

**From:** Steven Sinofsky  
**Sent:** Tuesday, February 24, 1998 4:02 AM  
**To:** Office Group Program Managers; Jon DeVaam; Jon Reingold; Richard McAniff; Ralf Harteneck; Craig Unger; David Goodhand; Mike Koss (Exchange); Chris Jones; Andy Schuler; David Thacher  
**Cc:** Oliver Sharp; Eric Rudder  
**Subject:** "virtual office" software

There has been some of talk lately in the press and around here about a category called "teamware" or "virtual office" software. These are a cross between packaged products and services. One product, eRoom, won a best of show at Internet Showcase, the same show we demonstrated the collaboration features of Office9. The primary focus of this category is providing the basics of collaboration and document sharing for an intranet. Some of the products are HotOffice, IntraNetics, and eRoom.

It is likely that some aspects of Office9 are likely to be compared to these offerings, either directly or indirectly, so it is worth understanding what they offer and how it relates to Office9. Friend or foe, you be the judge.

Moving forward, this is a potential area for futures planning for the next release of Office as there are projects within Microsoft that will likely enter some parts of this space in a unique way (you might have heard of megaserver, which is the new work starting over in IMG/msn).

As a first step, this write up describes the features based on using several of the major products in this category. There are about twice as many products as indicated here. This area is definitely ripe for some good customer research, which would be my primary conclusion. For those of you who did the CI visits for Office 95/97 these "places" will look familiar.

The URL is <http://officeweb/users/stevesi/VOffice> or in Word (the images look better):



Virtual Office  
Software.doc

Feedback, comments, or discussion welcome (please don't reply all though)

--Steven

Plaintiff's Exhibit

6326\_A

Comes v. Microsoft

MS/CR 0004039  
CONFIDENTIAL

## **Microsoft** Memo

To: Offgpm;jonde;jonre;richardm;ralpha;craigu;davidgo;mikeko;chrisjo;andysch;osharp;eric;  
From: SteveSi  
Subject: Virtual Office Software  
Date: 2/23/98

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### Introduction

In the past six to nine months several new software packages have been released that fall into the category of "virtual office" or "teamware". These packages support the notion of collaboration and communication among a team of people. This memo takes a quick look at the current products.

The role of this software within Office (both Office9 and future releases) is something we should look at since clearly many companies see enough of a whole to begin to try to fill it. In our studies for Office 95/o7 planning we spent a great deal of time on "projects" and learning about how people gather documents and communicate. In many ways these teamware products extend to the internet the contextual inquiry concepts we investigated. These products all focus around the idea of a "home page" for a "project" that allows one to connect to the various components of a project, which in these packages are primarily documents and people.

It is interesting to think about whether these products are competitors to Office or adjuncts to Office. One can easily see the "office compatible" nature of these products as all of them actively support Office 97 file formats and their documentation and examples are almost exclusively focused around Word, Excel, and PowerPoint. On the other hand, since the business model for these packages is not yet fully in place (as we will see each has taken a different approach) it is not a big leap to imagine that these companies might choose to leverage another suite of applications, or a home grown one, in order to sell their main asset (which might be as an ISP, a web hosting service, or a front for business to business communication). This is definitely something to consider in the near term as we are certainly going to be asked many questions about these products as we roll out Office9.

The four products we will look at in this memorandum are:

- Instinctive Software eRoom
- Netopia Virtual Office
- HotOffice Technologies HotOffice
- Intranetics Intranetics 97

There are a few other products that are garnering attention in this category, though are generally a notch below the products above: Internet Media 3-2-1 Intranet, Netscape Virtual Office by Concentric, Changepoint Corp.'s Involv.net (built using Notes). In addition there is Lotus Development Corp.'s Lotus Instant!Teamroom, which is a Domino based implementation of this concept.

The most recent category review appeared in PC Magazine. Editor's Choice went to HotOffice.

### **Customer?**

It is interesting to think about the target customer for these products. Of course the canonical customer is the "small business" that wishes to outsource the management of an intranet server (IntraNetics requires a local install, but is very simple). On the other hand, the focus of all the products is document exchange and discussions. These are generally large company collaboration scenarios. Certainly for a small company document exchange can be done over a local LAN (perhaps not available?) or most likely via email. Discussions are useful for dealing with clients or customers, but this scenario is not covered by any of these products (Netopia supports real-time collaboration with any party). The interesting thing about all of these products is that in order to collaborate with an "external" partner one generally would require adding that entity as a user. Finally, most of these products fail to function fully behind a firewall.

On the other hand, most of these products are missing things like customer lists, SPAMming, and any accounting functionality (invoicing, billing) which are all things that go on internally and are small business focused. Yet one can see this collaboration functionality for a 100 or 200 person firm (say an ad agency or

## Virtual Office Software

other non-computer knowledge-based business) using something like this if it was combined with their internet hosting and provided some levels of extensibility.

It is worth thinking about the target audience for a product like this and who would really benefit.

## Instinctive Software eRoom

eRoom bills itself as "an out-of-the-box application that turns your browser into a shared workspace. In minutes, any team leader can set up a private corner of the Web where team members from all over the world come together to share and edit documents, identify and discuss issues, track responsibilities, make decisions and take action."

Instinctive was founded by Jeff Beir and Pito Salas, both of Lotus. Jeff was the SVP of Business Software at Lotus. Pito was the development director for Improv. There are a total of nine executives listed on their web site. They have regional sales offices in Chicago and LA. Instinctive is backed by Matrix and New Enterprise Associates.

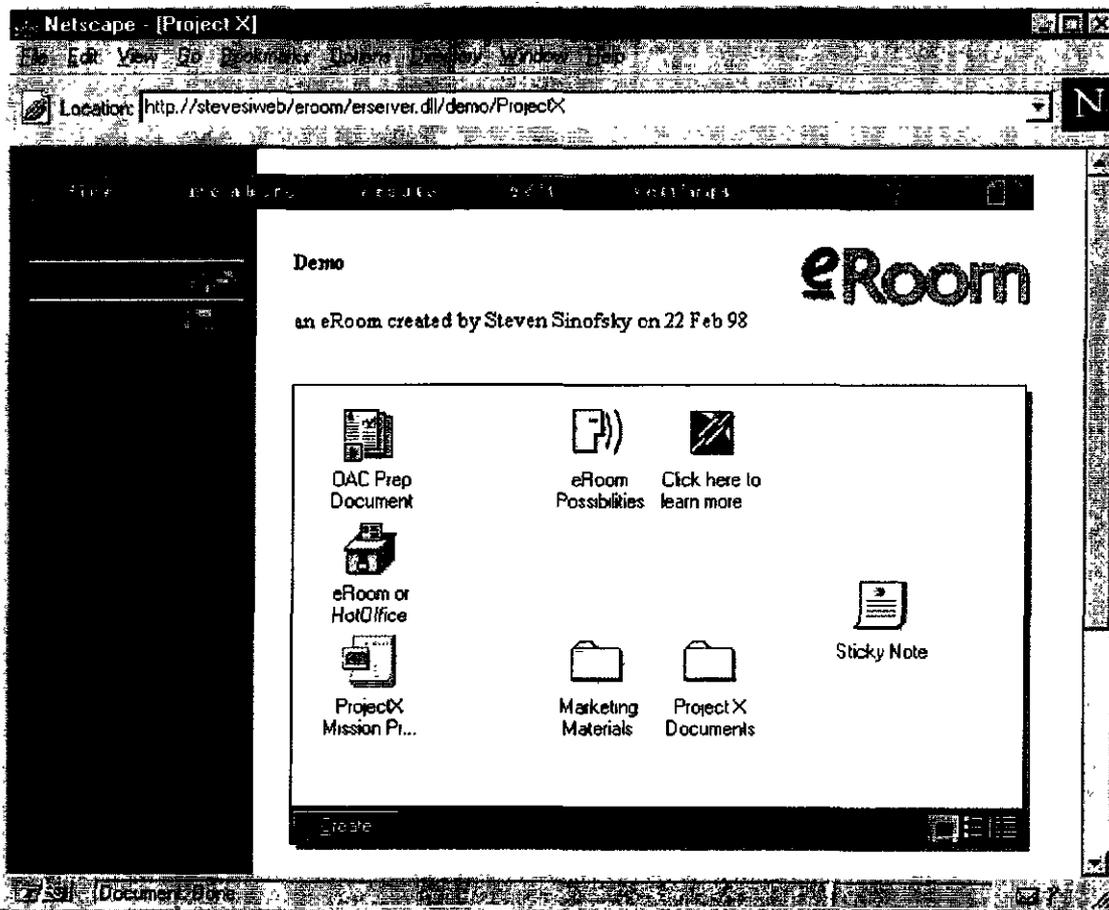
The product is sold as either a service where you can rent an eRoom server that is maintained by one of a few different ISPs. When you purchase the product for use on your own server it costs \$645 for a starter pack of 5 licenses, with volume pricing of \$79 per user for quantities of \$500 (plus the cost of the server software). When you rent an eRoom from an ISP it runs \$125 per month for 5 users.

The system requirements for the server are Windows NT with IIS and at least 64MB of RAM. For the browser eRoom requires Internet Explorer 3.x or 4.x or Netscape 3.x or 4.x along with NCompass's ScriptActive plug-in which enables running the ActiveX controls that are required. Instinctive recommends 32MB of RAM for the client. eRoom is quite a poster child for the Microsoft platform requiring software from NT and IIS, to IE and ActiveX, to Office documents.

## Home Page

The basic element of eRoom is a space called, of all things, an eRoom. This is essentially the project space and in general you will pass around URLs to this project. When you connect to a project you are asked for a username and password which is kept in the eRoom server. The eRoom itself is a wrapper around a storage location that can be used through the main eRoom user-interface (the ActiveX control). To the left of the main content area there is a "shortcut" bar that allows easy navigation to any portion of the eRoom and it is easy to drag things to this shortcut bar to customize it (these shortcuts also display the read/unread tracking as well). There is also a place for announcements ("Now I'm using IE" in the screen shot below). These are basically the message of the day.

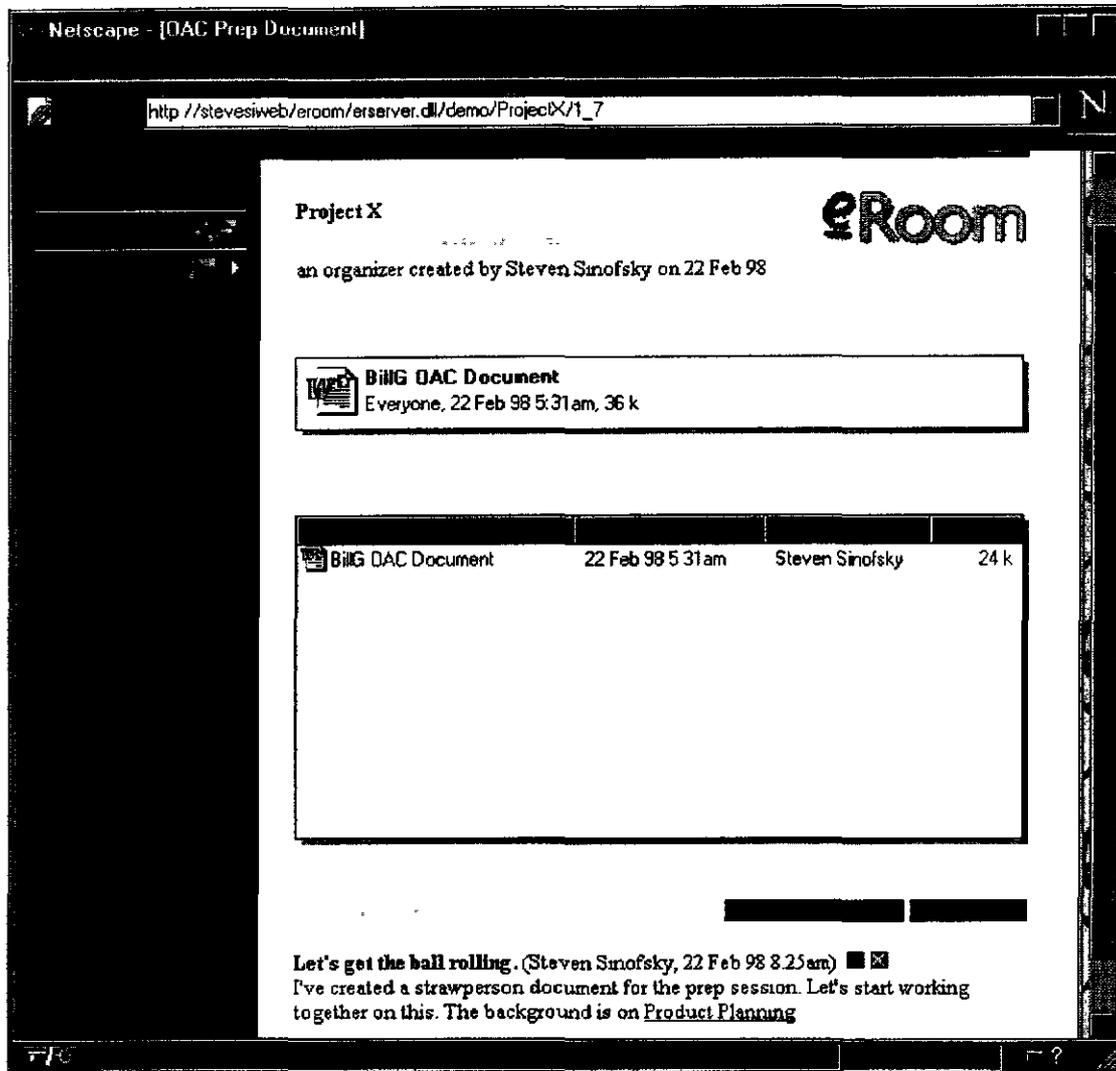
The product allows for seven storage entities as pictured below:



**Folder:** A folder emulates a Windows 95 folder including the presentation of icons, context menus, etc. eRoom manages the interface as a shell extension and the storage is automatically propagated from local temporary files to the server via HTTP PUT. Since the files in the folder are generally Office documents, they support double-click to open, which downloads the document to a local folder and then starts the creator's application (note it must be available) for editing. When the document is closed the changes are sent back up to the server

Folders support read/unread tracking on the contents of the folder. Unread items are indicated by a change in the visualization of the icon. This is pretty cool. The read/unread data is stored in the server's representation of the folder data structure using the user database. In addition folders allow items to be marked as read-only and they can be reserved for editing (in which case other's cannot make changes). One can also set permissions (based on the eRoom's user list) for opening/viewing and editing.

**Version Organizer:** This is a "special folder" that allows for the management of a single document and the history of changes associated with the document. One simply creates a version organizer and a single document is created. Each time the current version of the document is updated a copy of the previous version is placed in the archive. At any point one can create a version comment which is just a threaded discussion, though it is not tied to any specific version of the document. Read/unread tracking is supported on the old versions as well. In addition there is an ability to take a poll (presumably to vote on the status of the document) directly from the version organizer.



The folder view is reused to show the archive of the document (in fact you can put any arbitrary document in that folder—it is a little confusing in terms of which is the final document and which are the versions). Within the folder/archive view the details of the file are shown. There is also an undelete to recover items accidentally deleted.

**Discussion:** Discussions are similar to the FrontPage discussion bot, but they do not include threading. There is an ability to start a topic, as well as to delete existing comments. There is also a link on the discussion page to easily create a voting scenario based on a discussion. Discussion is probably a misnomer since they are not threaded, perhaps this is more like a white board. Rich text is supported in the entries as well as hyperlinks.

**Note:** A note is just a little rich text document that can appear on the eRoom home page, sort of like a sticky note. They can only appear on the home page and don't have any special function otherwise. One can be seen in the screen shot for the home page.

**File:** A file can also be placed on the eRoom home page. This allows the quick exchange of a document or to do something like publish the charter of the eRoom as a presentation or memo. Read/unread tracking and access control, as in the folder view, are supported at this top level as well.

**External Link:** This is just a quick way to place a URL on the eRoom home page.

**Poll:** This is a quick way to pose a topic and allow people to vote on the choices. Write-ins are supported and when you go to the poll location the current results are displayed. eRoom prevents one from voting

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more than once. An interesting touch is the inclusion of a folder associated with a vote so that you can be voting on a collection of documents.

## Document Management

In terms of document management, eRoom provides two concepts: folders and version organizers. The folder does not really support any document management, but it does support the posting of the document to a web site. So within folders, the basic functionality is access control (allow viewing and editing), read-only, and read/unread tracking.

The version organizer allows for archiving of past versions, but not in any manner more sophisticated than a customer would do today by using SaveAs. The model is somewhat confusing as you need to know to drag the document to the "current version" pane and not really muck with the folder view below.

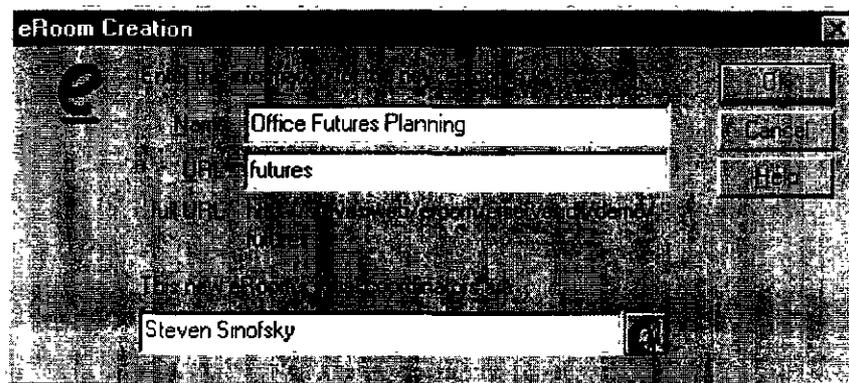
There are several ways to add documents to the eRoom. There are several places where there are attach buttons, you can right click and select New (as in the Explorer), or you can just drag and drop documents onto the eRoom.

## Discussions/Collaboration

There are four primary discussion/collaboration features: Discussion, Polls, Notes, and Announcements. These are implemented as described above. eRoom does some interesting work in connecting the polls, notes, and discussions together in terms of driving the scenario of "Create a document , discuss, and vote."

## Management

Managing an eRoom is easy once you get the server set up (which wasn't quite so easy). From the root of the eRoom server you click on create eRoom and all you do is give it a name and a URL:



The URLs to a eRoom are quite hard to remember and type since you always have to type in the name of the eRoom ISAPI DLL as well as the root eRoom (Demo in this case).

Adding/managing users is done through a simple, non-extensible, dialog that asks only for the basic user name, password, access rights. They have integrated licensing within the user manager, so you can purchase more licenses right when you run out of them. Although advertised as using NT Server security, the user list and names are not NT domain names and the ACLs on the files are the NT default.

## Other Features

There is a help system available while you are using the product. This is implemented as a local web site (using file URLs). Relative to the other assistance models for these products it is detailed and helpful.

It is possible to sign up to have a daily summary of all the changes to an eRoom mailed to you. The summary would include changes documents, created items, as well as the discussion changes. Unless you actually want to make changes or see the documents, one might never need to go to the eRoom because of the level of detail. The message contains URLs that go right to the document, though this was the only way I could find to create links directly to the content on the site (the URLs are the standard generated kind).

## Netopia Virtual Office

Netopia (formerly Farallon) Virtual Office provides more of a point-to-point presence on the internet along with a "presence" home page. Netopia is predominantly concerned with high speed connectivity, building hardware, and with providing just enough software to support collaboration scenarios. Given the heritage with Farallon, there is an obvious bias towards screen sharing and traditional chat and conferencing.

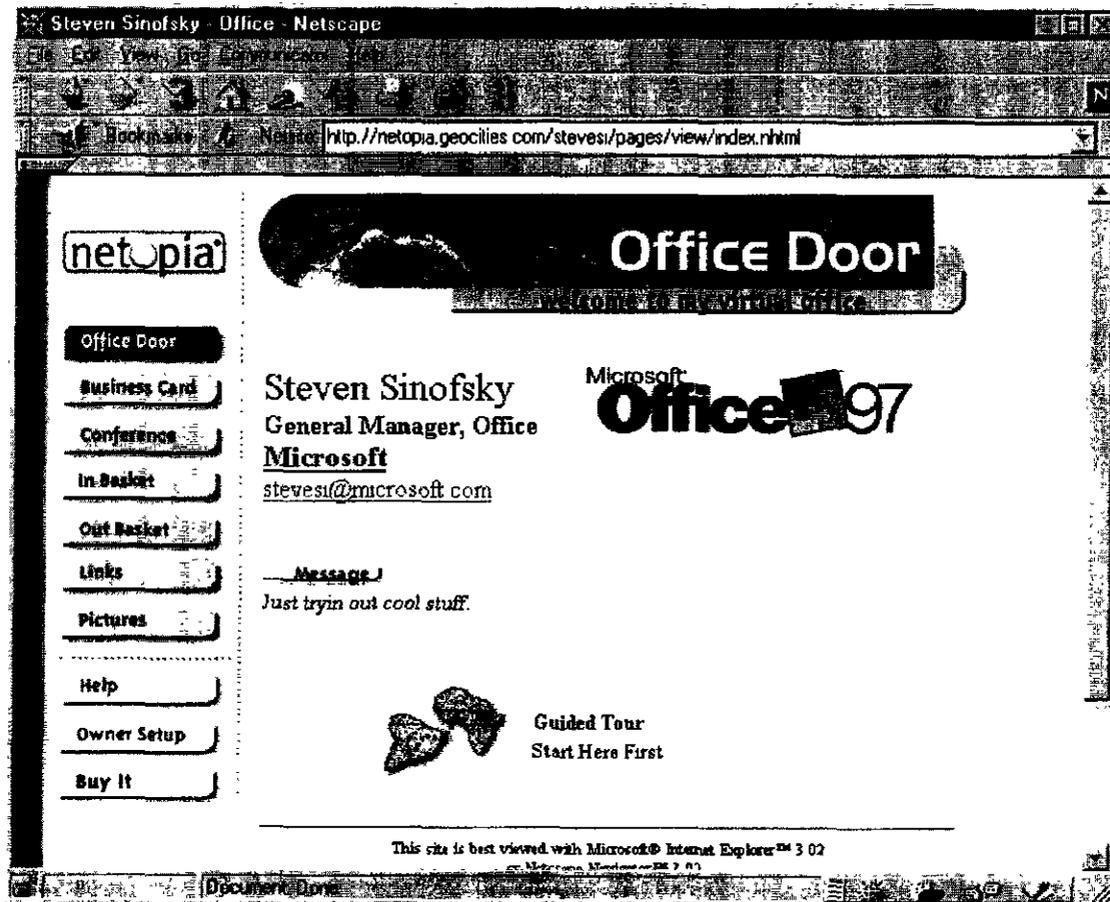
The product is billed as "Netopia Virtual Office is the industry's first interactive web office software and hosting service designed to extend the use of web sites from static content to interactive communication. It provides users with a personalized web office for 24-hour information exchange and real-time communication and collaboration." A point repeated several times in their product is that you gain an internet presence with no knowledge of HTML required.

Perhaps the most unique element of this product is that the hosting is done by GeoCities. So after you sign up (the hosting is free for a year) your URL is [http://netopia.geocities.com/your\\_company](http://netopia.geocities.com/your_company). The client software is \$49.95 and after a year hosting on GeoCities is \$19.95 per year. The browser requirements are basic Navigator 3.02/Internet Explorer 3.02. In order to support incoming communications you need to have the client software. One can support outgoing information using the "visitor" software which is free. The biggest drawback is that the bulk of the product is devoted to software that does not work through firewalls. There is no way to purchase the server portion of the software, so you need to go through GeoCities.

## Home Page

The highly touted home page presence provided on GeoCities is a basic layout that one can customize with a few selections.

A customized page looks something like:



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If you click on Owner Setup you can customize the look of the page by adding the basics. The above example is as customized as you can make it.

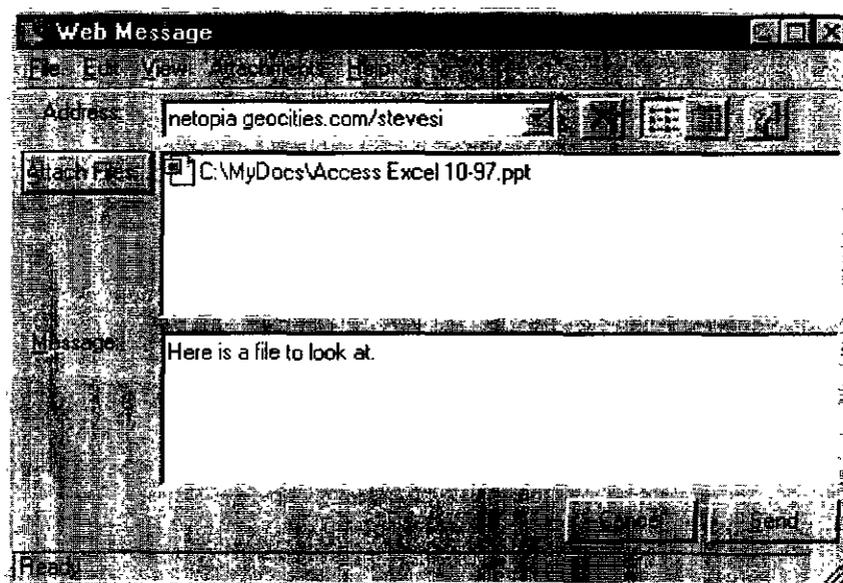
Similar to the home page is the Business Card, which allows a similar sort of customization, though is geared towards providing contact information. A number of extra fields (cellular phone, fax, beeper, etc.) are provided.

The links page is a collection of URLs that you can maintain on your site.

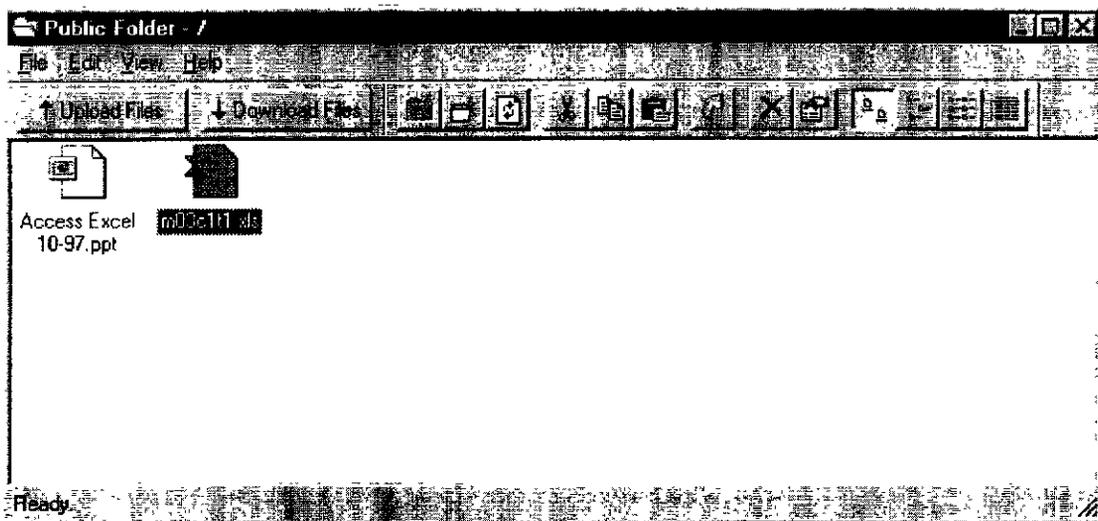
## Document Management

There are two forms of document management with Virtual Office. There is minimal support for maintaining a clipart gallery on the server. This is used to adorn the customizable home page and business card. Using the HTTP upload facility of the browser one can send a GIF or JPEG to the server. The customization dialogs allow picking from the uploaded images to place them on the pages. In the above example, the Office 97 logo was uploaded and then later used to customize the home page.

Within the web-based portion of the product one can send files around to other users or receive files (the Visitors can only send files). There is a plug-in (which is actually a stand-alone applet) that allows for file upload/download. Any visitor can browse and download files through a web interface to the file area.



There is also support for a repository of documents, known as the Public Folder Out Basket. This is where multiple users can exchange files. Basic HTTP upload is supported along with security on the folder so that the owner can specify who has read and upload permissions.



Through the file manager interface pictured, it is easy to create shortcuts to the folder, though they aren't URLs but rather launch the file manager application and then logon to Netopia.

When files are posted you are automatically notified by an alert on your machine if you are logged on (there is a small monitor application). You can adjust the polling rate of the software since it is sort of a slow operation.

If this all sounds a little confusing, unfortunately it is.

## Discussions/Collaboration

The bulk of the product is devoted to leveraging the Farallon software, which is actually Timbuktu I believe, for doing discussions and collaboration. The primary features for collaboration include:

**Knock:** This just pings the machine you want to talk to. Note that the site owner is the person that you can communicate with. Everyone who wants to be a destination must have a Netopia site on GeoCities. Thus this is not a virtual corporation, as much as a virtual desk.

**Look:** If the owner of the site is logged on (the monitor application is running) then this will allow one to take a look at their screen—so this is screen sharing.

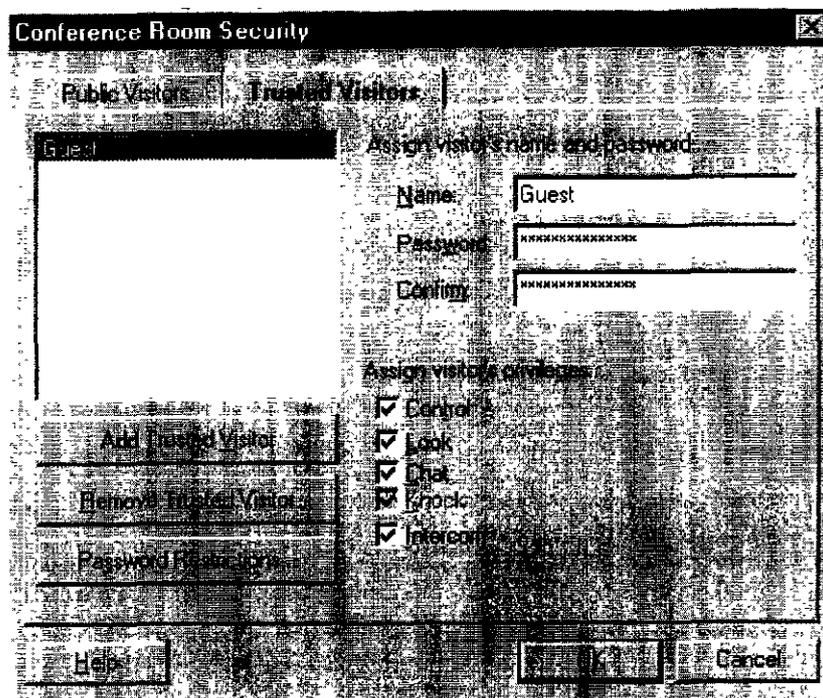
**Control:** This goes a step beyond Look and provides for true remote control of the PC.

**Chat:** This provides a text-based chat session with the owner of the site.

**Intercom:** Along the lines of chat, this connects you with the owner though over an internet voice phone.

## Management

Netopia users are managed through a dialog that allows the owner to add/remove users from the ability to conference.



Here you can see how to grant permissions to people based on a username that the owner picks. There is no global address book so managing this can be quite a challenge.

## HotOffice Technologies HotOffice

HotOffice is a product that many at Microsoft have been talking about. It combines a lot of technologies: HotMail (well free email, but it is tough to resist the play on words) and Office (obviously). It also ties in to several web services, such as travel, package tracking (through the shipper's web sites), small business *fee-for-use* tools (credit check, trademark search, Thomas Register). In addition, the product makes heavy use of Microsoft's server technologies judging by the .ASP in many of the URLs.

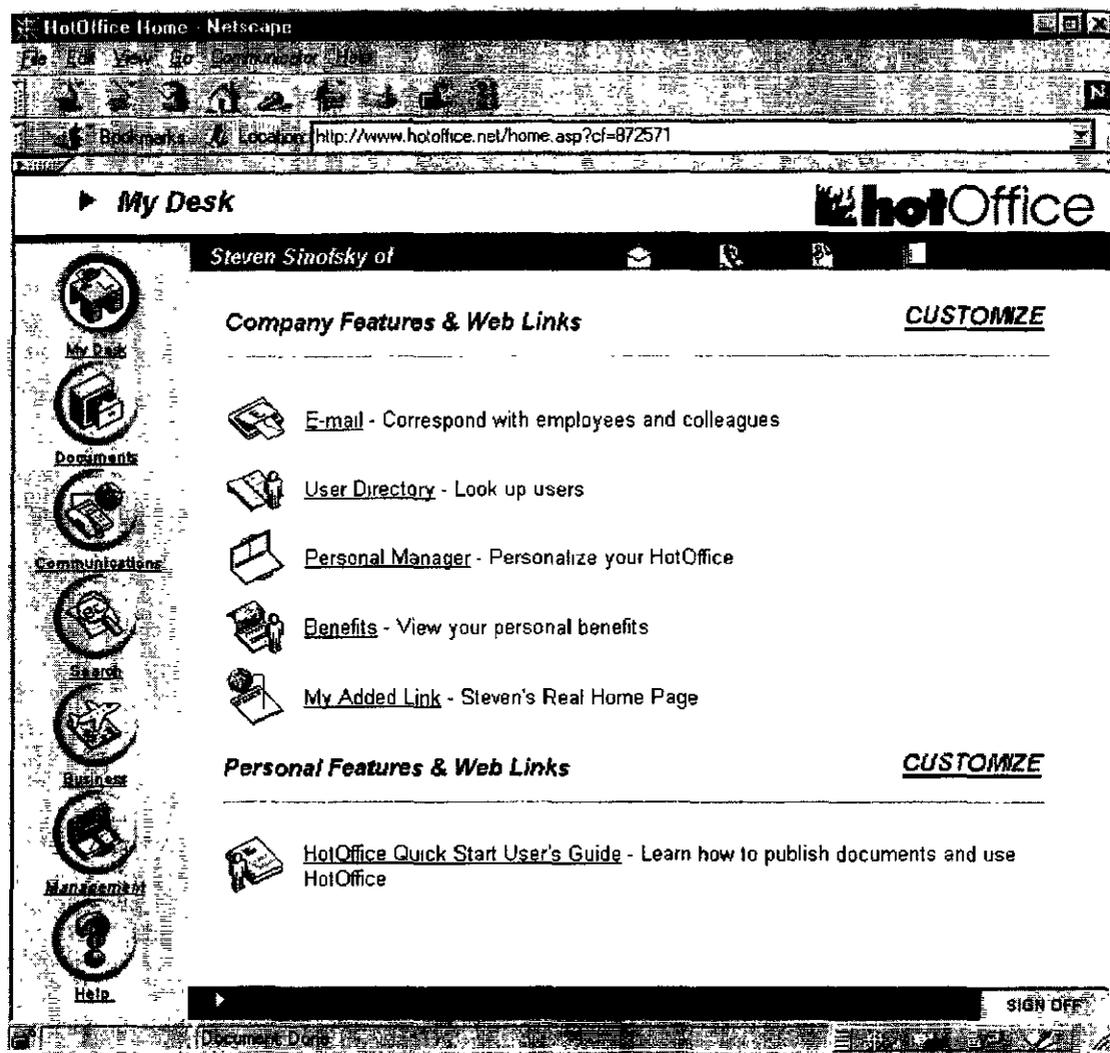
HotOffice Virtual Office Service bills itself as "a subscription-based suite of applications and services that enables small businesses, companies with multiple offices, mobile workers and workgroups to quickly, easily, inexpensively and securely communicate and collaborate at anytime from anywhere with just an Internet connection and a browser. Your HotOffice can be securely accessed by your selected group of colleagues, clients, customers, suppliers or just about anyone else you allow - whether they're around the corner or around the world!"

HotOffice is a service. The software is maintained on the HotOffice.net server farm. The price is per-user with a single user costing \$19/month and 25 users costing \$199/month. Each user is given 10MB of disk space. There is a free 30 day trial, but you need to sign up for the service with a credit card to use it. There is an indication that HotOffice Technologies will support a LAN installation as well.

There is about 3MB of client code that must be installed to use HotOffice. This includes the helper code for publishing, which is a Java application (that is sluggish and somewhat unreliable) that does the upload/download (about 500K of Java code is installed in the trusted Windows folder). The installation also adds Office templates that add a HotOffice publish button that sends the current document to the HotOffice server (using the Publish Wizard). Several of the applications within HotOffice (chat for example) are implemented as Java applications that are downloaded when needed. The Java code does not seem to work through a proxy.

## Home Page

HotOffice's home page is designed to be the home page for your corporation. All the users connect to this to read their email and get other messages.



The home page has some customization available to it that allow one to add links and pick which features are displayed. The can be customized for the entire company or for personal use. It is possible to place a link that goes directly to any HotOffice feature in either the Company or Personal sections.

There is an icon bar on the left side of the screen that is not customizable that links to the top level modules. The modules for HotOffice include the following, which are detailed in the Features section below:

**Desk:** This is a user's home base. It serves as a launching place. In addition there is an "alert bar" that shows new items in mail messages, phone messages, bulletin boards (see the upper right of the screen). The default configuration has links to: email, documents, personal manager (password, benefits, preferences, etc.) and a personal link to a short HotOffice tutorial. There is a sign off menu button on the status bar along with any company-wide message of the day.

**Documents:** This is a link to the HotOffice document management functions which include search, file folders, software library, and a top level link to download the HotOffice client software.

**Communications:** The applications in this module include email, reminders, phone messages, NetMeeting, bulletin boards, and online conferencing (chat).

**Search:** This module has a single application which is a front end to several standard internet search servers (Altavista, Excite, WebCrawler, Lycos, Yahoo, InfoSeek).

**Business:** These applications are links to several internet services that provide business information: stock quotes, travel, package tracking, credit reports. There is also a link to the Reference desk that provides links

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to for fee services including Business News, D&B Credit reports, Thomas Register, Tradenames in the news, and TrademarkScan.

**Management:** This application area is for the virtual office administrator. There are also personal functions one can manage here depending on the permissions set by administrators.

**Help:** The help area provides links to call-out help, where screen shots are annotated with descriptions of functionality. The help link is context sensitive and provides help based on the current application.

## Features

Application	Description of Application
My Desk	This serves as a user's home page. The main content area can be customized to include links to most used virtual office applications. There is also a company links area that is set by the administrator.
User Directory	Display the directory of all the users on a company site. The list includes name, phone, email, and title and can be sorted by name, department, or project.
Personal Manager	This area allows management of the personal settings. An admin can disallow these.
Benefits	This application allows one to view (entry is done elsewhere) the current value of "benefits" the site/admin defines the benefits. Examples of benefits include sick leave, vacation, insurance, etc. Benefits can have an Issued/Used count as well as an expiration date. The admin can prohibit users from seeing the current entries for a benefit as well.
Change My Password	Change your account's password.
View / Change My User Profile	The profile contains basic contact information as well as the user name for a HotOffice account.
HotOffice Preferences	Set the basic visual appearance of HotOffice including color schemes and fonts used.
Suggestion Box	This sends a mail message to an administrator defined mail location offering a suggestion (about HotOffice or a company issue).
<b>Documents</b>	
Search HotOffice	Search through the uploaded documents by summary text (entered at upload time), Author (dropdown derived from the list of authors that uploaded documents), Department (based on the department folder the document resides in), Project (based on the project folder a document resides in), or date (yesterday, last week, etc.). There is also a browse button that goes to the file manager view Browse Documents.
Browse Documents	Browsing documents provides a file system-like view of the published (uploaded) documents. The list provides for expand/collapse folder. The view is a details view that shows listings by either Author or Folder. The folders are defined by the Company and Project names defined (this defining a project defines a folder for that project). The top level folders are Personal (visible to me), Departments, Projects, Company (documents global to the company not in a department or project). There are "recycle bin" folders for deleted items. The details view supports Delete, Edit, View, Unlock (manually release the checkout lock), Date, Title, Keyword description, Revision number, Last Revised by, Size. There is also an ability to move documents to another folder (as defined above).
Software Library	A list of HotOffice defined applications available for download. This currently includes Acrobat viewer, Word viewer, Excel viewer, PowerPoint viewer, and WinZip. Download times for 28.8 are given.
HotOffice Starter Kit	Download the client software for HotOffice.

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<b>Communications</b>	This area offers the hub for the communications features.
E-mail	Email is implemented as a browser only mail client. Support is provided for folders, address book, single mail attachment. There is also an ability to check POP3 mail on other servers. The mail note is a basic ASCII form field. Blind copy is supported. The folder view supports moving messages between folders and mark as read/unread. There is a Deleted items folder where messages sit for a while before being purged.
Reminders	Reminders are like appointments though you don't get a calendar view (the view shows active reminders by name, project, department). A reminder is created by checking the recipients and selecting create reminder. A reminder has a subject, text, Start/End dates, a reminder frequency, and a time to issue the reminder. An active reminder count shows up on the main status bar on the Desktop.
Phone Messages	A phone message is sort of like a custom email message/reminder. The form allows picking a recipient from a list of all users, from (name, company, fax, phone—no email), an action dropdown (return call, wants to meet, etc.) and a plain text message. The number of new phone messages is displayed on the main status bar.
Microsoft NetMeeting	NetMeeting allows you to easily start a conference with someone else from your company logged on. I didn't work with more than one user, but it appears as though they implement a ULS on their server site.
Bulletin Boards	The BBS functionality is plain text threaded discussions as one would expect. The organization is according to Project, Department, or Company-wide. At each of those levels one can create new threads, respond to messages (privately or in the thread), and mark all messages as read (per-user read/unread is tracked). The main BBS screen shows the total messages and unread count for each folder.
Online Conference Room	The conference room is a Java application (firewall unfriendly) that permits real time chat between any logged on member of the company. There are no additional chat features (smiley faces, like AOL). There are separate chat rooms for each Project or Department, along with a Company room. The main Conference Room page gives a count of coworkers online in each room.
<b>Search</b>	
Internet Search	This offers a very basic front end to the common internet search services. Only the basic search string is entered without the normal advanced search features of the site.
<b>Business</b>	This is a collection of business service sites. All the information is presented within the HotOffice browser frame.
Stock Quotes	Basic quotes through Quote.com
Travel Planner (\$)	Travel reservations through the internet travel network.
Package Tracker	Ship or check airbills for UPS, FedEx, DHL, and Airborne.
Research Desk	The research desk is a set of fee-based information services.
Business News (\$)	Reports from WinStar Telebase which is a republisher of data from over 500 different sources (Knight Ridder news, for example)
Dun & Bradstreet U.S. Company Profiles (\$)	Company profiles from D&B that include basic SEC information for public companies or D&B research for private companies. Search by name, SIC, etc.
Thomas Register (\$)	Search for manufacturing and buying companies by several criteria.
Tradenames in the News (\$)	WinStar Telebase information searched by trademarked name.

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TRADEMARKSCAN @: U.S. Federal and State (\$)	Search USPTO for trademarks by name, class, or industry.
Dun & Bradstreet U.S. Business/Credit Reports (\$)	Obtain a credit report from D&B online. Search by name, D&B number, etc.
Experian Business Credit Profiles (TRW) (\$)	Obtain a credit report from TRW online.
<b>Management</b>	
HotOffice Quick Setup Guide	A basic tutorial. This repeats the common help system hierarchy (which is reproduced in this table).
Company Information	Modify the name and contact information for the company. These also serve as the defaults for new users. The suggestion box mail address and main mail address for the company are set here.
Departments	Departments are analogous to organizational units. The standard use is to create a department and assign management rights to the department manager. A department has a name, leader (chosen from all users), and a description. When a user is added to a department he/she inherits department rights which can include one or all of Member (just listed in directory), View document, Edit documents, Contribute to BBS. From the Department view there is one button access to the member list. As described, a department also defines a document folder, a reminder folder, an online conference room, and a BBS.
Projects	A project is identical to a department in all features and access rights and is essentially just another organizational tool.
User Profiles	Create new users or modify contact information for existing users.
Feature Access Rights	For the entire hierarchy of features the manager/admin can set access rights for new users. In addition once a user is in the system, rights can be set for each feature (grant/deny). An account is either a HotOffice Manager (full rights) or a User (selected rights).
Benefits	Allow the creation of a "benefit". Each benefit has a name and description as well as a "private" field that keeps the benefit from being viewed by the recipient
Message of the Day	This appears on the Desktop screen on the status bar. When creating a motd, the text and expiration date are given along with a URL that activates the status bar.
Billing and Usage	This area allows one to alter the billing, HotOffice plan, and contact information.
Price Plan and Billing Information	Go here to add more users to your plan.
Billing Questions and Answers	This is a FAQ.

**Document Management**

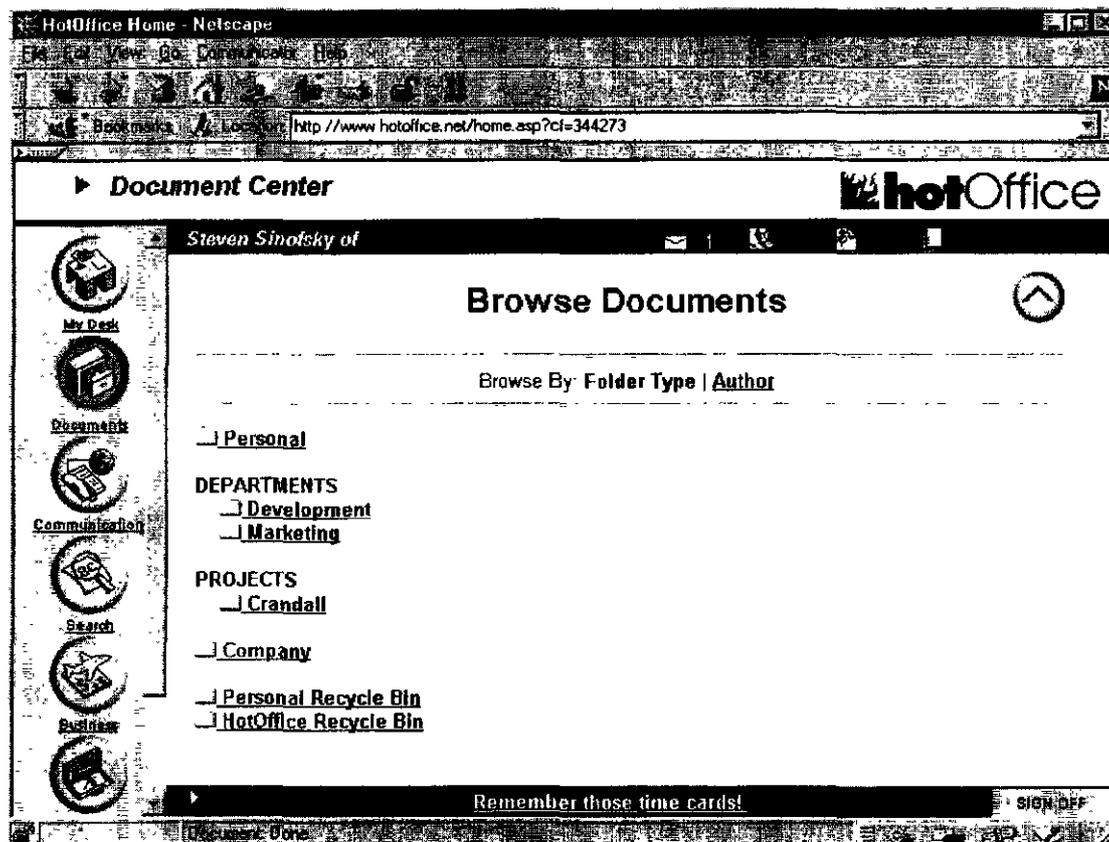
The document management functionality provided for a HotOffice hosted company are centered around using the web server as an internet file share. The documents are not stored on a web server as pages, but are in the HotOffice "store" and are best accessed through the user interface. For example, the URL to View a document might look something like <http://www.hotoffice.net/asp/view.asp?docDef=1350.2.0&cf=858816> (which is session dependent I believe).

The document browsing functionality is limited to a details view of a fixed set of properties (Department or Project, Title, Author, Keywords, Revision, Last Changed By, Size, Last Changed Date). There is no facility for custom views, though the obvious views are provided, nor is there a facility for custom properties. Within the document browser one can move documents to any other folder. Folders are defined by Project, Department, Personal, Whole Company. There is no way to create folder without creating a Project or Department.

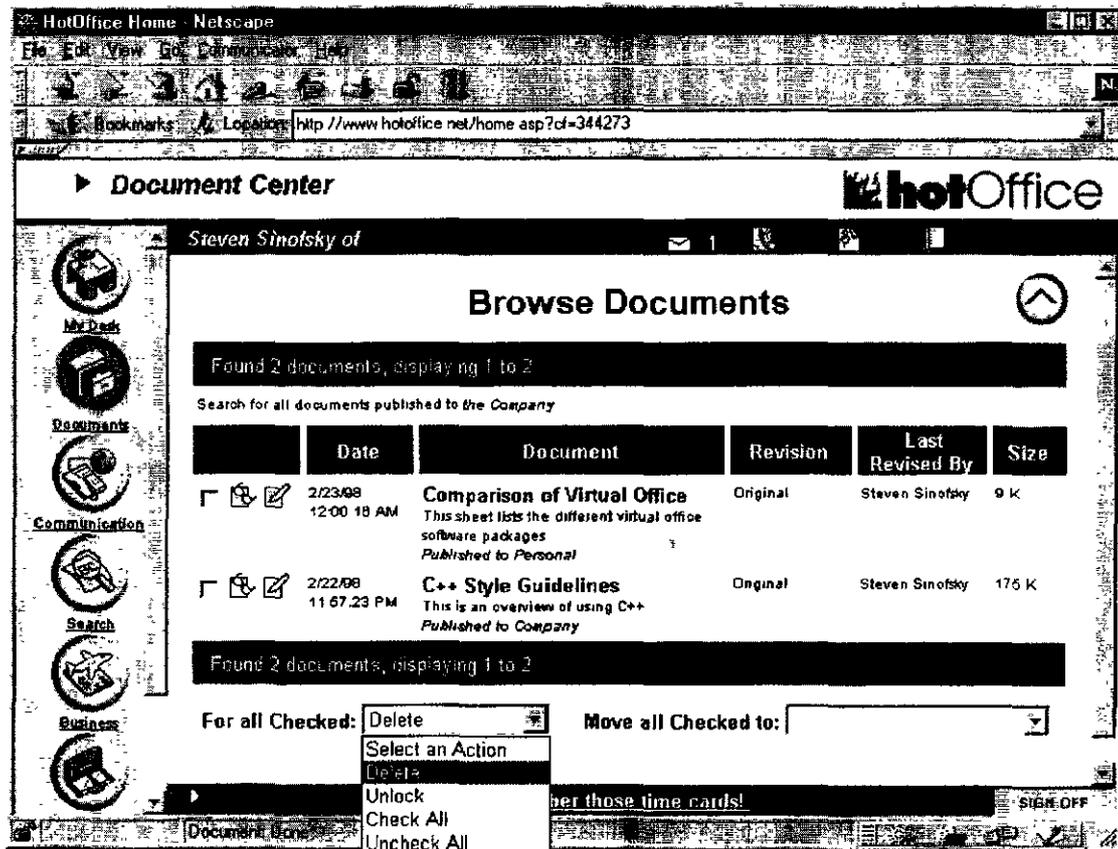
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A document may be opened for viewing, in which case it is downloaded to the local machine and the standard file association is used to launch the viewer. When a document is opened for editing, a HotOffice client applet handles locking the file and unlocking it when the launching application is done with the file. Because this is generally a fragile lock, the document browsing view also includes an explicit unlock command. When you open the document browser the lock status of a file is indicated below the title in red letters.

The basic document browser is pictured below. For this account there is a Project called Crandall and two departments, Development and Marketing.

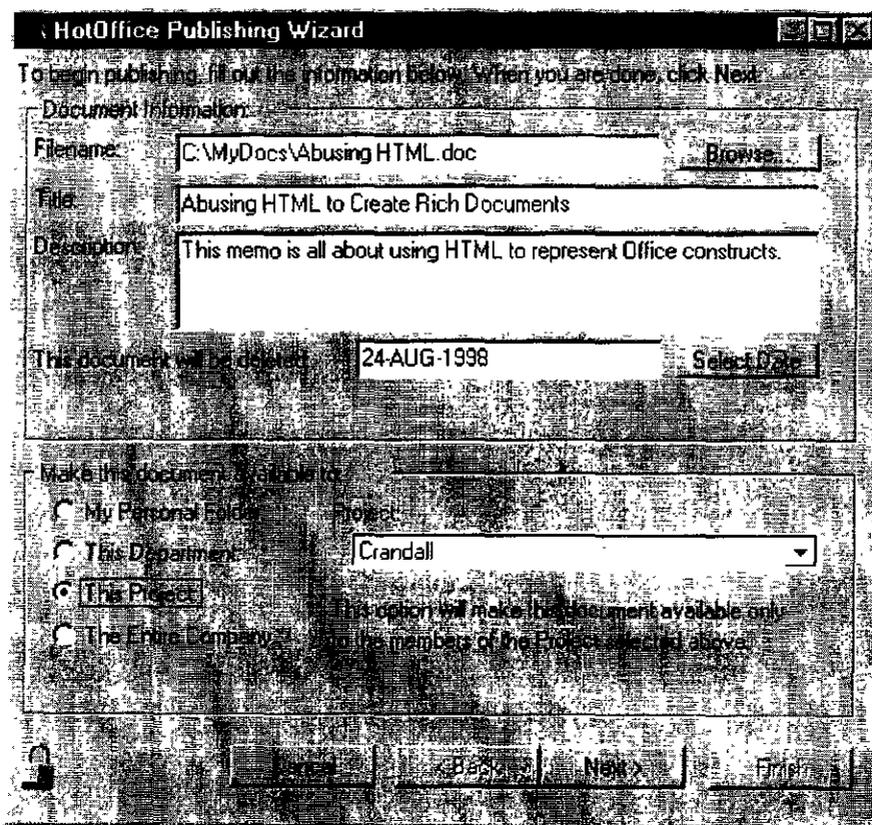


Clicking on a folder expands it, though not in place, to list the documents in the detail view:



There are a number of ways to upload documents to the HotOffice. Each of the techniques is a mechanism that uses the HotOffice Publishing Wizard. This wizard is available from the Start Menu, from within Office 97 (via a customized template with a "One Step" toolbar button), via a MS-DOS command line, via a context menu in the Explorer, or via the Send To command in the Explorer. Depending on where the command was invoked the various fields may already be filled in. The Publish Wizard is a Java application that is pretty sluggish.

The first screen (not shown) is the HotOffice logon screen. The second screen (below) allows you to pick the file, provide a title, description (the keywords to be searched), and an archive date. The radio group allows specifying the folder the document should be stored to (it can be moved later).



The document is transferred over a secure HTTP port. The transfer speed seems fairly slow. There are no restrictions on the type of document that can be uploaded and shared.

Each user is given a disk quota that documents are charged against (based on the owner of the document). The Personal folder is not sharable and can only be viewed by the owner.

## Management

HotOffice uses a full range of TCP/IP ports which makes using it through firewalls a challenge (I used a dialup ISP account for this writeup). The full list of ports (including those required by NetMeeting include):

- Port 80 HTTP requests, Web Browser
- Port 389 NetMeeting Registration
- Port 443 HTTPS requests, Web Browser using SSL
- Port 2959 Document publishing and retrieval (RC4)
- Port 2961 Document publishing and retrieval (SSL)
- Port 6667 Online Conference Rooms (IRC, chat rooms)
- Port 1503 T.120 (TCP)
- Port 1720 H.323 call setup (TCP)
- Port 1731 Audio call control (TCP)
- Dynamic H.323 call control (TCP)
- Dynamic H.323 streaming (RTP over UDP)
- To establish outbound NetMeeting connections through a firewall, the firewall must be
- configured to do the following:

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- Pass through primary TCP connections on ports 522, 1503, 1720, and 1731.
- Pass through secondary TCP and UDP connections on dynamically assigned ports.

### Intranetics 97

Intranetics is the closest to a product of all of these virtual office packages. They sell server software that you install and use, without selling you an ISP connection or server farm. Intranetics is an idealab! company.

The management team of IntraNetics is made up of a number of people with significant experience, including two people from Lotus. The president is Steve Crummey who was the VP of Sales at PictureTel. Bill Corrigan is director of product management was a senior manager on Lotus Domino. Bill Peacock as VP of Product Management was the development manager of Lotus 1-2-3 '97. There are 8 executives listed most of them in sales/marketing.

IntraNetics '97 is a server-based product composed of a suite of applications. These applications all work together off of a common set of databases and folders. The value of the integration becomes clear once you use the product—for example every time a person's name appears it appears as a link to their "personal page".

The product requires NT 4.0 server and runs with IIS or Netscape FastTrack. It also requires an ODBS compliant database and a POP3 mail server. There is a Small Business Server version that is ready to go on top of SBS using Exchange and SQL Server. The recommended hardware is a Pentium with 128MB of RAM. The SBS version comes with 25 licenses and lists for \$2495. This is an "applications only" version, which does not include a database. A version with the database (from InterSolv) lists for \$7495 and does not appear to have a user limit. The web site says an Apache version is planned for Unix in 1998. The implementation of the server side computation is done with PERL, which they seem to make a big deal about in the description of their product.

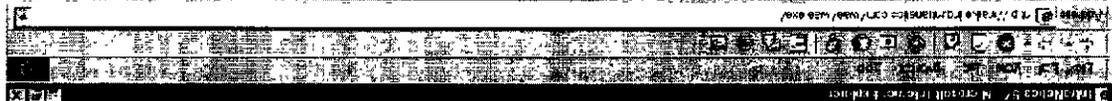
There is not client software other than a browser for IntraNetics.

The product is self-described as allowing "a small to medium size business to establish an intranet with a wealth of useful applications right out of the box. The suite of 17 applications gives the widest possible set of a company's potential intranet users immediate and compelling reasons to begin using and continue using the new corporate intranet. IntraNetics 97 has been designed as an intranet solution for small to medium size businesses, which typically don't have the technical staffs or budgets to build richly functional custom intranets themselves. Simply put, IntraNetics 97 is a complete solution for immediate creation of intranets with real value – intranets with the ability to attract and stimulate regular use by all authorized individuals."

Editorial: The biggest obvious limitation of the product is that it appears very specific and hard to customize. For example, expense reports have only a certain set of line items. There is a lot of talk on the web site about opening up the product and allowing more customization. In addition the whitepapers discuss the merits of a component implementation and a number of other architectural advantages.

## Home Page

The home page for your IntraNetics setup is designed to be the basis for your entire intranet. In many ways you can think of this as <http://msw> for a smaller company. It is very task focused and clearly tries to map the applications to the most common scenarios for intranets. The scenarios are very information driven and tend to focus on the communication and human resources parts of a company. The design can clearly support more applications and based on talking with some representatives at a trade show, it appears this is something they would like to do, as well as allow third parties to do. The demonstration site is pictured below:



The applications, which are accessed via the left-hand navigation bar, are divided into People, Places, Things, Time, and Reference. The following descriptions are taken from the web site.

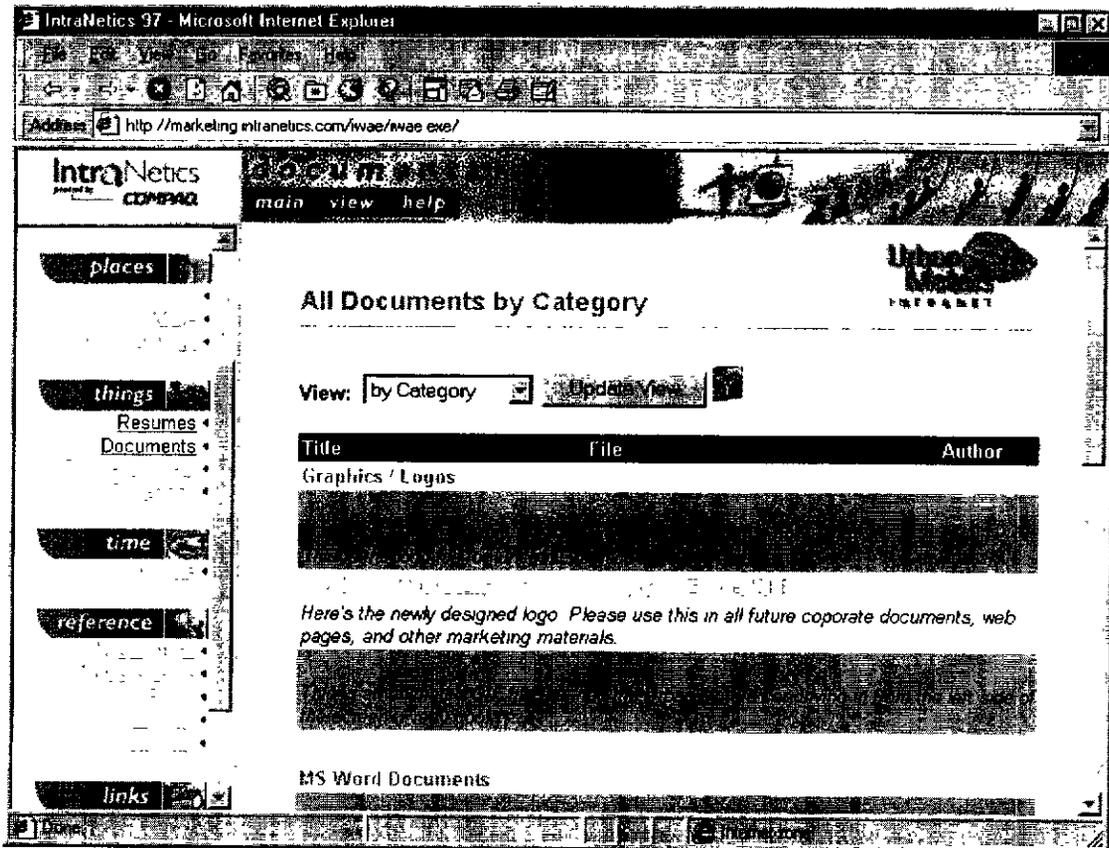
<b>People</b>	<b>Employees</b> Maintain up-to-date employee records. Improve employee communications using built-in individual and group e-mail links. Sort employee lists and photographs by location and department.
	<b>Contacts</b> Track external contacts, such as suppliers and customers. Keep a record of all phone calls and meetings with each contact.
	<b>Organization Chart</b> Navigate a continually up-to-date graphical organization chart with links to the Employees application for detailed employee data.
	<b>Handbook</b> Keep your employees well informed by providing an online employee handbook containing categorized sections and notes on "must-read" items for new employees. Import data from your existing handbook or use a "quick-start" manual.
<b>Places</b>	<b>Jobs</b> Fill open jobs more quickly by maintaining and distributing a current list of open jobs on your intranet. Categorize and search all job listings for quick reference.
	<b>Maps</b> Create customized maps and point-to-point driving instructions. Use it for directions to your office, and give your customers door-to-door, turn-by-turn directions to destinations in metropolitan areas nationwide.
	<b>Business Listings</b> Save time by searching a business yellow pages with 16 million listings, based on a simple, intelligent categorization method.

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Things	
Expenses	Obtain consistent expense reporting across your company with the expense application. Track personal expenses by date and category.
Resumes	Speed up the hiring process by scanning and categorizing resumes for easy retrieval. Search your intranet for qualified candidates based on key fields such as foreign language and education level.
Documents	Keep all company documents such as presentations, technical manuals and contracts up-to-date and accessible by storing them in the Documents library. Individual documents can be previewed or downloaded for instant use.
Software Library	Easily locate and maintain latest software revisions to update all employees PCs. Ships with several utilities, drivers and various Internet browser plug-ins.
Time	
Events	Improve internal company communications using a corporate calendar updated with events, projects, meetings and other happenings. View corporate events in weekly, monthly or yearly views.
Reference	
Newsletters	Save money and improve communications by creating your own company or department intranet newsletters. Use pre-built templates for easy formatting.
Today's News	Keep abreast of competitive announcements and industry trends. View daily news headlines and stories personalized from more than 2,600 categories. Headlines from more than 650 different news sources are scanned daily.
Press	Share your company's successes by broadcasting press articles over your intranet. All news articles can be searched, sorted and categorized.
Bulletins	Increase productivity by providing a company-wide online bulletin board for employees to post classified ads and suggestions.
Discussions	Increase collaboration and knowledge sharing among teams of employees. Enable users to easily locate, track and participate in discussions of interest.

## Document Management

The document management aspect of IntraNetics is focused on the "Documents" application in the Things section. The primary focus is as a repository for documents, thus there is no checkin/checkout or other management functionality. The basic flow is to go to the documents application, click Add. You are then given a form to fill in requesting basic properties (the property set for the site can be customized by the administrator) and an HTTP upload control. The Documents application supports browsing and searching based on the categories and title (but not the full text) of the document. Documents can also be located on external servers, in which case just a URL is entered for the document.



## Discussions/Collaboration

The Discussion application (part of Reference) is a fairly rich experience for threaded discussions. The basic form allows you to pick a forum (as defined by the administrator) a subject and then a URL or file attachment upon which to base a discussion. The text of the message is plain text. The threads can then be browsed and replied to, as well as deleted. There are views to display a forum by name, date, thread, and subject. The discussions are searchable.

The Resume and Expense applications are interesting because they involve some notion of tracking. For example, the expense report has a status field and the resume maintains an activity log. These work out of the box, but the customization is very limited.

## Special Features

The Mapping application is provided by Vicinity, Inc. A user can type in a street address and a map is returned. Similarly the Business Listings application is a yellow-pages sort of application that allows you to search by address and business "category."

## Management

The management of the site is controlled by a login ID. If you have administrative rights, all the applications display an extra menu command. Usually this allows you to delete items or add minimal customization. The primary role of an administrator is to add/remove users from the system.

There is one less level of permission known as a moderator, which usually allows the creation and deletion of items, but not users.

The most interesting aspect of the administration is that you can get to the ODBC data sources directly. Since I don't have a full version of the product it is tough to know what one can do with this data, but certainly read-only access would be possible.