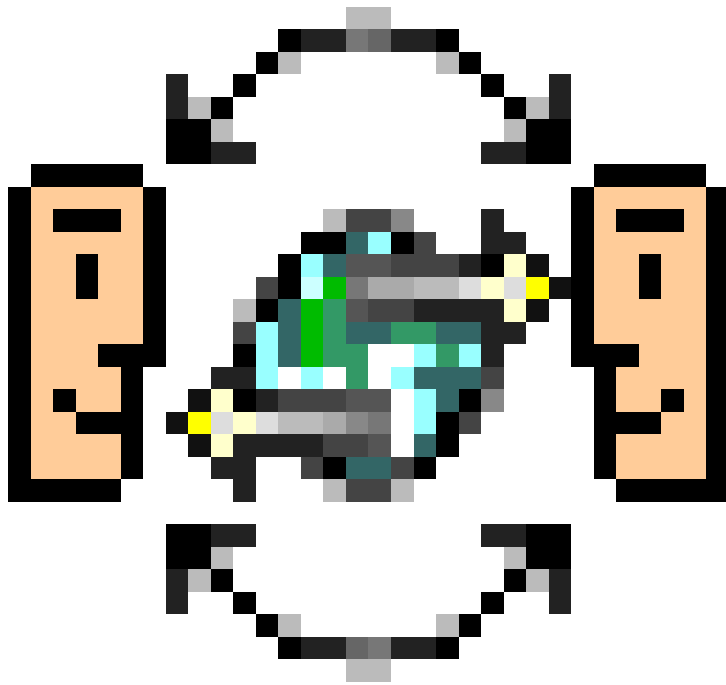


Enhancing Your Web Site With Interaction



Interaction / IP

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1. INTRODUCTION

Interaction is the most powerful companion to a web server, and is a complete solution for creating and managing dynamic and social websites that automatically adapt to the visitors. The application provides a sophisticated and flexible framework for advanced services that substantially enhance the capabilities of your web server.

Make Your Web Site a Social Place

Interaction makes your web site an exciting social place. It provides chat rooms and message boards so visitors to your site can communicate with others using nothing more than a web browser. Any of your pages can include information about who and how many visitors currently are on a page or visiting your site. Such features provide awareness about what others are doing and make your pages into meeting points. A very flexible membership feature allows you to restrict parts of your site for access by privileged members

Provide Exciting Dynamic Locations

Interaction puts a rich collection of entities at your disposal. Entities provide content to be embedded in your pages, similar to “Server-Side Includes” but in a manner that adheres to the international standard for markup. Simple entities include the current time or the domain name of the visitor. Entities can easily be embedded in your pages using standard entity-references, with no need to use mock HTML tags, overloaded comment tags, or programming code as part of the documents. Any HTML page on your site can be provided through Interaction to benefit from the entities and other capabilities.

Monitor Individual Visits

Interaction pioneered the technique of tracking visitors as they browse from page to page on the web. The application tracks visitors in the most reliable manner, without requiring the visitor to register nor to use a browser that supports cookies. Interaction uses this capability to provide many advanced features. For example, Interaction has windows that allow you to inspect current visitors to the site as well as recent visits.

Customize the Formatting

Interaction provides significant control over the formatting of your pages and services. This facilitates ease of customization and a consistent design. Interaction goes beyond editable headers/footers for customization by automatically adapting the presentation of the site based on formatting rules and your own content.

Interaction balances ease of use with power and flexibility. It provides dialogs and does not require you to do any HTML markup, editing of cryptic files, scripting or programming. Still capabilities to go “under the hood” are readily available for those that want to customize the services or changes to the application.

Follow Major Standards

Interaction is a light-weight SGML publishing system, consistently following the international standard for markup on which HTML is based. Interaction adheres to SGML and other open standards instead of require you to use bogus “command” tags, non-standard coding, or home-made scripting languages. This optimizes the ability for reusing content, which makes your site management more efficient and creative.

Extend the Functionality

Interaction is extremely extendable. The software is component-based and new features, tools and services can be added as optional components so you can customize Interaction for your own needs.

No scripting is required, but for those with some scripting experience, Interaction has a built-in development environment with full access to the internal features of the software. If that’s not enough, new features can be implemented using the ANSI-standard object-oriented dynamic programming language Common LISP with more than 2000 well-defined functions, in addition to AppleScript and other OSA scripting languages. Scripts can be embedded directly in markup for rapid prototyping, or be used to make new tools, entities and other features.

Welcome to the Interaction Community

Interaction has been developed with input from hundreds of site maintainers as to how it could solve their needs. Your feedback is also very welcome. To keep updated concerning the progress of Interaction, subscribe to the `www-interaction` mailing list by sending a request to:

`www-interaction-request@in-progress.com`

Also, your are encouraged to visit the Interaction website at:

`http://interaction.in-progress.com`

Comments and suggestions are always highly appreciated, as the application and its extensions are under continuous development.

Acknowledgments

Interaction has benefited from work by some of the best programmers in the world. I would like to direct my appreciation to Digitool (in particular Stephen L. Hain, Hazem Sayed, Bill St. Clair and Alice Hartley) and Apple for respectively developing and sponsoring Macintosh Common LISP, the powerful development environment in which Interaction is implemented. Bill St. Clair and Apple Advanced Technology Group also get credit for WOOD, the object database built into Interaction. Ray Pelletier and John Mallery are among many others whose code is integrated in the application.

Interaction would not be what it is today without a year of feedback and suggestions from hundreds of webmasters for the beta versions of the software. *Thank you all!*

Terje Norderhaug <terje@in-progress.com>

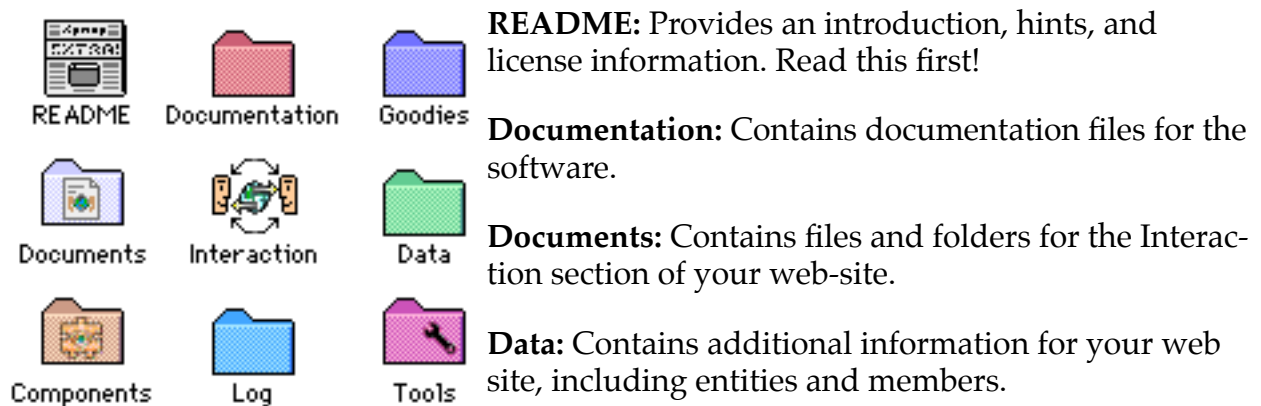
2. GETTING STARTED

Interaction is easy to install and configure, and you should expect to get the services up running within minutes. This chapter will provide an overview of the files and folders in the distribution of Interaction and how to configure various web servers for the application. The README file that come with the distribution provide a quick start to set up Interaction with your web server. Solutions to common problems are found in the FAQ at:

<http://interaction.in-progress.com/faq>

Installation

Place the Interaction folder anywhere on your harddrive, but preferably not in the same folder as the server software for security reasons. The Interaction application is distributed with the following files and folders:



Components: The files in this folder extend Interaction with new features and services.

Tools: Any file in this folder will be listed on the Tools menu of Interaction and can be executed by selecting the corresponding item from the menu.

Log: Contains one or more files with errors and other useful information recorded as visitors browse your pages.

Goodies: Contains optional components and tools for customizing Interaction.

Configuring the Web Server

Interaction works with a web server in providing documents and services to your visitors. This section describes how to configure various web servers for Interaction. The documentation for your web server should provide additional details on how to configure the server with applications such as Interaction.

In general, there are three ways to integrate Interaction with a server. These vary according to how the server determine which application a request should be passed on to:

- **As a Preprocessor:** The web server will pass *all* requests directly to a preprocessor. Any location served by Interaction will merge seamlessly with the rest of your site. In most cases, this is the preferable way to configure the server for Interaction. Adding Interac-

tion as a preprocessor will not affect the documents of your site that are not served by Interaction.

- **As a CGI (or ACGI):** Here the server will depend on the URL to determine when a request should be passed on to Interaction. Any request of which path includes an alias to the Interaction application will forward the request. For example, given that an alias to the Interaction application is located in the folder of the server and labeled "Interaction", the services can be accessed with an URL addressing this alias, followed by a "\$/" and the name of the location, e.g.:

```
http://www.myserver.com/interaction$/chat
```

- **With Suffix-map(s):** In this mode, the server will depend on the suffix in the request to determine that Interaction should get the request. A suffix is the part of a file/URL that begins with a period, e.g. ".html". A suffix map should map the empty suffix to Interaction so that all requests for URLs with no suffix are forwarded to Interaction. You can add maps for additional suffixes (such as ".html") so all requests for documents with these suffixes are passed to Interaction. Note that not all servers support empty suffixes in the suffix map.

Here is how various servers are configured for Interaction:

WebStar

WebStar <<http://www.starnine.com/webstar>> is best configured with Interaction as a preprocessor:

1. Make an alias to Interaction by selecting the application and choose "Make Alias" from the File menu of Finder. Move this alias to the same folder as the WebStar application, and rename it to "Interaction".
2. Open the WebStar Admin application, and select the WebStar server. Choose "Actions" in the Configure menu of WebStar. In this dialog, type in ":Interaction" for the Application. Give the new action the Action Name "INTERACTION". Click the Add button to create a new action, then Update to make the new action available.
3. From the Configure menu of WebStar, go to the Misc. Settings dialog. Type in "Interaction" in the PreProcess field, then click "Update".
4. The Interaction services can now be accessed using URLs such as "<http://www.yoursite.com/forum>".

As a preprocessor, any document on your site can be served through Interaction to benefit from the dynamic entities, access restrictions, and other features of Interaction. Details about how to import existing files is found in the section called "Adding Existing HTML Files" on page 22.

The HomePage of the site will automatically be served by Interaction, so if you already have a pre-made homepage you are advised to import it into Interaction either by using Import from the File menu, or by explicitly move the file to the Documents folder, rename it to "index.html", and open the Homepage from the File menu in Interaction to make the application aware of the changes.

If you for any reason decide that you don't want the homepage to be served by Interaction, set the access restriction of the "index" location to "Not Accessible" (see "Access Restrictions" on page 45). This will leave to the server to provide a homepage.

Note that WebStar (at least versions 1.3 and 2.0) has a flaw that causes it to write a warning about file not found when a preprocessor such as Interaction create a page without a corresponding file in the folder of WebStar. This is ignorable and will hopefully be eliminated with future versions of WebStar.

WebStar can also be configured using Interaction as an ACGL:

1. Make an alias to Interaction by selecting the application and choose "Make Alias" from the File menu of Finder. Move this alias to the same folder as the WebStar application, and rename it to "Interaction".
2. Start Interaction as well as WebStar. The Interaction services can now be accessed using URLs such as "http://www.yoursite.com/interaction\$/forum".

It is usually preferable to configure the server with Interaction as a preprocessor, as this allow you to serve any document through Interaction and eliminates the "/interaction\$" in the URL.

Web Server 4D

WS4D <http://www.mdg.com> can be configured with Interaction as a PreProcessor:

1. Open the "Web Server Setup" dialog from the File menu of WS4D.
2. Click the PreProcess button in the left bottom corner of the Setup form of the dialog.
3. Select the Interaction application from the file selector.

With Interaction as a preprocessor, *all* requests to your site will be routed through Interaction. As an alternative you can configure the suffix-maps so that only requests with an empty suffix is forwarded to Interaction:

1. Go to the dialog named "Web Server Setup."
2. Select the "Suffix Maps" form.
3. Click "Add."
4. In the "Choices for Actions", select ACTION.
5. Leave the cells for suffix, APL, and MIME type empty (this will give the defaults).
6. Type in the word "Interaction" in the rightmost Action cell, and hit the Enter button (not return) with the cursor afterwards. Select the Interaction application in the resulting dialog.

Hint: If you cannot access the Interaction services, make sure to remove any other suffix maps that has a blank or star in the suffix cell.

Quid Pro Quo

Quid Pro Quo <<http://www.slaphappy.com>> is best configured with Interaction as a PreProcessor:

1. Make an alias to Interaction by selecting the application and choose “Make Alias” from the File menu of Finder. Move this alias to the same folder as the Quid Pro Quo application, and rename it to “Interaction”
2. From the Control menu of Quid Pro Quo, select the Configure Server dialog.
3. Select the Actions category from the lefthand table. Click the “New” button to create a new action. Type in “Interaction” for action and “Interaction” for the path.
4. Select the Processors category from the lefthand table. Click the New button to add a preprocessor. Type in “Interaction” as the path to the alias to the Interaction application.
5. After starting the Interaction application, the Interaction services are accessed from the URL <<http://www.yoursite.com/index>>.

Quid Pro Quo can optionally be configured with Interaction as an action using a “suffix-map” with an empty suffix:

1. Make an alias to Interaction by selecting the application and choose “Make Alias” from the File menu of Finder. Move this alias to the same folder as the Quad Pro Quo application, and rename it to “Interaction”
2. From the Control menu of Quad Pro Quo, select the Configure Server dialog.
3. Select the Actions category from the lefthand table. Click the “New” button to create a new action. Type in “Interaction” for action and “Interaction” for the path.
4. Select the MIME Mappings category from the Configure server dialog. Create a new map by clicking the new button. Leave the suffix field empty, and type in text/html in the field for MIME type. From the pop-up menu, set the Action to Interaction.

Microsoft Personal Web Server

MPWS can be used as a web server for Interaction. Contact the Interaction FAQ for updated information:

<http://interaction.in-progress.com/faq>

MacHTTP

MacHTTP <<http://www.starnine.com/machttp>> requires Interaction as a CGI or ACGI:

1. Make an alias to the Interaction application.
2. Move this alias to the same folder as MacHTTP.
3. Change the name to “Interaction”.
4. Start Interaction and the server. The services can be accessed by using your domain name in place of www.yourserver.com in this URL:

```
http://www.yourserver.com/interaction
```

Note that as MacHTTP doesn't support suffix mapping, the URL for most pages will contain the name of the alias ending with "\$/" such as

```
http://www.yourserver.com/interaction$/chat/room1
```

Hint: A trick to simplify the URL is to set the default page item in the config file of MacHTTP to be "Interaction" instead of "default.html". This will eliminate the word "Interaction" in the URL, but the dollar sign is still required except for the default homepage.

NetPresenz

NetPresenz <<http://www.share.com/stairways/netpresenz/netpresenz.html>> should be configured with Interaction as a CGI:

1. Move the Interaction application to the top of the folder specified by NetPresenz to act as the WWW root. Move the Data, Documents, Plug-ins and Tools folder of Interaction to this folder as well.
2. Rename the Interaction application to "interaction.acgi".
3. Start NetPresenz and Interaction.
4. You should now be able to access the Interaction documents using an URL such as.

```
http://www.yourserver.com/interaction.acgi
```

If security is an issue, move the Data folder of Interaction outside the NetPresenz folder. Make an alias to the folder, move it back to the same folder as Interaction, and rename it to "Data". This will ensure that the passwords and other information of Interaction are not available on the Web.

NetWingz

NetWingz <<http://netwingz.com>> can be configured to handle Interaction as an ACGL. Contact the manufacturer for information configuring NetWingz.

InterServer Publisher

No instructions are yet available for this server. Contact the manufacturer for information about how it should be configured with Interaction.

Upgrading From Previous Versions

New versions of Interaction are available from:

```
http://interaction.in-progress.com
```

Be aware of the following issues when upgrading:

1. It is a good idea to make a backup of the Documents and Data folder before upgrading just in case.
2. Only the Documents and the Data folders should be copied from an old version to a new version. These folders contain your site information and are thus required.

3. Remember to move your personalized license from the components folder of the old version to the folder of the new.
4. The contents of the Tools and the Components folders may conflict with the new version. Make sure that you only use the Tools and Components for the most recent version of Interaction to avoid malfunctions.

Memory Requirements

The memory required to run Interaction will vary, depending on the size of your website as well as on the number of concurrent visitors. Interaction is relatively memory intensive¹, and you are advised to avoid using virtual memory as this will slow down the application dramatically.

The standard version of Interaction will run in a minimal partition of 3.5Mb and be comfortable in a 4.5Mb partition. The PowerPC native version will run in a partition of 5.5Mb and be comfortable with 7.5Mb allocated to the application.

The “About Interaction” dialog displays how much of the allocated memory is currently not used by the application. This can be used to optimize the memory allocation. However, keep in mind that Interaction requires some available memory to process a request and may get into trouble if the memory allocation is too low. In general, it is a good idea to leave Interaction with plenty of allocated memory.

Important: In starting up the PowerPC native version of Interaction, the Macintosh OS load the shared libraries that come with the distribution. These shared libraries require approximately 3 megabytes of free space, and this is not included in the memory partition of the application. Thus you should not set Interaction’s partition size to take up all the remaining memory on your Macintosh, but instead leave at least 3 megabytes of free memory. If there is not enough memory for the libraries, Interaction will show a dialog stating that the libraries cannot be loaded.

1. With today’s memory prices, the memory required cost less than \$50!

3. A TOUR OF INTERACTION

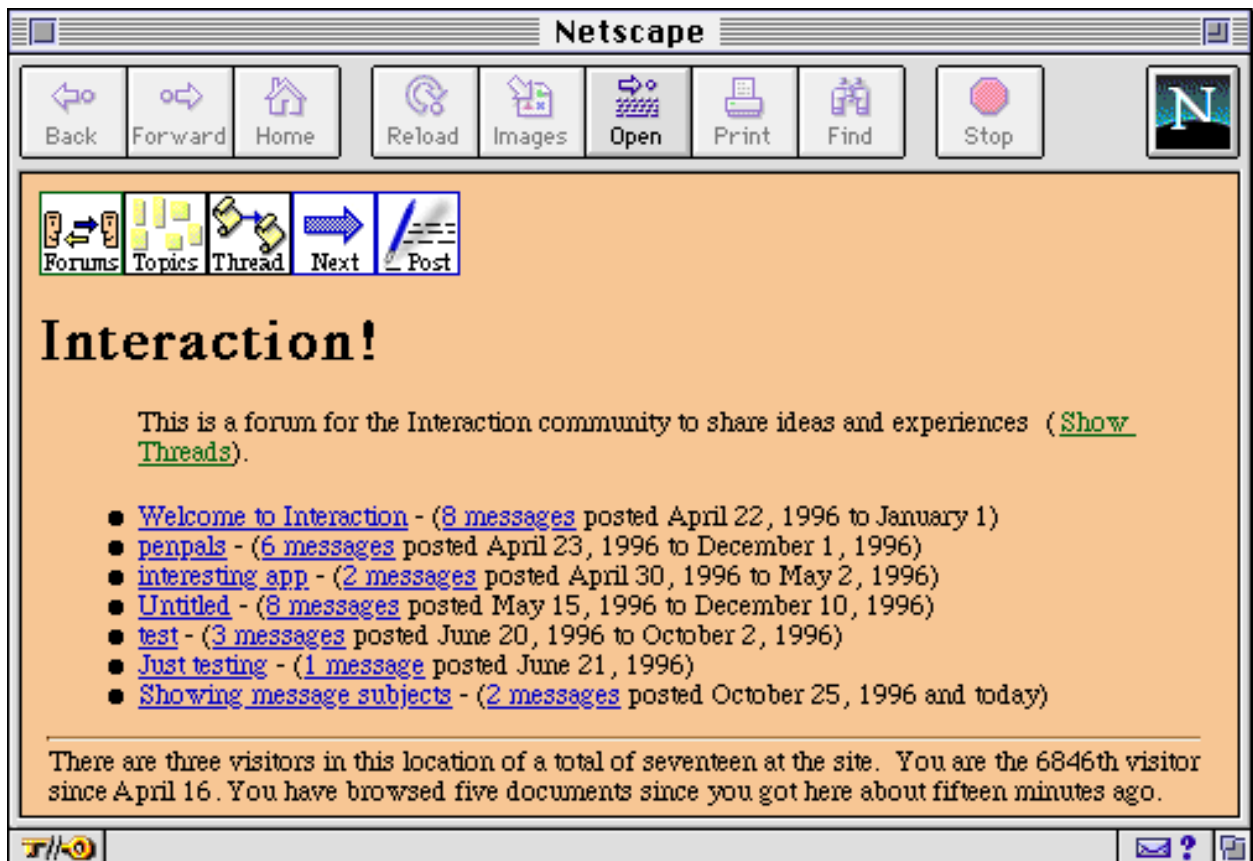
This chapter gives a quick tour of some of the services and features of Interaction. The following chapters provide more details about the various features and services:

- Managing a Dynamic Site (Chapter 4)
- Entities (Chapter 5)
- Chat Rooms (Chapter 6).
- Forums (Chapter 7)
- Membership and Restrictions (Chapter 8)

Subsequent chapters cover technical issues such as how to extend and modify the application, as well as hints for troubleshooting.

Browsing the Locations

Interaction is pre-configured with a "homepage", a forum, and a chat room, all of which can be accessed immediately after installing Interaction. The following is an example of a forum. Notice that the datestamps adapt depending on the current date and year! Also, the footer is defined to include various information about a visitor:



Accessing the Homepage

The "homepage" of the site is accessed with the URL `<http://www.yoursite.com/index>` where `www.yoursite.com` is substituted with your own domain name. The

default homepage includes a linked list of the services currently available. If you use MacHTTP or NetPresenz (or haven't configured the server with Interaction in its suffix-map as described in "Configuring the Web Server" on page 9) you will have to insert an `/interaction$` after your domain-name in the URLs.

Checking Out Forum and Chat

The homepage may contain links to services and documents provided by Interaction. It is a good idea to become familiar with the services from a visitors perspective by browsing the examples, posting messages in the forum and making some statements in the chat room.

The File Menu

The File menu contains general means to access the content of your site.

Creating Locations

The *New Location* item of the File menu provides a quick way to create new locations for your site. It gives a dialog to type in the locator of a new or existing document, and opens this in an editor.

Import is used to make existing documents become locations served by Interaction. It gives you a file selector to choose the file to import.

Editing Files

Interaction has an advanced built-in text editor¹ suited for direct editing of markup. The *New Text File* and *Open File* items of the File menu provide direct access to the various files for advanced webmasters that want to do changes directly on low level.

Exporting the Site

The *Export* item is used to export a snapshot of the site. Selecting this gives a dialog to choose a result folder. Each location of the site will be exported to this folder.

Entities

Opening this dialog provides a self-documented list of available entities. Entities are used to embed dynamic elements in your pages,² and make your site more flexible and efficient to maintain. An entity is a value that can be embedded in your documents by using a corresponding entity reference. Entities serve a similar purpose as "Server-Side Includes" as a reference in the document is substituted for a value at serving time.

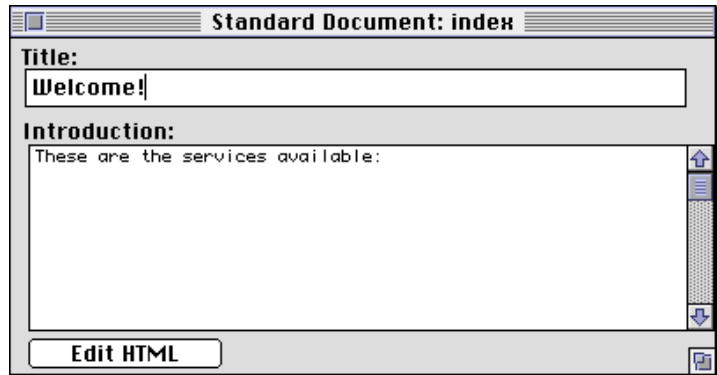
File	
New Location...	⌘N
New Text File	
Open File...	⌘O
Close	⌘W
Save	⌘S
Save As...	
Import...	
Export...	
Entities	
Homepage	
Locations	
Page Setup...	
Print...	⌘P
Quit	⌘Q

1. The editor of Interaction is a variation of the popular text-editor "EMACS" with a large number of short-cuts for efficient editing.

2. See page 25 for more details about making dynamic documents.

The Homepage

As the homepage plays such a central role to a site, Interaction makes it easily accessible. Choosing the Homepage item of the File menu gives you a dialog where you can type in a title and introduction for the homepage. If you need more extensive control of the HTML formatting of the page, you can use the “Edit HTML” button to access the markup.



Managing Locations

The Homepage and the services are not the only content provided by Interaction. Interaction is also a powerful general site maintenance tool. The Locations dialog lists all documents provided by Interaction, with updated information about their hits and how many visitors currently are in each location. This dialog is also used to specify the access restriction of each location.

The chapter “Managing a Dynamic Site” on page 20 gives more details about how to use Interaction to manage the documents of your site.

Services

Each item on the Services menu provides a dialog to edit a specific service. Subsequent chapters give in-depth information about how to customize the services:

- Forums: page 39
- Chat Rooms: page 32



New services are distributed as *components* to Interaction. Each will add an item to the Services menu. The Shop service is an example of such an optional service, and this is available from:

<http://interaction.in-progress.com/components>

Tools

The Tools menu provides an extendable list of features. A tool typically provides a dialog that affects some internal functionality of Interaction or changes the documents or services.

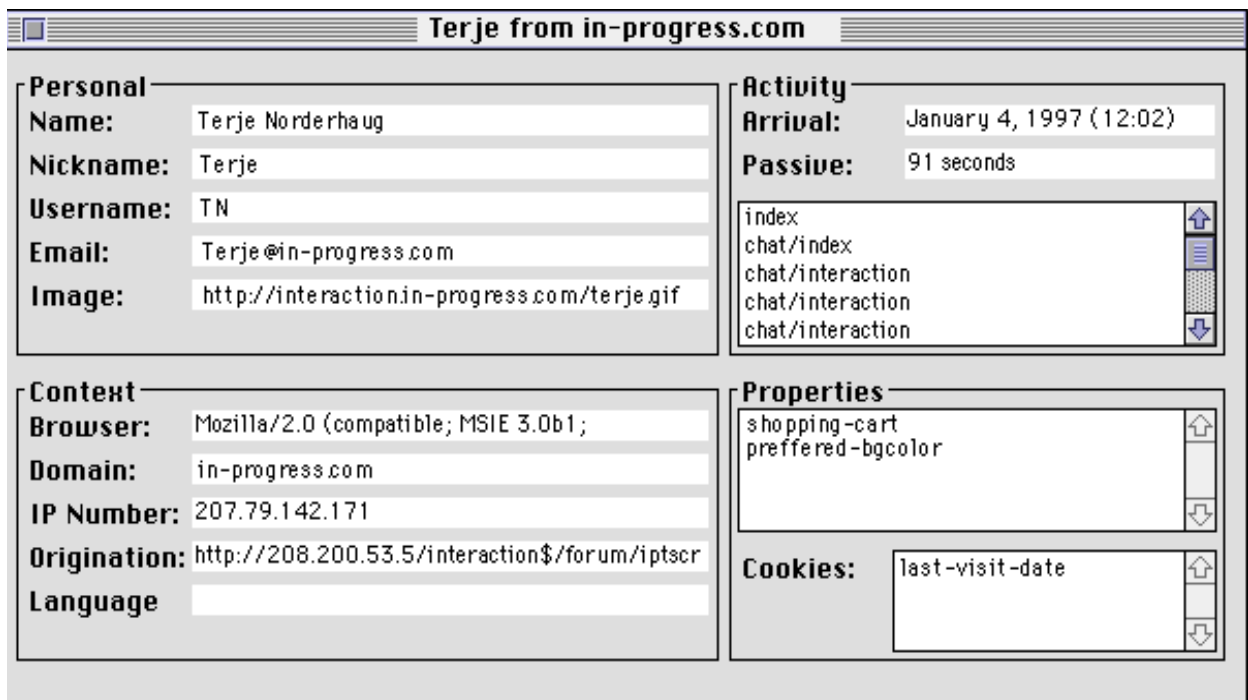
The items on the Tools menu correspond with files in the Tools folder. You can tailor the menu by removing or adding files in the Tools folder, or by using the Edit Tools item of the menu.

It is possible to edit some of the existing tools or extend Interaction with your own scripted tools (see the chapter “Extending Interaction” on page 46 for details).



Monitoring Activities

The Current Visitors dialog displays a list of all visitors currently visiting your site. Interaction has sophisticated visitor tracking that allows the software to follow the visitors as they move from page to page. You can inspect details about each of the visitors by double-clicking on any of the items in the list of current visitors, which will show a dialog with detailed information about each visitor and their activities at your site:



Membership and Access Restrictions

Interaction has page-level access restriction to give a high extent of control of who can access various parts of the site. For example, document access can be limited to registered Members, or to those in a particular group. Each visitor has his own username and password that determines their access privileges, saving them from the hassle of maintaining multiple passwords.

The Restriction pop-up menu on the Locations dialog is used to assign a restriction to a document. The Members dialog on the Windows menu contains the members of your site as well as the groups to which they belong. Further documentation regarding membership and access restrictions are found in the chapter “Membership and Restrictions” on page 44.

Access restrictions can also contain conditions for making a document secret. A secret document will not be listed in any directory of documents. Interaction can thus adapt your site to the privileges of individual visitors.

4. MANAGING A DYNAMIC SITE

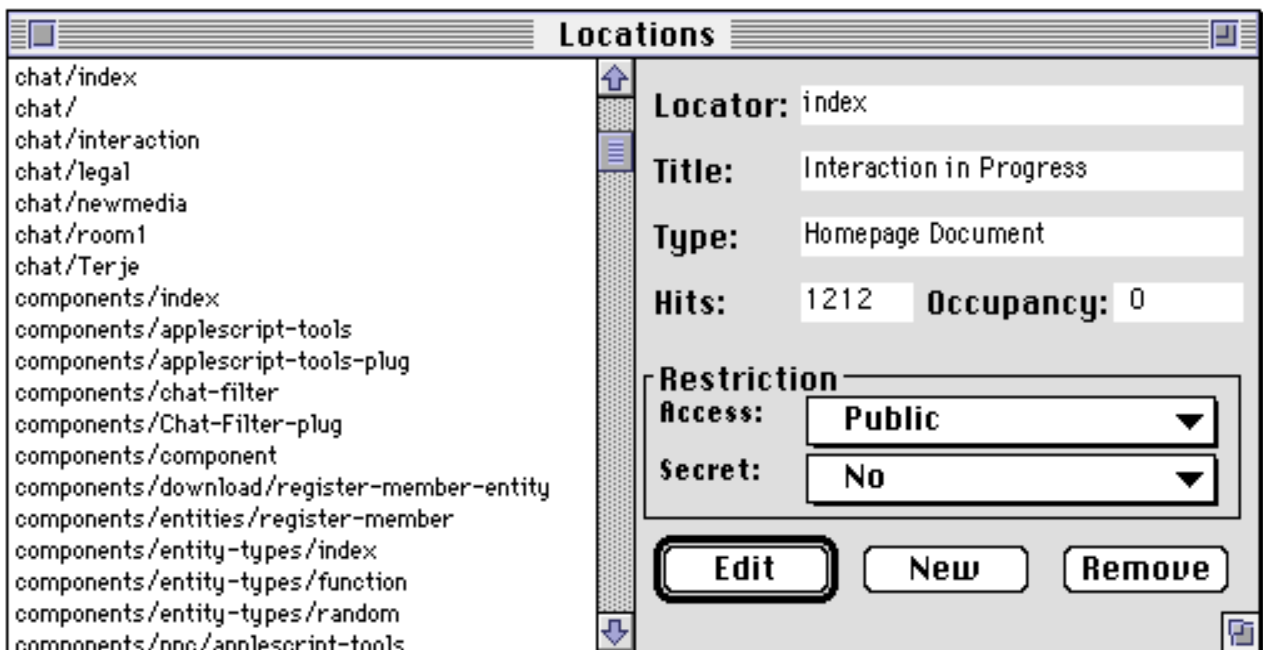
Interaction facilitates advanced site maintenance with a dialog that gives you a full overview. Locations can be created and edited within Interaction, and you can also add previously created HTML files to the Documents folder. Interaction turns your static pages into exciting dynamic locations that change over time and adapt to the individual visitor. The application serves all locations from a database, yet still offers the power of being able to inspect and change individual files.

Locations

A location is an independent part of your site, appearing as a specific page to the visitor. Each location is addressed with its own unique URL.

The Locations Dialog

The Locations dialog of the File menu provides an overview of all locations provided by Interaction:



The right side of the dialog provides details about each location. The locator field shows the Locator, which is the part of the URL (Uniform Resource Locator) that follows after the domain name of the site. Next is the title of the location, so you don't have to open the document or guess from the locator which document represents a location. The Type field displays the type of location.

Hits and Occupancy

The hitcount shows how many times a location has been requested. The hits are counted in real time, so you don't have to analyze the log files to find how many times a specific location has been visited. This number can be embedded in any document using the entity reference `&hits;` (see "Entity References" on page 26 for further details). Click on the number to modify or reset the hitcount.

Occupancy is the number of visitors currently in a location. As Interaction track visitors as they move from location to location, each visitor will only be counted one place. The occupancy counter can be embedded in a document using the entity reference &occupancy; (see "Entity References" on page 26 for more about this).

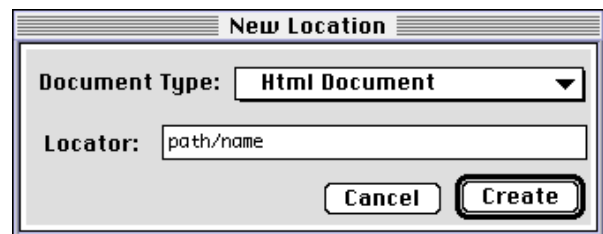
Access Restrictions

Interaction allows you to control who can access parts of the site. The pop-up menu labeled "Access" in the restriction area of the dialog determines the access restriction of a particular location. If this is set to "Public", everybody can access the location. An access restriction for "Members" limits the access to those that are registered with a username and password. There are also other access restrictions. For further information see the chapter "Membership and Restrictions" on page 44.

A powerful capability of Interaction is that it is able to adapt the presentation of the site depending on the access privileges of a visitor. The pop-up menu labeled "Secret" determines whether the location will be linked to from various automatically generated indexes provided by Interaction. For example, the entity "documents" provides a linked list of all documents of the site¹, but will not list items found to be secret for the specific visitor.

Creating New Locations

New locations can be created from the Location dialog. Clicking the New button gives you a dialog to select the document type and type in a locator for the new location. New locations can also be created by choosing the "New Location" item of the File menu.



Documents

The Documents folder of Interaction contains documents that provide the content for the various locations served by Interaction. Interaction goes beyond the paradigm that a web server provides files. Instead, each location is represented by one or more files in the documents folder. However, Interaction facilitates migration from the old way of setting up a website. The files in the Documents folder are organized so that the name of the files and the sub-folders correspond to the URL.

One Location - Many Files

The Web standards emphasize that there doesn't have to be any one-to-one relationship between URLs and files on the web server. Despite this, the basic operation of most web servers is to serve a file addressed with a URL. Interaction goes beyond this paradigm to draw advantage from the more flexible model suggested by the standards. Although the files in the Documents folder of Interaction to a high extent concur with the URLs they are associated with, many of the documents served by Interaction use information from several files and other sources to create the resulting page for a request.

1. This entity can be embedded in any document using the entity reference &documents;

When presenting the location, Interaction will ignore the suffix of the file or files representing it. Interaction allows a location to be represented by more than one file. These files will have the same name but different extensions. For example, Interaction may keep the core information of a document in a file called “test” and the HTML version in a file called “test.html”. This allows you to use different editors to inspect the various aspects of a document.

The description of a document is usually kept in a file in the Documents folder. The file or files representing a document will be located in a sub-folder that corresponds to the path-name of the location used in the URL, as is commonplace with most web servers. For example, if the path-name of the location is “path/name” the file will have the name “name” and be stored in a folder named “path”.



Editing the Documents

Many of the services on Interaction can be customized with an associated HTML page to customize the HTML formatting of the services. These pages go beyond templates and let you design the format of the associated document or documents using HTML. If such a file is available for a document, it can usually be accessed by clicking the “Edit HTML” button on the respective dialog. This gives you a default HTML page in a text-editor, and you can edit this as you please. If you want to revert to the default HTML, delete all text in the page and verify that you want to revert to the default when saving.

The document files can also be edited directly in the text editor of Interaction if you are familiar with markup. All markup follows the SGML standard on which HTML is based, with no mock tags or mix between markup and programming code. Such respect for the philosophy behind the Web technology and the standards result in reusable content that can be manipulated with standard tools.

Adding Existing HTML Files

The Import Location item of the File menu provides a convenient way to add existing HTML files as source for locations. It permits Interaction to update its database and internal data as required to serve the latest version of the content.

However, you may want to import larger numbers of HTML files. Interaction allows you to move these files directly to the Documents folder as long as you take the necessary steps to keep Interaction’s database consistent. Documents previously served directly by the web server can be advanced to be provided through Interaction:

1. Quit Interaction. Trash the file called “Cache Database”. This ensures that Interaction recreates the cache database correctly when starting up.
2. Move the HTML files from the folder of the web server to the Documents folder of Interaction, eventually creating new corresponding sub-folders as required.
3. Restart Interaction to make Interaction aware of the file and able to cache the HTML files to the database.

The Object Database

Interaction serves the locations of your site from an object database for speed and flexibility in processing. At the same time, the application maintains the content as files in the Documents folder to allow them to be modified by standard tools. Interaction provides you with the advantages of both ways of serving the site, and eliminates the disadvantages of either.

When Interaction is started for the first time, it loads the files in the Documents folder into a sophisticated object database¹. The files are reformatted and indexed to allow advanced features and to speed up the processing. Interaction will keep all or the most often requested parts of the database in the memory of the computer to save the delay of file accesses.



Cache Database

The database acts as a cache where all content is kept in the original format in the Documents folder. Thus, you don't need to make backup of the cache database. It will be automatically rebuilt if it is removed. You may find it beneficial to quit Interaction and clear the file from time to time particularly whenever you make larger changes in the Documents folder without going through Interaction.

Central Concepts

A number of terms are used in this documentation and in the interface of Interaction to denote the various stages of the information:

- The **Location** is the "virtual place" or comprehensive unit of content that the visitor perceives for a page. Your site consists of a number of locations, each having their own unique URL (Uniform Resource Locator). The visitor can direct the browser to the various locations of your site, for example by using "Open Location" from the menu in Netscape or by following a link.
- The **Page** is what the visitor views in their browser. It is a presentation of a location for a particular visitor at a specific time. The same location can be represented with different pages.
- A **Resource** is the general object representing a location in Interaction. Your site consist of various resources.
- A **Document** is a type of resource that has the "intelligence" to bring together various information sources and creates a presentation depending on the context of the request. Each document is of a specific **Document Type** where documents of the same type share characteristics. A document is usually represented as a file in SGML format and eventually one or more auxiliary files.
- **Files** physically represents the Document as it is stored on your computer.

1. Thanks to Apple Advanced Technology Group for sponsoring the WOOD object database.

Summary

- The Locations dialog of the File menu contains an overview of the locations provided by Interaction.
- New locations are created from the Locations dialog or by selecting the New Location item from the File menu.
- The Locations dialog provides some general information about each location, such as hitcount and the current occupancy.
- You can assign an access restriction to each location, which determines who can access it.
- Interaction serves the locations based on content in a database, so new documents has to be added through Interaction or will require that the application is restarted without the Cache Database.

5. ENTITIES

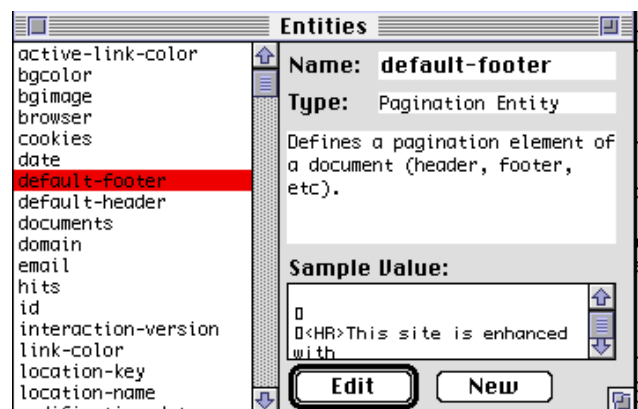
Entities are central for intermediate to advanced use of Interaction. In particular, entities and entity references are extensively used in customizing the structure and formatting of locations. Use of entities require familiarity with markup. Examples of entities include time, default headers and footers, lists of available services or documents on your site, and many more.

An **entity** is a collection of information that can be referenced as a unit. Entities are used to provide dynamic elements of documents and to make site management more efficient by minimizing duplicated content. Each entity generates an **entity value**, which may vary depending on the current context. The entity value is embedded in a document in place of an **entity reference**.

For example, the entity reference `&interaction;` will be replaced with its entity value: a link to the Interaction site. Placing this entity reference in any document will embed the value in place of the entity reference before the page is presented to the visitor.

The Entities Dialog

The Entities dialog of the File menu provides an overview of the general entities of the site. These entities can be used in all documents of the site. Each entity has a description and a sample value displayed in the dialog. It is a good idea to explore this dialog to get an overview of the entities and their use. Activate balloon-help for some hints about using the entities.



Interaction provides a wide selection of general entities that can be embedded in any document. Note that some documents have their own specific entities which are not listed in the overview of general entities. Here is a sample of the entities:

Entity	Description
browser	The name of the browser of the particular visitor
date	The current date
documents	A linked list of the general documents of the site (except the one that embeds the entity and those set to be secret for the visitor)
domain	The domain name of the visitor
hits	The number of times the document has been requested
index	A linked list of the general documents in the same folder as the current one, except the index document

Table 1: A sample of the general entities provided by Interaction

Entity	Description
modification-date	The date for when the current document was last modified
occupancy	How many concurrently are in the same location
referrer	The URL of the previous location
services	A linked list of the available services
site-occupancy	How many are currently visiting the site
staytime	How many seconds the visitor has been on the site
time	The current time in hours, minutes and seconds
track-length	How many documents the visitor has browsed on the site
visitors	A list of the nicknames of those currently in a location
visitor-origination	The URL of the location the visitor came from before visiting your site.

Table 1: A sample of the general entities provided by Interaction

The entities listed above are just a few of the many entities provided by Interaction. The Entities dialog of the File menu list many others.

Entity References

The value of an entity is embedded in a document in the place of a corresponding entity reference. Entity references are not commands or instructions, but a reference to replacement content. The same entity can be placed in several documents.

How to Refer to an Entity

An entity reference is a label separated from the rest of the content. Entity references start with an ampersand followed by the name of the entity ending with a semicolon. For example, to embed the value of the entity "hits" on your pages simply add the entity reference `&hits;` where you want to have the hit-counter.

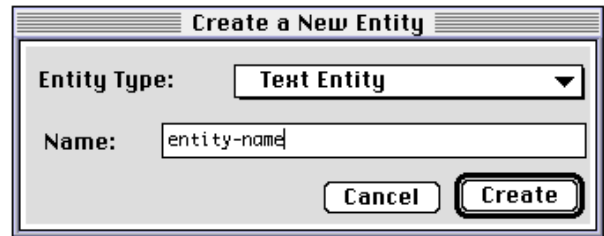
Why do Entity References Start With an Ampersand?

Entity references are part of the International standard for markup (SGML) thus already a concept in HTML. The ampersand is the standard way to separate an entity reference from regular content of a document. The syntax for an entity reference is the same as used in HTML pages to embed special characters such as `<` for the less than sign.

Creating a New Entity

New entities are created from the Entities dialog of the File menu:

1. Click the New button to get a dialog for creating the entity
2. Select an entity type from the pop-up menu, or use the default Text entity.
3. Type in a name for the entity. You can only use characters, digits, periods, and hyphens in entity names¹.
4. Click Create and the new entity will be added to the available entities.
5. Usually you will automatically get a dialog to define the new entity. This dialog is dependent on the entity type.
6. The new entity can be embedded in your documents using an entity reference. An entity reference starts with an ampersand, followed by the name of the entity, ending with a semicolon.



Entity Types

Each entity is of a specific type which determines the characteristics of the entity. Interaction provides five basic entity types: text, alias, color, argument value and file.

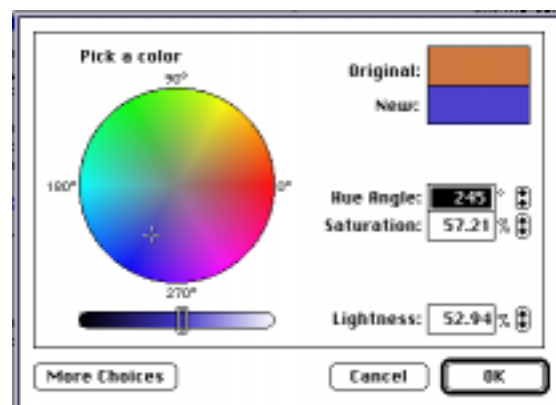
Text Entities

Entities of the Text type provide replacement text. The value of the entity is the text and markup as typed in the editor for the entity. Text entities can even include entity references, so you can create new entities that combine other entities and markup.

A common use of text entities is to ease site management by maintaining repeatedly used content as entities. In this manner, changes can be made in one place rather than requiring a search/replace of all documents of the site.

Color Entities

Color entities represent colors. Each color is defined in a dialog, saving you from having to mess with figuring out the cryptic color codes required by the various browsers. This makes it easy to experiment with the colors for your site. The color selections is kept in one place so you can change these without having to edit all documents.



1. This is according to the SGML standard.

Interaction has several predefined color entities that correspond with the Netscape extensions to use attributes of the body element to change colors:

Entity	Description
bgcolor	The color of the background
text-color	The color of the text
link-color	The color of a link
active-link-color	The color of a not yet followed link

Table 2: Predefined color entities

For example, say you want to use a background color for most of your site. Instead of adding the color code in the BODY attributes, you can add the entity reference for the color feature as an attribute value:

```
<BODY BGCOLOR="&bgcolor;">
```

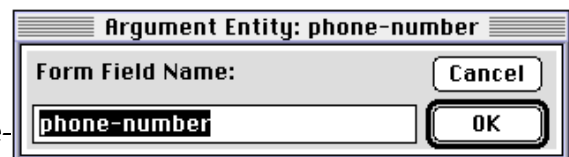
Place the entity reference for a color anywhere in your documents where you would use the code for a color.

Alias Entities

An alias entity is an alternative label for another entity, similar to an alias as used in the MacOS. This allows use of more than one name for an entity.

Argument Entities

Argument entities provide the values of a form submission. Use this entity for example to provide feedback when a visitor submits a form. Each argument entity provide the value of a specific named field in the form. The name of the field is specified in the dialog for the entity, and is by default the same as the entity name. here is one way of using Argument Entities:



1. Create a form with one or more fields to submit to a location.
2. Using the new button of the Entities dialog, create entity references that correspond to the names of the fields in the form.
3. Place entity references for the argument entities in the document of the location that the form is submitted to.

For example, say a document contains the following form to collect the phone-number of a visitor. This will submit the field with the phone-number to the location named "feedback":

```
<FORM ACTION="/feedback">
Phone Number: <INPUT NAME="phone-number" SIZE=40>
</FORM>
```

In the document of the location “feedback”, place the entity reference `&phone-number;` wherever you want to embed the value of the submitted field. Note that any location provided by Interaction can provide feedback for a submitted form.

The submitted value sticks with the visitor as long as he is on your site. Thus, in any subsequent document the submitted phone-number can be embedded using the entity-reference `&phone-number;` or whatever you have decided to label the argument entity.

File Entities

The File entity type make files into entities, so they can be referenced using an entity reference and embedded as part of a document. The file is selected by using the familiar file selector of your Mac so you don't have to figure out the directory path yourself.

Wherever the entity is referenced in your documents, Interaction will embed the content from the file in place of the entity reference at the time the document is served. Entity references in the file will be resolved and the content of the file will be processed just as if it was placed directly in the document.

The File entity contains a reference or alias to the file. If you change the content of the file the changes will be reflected in the pages seen by the visitors. You can integrate files into your website without being limited to locating these in the folders of Interaction or your web server.

Additional Entity Types

Interaction can be extended with new entity types in the form of plug-in components. You only have to install the entity types that you find useful, allowing you to customize the site maintenance to fit your needs. New entity types can be downloaded from:

<http://interaction.in-progress.com/components/entity-types>

These are some of the optional entity types that can be downloaded:

- **Random entities** randomly pick one of several items as its value. Random entities can be used to make your site more exiting by making parts of the pages change from access to access.
- **Banner-ads entities** makes it easy to add random banner ads to a site. The various banners for an ad is pasted into a dialog, with the link where the visitor will go as a result of clicking the banner. These entities even count how many times each banner has been clicked to make it easy to manage the collection of a revenue from the banners.
- **Counter entities** increments a counter each time a visitor submits a form field that matches a specific pattern. This entity type can for example be used to create voting features.
- **Function entities** executes your script to create a value. The script can be written in LISP, AppleScript, HyperTalk, or other OSA scripting languages. It provides an alternative to conventional CGI's. Using this entity type saves you from the mess of mixing markup with script code.

Referencing Entities with URLs

An advanced feature of Interaction is that each entity can be referenced with a URL. This is useful for site administration to inspect the value of an entity. Also, it can be used to facilitate management of Frames.

The URL of an Entity

The syntax of the entity URLs is that the name of the entity is passed in the search arguments following the URL of a location. For example, the following URL will return the a number for how many currently are on the homepage:

```
http://www.yoursite.com/index?entity=occupancy
```

The reference consists first of the URL for a particular location, then a question-mark, then "entity=" followed by the name of the entity. This is equivalent to submitting a form field with name "entity":

```
<FORM ACTION="/index">  
<INPUT NAME="entity" VALUE="occupancy" SIZE=40>  
</FORM>
```

The entity will be formatted as it would have been embedded in the location. Any entity references in the entity will be expanded as if the entity was embedded in the location.

Using an Entity for a Frame

Entities can be used for efficiently developing and managing a frame based site. The content of each frame can be an entity, so a framed page can be developed just with one document for the frameset instead of requiring additional documents for each frame.

The entity is placed in a frame by using a URL for an entity as the source for the frame. For example, the following will embed a linked list of the documents of a site in a frame:

```
<FRAME SRC="&url;?entity=documents">
```

Note the use of the entity reference `&url;` in the link. It will expand to the URL of the current document. Of course, the URL of any location served by Interaction could be used in its place to resolve the entity as if it was placed in this document.

Summary

- An **entity** is a collection of content that can be referenced as a unit.
- The entity is embedded in a document using an **entity-reference**.
- An entity-reference consists of the name of the entity with an ampersand before and a semicolon after to separate it from the other content of the document, e.g. **&time;**
- The **Entities dialog** of the File menu provides an overview of available general entities.
- New entities can be created using the New button of the Entities dialog.
- Each entity is of a specific type that determines its characteristics and how it is edited.

- *Additional entities and entity types come in the form of plug-in components.*

6. CHAT ROOMS

A Chat Room makes it possible to converse using a web browser. You can use a chat room to provide a meeting place for a group. Interaction Chat doesn't require participants to download special software or extensions to their web browser. Also, the Chat is designed to work with all recent browsers by not relying on frames or other non-standard features. The Chat Rooms of Interaction can be configured in minutes, yet gives you extensive possibilities to create highly tailored chat rooms and more complex chat systems. This chapter will walk you through creating your own chat rooms.

How the Chat Works

A chat room provides a field where participants can type in a statement. Clicking a submit button sends this statement to Interaction, which adds it to a list of previous statements. Interaction then creates an HTML page that displays the list of statements as HTML, followed by a field where a new statement can be typed. As several participants submit statements that are collected on a shared list, it become possible to have a dialog in close to real time.

Interaction chat is designed with the characteristics of the web in mind, rather than as an attempt to replicate similar chats in other media. It keeps track of when the various participants last got an updated list of statements, so they don't have to read the same messages over and over. When a participant updates the room, Interaction will show all statements posted since their last update, plus one for continuity, with a minimum of four statements so the room never appears empty. By default, Interaction chat will display a maximum of 40 statements. These default minimum and maximum values can be changed using a Tool available from the Interaction site if you want to adapt the chat to special purposes.

Creating a New Chat Room

You can add an unlimited number of chat rooms and configure these to best suit your purpose.

1. Select the Chat Rooms dialog of the Services menu.
2. Click the "New" button in the lower left corner of the Chat Rooms dialog.
3. Fill in a unique name for the Chat Room (this will be used as part of the URL).
4. Type a title and introduction for the room in the fields on the right in the dialog.
5. Close the dialog and save the changes to make the room available.



Designing a Room

The chat rooms can be customized from a dialog, with no need to edit any files or markup.

Changing the Title and Introduction

The title and introduction of each room can be changed to reflect the purpose of the room:

1. Select the room you want to customize in the table on the left side of the Chat Rooms dialog
2. Fill in a title for the room in the field labeled “title”.
3. Add a description or introduction in the field labeled “introduction”.
4. Save the room to make the changes available.

Modifying the Structure of Rooms

Each chat room can include a list of links to other rooms. In fact, even the “index” is just another room that has a directory list but no fields for making statements. Each new room will automatically be appended to the directory listing of the “index” room.

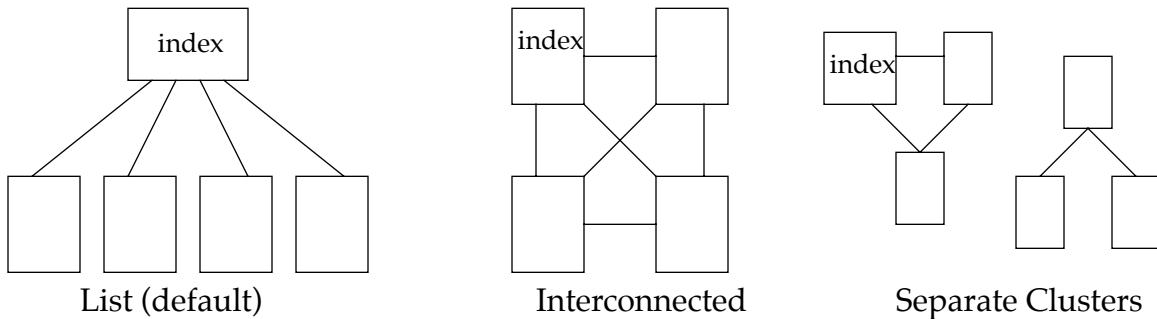
To edit the directory list, select the room from the list in the left table of the Chat Rooms dialog, and click the “More” button to get a list of which rooms that are linked to from that particular room.

Until you edit this list, all “directory” entities will be empty except the one for “index”. You can create new items in the directory list for a chat room by using the “New” button of the table to the right of the dialog. This will give you a pop-up list to select a room. You can also reorder the directory list by using the “up” and “down” buttons.

This feature can be used to interconnect the rooms, and to make clusters of selected rooms. It gives you a high degree of freedom when it comes to organizing the rooms. For example, you can group rooms together under separate directory listings, put rooms in highly interconnected clusters, make sequences where you advance from room to room, or other structures that fit



the purpose of your site. Here are some possible ways to organize the rooms, where the lines between the rooms signify the links in its directory:



Advanced Customization

The chat service has many advanced features that allow you to adapt the rooms to fit your needs and design. Using the advanced features of the chat service require that you are familiar with HTML and with entities and entity references (see the chapter "Entities" on page 25).

Adapting the HTML of a Room

You are not required to edit any HTML to set up chat rooms. However, if you are familiar with markup, Interaction offers extensive abilities to customize the chat rooms to your design. Each room has an associated HTML file that defines its appearance. This file can be used to define your own highly tailored rooms. When you click the button labeled "Edit HTML", Interaction will give you access to the HTML in a text editor. Each room will have a default HTML formatting that you can adapt for your own purposes.

Using the Chat Entities

Various "entity-references" embed the central features of a chat in the HTML (see the chapter "Entities" on page 25 for an introduction to entities and entity references). The following chat specific entity-references can be used in the design of your rooms:

Entity	Description
title	The title of the room as defined in the field of the dialog.
introduction	An introduction to the room as defined in the field of the dialog.
nickname	The nickname of the visitor.
statements	A list of statements posted to the room.
refresh	The automatic refresh rate of the room (require special markup to be activated)
directory	An optional list of links to other chat rooms.
silence	The time in seconds since the last statement was made.

Table 3: Entities of a Chat Room

Entity	Description
silence-sentence	A sentence that describes how long it has been since last statement.
statement	The content of the statement field if the room is updated.

Table 3: Entities of a Chat Room

You can also embed the numerous entities listed in the Entities dialog of the File menu. Some of these general entities are very useful as part of the design of a chat room. For example, `&occupancy;` will embed a counter for how many currently is in a room, while `&visitors;` will embed a list of nicknames for the current participants in a conversation.

The Nickname Field

The INPUT field with NAME="nickname" allow visitors to provide a name for themselves:

```
<INPUT NAME="nickname" SIZE=40>
```

This field is part of the default chat rooms, but can alternatively be placed in pages with a submit button that leads to a chat room. This is useful when you would like to have an introductory page where the participant fills out personal information before they go to the chat. The nickname field will be automatically eliminated if the participant has previously provided a nickname. Thus you may find it useful to combine this field with the entity-reference `&nickname;` so a previously chosen nickname will be in the place of the field:

```
<INPUT NAME="nickname" SIZE=40>&nickname;
```

Making a Default Nickname

You may want to provide a default nickname for your participants, such as their username if they are registered. When a visitor submits a nickname field to a chat room, Interaction will remember and use the nickname as long as the visitor is on your site, or until another nickname is submitted to supersede it. You can make this field have as default value the username of a registered visitor by using the entity `&username;` for the initial value of the field:

```
<INPUT NAME="nickname" SIZE=40 VALUE="&username;">
```

Of course, any other entity or combination of entities can be used for the default value, such as the domain name of the participant.

If you want the username to be automatically used as nickname without allowing the participant to override it, make the field above hidden:

```
<INPUT NAME="nickname" TYPE=HIDDEN SIZE=40 VALUE="&username;">
```

This way, the field will not be displayed in the chat room but will still submit a value for the nickname of the visitor.

Persistent Nicknames

A nickname can be automatically reassigned when a participant in a conversation returns to your site. This is achieved by setting a cookie called "nickname" containing the nickname of the visitor. The Chat service will look for a cookie called "nickname" unless a nickname already is assigned. You can set the cookie with the nickname by adding the following to the HEAD element of a chat room:

```
<META HTTP-EQUIV="SET-COOKIE" VALUE="nickname=&nickname;">
```

This is a standard META tag as defined in HTML. For further documentation about this tag and what it does, see the HTML specification.

Avatars

An avatar is generally a visualization of a visitor in a "virtual space". Avatars facilitate others in recognizing a participant, thus making the social experience more personal.

In Interaction Chat, any visitor can have an associated image which will be automatically attached to the statements they make. You can use this feature to assign each visitor an image the first time they get to the chat.

The value of any field with NAME="image" that are submitted to a chat room will be kept by Interaction and used as the SRC for an image next time the participant makes a statement in any room. The field does not have to be located in the chat room, but can be located in any form that submit to a chat room.

This feature can also be used for facilitating issue-based discussions. You can make it possible for participants to change the image for each statement by adding a selector to the form in the HTML template of a chat room. An example would be to place the following tag inside the FORM element of a chat room:

```
<INPUT NAME="image" SIZE=20>
```

The value typed in this form would be taken as the URL of an image to use with statements posted by the visitor. Such fields can of course also be a set of radio buttons or other markup.

Private Statements

Participants in a conversation can post private statements to each other. These messages will not be seen by other participants, and can occur concurrently with a public chat. A message is made private when it is posted with a particular nickname as receiver.

Here is one possible way to add the markup to facilitate private messages in a chat room:

```
<SELECT NAME="receiver">
  <OPTION VALUE="">Everybody</OPTION>
  &visitors;
</SELECT>
```

The entity for &visitor; will embed a dynamic created option list of visitor nicknames.

The Statement Field

The content of the TEXTAREA with named "statement" will be used for the statements that the participants want to make. Interaction will take care of emptying this entity-reference whenever a statement is sent. It is a good idea to use &statement; to set the default value of this to whatever value has been submitted previously, as this makes it possible for the participant to update the page and still keep partially typed statements.

Automatic Refresh

A chat room can be automatically reloaded with regular intervals (at least for visitors using Netscape-compatible browsers). This is achieved using a special Netscape HTML construct:

1. Go to the HTML template of a chat room using the Edit HTML button of the dialog of the room.
2. Add the following tag within the <HEAD>...</HEAD> element of the template:

```
<META HTTP-EQUIV="refresh" CONTENT="20" >
```

This will cause the page to be reloaded every 20 seconds.

Optionally, you can make it possible for your visitors to change the refresh rate. The entity-reference &refresh; provides refresh rates for the particular visitor for each room. The refresh entity default to the value 120 but can be changed by submitting a field with name "refresh" to the room. As an example, try to add the following meta tag in the HEAD element of the HTML of a room:

```
<META HTTP-EQUIV="refresh" CONTENT="&refresh;" >
```

This will make the browser automatically refresh the room with the rate specified by the refresh entity. Next, add an input field in the FORM element of the chat room template, for example:

```
<INPUT NAME="refresh" VALUE="&refresh;" >
```

This field allow the participant in a conversation to change the refresh rate, and will at the same time show the current refresh rate.

You can use a selector or other fields as you find appropriate, just as long as its name is "refresh":

```
<SELECT NAME="refresh" >
<OPTION SELECTED>&refresh;
<OPTION VALUE="30">30 seconds
<OPTION VALUE="60">60 seconds
</SELECT>
```

Hint: Note the use of the &refresh; entity reference in the selected option element. This will make the pop up menu display the currently selected refresh frequency. You can also use this entity-reference in the content.

A last word about refresh: Although automatic reloading might sound like a good idea, it has its disadvantages. For example, it may confuse those that are not technically savvy,

making your service harder to use for beginners. Statements typed can get lost when a refresh occurs due to technical limitations of the browsers. Automatic refresh might invite the participants to be lurkers in the chat rooms rather than active participants. Also, your server will get more hits, reducing the number of possible participants in the chat.

Accessories

The chat service has many optional features provided in the form of components and tools. You can download these from:

```
http://interaction.in-progress.com/components  
http://interaction.in-progress.com/tools
```

The following is an introduction to some of the accessories for the chat service.

Transcribe Chat

The Transcribe Chat tool allows you to transcribe a chat conversation to file. This is useful whenever you want to have a written record of a dialog. The conversation will be stored in HTML format, so you can immediately make it available on the web.

Filter Statements

The Chat Filter component substitutes phrases in the statements with other phrases. It can be used to eliminate unwanted language in a conversation. The filter can also be used to ensure that nobody is posting HTML or Javascript to a conversation. A more creative use of the chat filter is to substitute abbreviations in a conversation with its complete value, for example, to convert “smileys” in a conversation into images of smiling faces.

Purge Rooms

The Purge Rooms tool provides a dialog to erase all statements made in one or more rooms. This is useful to clear out the room before it is used again.

Remote Control

Remote control of the chat rooms are provided with entities such as Editor, Purger, and Eraser. The Editor entity embeds an editor in the room that can be used to change the title or introduction using a web browser, or add new rooms. The Purger entity makes it possible to purge the statements of a room from a browser. The Eraser allows the webmaster to remove a chat room from a browser. Either of these entities can only be used for those logged in as a member in the group “Webmaster”, and will be hidden for others.

7. FORUMS

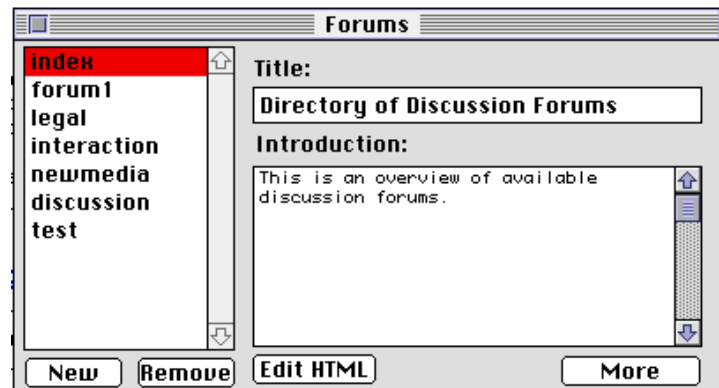
A Forum is a place where people can discuss with others. The threaded discussion forums of Interaction are designed for elaborate discussions. Each message has its own page when presented on the web, so contributors have plenty of space to present their point of view. In contrast to services such as the Chat Room, where there are multiple messages on one page, participants will be able to make a complete argument even for complicated matters. The posted messages will be sorted on topics (threaded) to facilitate a more focused discussion and allow later participants to follow a discussion in an organized manner.

The Forum service can be adapted to be used for a variety of other purposes beyond discussions. You can change the access restrictions to create services such as private mailboxes or forums where only a few selected experts are allowed to answer. For more about access restrictions, see the chapter "Membership and Restrictions" on page 44.

Creating a New Forum

You create a new forum by using the Forums dialog available from the Services menu of Interaction:

1. Click the "New" button to create a new forum. A dialog will request a unique name for the forum.
2. Type in a name for the forum (or leave the default) and select OK. The new forum will appear as an item in the list of forums on the left side of the dialog.
3. Fill in a title for the forum and a short introduction in the respective fields.
4. Close the dialog, verifying that the new forum should be saved. Next time you visit the Forums, your new forum will be available as one of the options.



You can add an unlimited number of forums.

Designing a Forum

The title and introduction of each forum can be changed to reflect the purpose of the forum:

1. Select the forum you want to customize in the table on the left side of the Forums dialog
2. Fill in a title for the forum in the field labeled "title".
3. Add a description or introduction in the field labeled "introduction".

After saving the new definition of the menu listing, you can access the changed page by pointing your web browser to the URL previously described.

Reordering the Directory of Forums

The index of forums has a directory of other forums that it links to. The table labeled “Directory” in the Forums dialog contains this list of forums when the index forum is selected:

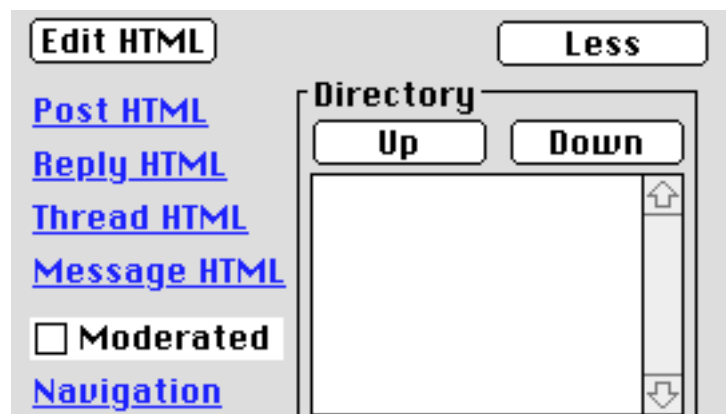
1. Select the “index” forum.
2. Click the More button to see all available options.
3. Use the “Up” and “Down” buttons to reorder the list of forums in the directory table.

Advanced Customization

The formatting of the various parts of a forum can be customized using HTML to fit your needs and design. This requires that you are familiar with HTML and with entities and entity references (see the chapter “Entities” on page 25). You can use the entities specific to a forum location or any of the general entities as listed in the Entities dialog of the File menu.

Editing the HTML

The “More” button on the Forums dialog gives you additional options for customizing the forums. These options include declaring Moderated forums, change the navigation icons of the forums, tailor the HTML templates for the various pages of a forum, and change the order of the links in the index of forums.



Customizing the Forums Index with Markup

You can customize the HTML of the forum index by selecting the “index” in the Forums dialog and use the “Edit HTML” button. A set of entity references are available to embed the central features of a forum menu:

Entity	Description
navigation	A navigation bar for the forums.
title	The title of the forum as defined in the field of the dialog.
introduction	An introduction to the forum as defined in the field of the dialog.
directory	A list of links to the forums.

Table 4: Entities of a forum menu

Customizing a Forum with Markup

Each forum has associated HTML templates for its various pages. These templates give you extensive control of the HTML formatting of the pages. However, you are in no way required to edit these templates to use Interaction.

The button labeled “Edit HTML” gives you the default HTML template of a forum¹. The template consists of HTML and content. In addition, there are a number of “entity-references” that dynamically embed central features of the forum (see “Entities” on page 25 for more about this). The following entity-references can be used as part of your template for a forum:

Entity	Description
title	The title of the forum as defined in the field of the dialog.
introduction	An introduction to the forum as defined in the field of the dialog.
topics	A list of topic threads of messages posted to the forum.
topics-order	The order of the topics.

Table 5: Entities of a forum

The order for the topics of a forum can be controlled by submitting a field with name “topics-order” to the forum. If the value is “Chronological”, the threads will be sorted in the order they were posted. If the value is “Alphabetical”, the threads will be sorted depending on the alphabetical order of their subject, while “Reverse” will list the threads in reverse chronological order. The following form can be placed in a forum to allow the visitor to control the order of the topics:

```
<FORM>
<SELECT NAME="topics-order">
<OPTION>Chronological
<OPTION>Alphabetical
<OPTION>Reverse
</SELECT>
<INPUT TYPE=SUBMIT VALUE="sort">
</FORM>
```

The entity reference `&topics-order;` can be used to provide feedback about the current order.

The overview of threads can also include the messages in each thread. An argument with name “format” and value “threads” will cause the topics to be embedded with all messages included. This can be achieved by placing the following in the HTML of a forum:

```
<FORM>
<INPUT TYPE=HIDDEN NAME="format" VALUE="threads">
```

1.If you ever want to revert to the default, just remove all text in the HTML file before closing it.

```
<INPUT TYPE=SUBMIT VALUE="Show Messages" >
</FORM>
```

The list of threads can be limited to only show threads that have been posted to within the last days. Submitting an argument "outdated" with a numerical value will cause the topics only to list threads posted to within the given number of days. For example, the following HTML form will allow the visitor to control how old messages are displayed:

```
Only show threads posted to the last <FORM><INPUT NAME="outdated"></FORM>
days.
```

Editing the Post and Reply Forms

Each forum has associated documents for posting new messages and replying to a message in a thread. The Post and Reply links on the Forums dialog has a shortcut to these documents, and selecting either gives you a dialog where you can edit the documents and templates to match the purpose of your own Forums.

Entity	Description
navigation	The navigation bar
title	An automatically generated title
subject	The subject of the thread (only for replies).
in-reply-to	The key for the message which this is a reply to (only for replies).
thread	The key for the current thread (only for replies).

Changing the Formatting of Threads

The threads in a forum are associated with an HTML file to control the formatting of the HTML pages. This file is available from the Forums editor by following the links named "Thread HTML". In addition to all the general entities of Interaction, the following entities can be used to customize the formatting of threads:

Entity	Description
navigation	The navigation bar of the forum.
title	A synonym for the subject of a thread
subject	The subject of the thread.
messages	A list of the messages in a thread
next	Link to the next thread, if any.

Changing the Formatting of Messages

The messages in a forum have an HTML file that control how they are formatted. This template is available from the Forums editor by following the links named "Message HTML".

Entity	Description
navigation	The navigation bar
title	A title for the message
subject	The subject of the message, usually same as the thread
post-time	A timestamp for when the message was posted
author	The name of the author of the message
email	A link with the email address of the author of the message
in-reply-to	A link to the message which this is a reply to, if any
message	The content of the message
signature	The signature of the message

Moderated Forums

A forum is declared moderated by checking the "Moderated" checkbox. Messages posted to a moderated forum will not be publicly available before they are reviewed by a moderator.

Messages posted to a moderated forum will get an access restriction (see page 44) that makes the message inaccessible and not listed. This access restriction must be manually changed from the Locations dialog to make the documents available. A specialized Tool that facilitates moderation will be made available.

Changing the Navigation Icons

Interaction is pre-configured with icons located on a central site making it easy for you to get the forums working. Clicking on the Navigation hyperlink on the Forums dialog gives you the dialog to change these icons. You might find it appropriate to download the original icons to your own site or make your own. However, note that Interaction does not serve images, thus the icons cannot be added to the Documents folder.

Hint: In the bottom of the Navigation dialog are fields for the optional width and height of the icons. You may find it useful to fill in these values, as it will speed up the display of the forum pages on browsers that support width/height (e.g. Netscape). The values for the default icons is 32 for both width and height.

Removing Messages and Threads

Messages and threads can be removed from the Locations dialog of the File menu. Select the thread or message and use the Remove button to delete. All messages in a thread will be erased with the thread. The first message in a thread cannot be removed before all the replies has been removed.

8. MEMBERSHIP AND RESTRICTIONS

The Membership feature is used to give individuals access privileges so you can make specific locations accessible only for selected people and groups. Access Restrictions control accessibility of a location as well as when it will be linked from other pages. Together these provide a flexible scheme for adapting the presentation depending on visitor and context. Interaction allows an unlimited number of members and will look up the username and password just as fast no matter how many members you have.

Members

Members are visitors that have their own username and password for your site¹.

Adding a New Member

The list of members is edited using the members dialog of the Windows menu:

1. Click the “New” button. This will create a new item in the list of members.
2. Type in a username and password in the corresponding fields.



Assigning a Member to a Group

A member can optionally be in one or more groups. All groups have a corresponding access restriction which makes a document accessible only for those who are in the group. The table to the bottom right of the Members dialog depicts the groups that a particular member belongs to. To assign a member to a group:

1. Click the “Join” button. This will bring a dialog that ask you to type the name of a group.
2. Type a name for a new group, or the name of a previously created group.
3. Click the OK button. This will add a group to the list that shows the group membership of the member.

Defining a Webmaster

A webmaster has special access privileges to your site. Typically modifications are by default restricted to webmasters. A webmaster is anyone in the group WEBMASTER. Here is how to add yourself as webmaster:

1. Click the “New” button. This will create a new item in the list of members.
2. Type in a username and password for yourself in the corresponding fields.
3. Click the “Join” button. This will bring a dialog which asks you to type the name of a group. Type WEBMASTER as the name for the group. Click the OK button to complete.

1. The concept “Members” as used in Interaction is similar to what often is referred to as “Users”, but “Members” is more suited in this context as a web site usually is public available without requiring any passwords.

Access Restrictions

Each location has an access restriction, which determine who and in which context the location can be accessed. This can be used to adapt the site to each visitor as well as to keep parts of the site inaccessible for those without the right privilege.

Restricting Access

Access restrictions can be changed using the “Access” pop-up menu of the Locations dialog. For example, you can set a document only to be accessible for members at your site. You can then assign username and password to individuals using the membership dialog on the Windows menu. The location will not be accessible unless the visitor has a username and password which verifies membership.

Adaptive Indexes Based on Secrecy

Interaction has the ability to hide specific locations depending on their access privilege. This feature is used to get the site adapted to each visitor. The “Secret” pop-up menu of the Locations dialog is used to define when a location is to be considered secret. Interaction will not include a secret location in any automatically generated content (e.g. index listings created by the forum or chat service, or by the “documents” entity).

9. EXTENDING INTERACTION

Interaction can be extended without programming or scripting, by adding new components, tools, and cgi applications. The technical reference are found in a separate manual, and introduced in the next chapter.

Components

Interaction is extensively component-based, where the application acts as a container for dynamic objects that extend Interaction with new features or modifies the functionality. Components have unlimited ability to change the Interaction application, providing a far more powerful scheme than traditional CGI's or API's. New components can be downloaded from:



<http://interaction.in-progress.com/components>

Components will be integrated in the application upon invocation. To install a component, add the file or files to the Components folder and restart Interaction to activate. In some cases you can activate a component by double-clicking its icon or dropping it on the application icon.

New Tools

In a similar way as you can extend Interaction by adding files to the plug-ins folder, you can add special components to a folder called "Tools" and get these executed from the menu of Interaction. If a "Tools" folder exists in the same folder as the Interaction application, its content will be listed in a "Tools" menu. When you choose any of these items, Interaction will open or execute the file.

CGI Applications

Interaction can be extended with external applications (often called CGIs). This is done by adding the CGI application to the documents folder, and then restarting Interaction to make it available. The application must be running in advance of the request, and the file is required to have the extension ".cgi" or ".acgi" (however, this extension will be ignored in the URL).

10. TROUBLESHOOTING

The first place to go in case of problems is to the Interaction FAQ:

<http://interaction.in-progress.com/faq>

The Problem Report

The “Problem Report” file in the Log folder provide a log of problems that have been taken care of by Interaction. In case of problems, the last items in this report might provide hints for a solution.

Common Problems

This section provides solutions to potential problems when using Interaction.

Garbage Characters in the Response

If the server is incorrectly configured it may attempt to serve the Interaction application file. This will appear as a long, cryptic mix of sentences and data.

- If Interaction is acting as a CGI (i.e. you use “/interaction\$” as part of the URL):
There might be an item in the suffix map of the server causing it to consider any file without suffix to be a document to download. This has shown to be the case with the default setting of some versions of Web Server 4D. The fix is to either remove the suffixless item from the map, or setting its action to be Interaction.
- If the server is configured with Interaction as a preprocessor:
The problem can probably be eliminated by creating a new location called “Interaction”, optionally containing a link to the “/index” location.
- If the server is configured with Interaction in its suffix map:
The problem is probably due to an incorrect suffix map for Interaction and/or an alias to the Interaction application located in the same folder as the server. The fix is to remove the alias and make sure that the suffix map is correct (see page 9 for more about how to configure the server).

Slow Speed

Interaction does not work very well with Virtual Memory, RamDoubler or SpeedDoubler. Either will typically slow down Interaction to half the speed or less. The fix is to use real memory and disable these applications. If you cannot avoid using them, make sure that Interaction is the first program that is started when restarting the computer.

Document Contains No Data

Does the browser show an empty page or displays a “Document Contains No Data” dialog?

The reason might be that Interaction does not provide a location for this particular URL. An empty page is the way Interaction tells the browser to take care of the request. Some browsers have bugs that causes it to not continue processing, but instead return the empty page. You may consider to report this as a bug to the server developers.

If there is a location that corresponds to the request, Interaction might have had an immediate problem in creating a response. The Problem Report may contain a message that indicates what went wrong. If there is such a message and it does not make sense, consider to report it as a bug given that it happens regularly.

Unexpected Quits

Interaction should be very stable and rarely if ever crash. However, Interaction is somewhat sensitive to low memory, and might fail if this is the case. The "About Interaction" dialog will show how much free memory Interaction has available. If this number is below 500K it is a good idea to increase the allocated memory. Please report it If you encounter any events of Interaction crashing while still having a lot of memory allocated.

Broken Graphics

You might have encountered problems with graphics that do not show up when you browse the pages and Interaction is running as a CGI. Unless Interaction is set up with mime mapping (see page 9) or preprocessor, images cannot be referred using a relative URL (e.g. "images/img.gif"). The problem can be eliminated by using a full URL (e.g. "http://www.yourserver.com/images/img.gif") or an relative URL that contains an absolute path (e.g. "/images/img.gif").

Unresolved Entity-References

Syntax errors in the markup might cause Interaction to ignore embedding the value of entity-references. Interaction attempts to write an understandable error message in the Problem report when encountering such situations. The most common syntax error is to forget a closing quote in an tag attribute value, e.g.:

```
<A HREF="http://www.ifi.uio.no/~terjen>
```

This will cause Interaction to consider the text that follows the URL to be part of the attribute. Another common error is to leave a less-than sign '<' in your document without it being part of a tag.

Search Argument Conflict With Other Software

To be able to reliably track visitors, Interaction will add a unique ID for a visitor to the search arguments of all URLs, such as "...?id=123456". Unfortunately, a few non-mac web servers report an error whenever encountering a request with such search arguments, typically reporting that the server doesn't accept any search args in that URL. Also, links to some external CGI's may fail due to unexpected search arguments.

The solution is to make sure that Interaction doesn't add a visitor ID in the rare instances where other software has problems with the visitor ID. This can be accomplished using the SGML markup for a "marked section" to describe that the link is to be kept unchanged by Interaction. For example, to define a link to be kept as it is, make it into a CDATA marked section by putting "<![CDATA [" before the link and "]]>" after:

```
<![ CDATA [ <A HREF="http://www.in-progress.com/">In Progress</A> ] ]>
```


Interaction will then format the link without any id number or other changes. The markup for the marked section will not be passed on to the browser.

Loosing Track of the Visitor

Interaction might fail to track the visitor in some circumstances. This might occur in cases where there are syntax errors in the markup as described in the section "Unresolved Entity-References" on page 48. Simpler servers such as MacHTTP might also loose track of visitors during automatic refresh.

Reporting a Bug

No software is free from bugs, and real use as opposed to artificial testing will usually reveal bugs unforeseen by the developers. It is important that you report any bugs so these can be repaired for the future. If possible, you may get back a fix for the bug within days of reporting it, so you can benefit from it being repaired without having to wait until the release of the next version of Interaction.

Bugs can be reported by sending an email to:

bugs@in-progress.com

Using this address ensures that your bug report gets to my immediate attention. The more information given related to the problem, the better. It is appreciated if you provide as many as possible of the following in a bug report:

1. A description of the problem, what you do to make it happen, and what actually happens. This will facilitate replication of the problem, which is key to identifying what is wrong.
2. The version code of Interaction. You can get this from the "About Interaction" dialog on the Apple menu. The version code will typically look like "1.0" and can be reported as "I am using Interaction 1.0".
3. The last items in the "Problem Report" just after the problem has occurred. You can view the problem report by selecting this item on the Windows menu. If you have any problems with accessing this, you may alternatively enclose the complete file called "Errors" in the Log folder of Interaction.
4. Other information that you believe might be useful, such as what other software you have running on your computer.

11. TECHNICAL DOCUMENTATION

Interaction can be infinitely modified and extended with scripting or programming. It has a built-in ANSI-standard dynamic object-oriented scripting/programming language, and is in itself an object database of scripts, programming parts, and data which can be dynamically adapted as you wish. There are several reasons to make use of these capabilities:

- You want to script smaller features to your site or make script to help you maintain your server.
- You want to create extensive modifications and adaptations of Interaction and its services to best suit your purposes.
- You are a third party developer interested in providing extensions for the growing number of Interaction users.

The technical details about how to extend and modify Interaction with scripts and programs will be incrementally documented. Updated technical reference material for Interaction is found at:

<http://interaction.in-progress.com/documentation>

Interaction provides an exciting and powerful framework for creating advanced web services:

- Integrated ANSI-standard object-oriented scripting/programming language with more than 2000 well-tested functions. Any of your code can be reused in other context and platforms.
- Your extensions have direct access to all internal functionality of Interaction, and can even modify it.
- Code can be embedded directly in the markup in the form of processing instructions to allow for quick prototyping of new features.
- Dynamic evaluation allows the application to be extended and modified at run-time, with no need for compilation.
- Support for compilation and execution of AppleScript and other OSA scripting languages
- Modifications and extensions can be distributed as plug-in components in either compiled or even uncompiled as interpreted code.
- Tools to facilitate authoring and site maintenance can be distributed just as the plug-ins, but will be added to the Tools folder and first executed when the corresponding item is selected from the Tools menu.
- Implements the CGI standard familiar from the UNIX platform for extending your site with scripts in Interaction's internal scripting language. In addition, Interaction supports the AppleEvent based CGI-alike protocol for scripts written in AppleScript or other environments that can receive AppleEvents.
- Dynamic locations can be defined in the form of a "pattern" using object-oriented programming, providing a sophisticated way to add new features to your site. No need to

mess with limited API's when you instead can use self-containing dynamic objects for integrating extensions.

- Built-in object database and TCP/IP support.
- New code libraries can be added as plug-ins.
- New features can be defined as subclasses of existing ones. The internal structure and superclasses of Interaction will be incrementally documented to facilitate your efforts in defining new access restrictions, entity types, document types, services, tools, and other extensions.

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