## Cortex - Outline for a Persistent Cross-Platform Environment for Project Work
by Hans Andersen

Cortex is the working title of a persistent project work system. It uses traditional software for individual work, and a Groupstorm-based Worktop for collaborative work in the iRoom.

Cortex's guiding philosophy is to use as many off-the-shelf software components as possible, in as platform-agnostic a manner as possible.
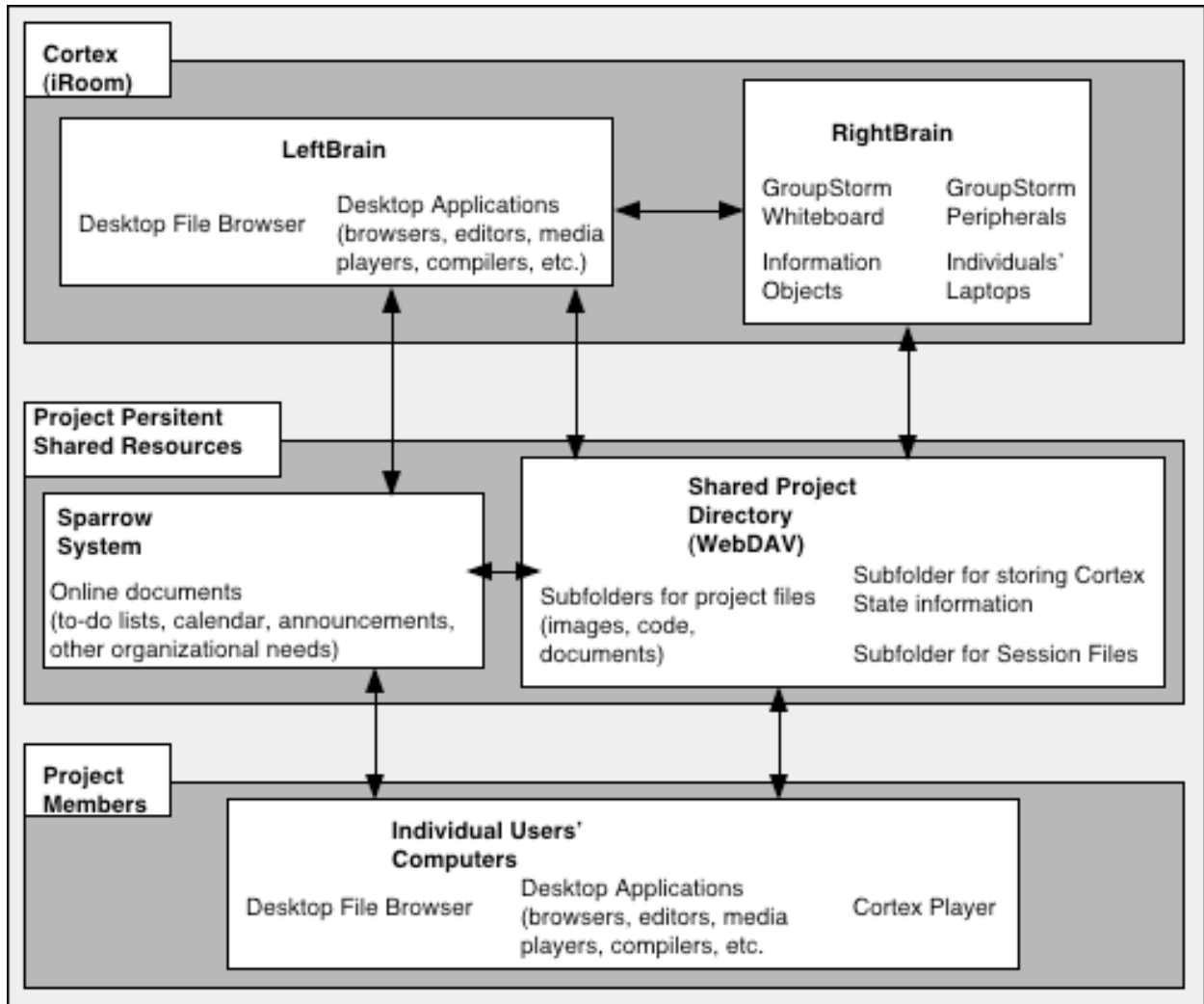
In the above diagram, there are three distinct groups. The middle group is the obvious starting point for discussion.

Project Persistent Shared Resources

A Shared Project Directory, such as a WebDAV volume, is used to store the group's work. Images, documents, products, code, resources, etc. are all stored here. From this directory, all of the project's resources can be accessed from virtually any computer with an internet connection. The Shared Project Directory might be configured to do automatic backups of its content at regular intervals, both for the purposes of avoiding catastrophic data failure and

for looking "back in time" to earlier project states.

The Shared Project Directory will also be used to store state and session files for RightBrain, which is discussed below.

Also included in this group is the Sparrow System, used to allow the project's members to remotely collaborate. Other systems can be used in place of the Sparrow System, but its web-based interface allows users to access it anywhere without needing special software. Furthermore, by including in the Sparrow page a link to the Shared Project Directory, a single URL can serve as the gateway to all of the project's resources.

Project Members

Individual project members use their own computers and applications to do individual work, accessing the Sparrow System and Project Directory as needed, and saving new and updated work to appropriate subdirectories of the Project DIrectory as needed.

Cortex

Cortex is a Worktop system designed for the iRoom and similar environments. With Sparrow, the shared project directory, and traditional email, IM, and other communication channels, project members can keep each other updated on the work that they do independently, and make that work available to the group as a whole. When the group gets together for meetings in the iRoom, Cortex is their persistent worktop.

Cortex is designed around the idea that desktops are very good at letting users manipulate individual documents, but that they are less useful at dealing with multiple documents of different types. Furthermore, whiteboard applications like PostBrainstorm allow for fluid interaction with pictures and sketches, are inherently unsuitable for dealing with exotic and proprietary content like streaming video, Word documents, and 3D images. (Yes, PostBrainstorm can do 3D, but it requires quite a render farm, and it won't run off-the-shelf programs like Bryce or 3DStudioMax).

Cortex is an attempt to play up the strengths of both types of system (Desktop OS, Whiteboard) by using both - a Desktop and a Whiteboard - running side-by-side, both sending events and information to each other, and cooperating with each other.

Cortex consits of two major software components, dubbed LeftBrain and RightBrain, respectively.

Cortex:LeftBrain

At first glance, LeftBrain is simply a computer running a traditional desktop OS. That's because LeftBrain is exactly that. It lets the group do all of the things that they can with a desktop computer. Groups can use it to mount the shared project directory, launch a web browser to view online content (including the project's Sparrow system), and view and edit content in specialized applications (Photoshop for pictures, RealPlayer for video streams, etc.) What makes LeftBrain interesting is in the many ways that it can interact with RightBrain, which are discussed below.

Cortex:RightBrain

RightBrain is a PostBrainstorm-style whiteboard application whose features reflect a special emphasis on creating and annotating data about the relationships between a variety of imported documents. While LeftBrain is well suited to work on one document at a time in a specialized environment, RightBrain can display multiple pictures, documents, representations of specialized documents (e.g. a thumbnail in place of a 3D render file). (The diagram above refers to these things as "Information Objects", but that terminology is subject to change.) The documents and document representations can be easily rearranged, scribbled upon, moved aside, grouped with other documents, etc. RightBrain is the free-form, creative counterpart to LeftBrain's rigid structure. RightBrain is described in greater detail in other documents.

Communication between LeftBrain and RightBrain

LeftBrain and RightBrain are not meant to operate in isolation; instead, they are meant to be able to communicate with each other in a variety of ways, all using the EventHeap as an intermediary.

While operating the LeftBrain system, group members should be able to drag any document icon onto an always-present applet, with the effect that a representation of that document appears as an Information Object in RightBrain's workspace. One-touch scanners and sketchclients will save their output to a specified subdirectory of the Shared Project Directory, and then subsequently push representations of that output to RightBrain for immediate manipulation.

While operating the RightBrain system, group members can "invoke" an information object to signal LeftBrain that the original file to which it refers is to be opened in a specialized application. (By invoke, I mean a special FlowMenu command or the like.) For example, invoking an imported movie file, represented in RightBrain by an icon or thumbnail, would be opened in the relevant movie player application, such as RealPlayer. Invoking a web page, also represented in RightBrain by a snapshot or icon, would open up a web browser in LeftBrain and bring it to that page.

Distribution of Work between LeftBrain and RightBrain

By sending frequently used documents and web links to RightBrain, the project group can always have those resources ready at hand. In a sense, content tucked away into a convenient corner of RightBrain can act as a highly flexible "Favorites" folder of sorts.

When desktop software already exists to handle a useful piece of functionality (Word for heavy-duty text editing, Illustrator for picture drawing, Sparrow for group scheduling and formal to-do lists), RightBrain will not attempt to mimic that functionality. While it will be necessary for RightBrain to have some sort of structured list capabilities, the assumption is that when a task is ideally suited to an existing app, that existing app will be used instead. That is why LeftBrain runs right alongside RightBrain.

Cortex and Persistence and Groups

Persistence in a multi-project environment is a tricky issue, so here's a possible implementation.

The Shared Project Directory is persistent, in that it will reside on an "always on" server accessible from anywhere.

The Sparrow System (or other scheduling/collaborating platform of choice) is persistent in the same manner.

In LeftBrain, little or no effort is made towards keeping the work environment persistent. LeftBrain is primarily used for viewing and editing documents that reside in the Shared Project Directory, and the state of those documents may change from meeting to meeting, as individual work is done. If it is feasible to give each group a separate login account on the LeftBrain computer, then each may configure various settings, shortcuts, and such to their own specification, and then whenever they log in those will be restored. This is not always feasible, and it is quite possible that every group will share a common "iRoom Project User" account, in which case LeftBrain is intended to be used for scratch work; any data that needs to be saved across sessions should be saved to the project's unique Shared Directory.

RightBrain is intended to be persistent in the same sense as PostBrainstorm. Its state and history files are stored in a subfolder of the Shared Project Directory. Because each project group has their own Directory, that means that they each have their own "persistent" state. Therefore, there will need to be a quick way to switch from one group's state to another, perhaps with a Cortex Launch Applet residing on the LeftBrain machine, which will perform the task of mounting a group's Shared Project Directory, opening up a browser window to the group's Sparrow account, and informing RightBrain that it should reinstate this particular group's most recent state.

It should be made possible/easy to denote the "start" and "end" of a work sesion, and a list of "sessions" should be viewable, so that within the group's comprehensive history file for RightBrain, a particular moment in history can be singled out and reinstated.

Additionally, group members will have a RightBrain Viewer client program that allows them to use their own desktops and laptops to view and play back the state and session files stored in the group's Shared Project Directory.

Cortex and Multiple Physical Workspaces

Because LeftBrain makes no attempt to be persistent (beyond the persistent nature of the project's Shared Resources,) and RightBrain is a platform-independent application whose data is stored in a platform-independent remote-accessible shared directory, a Cortex work session is not tied to any particular physical work space. If a group meets in the iRoom one week, there's nothing that prevents the group from meeting somewhere else the next week, and resuming right where they left off. All that is needed to recreate the Cortex worktop is one computer to act as LeftBrain, one computer to act as RightBrain, and one EHeap2 server, with the caveat that all these computers must be able to access the project's Persistent Shared Resources. With this system, two laptops and a Wacom tablet in an 802.11b-equipped coffee shop are all that's needed to create a fully functional "instant iRoom".

In fact, LeftBrain, RightBrain, and EHeap2 can all be run simultaneously on the same single physical machine, although this would prevent LeftBrain and RightBrain from being used simultaneously.