Whatever they would have. **Microphones more set back so they don't interfere.**[13] Chairs would be low backed at least on the front, so that way **these people don't totally block the view in.**[1] Now I have at least a standard three large screen displays and then I have two auxiliary, which I recall more large screen monitor, projectors on wheels, so these are mobile.

My whiteboards are really mobile. They are on the side, but I want them mobile because now and then you are going to need them, now and then you're not. Augmenting this is what I would call collaborative planning. Whiteboarding and stuff on the computers or whatever with a camera/microphone built in, one per table. So if they don't want to do this, but they want to **whiteboard collaborative amongst each other** [10] then they have that. Obviously these are the portable podiums or overhead projectors, but they are also mobile. So you could **move everything out of their front view** . These are eyeballs... not... I don't want eyeballs down on top as we got them because **they blind the person and they also blind his screen** [13] . So they need to be in **between normal overhead lighting**... but they need eyeballs [cameras]... So we can darken the room and use **low lighting** [8]....**difficult to understand*

The other thing **they got to have is space on these tables for writing** [7] because they're gonna bring written material to want to take notes and all the computers and all crammed up in there block. So, they are gonna bring stuff anyway. The paper, they're gonna throw it on the floor on their side or put it over top or beneath. We're still partially an analog world, so they still need notebooks and paper. So they got have that amongst them.

Obviously you already need a table or something near by where they enter the room to sign in, check in, check out or even put briefing material and stuff all along sides, so they can pick up. Not that they need it here, but they can come and go cause you already need a list of people in attendance.

The walls, I would always have them in sound soaker to absorb sound. It has to be carpeted because you don't want to hear people crompting and planking around, but you want to be able to hang stuff, like we do here, and we are still gonna have analog paper and stuff to hang up. Now, it may be stick it or whatever for, I guess, large... the post it boards, but sound soakers seems to be better even on the back.

Now there needs to be some sort of tech control. Which instead of having the more traditional technographer up in the front, that person, to me, needs to almost kind of sit back. The technographer does not need to be part of the exact meeting, because they are not a vote or whatever. They need to gather data, record data, and **manipulate lighting screens and everything** [8]. And that should be more done by if we have a leader or coach. They are the ones that stand up and walk around if so necessary, but they should have a portable microphones and they should be able to have some device to move projection and stuff forward or they tell... you know, hey bring lights up, bring the lights down, record this, get the thing ready. And they kind of need to be, not hogging up a seat here, but be out of the way. And the other thing is that we don't want bad spots. So, as we have down there... cause, you know, and then when they're sitting like this they have their crick of their neck looking forward. So this person may not be able to see this screen well, but they can see these ones **usually the ends of the tables are too close to the screens** [1] right here. Then the large screen TV here. ... can be ... moved in. These ones are looking at that, **this one has a common view anyway** [1].

Cause this room should be **multifunctional, standard classroom lectures** [5]. If we're giving a class they can come in here. Just an information brief. They're given that (pointing at an area of the room). They can overflow. We can bring in mock up rooms, like for us in a tactical. Here's your support areas and **you could actually divide them down since they are physically separated by space** [12]. This could be one area, this could be another. So, you have three separate areas, three different screens.

Well, to me, you need the wooden, I'd rather have a little bit lighter wood then... but the wood, whatever has to be covered. Plexiglas, glass, we're tearing it up. I would say definitely always need skirting. It's probably more comfortable for the women, but you need to close up all the cables. Second, the carpet has to be dark. You know, dark but more neutral. Not something black or anything, but, you know, we have red... dark red down their burgundy, that dark brown or something. In other words, hides dirt and everything, but you don't want the carpet to be so light to the people seeing it. The sides have to be neutral grays. I like when you kind of have a medium gray. I like the distinction from the color to the carpet to the walls, especially when you darken the space down, people got to be able to walk around without tripping and falling over stuff.

What I have there are microphones... They have to have their own individual. These [*people*] back here, they should only have one per group. And the only thing I would have back here is... I would have some sort portable microphone with a stand that you could put up cause these people may actually have questions that they step up and come to a microphone on a pass, so the speaker can see down if they want, they can turn around and see.

Or you have cameras and stuff up here that **cue on a microphone to talk and then the camera will cue and the person will display, so you don't even have to turn around** [13]. You'll see whoever steps up to the microphone, if it's a voice activated with the camera cueing. But to me, this group can work among themselves or this group can be **connected to a larger organization and viewing them through these** [2]. Or through these portables whatever they want to have a more up close person to person. They could have them on these, on these collaborative planning things ... whiteboard, video camera, put displays and maps, or power point and stuff.

I would say its going to be space [4], since this occupies a significant footprint to be taxed and used for if you have a narrow room or something like that, obviously this design is not going to work. And the other, my main one is getting people in and out [4], so you don't have to cram up one ... trying to get out the ends and backs, that they don't swing back and bang into the table

behind them. And then you got portable... so things can be moved in. Things need to be, whiteboard and stuff ... portable you know, wheel them in, but you're not going to use them for every meeting. So you get overhead projectors and stuff out of the way. And you go totally video to them. But **you got to be able to swing things in to allow people to come up and talk and some people** don't like to stand at the podium like to walk around and look at their people. **Depends... but you got to be able to do both.** [5,9]

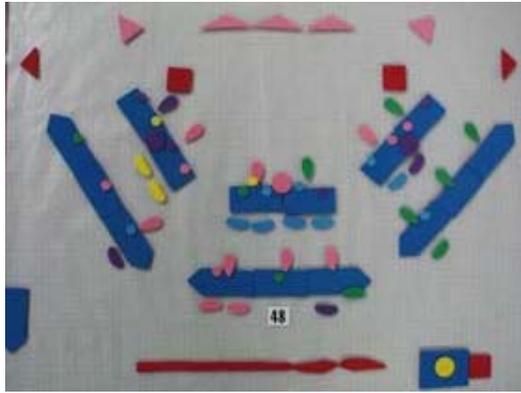
I knew how I was going to lay it out. Already in mind.

I mean, if I only had a half space then I would just V it. [move tables reconfigure]

I want to... how do I isolate groups? Can I, in essence, have a portable wall a curtain that I could slide down to **almost like here or here to isolate** [12], cause there's now in some of those rooms and ships we have according doors we can pull all the way up and isolate a room if you want three individual or you pull it up partial, however it goes, so everybody can see the **large screen displays** [1], but they're not bothered by the next organization, whatever noise and stuff and the according will absorb some of the noise. But you could isolate them. **Sections of the room for different parts** [12]. If you're gonna have two types of meetings or events going on. Well, I don't know if it would have to be stadium tiered then you could never do that. If it was flat leveled then you could do a partial accordion door or pull a curtain down to isolate, but a curtain won't isolate much of the sound.

We didn't go into the computers and stuff. These ones would be recessed. **I put them on the end recessed back cause I don't want the blocking** [1,2]. Now they can be laptops, but they have to be... what I've learned is that they have to be fairly high end and powerful, 450, 500 Mega...cause we're dealing more and more in heavy intensity graphics and I think they should all have email or stuff built in. Not only this person [technographer] can email. **These will be for collaborative planning** [10]. These tend to be real high end Unix systems. But, they can also email or whatever out to the community, so the person on the other end of this screen, the next state or the next part of the world can also pick up and pull his power point, his document, his whatever, his redlining, or map. He and she or whatever can join in the same event. Right now you got to go kind of wait, send something to a fax out, wait for them to receive it. And I think you need a mix of systems.

If you want **to be multipurpose** [5], unless you just want to have one, if you have one you have laptops with NT or something. If you want a more unique environment, you need to kind of mix **UNIX** systems with PCs or NTs cause NTs are never gonna be able to do the high crunching, high visual graphics right now, but the Unix, Unix tends to have larger footprints, though and they are a little tougher man machine interface.



Design 48

This is a tiered arrangement. This is the lower tier and this is the upper tier. I used the curved arrangement because I was trying to serve two purposes. To get the folks in the **room together to see each other** [2] as well as possible, but at the same time, **if you are VTCing you need to be able to be able to focus on the people** [1] at the other sides too so you know, the curve seems to do that best. Also I find that the most useful VTCs or Decision Support Centers that I have been involved with are with a smaller number of people. So for the most part your main table here is what you are going to use more than anything else even if you're using VTC at another sight. When you start getting the number of people back here, these folks aren't usually as heavily participating as the folks that are down front in that section. So that allows them to do that and yet everybody can kind of see each other with the tiered arrangement, with the tier coming up higher in the back. You need to make sure you give them room in here too. You know, you're trying to get everyone where the camera can see them and everything, **but a lot of times they don't give quite enough room** [11] and everybody feels kind of crowded.

One of the other things I've often noticed in these rooms is they're dark. They're too dark. **You need to be able to see each other** [2]. You also need to be able to see what's on the desktop, but you have to see each other. And a lot times the background... everything in the room is so dark that makes it difficult. That **makes the lighting very important.** [8] Had a hard time trying to decide where to point these lights. What I have in mind here is a good overall ambient lighting where you notice that glare in your face when you look at somebody else and it doesn't seem to pinpoint the spot. I tried to center some over the desktop, overhead lights, but they need to be something that is diffused and not harsh. As a matter of fact because you end up being in these rooms for a long period of time I would almost suggest going for some of the newer lights that provide more natural lighting because I think its more comfortable. It gives you more of a full spectrum lighting. It's healthier too when you're sitting in a closed room like this which normally has no windows whatsoever.

I would suggest a tiered approach here too, where you've got two screens and another screen above that one [1].

You also need to make sure of a couple of things when it comes to the audio, visual equipment. A lot of times when we are doing three-way VTCs it gets very difficult because you end up with, this has been my experience. Looking at yourselves on one monitor. Looking at one group on the other monitor. and that this group back and forth between which ever group talked last and this one being used for whatever presentation media is being shown at whatever side. Well, that's not good. To me, who cares if you can see yourself or not. Now we're not that vain. If you're doing a three-way VTC have each of these screens pointing to that group at all times. Now probably, you said not to let cost or limit you. I'm not letting technology limit me either because a lot of times I think our electronics communications lines right now aren't allowing the speed for us to connect in a true 3-way communication. They switch back and forth.

I'm using this (picks up a piece) to represent my whiteboard. It needs to be portable because depending on what you're doing, if you're not doing a VTC you may want that sucker wheeled right in front of those boards. This needs to be something that's recessed so that you know, you can put something in front of it and not get in the way. The podium should be the same way. There is a very nice system that you can get now, where there is a laptop built into the podium so that you can go back and forth between electronic presentations and whiteboard presentations. And I would suggest a system like that so that all could be done in swoop. These are usually... this is one of those writable boards too, you know, as well, so that you can record whatever's on

the board. This is where I am putting your technographer, over here in the corner in clear view of everyone so that they can kind of follow on there. The microphones. The microphones are another very important thing.

Meetings ... when you are just meeting with **the people that are in the room with you, you are usually ok, you know, you are looking at each other** [11] ... the microphones aren't even really necessary unless you start getting a lot of people crowding in there, but when you're VTCing those microphones are extremely important and it's important they are good quality microphones. I've been **in situations where the voice, sound is cutting in and out.** [3] **It is very important to have all the technology seamless and invisible as possible.** [13] Now, I said in my interview to recede these into the desk, mainly because get them out of the way, but have them pick everything up. **If you have the ones up on necks, a lot of times they are very directional and if you don't happen to be right up in it, it doesn't catch you so lapel ones are nice, but they bug people.** [14] People are always... if they're wearing one, they're always, you know, we aren't news reporters, they're always taking them off and fiddling with them and causing all this noise on the other end. Or they just want to pick it up and hold it when they say something and put it down. They defeat the purpose. You need a nice omni-directional mic that's going to pick up the noise in the room and if people make too much noise where that they are always cutting it up they're gonna have to learn when they are in a situation like this. Well, part of this is education of the people to use the equipment better. I would suggest laptops. **They're smaller, they're less intrusive** [13], you can move them off if you need to, but you've got them sitting there. And I don't see any need for shade. The laptops give you a certain **amount of privacy to type** [3] your thoughts in and display them with the groupware software so they can be anonymous. If you're that paranoid, you probably shouldn't be in the meeting to begin with. So, I'm sorry, I've got a tough love approach here I guess. Very comfortable seating. You don't want them reclining and going to sleep, but you want people to be comfortable and it needs to be a pleasant environment so that they're not distracted by any of this around them. I think that's everything.

Not dark, I pick blue because I pick blue for everything, but something that's not distracting. You don't want ... I wouldn't put anything with harsh yellow or reds because that's... that's... the blues are usually kind of a soothing thing and sometimes things you're talking about, I think...the great aid in getting people to communicate, but you don't want an environment that automatically gets people's when they walk in. Ok, anything else?

Cameras. I've been in a couple of situations where you've got a camera where you can move around. Again, when you are doing a DSC without **the VTC you don't really need the cameras.** [11] If you are doing the VTC then you need a professional who is pointing the cameras at whoever is talking and when its not there, its spread out over the rest of the room. So, something that gives the room good coverage so that you can center on who's talking and, more important than anything else, a good operator behind the scenes whether it's the technographer or somebody else somewhere else off line who is centering in on the person who is talking, has experience in that

Trying to close it in so **everybody could see everybody else,** [2] but keep it open enough for the VTC at the same time. I felt like that was a tradeoff that I kind of bent your pieces a little funny to try to do that.

Deciding on the... this is gonna sound like a conflict, but deciding on the semi-circle configuration. I kind of hung on that right away. I never even tried the any of the rectangular or circular pieces.

I'd get rid of the back tier and I'd like to go...if it was just DSC I'd go to a round or open table. [move tables] Well, you can't close it in completely, I take that back. I'd go to more of a horseshoe probably because you can't close it in completely because everybody... unless your gonna put screens at both ends of the room and that's kind of a pain in the butt. Well, if you were just talking about 5 or 6 people you'd probably just use the horseshoe and forget about the rest of it.



Design 49

Interview 50 - Experienced User

Two things ... **one is be able to see and be seen by everybody [2]** within the room and anybody else. So limit all the things that inhibit that and **hear and be heard [14]**, ok, because facilitating all those meeting downstairs over the years it's very important.

So, that's why I went for this configuration with the inside tables being recessed a little bit. I mean, not way down in a pit somewhere, but in a sense recessed a little bit so people in the room can see for sure. Lets say there are 6 people, you know a dozen can see these people. The only people that are gonna have trouble are the ones who are looking back a little bit, but you're gonna be able to see about as many people you can see. And that's the same reason I went to...there's a way of getting overhead mics so that they can pick everything up and put them throughout the whole room because it's really hard with directional mics. Wiring people up is a pain in the butt and the batteries go dead and all that other stuff. So the whole idea is to be able to... to do that. So I went to a recess seating for the front two tables down here and also this area would have to be recessed too otherwise people are looking up. OK and the main room floor this is all one...one level, ok. And I don't know which to call it.

I mean this layout basically puts 6 people at each of these long tables. Overhead lighting so there is no lights in the way of your visions. , to me, the workstation design would be very sleek with an area for the keyboard and recessed monitors, maybe behind a glass right here, very smooth all across here. Very smooth a smooth panel with two monitors, one with a computer and one to allow the person to look at anything he or she wants to look at, whether its on the screen, somewhere else... whatever it is. So let them have two monitors so it's all nice and slick. So the people sitting down there or over there, it's not in their way. That's why I said, you know, **the private issues [3]**. I didn't find it. In fact most of the time when people look at somebody else's it creates more levity and interest and cheap shots. (laugh) So, , so I had three displays. I found in my experience that three displays is used quite often. You wouldn't want anymore. Two podiums so you can work at either side of the room. , I put whiteboards on the sides, but you could make them mobile so you can drag them if you want to. Two whiteboards.

Camera locations. I had three. I don't know, focal length, but sort of one here looking at this group, one here looking at this group, and maybe this is one that you could control. And if you kept the camera set up and focused and all that and you got all the sound and everything, that's why I don't think you want to move it around, **have a lot of flexibility and move it around, [11]** cause its really difficult to keep everything tuned up.

Back here was the technographer thing. I had three document, and or, viewgraph machines, two speakers, the main reason, some people just want control or you may not want to have anybody... and one back here with the technographer. So give them the flexibility ... give them all the flexibility they want cause some people just love to have control ... just love to have control. I put the technographers in the room because they need to be engaged in the meeting. Many times in facilitating or whatever you have hand signals with the technographers and little signals that they know what you mean to get them to do things they nobody else knows in the room so you need to be in constant visual communication with the technographers. So, having them in the room and having them here where the facilitators or the people in the front can see them just like the audience is more important than sticking them over in the corner.

Okay, I think **the room needs to be flexible [9]** and sometimes you'll have workshops where people will go off and into satellite rooms or whatever ... **breakout rooms and a lot of times [12]** when you do that you use flipchart papers and things like that so build a room so that you have the lighting and the mics and everything on the side walls and maybe the back wall you may

add a little junk, but where you can then bring them in and put them on the wall. Primarily for a meeting that's here or **down here, but not a VTC.** [11]

These in a sense represent walls that you can put stuff up on and so if team A comes in and they want to put their stuff on, they can put it up here. The lighting, the mics, and everything are here. The people can stay in their seats and all that while the leader of the group explains what all the chicken scratch is. What else did I have. I really like the recess monitors for the speaker. A lot of times even with good projection systems, when you're standing here and you look at such a weird angle, you can't see what's really up there in detail, but if you can see it here and recessed a little bit. Right, these are like the ones we have downstairs for the speakers... Cause a lot of times they can't see very well cause they're too close to the screen unless the rooms big enough. But every person I think will have, I'd like to see them have two, two monitors in that sleek design. That was just another whiteboard, if you pop the screen up you got another one already built in there. You'd have you could put something back there. You got to have a really big whiteboard if it's a drop screen and you don't have to worry about... I just put the mics around, kind of thought maybe the ceiling lights to do that.

I mean if you do a recess monitor you're gonna have to do it with a desk top, ok.

Having lived through this. Having a room that really looks rich, you know really looks executive, you know like is impressive, is impressive and I remember the first ... as we started bringing people into the DSC that colors, the dark wood, the dark carpet and everything, I mean it gives a really neat impression of a rich, high class, executive look. So I put dark maroon. I just ... a darker color carpet and chairs and wood grain and I'm not a color person, but you bring the light into the room with the walls or something and the ceiling. You don't want it all dark. But to me, I got more comments when people walk in. They would go "Wow" and it really was the carpet and the colors. It had that rich feeling. It wasn't this raised floor stark, you know, normal room they're used to. It really had a good feeling and it was sort of like a living room kind of thing, you know. Chairs are important crappy chairs, crappy meeting, you know, we found that out. First couple of meetings we didn't have enough of those chairs we had and we found that out.

I say figuring out the configurations of the workstations.

The front part, the display part, the podium part.

If we had a smaller room we'd just take away the... just keep it on one level and take away one of the sets of tables... yeah take away the back row tables and don't recess it. You wouldn't have to recess it at all. [move tables]



Design 50

Study 1 - Raw Data

See Study 1.pdf

Appendix B

Study 2 - Experimental Instructions

Welcome!

In this experiment, you will be asked to arrange a meeting before participating in a meeting with your remote team members. You must work as a group to create a configuration that you group feels is suitable for your meeting. You may move any of the equipment or furniture in the room in order to do this.

Once you decided on a configuration, you will describe your configuration to your meeting facilitator so he/she can write it down.

After your discussion with the meeting facilitator, you will be provided with additional information about creating room designs. You will have the opportunity to make any final rearrangements to your room based on the new information.

In second part of the experiment, you and your remote team members will have a meeting. you will be given an agenda and you and your group will be asked to complete all of the agenda items. These will involve discussion and brainstorming of ideas for a name for the new process that you just participated in.

At the end of the experiment, you will be given a brief questionnaire. Following the completion of the questionnaire any questions you have will be addressed.

Do you have any questions before we begin/

Study 2 - Communication Effectiveness Questionnaire (from Kies, 1997)

Questionnaire for Communication Effectiveness

Please fill out the items on this questionnaire by circling the number which best corresponds to your opinion. If the question is not appropriate, then circle n/a.

Part A. As a Speaker:

1. I felt as if my message was well-understood by the remote group.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. I was able to keep the remote group's attention.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. I knew if the remote group was paying attention.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. I was not distracted by the computer arrangement when talking.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. I thought this arrangement was just as effective as face-to-face communication.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

6. I was able to make eye-contact with the remote group.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

7. I was able to see the remote group's facial expressions.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

8. I was able to see the remote group's hand gestures.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

9. I was able to see the remote group's body movements.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

10. I did not feel awkwardly interrupted by the remote group.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

11. I felt the transitions between who was speaking were smooth.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part B. As a Listener:

1. I was able to understand the remote group's message.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. I did not have to strain too much to understand the remote group's message.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. I paid attention to the remote group.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. I was not distracted by the computer arrangement when listening.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. I thought this arrangement was just as effective as face-to-face communication.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

6. I was able to make eye-contact with the remote group.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

7. I was able to see the remote group's facial expressions.

	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
8.	I was able to see the remote group's hand gestures.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
9.	I was able to see the remote group's body movements.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
10.	I was able to interrupt the remote group easily.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
11.	I felt that transitions between who was speaking were smooth.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part C. Transmission System (audio and video):

1.	The video quality was acceptable.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
2.	The video was clear enough.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
3.	The size of the video window was adequate.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	
4.	The video was just as good as a live lecture in the same room.							
	1	2	3	4	5	6	7	n/a
	Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. The audio quality was acceptable.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

6. The audio was clear enough.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

7. The audio was just as good as being in the same room.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part D. Physical Environment:

1. The lighting level was appropriate in my room.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. The lighting level on the video image was appropriate.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. The noise level in my room was not too loud.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. The noise level in the other (remote) room was not too loud.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. The camera angle was appropriate.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part E. Guidelines:

1. The guidelines are easy to understand.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. The supporting text is easy to understand.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. It is possible to apply the guidelines before reading the supporting text.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. The supporting text for each guideline is useful.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. The guidelines are easy to remember.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

6. It was difficult to decide which guidelines to apply to the design.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

7. It was difficult to make a decision about the strengths and weakness of this design.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

8. The guidelines helped me to determine the strengths and weaknesses of each design.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

9. These guidelines can help any team make a decision on the best meeting room.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

10. I would use these guidelines to help design a meeting room.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

11. I believe guidelines were not necessary to determine the best room for my team's needs.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

12. I was able to use the guidelines to address all my concerns about each design.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part F. Video Teleconference:

1. I am aware of the importance of the microphone.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. It is easy for me to hear team members on-site.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. I am disturbed by background noise during meetings.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. I feel comfortable initiating conversations on site.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. PowerPoint presentations are easy to read.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

6. I feel comfortable initiating conversations off-site.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

7. The technology is helpful to our meeting process.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

8. I feel comfortable using the applications/tools available.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

9. During the meetings, I rely heavily on hardcopies.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

10. I feel comfortable having sidebar conversations.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

11. Spreadsheets are easy for me to read.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

12. It is easy for me to hear team members off-site.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

13. My participation in this VTC meeting is the same as face-to-face meetings.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

14. I can see remote members clearly.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Part G. Participation:

1. It was easy to participate in the design of our room.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

2. Participating in the design of the room increased my commitment level to the success of our meeting.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

3. Our team selected the best design for our needs.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

4. I would be highly committed to this process if our group met again.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

5. I would be highly committed to using this design if our group met again.

1	2	3	4	5	6	7	n/a
Strongly Disagree	Moderately Disagree	Mildly Disagree	Indifferent	Mildly Agree	Moderately Agree	Strongly Agree	

Any additional Comments you wish to share about your overall meeting experience:

Many thanks for your participation.

Study 2 - Feedback Sheets

Site A

Participant 1

Pretreatment Feedback

	Host	remote
Strengths	More table room with sharing computers	Used all computers
Weaknesses	No individual computer use. Wires everywhere.	Less table room. More wires
Changes	Camera view should be wider. Some individuals on the sides are cut off	
Heuristics used	1-10	
Strengths	More professional, less wires, more room because only one computer	
Weakness	Camera view (angle).	

Participant 2

	host	remote
Strengths	Efficient, neat, wall color and floor color help viewing	Efficient
Weaknesses	3 small tables strategically positioned take up the majority of the room.	Color contrast - hard to distinguish things.
Changes	The room should be deeper in dimension.	Put color into floor and walls. It well help with viewing.
Heuristics Used	1-11	
Strengths	Professionalism, less clutter	
Weaknesses	Camera position	

Participant 3

	host	remote
Strengths	With dust 3 laptops you have enough room to take notes.	
Weaknesses	Use less space with tables.	Cluttered desk and whiteboard is hard to see.
Changes	Arrange or find different tables so they take up different space.	Only use three laptops instead of five.
Heuristics	1-5,8,9	
Strengths	More versatility	More lighting.

Participant 4

	Host	remote
Strengths	You can see everyone and it is clutter free.	Same design as ours.
Weaknesses	Wires are visible.	Wires visible, too much clutter on tables. Poor lighting on one side.
Changes	Table skirt.	Table skirt, less computer
Heuristics	Now we have table covering around the wires.	
Weaknesses	1-11 They can't get their system up due to too many computers	

Participant 5

	Host	remote
Strengths	Open, very easy to communicate with other party on screen, organized.	Same configuration.
Weaknesses	Not enough computers, electrical hazards. Closed, can't see whiteboard - off center.	Looked cramped, unorganized, messy background.
Changes	Make table longer, more spacious, covering wires.	Clean up backdrop, organize it, longer more spacious tables, organize computers, cover wires.
Strengths	1,2,4,8 Very professional, not cluttered, space for note taking, etc. Open	Lighting
Weaknesses		Very tacky, unorganized, too cluttered.

Participant 6

	host	remote
Strengths	We can see and look at people when they're talking	We can see and look at people when they're talking.
Weaknesses	Having to share computers. The wires could be placed better (trip hazard).	Also trip hazard.
Changes	Find a way to move table closer to screen and still be able to see everything.	Clear the clutter in the back.
Heuristics	1,2,7,9	
Strengths	Looks more professional	
Weaknesses	Can't see with all their laptops	

Site B

Participant 7		
	host	remote
Strengths	We are centered around the TV so we can see the other team well. Five of us have a computer and 1 is working the remote.	They can see all of us well
Weaknesses	The people on the ends are far apart from each other	They only used 3 of the computers so they are segmented into groups of 2.
Changes	Use another 1/4 round to make a "U" shape, that way the people on the ends would be closer. But that would make the people on the inside harder to see.	Use all available computers and they could also use a "U" shape design.
Heuristics	1,2,4,5,6,8	
Strengths	Its much brighter in the room	Still have "V" shaped design so we can see so we can everyone.
Weaknesses	Now we were happy	Only one computer, no whiteboard anymore.
Changes	Maybe a "U" shaped design	Put all computers out, bring back out the whiteboard
Participant 8		
	host	remote
Strengths	Everybody in the room is on the TV	The same design
Weaknesses	The can't see what's on our whiteboard.	It's hard to see everybody on the TV. It's hard to understand them when everybody is talking.
Changes	Furniture that curves to the room more where everybody can be seen.	
Heuristics	1,2,3,6,7	
Strengths	The room is bright	The table is pretty . You can't see their feet or wires.
Weaknesses	None	They have no flexibility of computers
Changes	We turned on the lights, maybe its to bright for them.	More communication stuff is needed.
Participant 9		
	host	remote
Strengths	You can see everyone	Everyone can be seen.
Weaknesses	It seems we had to get a little crowded to see everyone.	I don't like they way you are looking down at them.
Changes	Camera wider or do room design different.	Gets unclear ion boards and maybe other graphics if used.
Heuristics	2,3,5,8,10	
Strengths	Brighter in room..	It's pretty.
Weaknesses	Still a little crowded.	They removed computers and board which takes out a lot communication to us. Which is the key to the whole conference.
Changes	Little less crowded	Take off skirt (pointless) add more computers.

Participant 10

	host	remote
Strengths	With the way we formatted the room. We would be able to interact with all the other students and the instructors if they stayed in view. Clear sound - but a little too clear.	The sound is clear and the system is very mobile. The system would work with a variety at set-ups as long as the picture was able to capture everyone. The picture is surprisingly clear
Weaknesses	I can't really think of any weaknesses right now If I could then I would have changed the set-up.	To have a class of 10-12 people you would have to have a huge classroom to fit everyone in the picture.
Changes	Huge classroom to fit everyone in the picture	
Heuristics	1,3,4,5,6,7,8	
Strengths	No real changes brighter lighting	Less clutter on table and you can't see their ferret.
Weaknesses	No real weaknesses	I central computer does not give all of them easy access to computer. Lack of whiteboard would make it harder to show freehand designs and examples.
Changes	They really took away from their flexibility of their set-up.	None

Participant 11

	host	remote
Strengths	All the participants can be seen.	Participants can be seen.
Weaknesses	One weakness I see is that the board can not be easily read.	Their board is hard to read.
Changes		
Heuristics	1,2,3,4,6	
Strengths	It's brighter in our room and it's probably much more visible.	The table skirt made their side a little more less cluttered.
Weaknesses	Nothing.	No communications. Only 1 computer for the whole group. Now that the board is gone there is no visuals.
Changes		

Participant 12

	host	remote
Strengths	Ease of viewing of conducive to group discussion.	Same
Weaknesses		
Changes		
Heuristics	All but 10	
Strengths	Ease of viewing, access to computers, access to whiteboard	"pretty"
Weaknesses		Lack of computer available. Lack of access to written media
Changes		Pulled most computer away, pulled out written visual availability. Put on "skirt"

Study 2 - Questionnaire Data

For VTC Evaluation

Key

Host - # worked together

Remote - # worked together

Alpha Codes for Items

A- As a speaker

B - As a listener

D - Transmission System

E - Physical Environment

G - Guidelines

P - Participation

H - Heuristic Used

VTC Evaluation Data

SUBJECT	TEAM	GENDER	AGE	EDUCATION	VTC	HOST	REMOTE
1	1	2	19	2	0	3	3
2	1	2	19	2	0	2	3
3	1	2	26	2	0	1	0
4	1	1	21	2	0	2	3
5	1	1	20	3	0	2	1
6	1	1	26	3	0	0	2
7	2	1	23	3	1	1	0
8	2	1	26	3	0	2	0
9	2	1	22	3	0	1	0
10	2	2	20	2	1	3	2
11	2	2	20	2	1	2	2
12	2	2	28	4	1	3	2

SUBJECT	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
1	6	5	6	6	5	2	4	4	6	6	6
2	6	5	7	6	6	6	5	6	7	3	6
3	3	2	2	5	1	2	5	5	5	3	2
4	6	2	2	6	5	3	3	5	5	3	4
5	5	4	7	7	4	7	7	7	7	7	5
6	5	3	6	6	6	6	6	6	6	6	6
7	5	2	5	6	1	1	1	6	5	1	1
8	5	2	2	6	1	2	1	3	3	3	2
9	3	5	3	6	2	2	2	3	4	3	3
10	5	5	6	7	2	2	5	6	5	4	3
11	5	5	6	7	3	3	2	5	6	5	5
12	6	4	6	6	6	3	3	5	5	6	3

SUBJECT	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	D1	D2	D3	D4	D5	D6	D7
1	5	7	6	6	5	4	5	5	6	5	7	5	4	3	5	6	6	7
2	6	6	6	7	6	6	6	6	6	3	5	3	5	5	6	5	5	3
3	3	3	5	5	1	2	2	3	3	2	3	5	5	6	2	6	6	3
4	5	5	7	6	3	3	3	5	5	3	4	5	5	7	5	5	5	3
5	7	7	7	7	5	7	7	7	7	5	5	6	6	6	6	6	5	5
6	3	6	6	6	6	6	6	6	6	6	6	5	6	6	5	5	5	6
7	2	2	1	2	1	1	1	1	5	1	1	5	3	6	1	5	5	1
8	5	4	6	7	1	1	2	3	3	6	3	6	6	4	4	5	5	5
9	2	2	5	5	1	2	2	3	4	4	3	5	5	3	1	3	3	2
10	5	6	3	6	2	2	5	6	6	4	4	6	5	3	2	2	2	1
11	5	5	6	6	3	3	3	5	6	5	5	6	6	6	3	6	6	2
12	5	5	5	5	5	4	4	5	5	6	3	3	3	3	2	3	3	2

SUBJECT	E1	E2	E3	E4	E5	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G6R	G7R	G11R
1	7	6	6	6	3	5	5	6	5	6	5	3	5	4	4	6	5	2	4	2
2	6	7	7	6	6	5	5	6	5	3	4	5	3	5	6	6	7	3	2	2
3	6	5	6	6	2	5	5	5	5	5	6	6	3	6	5	3	3	1	1	5
4	7	2	7	7	5	5	5	5	5	1	3	5	5	6	6	5	4	6	4	3
5	7	6	7	5	3	6	6	6	6	5	3	3	5	6	6	4	5	4	4	4
6	6	6	6	6	5	6	6	6	5	5	3	2	6	5	5	3	5	4	5	5
7	5	3	6	3	1	2	2	5	2	1	2	3	3	1	1	7	1	5	4	1
8	6	6	6	5	5	4	5	5	5	6	3	5	5	5	2	4	2	4	2	4
9	5	5	4	2	2	5	4	4	4	5	4	5	5	3	3	6	2	3	2	2
10	6	2	4	2	5	6	6	6	5	6	5	5	6	3	6	2	5	2	2	6
11	6	3	6	6	5	6	5	5	6	6	5	6	5	5	7	6	5	2	1	2
12	6	6	6	5	2	6	6	6	6	6	2	2	6	5	4	6	5	5	5	2

SUBJECT	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	P1	P2	P3	P4	P5
1	7	6	4	6	6	6	6	6	4	3	6	5	5	3	5	6	6	7	6
2	6	6	6	5	6	5	6	6	5	6	6	5	6	5	6	6	7	7	7
3	6	6	5	6	Null	6	7	6	6	5	5	6	2	3	6	5	5	6	6
4	7	7	2	3	7	3	6	7	3	5	5	3	3	3	7	7	7	7	7
5	7	7	3	7	7	7	7	7	4	4	4	4	6	7	7	6	7	7	7
6	6	6	2	6	Null	6	5	5	2	5	7	6	6	6	6	5	7	1	6
7	2	3	3	1	6	1	1	3	1	1	Null	1	1	1	5	1	1	1	6
8	6	6	3	5	4	4	6	6	4	5	6	5	4	5	6	5	6	4	5
9	5	2	6	4	Null	4	4	Null	4	7	Null	2	2	2	6	2	5	1	2
10	6	5	7	6	Null	Null	6	6	4	6	Null	4	2	3	6	6	6	6	6
11	6	5	5	3	4	5	7	5	4	4	4	5	3	3	6	6	7	6	7
12	5	5	4	5	Null	5	6	6	Null	6	Null	5	2	2	6	4	7	4	6

Study 3 - Experimental Instructions

Welcome,

You are about to complete an expert evaluation of a room configuration for videoconference and electronic meeting systems. You have been chosen to perform this evaluation because you have had previous experience in designing a computer supported meeting room.

You will be presented a room design made by a team that met in this facility. This team was asked to design the meeting room in order to meet with their remote team members. You will be shown pictures of the team's design and a layout of the room design. In this session, you will be asked to provide your feedback on their design. Later, you will be given a set of guidelines to help you evaluate the design. Once you have completed your evaluation you will be asked to complete a brief questionnaire.

Do you have any questions before you begin?

Demographic Information

Title

Tenure in this position (in years)

Tenure in the organization (in years)

Describe your previous experience with DSCs (or related facilities).

Have you participated in any other part of this study.

Study 3 - Feedback Sheets

Expert 1

Profile:

Mechanical Engineer

Tenure in position: 9 years

Tenure in organization: 9 years

Previous experience with computer supported meeting rooms: Occasional use of DSC.

Design specification review for DSC in new department building.

Participated in any other part of this study: no

Pre-treatment Feedback about Design

Strengths

Position of participants allow good interchange of information

All can readily see displays and technographer

Interpersonal interchanges due to good sight lines to each other

Good arrangement for small (6) group.

Weaknesses:

Each participant should have a laptop computer

Location of whiteboard and podium behind participants

Not satisfactory for large number of (above 10) participants

Changes

Relocate podium and whiteboard

Supply each participant with a laptop

Post-treatment Feedback about design

Strengths

- Good design for a small group of relatively equal peers (3,4)
- (small group utility designated on feedback)
- Good for quick rearranging for opposing teams (6)
- Use of 2 table microphones good for "non-power" participants.
- Participants can readily see each other, technographer, and most displays

Weaknesses

- Limited ability to see whiteboard or podium
- No workstations apart from main table
- Not suitable arrangement for large groups (identified before)

Changes

Relocate whiteboard and podium (identified before)

Add separate workstation (depending on the decisions to be considered).

Guidelines Used:

Minimize obstruction to vision

Maximize the ability to hear and speak

Support the desired team structure

Where possible centralize functions

Accommodate participants

Consider the mobility of all devices in the room

Let desired group dynamics dictate the location of support staff
Select the configuration that meets your groups needs

Profile:

Title: Management Analyst

Tenure in position: 13 years

Tenure in organization: 13 years

Previous experience with computer supported meeting rooms: have participated in numerous DSC meetings. Have organized more than 5 distributed meeting events have facilitated or assisted in DSC environment.

Participated in any other part of this study: yes

Pre-treatment Feedback about Design

Strengths:

- Good set up for a small meeting
- Participants had a good view of screen and each other

Weaknesses:

- More microphones might have been as this was a small group
- And the placement of them might have resulted in the people on the ends having to speak toward the center.

Changes

- More microphones.

Post-treatment Feedback about design

Strengths

- The design seemed to work (11)
- accommodate participants (6)
- All participants had a clear view of the screen (2)
- This groups did a good job of configuration the room to meet their needs (11)
- the laptops might be helpful or necessary are not intrusive (9)

Weaknesses

- Maximize the ability to hear and speak - Not used (3)
- If this was just a VTC with no interaction on the laptops necessary, they should have been closed. (9)

Changes

- Maximize the ability to hear and speak (3)

Guidelines Used:

- Minimize obstruction to vision
- Maximize the ability to hear and speak
- Accommodate participants

Pre-treatment Feedback about Design

Title: DEP Information Manager

Tenure in position: 1 year

Tenure in organization: 11 years

Previous experience with computer supported meeting rooms: Engineered Naval Surface Warfare Center DSC in Building 180

Participated in any other part of this study: no

Strengths:

- Equal view, equal sitting

Weaknesses:

- Picture-in-picture
- Distractions (Floor cables, legs)

Changes

- Consider location of whiteboard- to side or front
- Podium microphone
- Unknown: sufficient lighting; appears okay.

Post-treatment Feedback about design

Strengths

- Minimal obstruction for all (2)
- (Assumed) minimal intrusiveness; technographer available too. (9)

Weaknesses

- Small group of participants, (?) picture-in-picture instead of dual-screen.

Changes

- Consider change; add podium mic (3)
- [assumption: all pieces are connect to network and video feeds]

Guidelines Used:

- Minimize obstruction to vision
- Maximize the ability to hear and speak
- Support the desired team structure
- Accommodate participants
- Minimize the intrusiveness of technology

Expert 4

Profile

Title: IT Program Manager

Tenure in position: 1 year

Tenure in organization: 17 years

Previous experience with computer supported meeting rooms: Efforts to use DSC for Joint Warfare Analysis Center.

Participated in any other part of this study: no

Pre-treatment Feedback about Design

Strengths:

- V-shaped table and seating provides good visibility for all

Weaknesses:

- Flexibility to add people

Changes

- More microphones (1 for every 2 people)
- Add secure phones to use if microphones don't work
- Need capability to mute mic for discussion prior to sharing with other sites
- Add place card in front of seats to identify personnel.

Post-treatment Feedback about design

Strengths

- Good visibility for participants
- Portable equipment
- Room can be rearranged

Weaknesses

- Flexibility to add participants [lack]

Changes

- Add microphones

Guidelines Used:

- Design an adaptive environment
- Minimize obstruction to vision
- Maximize the ability to hear and speak
- Create a task-oriented design
- Consider the mobility of all devices in the room
- Select the configuration that meets your groups needs

Profile

Title: Tech Advisor to Executive Director

Tenure in position: 1 years

Tenure in organization: 32 years

Previous experience with computer supported meeting rooms: Helped to develop Dahlgren DSC as Director of Theater Warfare Center.

Participated in any other part of this study: Yes

Pre-treatment Feedback about Design

Strengths:

- Visual Contact with people in room (side and front view - no rear)
- Compact enough to fit into camera feed of view
- Technographer close to action and in view
- Two screens - 1 VTC other for presentation

Weaknesses:

- Podium position
- Not enough computers

Changes

- Move podium to end of either table
- Give each person a computer-saves time

Post-treatment Feedback about design

Strengths

- Minimum obstruction
- Layout matched participants
- Support staff in front (stationary save time and \$)
- V-shape was right for this meeting

Weaknesses

- One microphone probably didn't meet maximizing speaking
- Laptops obstruct view of participants (

Changes

Guidelines Used:

- Minimize obstruction
- Maximize the ability to hear and speak
- Accommodate participants
- Minimize the intrusiveness of technology
- Let desired group dynamics dictate the location of support staff
- Select the configuration that meets your group needs

Additional Comments about guidelines

Experience doing this reflects different answers. Guidelines are less important if you have personally done this a few times.

Profile

Title: Head, Theater Warfare Center

Tenure in position: 2 years

Tenure in organization: 21 years

Previous experience with computer supported meeting rooms: Management responsibility for the Theater Warfare Center's DSC the past 2 years; user of capabilities sporadically the past 5 years, at NSWC and elsewhere

Participated in any other part of this study: yes

Pre-treatment Feedback about Design

Strengths:

- Good configuration for small number of participants
- Near camera allowed remote participants to see local participants and what they were viewing

Weaknesses:

- Limit number of participants, base upon camera positioning, and seating arrangement
- No microphone at podium

Changes

- Whiteboard positioning seems awkward, more up front?
- Give all participants a computer and their microphone if sound was a problem
- Ensure A/V engineer present to handle switching of displays and maintain links

Post-treatment Feedback about design

Strengths

- P1 Allows one to accommodate a wide variety of uses than for a single fixed configuration
- P2 more relevant to smaller interactive groups and to a remote group
- P3 important to virtually all users and configurations
- P5 useful where 1 person is in continual control and rest of group is passively participative
- P6 this is a particularly valuable feature
- P8 mobility is fundamental to flexible design and maximum use of facility
- P9 agree technology should not be a distraction, but should be readily accessible
- P11 important to get the most out of capabilities

Weaknesses

- P5 Don't see much value to centralized functions, especially where participants are all equal
- P8 Mobility costs
- P6 Increased support and cost associated with flexible accommodation
- P10 This cannot be anticipated usually and is probably not an issue with most users.

Changes

- P7 this should be anticipated and a set of standard activities and associated configurations developed and provided to user for choice

Guidelines Used:

All but 4

Additional Comments about Guidelines:

I would suggest a more "cookbook" or examples type of guidelines - anything that makes it easier for the average meeting planner. They have typically not thought about these kinds of issues and often won't want to spend much time on them.

Study 3 - Questionnaire Data

Expert Responses to Section G (Heuristics Usability)

SUBJECT	POSITION TENURE	ORG_TENURE	STUDY	GENDER	G1	G2	G3	G4
1	9	9	0	1	7	6	5	6
2	13	15	1	2	7	7	6	6
3	1	11	0	1	6	6	5	6
4	1	17	0	2	6	6	5	7
5	1	32	1	1	7	6	3	6
6	2	21	1	1	6	6	5	6

SUBJECT	G5	G6	G7	G8	G9	G10	G11	G12	G6R	G7R	G11R
1	6	2	1	6	7	7	1	6	5	6	6
2	6	2	2	6	6	6	2	6	5	5	5
3	5	3	5	3	5	7	2	3	4	2	5
4	5	2	2	5	6	6	3	6	5	5	4
5	4	3	2	5	6	6	3	5	4	5	4
6	6	5	2	6	7	6	2	6	2	5	5

Vita

Delia Grenville was born in Montreal, Quebec. She received a Bachelor's Degree from Queens University at Kingston, Ontario in Mechanical Engineering in 1989. She worked in several positions in industry, including as a systems analyst in computer technology and a logistics analyst in warehousing and distribution. In 1995 she entered the management systems engineering program at Virginia Tech. In 1997, Delia received a MS in Industrial and Systems Engineering in the Management Systems option area. While working on her Master's, she was involved a variety of projects on campus including the development of web-based class assessments, web-based distance learning for the Center of Interdisciplinary Studies, and the research writing of case studies for NASA project management. Her research has been funded by the Naval Surface Warfare Center. She is a member of the Human Factors and Ergonomics Society, the Association of Computing Machinery, and Alpha Phi Mu, the National Industrial Engineering Honor Society. Her current position is Staff Research Scientist at the Advanced Usability and Interaction Design Laboratories of Oracle Corporation.