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# Collabrium

## A *Group Collaboration over the Internet using Customizable, Persistent, Virtual Spaces*

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## Section 1 : Background & Purpose

The Internet has made new modes of business and communication affordable and reliable. There are now many raw technologies for the delivery of information from various kinds of "data servers" to the desktops of individual users. There is now an increasing need for and emphasis on using the power of this technology to enable groups of users to work together in a variety of different areas.

Despite the emergence of standalone tools like chat, instant message, email, real-time video and audio tele-conference, there is a true need in the field for intuitive metaphors to organize and conduct group work over the Internet. *Collabrium* is a technology that addresses this burning need in the contemporary software marketplace.

*Collabrium* can be used by groups of individuals in geographically distributed locations to collaborate in a variety of different modes by drawing upon the intuitive metaphors drawn from the physical universe that are familiar to everyone.

## Section 2 : Summary of Innovative Characteristics of *Collabrium*

### 2.1. Metaphor of a Real-World Meeting Place

When one organizes group activity, one has to choose a place for the group to meet, and decide what kinds of functionality are needed in the place where the group meets. The first innovation in *Collabrium* is the idea that one goes to a conference center to get together with others in the group -- a conference center that is organized along the same lines as a real-world conference center, and not as a set of disjointed and unintegrated computer tools such as email, chat, and document exchange. The schematic for the *Collabrium* conference center is discussed in detail in Section 3.1.

### 2.2. Metaphor of Virtual Spaces to Organize Collaborative Functionality

Functionality within the conference center is organized just like it is in the physical world -- into rooms, each of which has self-evident functionality for anyone in contemporary society. The rooms within the conference center resemble physical rooms E.g., a library, a theater, a lounge, meeting, room, etc. This is a key difference because collaborative tools today package and organize functionality into traditional, inscrutable menus. So long as the group is functioning, everyone in THAT GROUP will see the same conference center rooms, decor, and content – further reinforcing the resemblance to the physical world. The rooms within the *Collabrium* conference center and their detailed functionality are described in *Section 3*.

### 2.3. Metaphor of “Renting a Conference Center”

All conference centers are not alike. In real life, people choose meeting places that are in keeping with their requirements and budget. There may be different rooms of different sizes and functionalities that the group coordinator believes the group will need to accomplish its goals. This is exactly the same way that *Collabrium* works. One can customize the conference center to the needs of the group in several dimensions such as the kinds of rooms needed for the group to function effectively, size of the rooms, appearance of the rooms, etc. Precisely how the customization is done is described in *Section 5*.

## 2.4. Persistent Customizable Content for Each Group

Each group has a purpose for which it has been convened and which it will attempt to accomplish collaboratively. Different groups need different reference materials (documents, Web pages, video/audio material, etc.) in order to conduct its work. *Collabrium* provides mechanisms for the coordinator of a group to make content available to the group. Content is determined by the group, and will be available as long as the group is functioning. The same individual might be part of different groups, but will see the conference center in different ways depending on the group which that person is attached to when entering the conference center.

## 2.5. Distributing of Content into Different Rooms

The Library has reference materials such as documents and URLs. The Theater has video and multi-media content. The Lounge has recreational and relaxation material. All this material is naturally partitioned in much the same way we see in the physical world, making it easier for the group members to find the appropriate reference materials rapidly.

## 2.6. Real-time and Long-term Group Support

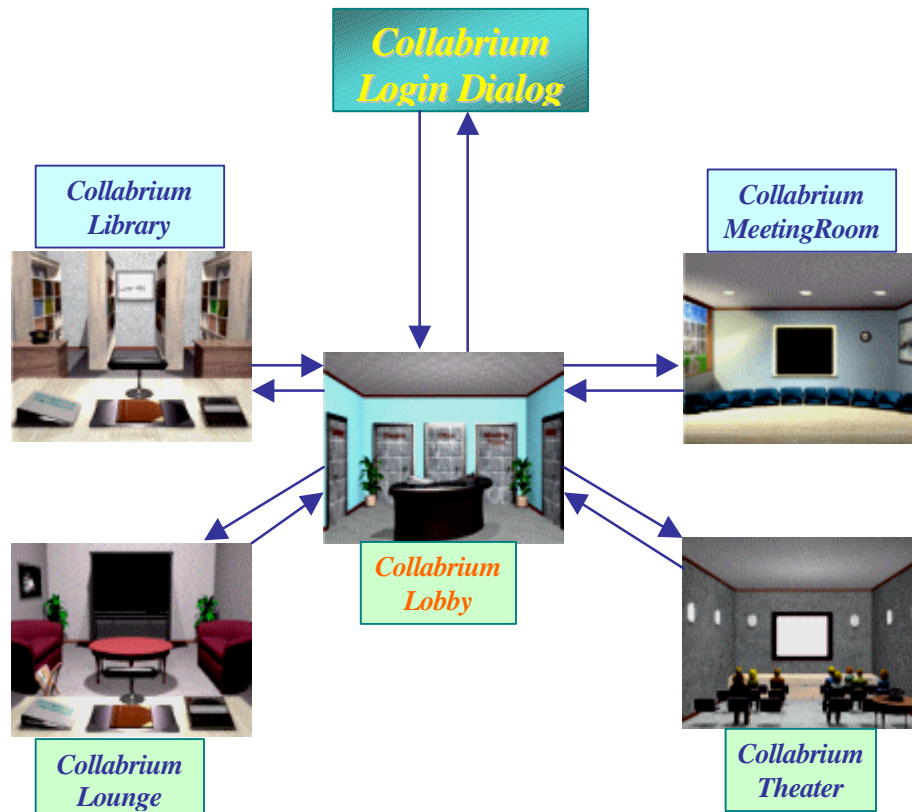
Groups sometime need to function in real-time (e.g., to do something together like brain-storming), and sometimes they need to work together asynchronously for extended periods of time. Supporting hybrid and complex modes of collaboration is an important innovation within *Collabrium*. *Collabrium* is organized around the central idea of a group and its meeting places and meeting content being persistent. Therefore, the group can meet in real-time or conduct work over an extended period of time with long term collaborative objectives at their different locations. Running transcripts (minutes) are automatically maintained of interactions in the meeting room and other public places to make this an efficient process.

## 2.7. Sophisticated Push Computing Engine

*Collabrium* is implemented as a 2-tier or 3-tier client/server system (Details in *Section 6*). In either case, *Collabrium* uses an engine that is utilized to coordinate the activities, messages, and documents of participants so that they can be aware of activities of others in the group. The *Collabrium* Server notices when events occur (e.g., new document in the library, or new chat message, etc.) and will notify the participants of that group about those events. Thus, participants are guaranteed that they will be notified of events relevant to their group. If the participant is online, they can use the notification to start real-time collaboration. However, if the participant is not on line, he or she will see the new content the next time they visit the conference center as a member of this group.

## Section 3: Rooms and Functionality of *Collabrium*

Rooms within *Collabrium* resemble physical rooms, giving the participants the strong impression and feeling that they are in actual real-world physical spaces that have obvious functionality. In addition, where relevant, personalized avatars are used to inform participants of others who are present within the room. The overall schematic for *Collabrium* looks as below. Participants can navigate through the conference center by locating the portals to each room, or by using a WorldMap which will also be described herein.



*Figure 1: Schematic of the Collabrium*

In addition to the above, for applications and extensions of these ideas to Distance Education, *Collabrium* incorporates a Testing Room and Faculty Room to convey the notion of a physical campus.

### 3.1. *Collabrium* Lobby

The Lobby is a transitional place as participants move from room to room. If you exit any room through its portal, you will be in the lobby of the conference center in *Collabrium*. It is also usable as a greeting area where one can see announcements of events and so on.

### 3.2. *Collabrium* Library

The *Collabrium* Library is used to stack and view references materials – reports, spreadsheets, drawings, Web documents (URLs), etc. are organized in the Library. The Library has 4 bookcases and 4 shelves within each bookcase. The coordinator can choose captions for the bookcases and shelves that are meaningful to his or her group, and thus make it convenient for them to know how the material is organized. The coordinator is also

responsible for populating the shelves with content. Participants can locate materials by exploring the bookcases (using their captions, if provided), or by using the Library Index that is automatically maintained.

### **3.3. *Collabrium Meeting Room***

The Meeting Room is a vibrant place where participants come face to face to do the work that they are supposed to do. Name tags are randomly placed in the meeting room seats corresponding to all participants. Avatars of the people that are actually in attendance will be located in the seats allocated to them. Mechanisms for public discussion (chat dialog), instant message (private dialog), and examining the agenda for the meeting are provided here. Only the coordinator can actually move the agenda forward. A meeting timer makes it easy for the coordinator to allocate time limits for specific activities. The Blackboard is used to draw charts and free hand drawings that participants can share in real-time should they need to.

### **3.4. *Collabrium Lounge***

The Lounge is used as a rest and recreation area. However, this room also has group-specific content determined by the coordinator. The big screen TV will serve up randomly selected recreational videos. The NewsRack will connect the participant to the default Web Browser on that machine so that one can directly use the World Wide Web.

### **3.5. *Collabrium Theater***

The *Collabrium* Theater is used to view multimedia content (video, audio, and other “heavy” content) in a non-interactive setting. Essentially, the viewer is presented the material he or she selects. Note that the content in this room will depend upon which group the participant chose while entering the *Collabrium* facility.

## Section 4: How Participants Interact with *Collabrium*

### 4.1. Interacting with *Collabrium* as a Group Participant

To enter *Collabrium*, you must specify which group you are participating in. *Collabrium* is automatically configured as needed for that group. All rooms and content will automatically be customized to the group. The appearance of and the content in these rooms will be around until the coordinator removes them or changes the conference center.

In addition, each group is provided a set of tools such as Chat, Calculator, Topical Email, etc. These tools are automatically attached to this group and this group alone. In effect, this provides automatic threading of messages. All participants use these tools to collaborate and provide their input to the rest of the group.

### 4.2. Interacting with *Collabrium* as a Group Coordinator

The group leader has a more onerous task, of course, than the rest of the participants. The coordinator is responsible for the following activities within the group:

- a) Setting up the group itself, including who are the participants, and what the topic of the meeting actually is.
- b) Selecting the set of conference facilities needed for this group, and customizing their look and feel to the group's tastes and budget.
- c) Setting up the content of key rooms (such as the Library, Theater, Lounge) so that the group has all the materials it needs to move forward with its work.
- d) Determining the agenda for the group (*this can be changed dynamically over time*).
- e) Advancing the agenda as items are completed, and generally running the meeting proactively.

## Section 5: Dimensions of Customizability of *Collabrium*

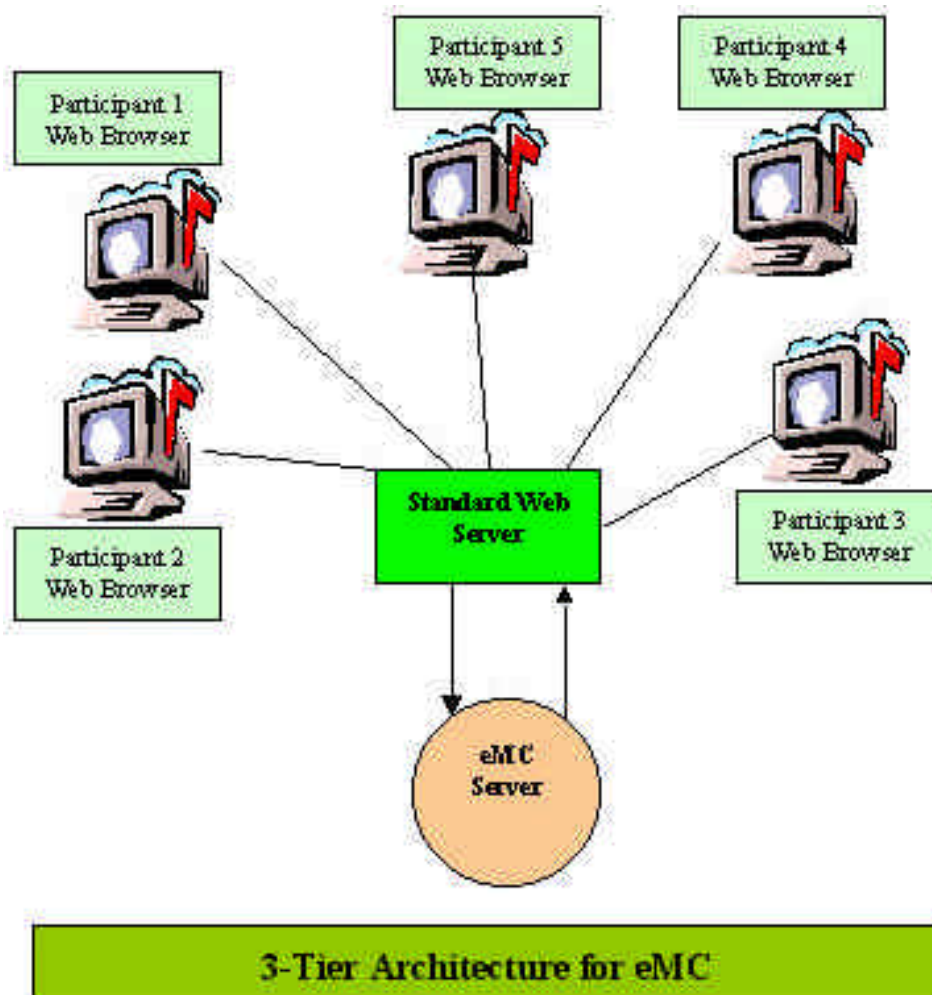
The coordinator of a group meeting in *Collabrium* can customize the look, feel, and contents of the conference center to his or her group's needs. This is done by interacting with a **Meeting Setup Wizard** that walks the individual coordinator through a small series of steps to understand the person's needs.

- ❑ What is the maximum size of the group? This will determine how many seats and name cards will be placed in different rooms as applicable.
- ❑ What is the range of rooms required? Coordinators can choose the set of rooms they wish.
- ❑ The coordinator is provided dialog on the finish and color of the walls, the ceilings, floors, and furniture types for the conference room.
- ❑ What collection of tools must each participant be provided?
- ❑ Multimedia capability – whether it should be offered via the theater, and modes for it to be offered (along with differential performances on each mode).

Based upon the specifications of the coordinator, the *Collabrium* Server stores these settings as the relevant ones for that group. When any of the participants tries to join this group through *Collabrium*, these settings are retrieved, and the look and feel of the conference room is automatically customized for that participant per the coordinator's instructions. In this way, when the same person "Joe" participates in different groups via *Collabrium*, he will see different rooms and functionalities of the Conference Center as determined by the person who created the group.

## Section 6: Architecture for Delivery of *Collabrium* Functionality

The *Collabrium* software is a client/server software system. This means that a single server (that is maintained by the organization that is responsible for setting up and coordinating the groups) can service multiple participants. Each participant is a *Collabrium* client. This can be offered over the standard multi-tier Web architecture as shown below.



With the advent and virtual pervasiveness of the World Wide Web, it is increasingly common to see 3-tier client/server systems. In such systems, by standardizing the input/output protocols to be those of the Web, one can eliminate the need for a specialized piece of software such as the *Collabrium* Client. It is indeed replaced by a standard Web Browser. The *Collabrium* Server does not communicate directly with the browser. It interfaces with the Web Server – a standard component in the World Wide Web that serves up HTML content for Web documents. In short, this patent application covers the implementation of *Collabrium* in the 3-tier platform as well.



## Section 7: Applications of *Collabrium*

There are various applications of *Collabrium* across a full gamut of organizations:

- ❑ Meetings and conferences involving groups of people in corporations.
- ❑ Distance education and learning – with the addition of Testing Room and Faculty Room, *Collabrium* can be used to deliver learning materials and testing materials to students without their having to be at a physical campus.
- ❑ Delivery of corporate training and training programs.
- ❑ Help desk management – where groups of people can converse directly with the product support staff.
- ❑ Informal and formal groups that are working on a joint goal of some kind for any length of time.