

Microcosm Pro

System Administration

Guide

for Windows



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Additional information about Microcosm is available on our World Wide Web site:

<http://www.multicosm.com/>

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Contents

1 The Microcosm Pro Administration Guide Introduction	1
1.1 Who is the Administration Guide For?	3
1.2 How is the Guide Organised?	4
2 The Microcosm System	5
2.1 Microcosm: An Overview	7
2.2 The Microcosm Architecture	7
2.3 Microcosm Viewers	9
2.4 Microcosm Filters	11
2.5 The Document Management System	12
2.6 Utilities and Wizards	12
2.7 The Microcosm Registry	12
3 Installing Microcosm Pro	15
3.1 Hardware and Software Requirements	17
3.2 Retaining Existing Applications and Settings	17
3.3 Using the Setup Program	17
3.4 Microcosm WIN.INI Settings	19
3.5 Changing the Microcosm Key	19
4 The Microcosm Configuration Program	21
4.1 Microcosm Configuration: Overview	23
4.2 Microcosm Configuration Summary; How to...	28
5 Microcosm Startup	31
5.1 Microcosm Startup: Overview	33
5.2 Startup Documents	33
5.3 Startup System Settings	34
6 Users	37

6.1 Adding a New User	39
6.2 Removing an Existing User	40
6.3 Changing the Password of a User	40
6.4 Adding Many New Users	42
7 Settings	45
7.1 Settings: Overview	47
8 Microcosm Registry Editor	53
8.1 The Microcosm Registry Editor: Overview	55
9 Filters and the Filter Chain	63
9.1 Filters and the Filter Chain: Overview	65
9.2 The Filter Chain	66
9.3 Available Filters	67
9.4 Linkbases	68
9.5 Defining the Filter Chain	69
9.6 Defining the Available Filters	72
9.7 Create a New Linkbase	72
9.8 Create a New Annotation Database	74
9.9 Create a New Computed Link Index	76
9.9 76	
9.9 76	
9.10 Re-indexing a Compute Links Index	76
10 Applications	79
10.1 Managing the Application List	81
10.2 Creating an Application	82
10.3 Portable Applications	83
11 Document and Viewer Settings	85
11.1 Document and Viewer Settings: Overview	87
11.2 Clearing Settings	87

11.3 State Saving Control	88
12 Documents	91
12.1 Document Attributes Overview	93
12.2 Document Types Overview	94
13 Application Management	103
13.1 Application Management: Overview	105
13.2 Verifying Applications	105
13.3 Importing the Application Data from a User	107
13.4 Publishing Your Application	111
13.5 Creating Shortcuts	112
14 Networks	115
14.1 Using a Network: Overview	117
14.2 Setting Up Microcosm Pro to run on a Network	117
14.3 Performance Considerations	119
15 Path Variables	123
15.1 Path Variables: Overview	125
15.2 Application Variables and Paths	125
15.3 System Paths and Variables	126
16 Index	129

1 The Microcosm Pro Administration Guide Introduction

In this chapter

- **Who is the Administration Guide For?**
 - **How is the Guide Organised?**
-

1.1 Who is the Administration Guide For?

Microcosm Pro recognizes four classes of users;

1. *Users without authoring permissions*
These are users who can do no more than view existing Microcosm Applications. The Microcosm Tutorial contains all the information such users need in order to use the system effectively.
2. *Users with authoring permissions*
These are users who can not only view applications, but may also add their own links, annotations, documents, folders and settings to existing applications. The Microcosm Tutorial covers most of this information, and further detail is given in the User Guide.
3. *Owners of Applications*
These are users who have built an Application, and who have the permissions to alter the Application and publish the Application. The process of building an application is described in the Creating Applications Tutorial. Further Details are in this System Administration Guide.
4. *The System Administrator*
The System Administrator is the person responsible for the facilities that are available in the base Microcosm on which applications are built, its installation and delivery, and also for the creation of user accounts and their associated security. All the information on how to carry out these tasks is described in this System Administration Guide.

So this guide is intended for those who need to know how to administer Applications, Users and the Microcosm base system.

1.2 How is the Guide Organised?

- This Guide covers the following topics
- Installing Microcosm
- Installing Microcosm on a Network.
- The Configuration Program
 - ⇒ User Management Wizards
 - ⇒ System and Application Settings Wizards
 - ⇒ Application Publication and Management Wizards
 - ⇒ Document Management Wizards
- Microcosm Internals

2 The Microcosm System

In this chapter

- **An Overview**
 - **The Microcosm Architecture**
 - **Viewers**
 - **Filters**
Linkbases, Show Links, Navigational Filters
 - **The Document Management System**
 - **Utilities and Wizards**
 - **The Registry**
-

2.1 Microcosm: An Overview

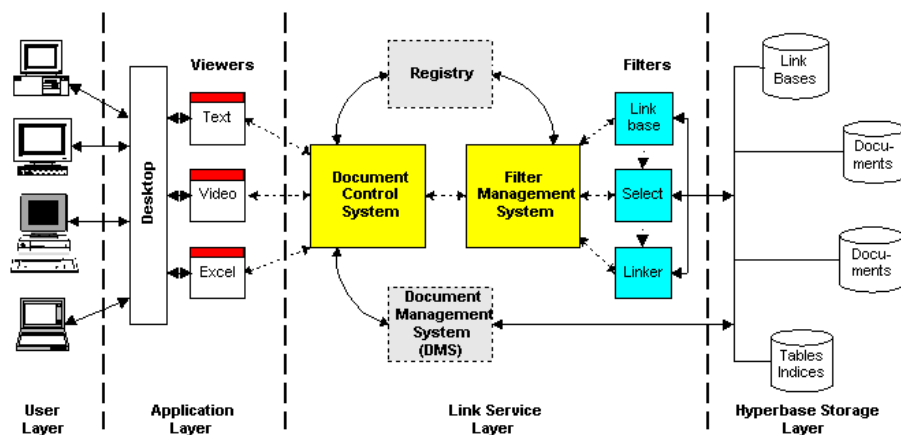
Microcosm is a hypertext system for creating, browsing and querying large collections of documents. Since it treats multimedia objects as documents, Microcosm is termed a *hypermedia system*. It differs from other hypermedia systems due to its open architecture which allows documents produced by different applications to be linked together while still in their original application format.

Microcosm has been used within the educational field, for large archives, for computer aided engineering maintenance and for delivering multimedia materials in a range of other applications. Wherever people have seen the system they have been excited by the possibilities that it offers. Academic courseware authors have been quick to see the advantages over current hypermedia and presentation packages in improving the effectiveness of courseware; Engineers realise that operational productivity can be greatly improved by deploying existing technical information in new multimedia applications tuned to specific engineering maintenance tasks.

2.2 The Microcosm Architecture

The Microcosm system comprises four layers. The *User Layer* offers the user access to the functionality of Microcosm, and to the documents and links in the system. The *Application Layer*, and its viewers, integrates the user's applications into the Microcosm hypermedia environment. The *Link Service Layer* implements the hypertext actions, and the *Hyperbase Layer* is the permanent store for the hypermedia resources - documents and links.

Microcosm Architecture



Microcosm consists of a number of autonomous processes which communicate with each other by a message-passing system. In the diagram above, the paths along which the messages are passed are represented by dotted lines.

Documents of all types are held in the Hyperbase Layer and are referenced in their original application formats. This contrasts with traditional hypertext approaches

which embed the link information in specialised, marked-up, versions of the documents. Microcosm holds its link information in objects termed *linkbases* - collections of individual links. Each link consists of items such as a *source anchor* (the starting point of the link), the *destination anchor* (the destination of the link) and attributes such as the *link description*. This approach offers three important types of function:

- it allows more than one link base to be applied to a given collection of documents.
- it allows links to apply to read-only media.
- it allows linkage to processes as well as to documents.

Most hypertext systems support a single *action* - pressing a button causes a link to be *followed*. Microcosm offers a number of different actions, which are covered in more detail in the section on Filters. The user selects the item of interest (e.g. a piece of text) and uses a menu item to choose an action to take. To Microcosm a button is just a binding of a specific selection with the particular action **Follow Link**.

Microcosm has generalised the source anchor concept to offer a spectrum of link possibilities, from explicitly defined anchors to dynamically generated anchors.

Specific Links.

The source anchor is a particular selection in one document and the target anchor is a particular selection in another (or the same) document. Specific links may be made into buttons.

Local Links.

The source anchor is any occurrence of a particular text string in one document; any occurrence of this text string can be followed to the target. The target is a selection somewhere in another (or the same) document. There can be several local links established from a given source anchor.

Generic Links.

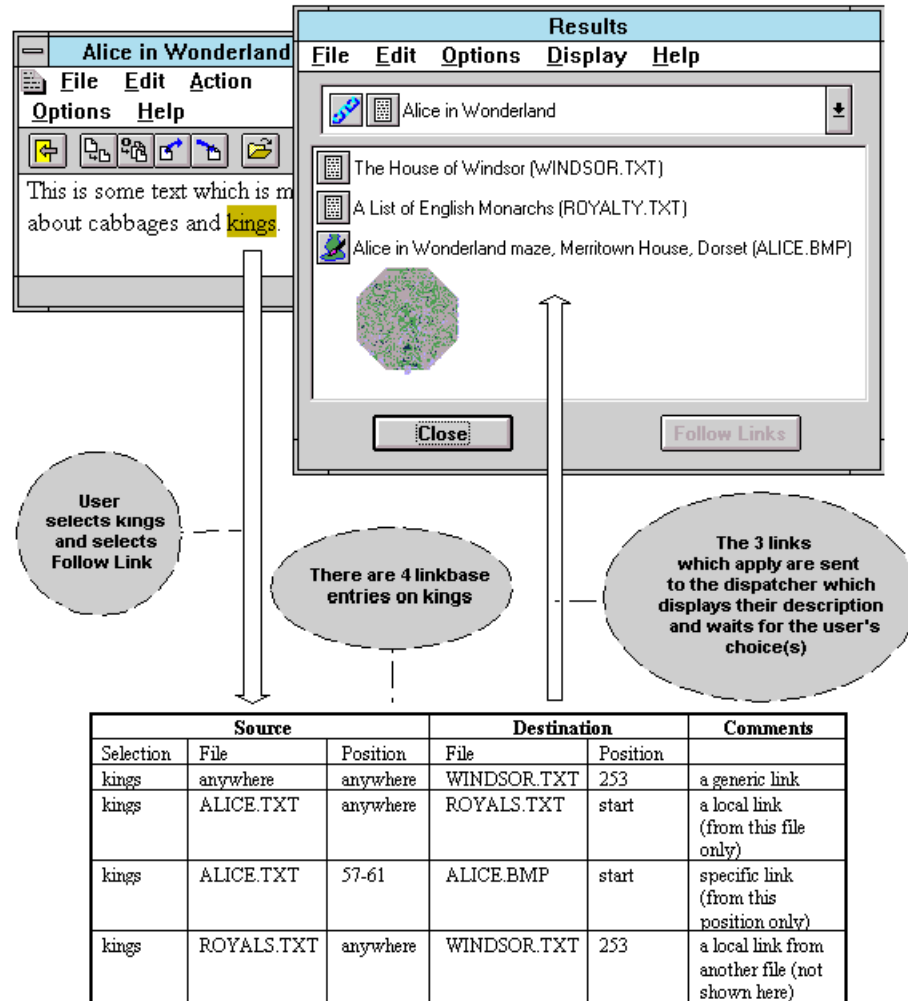
The source anchor is any occurrence of a particular text string in *any* document; any such occurrence can be followed to the target. The target is a particular selection in the target document. Generic links offer great productivity advantages since, for the cost of a single link, many linkages are available; further, as new documents are introduced they immediately have access to all the generic links that have previously been defined.

Dynamic Links (e.g. Computed Links.)

Not all links need to be created explicitly by the author. For example, relationships between pieces of information can be computed, based on statistical analysis of the content as in the Computed Linker, or related information can be retrieved based on attribute coding of documents.

In the schematic below four links (1 generic, 2 local and 1 specific) have been constructed using the common source anchor *kings*. By selecting *kings* and performing the action **Follow Link**, three of the four have been identified.

Following Links



The **Results** window allows the user to choose which of the three links is the most appropriate.

The basic Microcosm processes are Viewers and Filters.

2.3 Microcosm Viewers

Viewers are programs in the Application Layer which allow a user to view documents with differing physical formats. Viewers are provided in Microcosm for:

- Text Viewer - documents in ASCII or RTF format
- Graphics Viewer - documents in BMP, JPEG or AVI format
- MultiViewer - documents in a wide range of text, graphics and spreadsheet formats. See the **Microcosm User Guide** for a detailed list of the file formats that can be seen by this viewer.
- Microcosm Animations - documents constructed from a sequence of Graphic Documents

- Audio files - documents in WAV format using the Microsoft Media Player.
- Microcosm Mimic files (a form of Guided Tour)

Any program that presents data to the user can be connected to Microcosm as a Viewer. Microcosm is set up to use Toolbook to view Toolbooks and your default Web Browser for HTML files, and it is straightforward to connect other programs (e.g. Excel to view spreadsheets) as Viewers. Examples of products that have been connected in this way are:

- Word Processors
- Web browsers
- CAD/CAM packages
- Databases
- Spreadsheets
- Industry packages

In addition, specialised viewers have been written for particular file formats (e.g. DXF, the CAD/CAM Interchange format).

The Viewers present the user with the menu of possible hypertext actions. Typical actions are **Follow link**, **Start Link** and **End Link**. When the user makes a selection and then takes one of these actions, the viewer captures the selection and constructs the appropriate message. The message is routed by Microcosm's **Filter Manager** to the filter processes which carry out the user's action request.

A viewer's ability to connect and communicate with Microcosm will fall into one of the following categories:

Fully aware.

A fully aware viewer is one which has been written explicitly to communicate with Microcosm via messages. A bi-directional message channel exists between the viewer and Microcosm, allowing the viewer to issue requests, for example to the linkbases for buttons. Such a viewer is able to receive replies also. For example, when displaying a button, the viewer receives information from the linkbase concerning the position and extent of each button that needs to be displayed.

The Graphics, Text and MultiViewers are all fully aware.

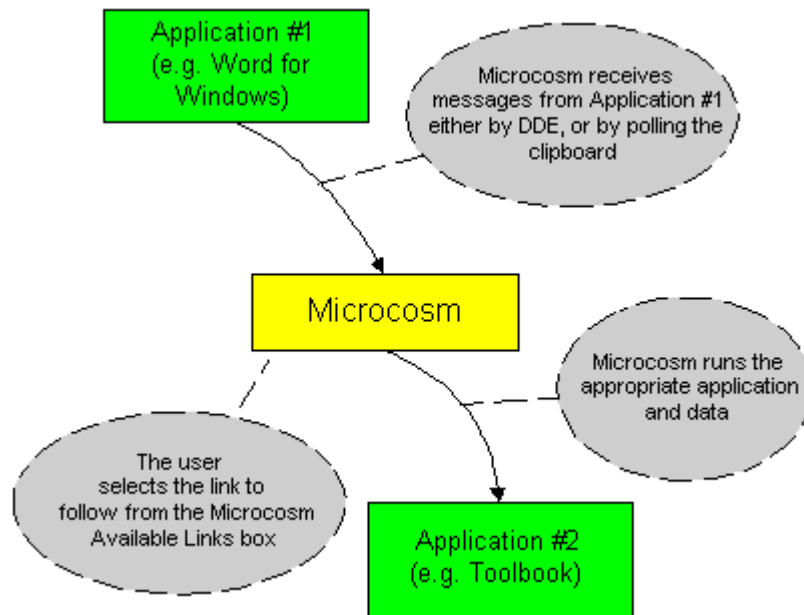
Partially aware.

These are usually applications that can be tailored by the user, e.g. Word for Windows. Microcosm is able to control which document the application should open. In addition, the user is able to follow or create generic links from within them, but the viewer is not capable of full communication with Microcosm as it cannot receive messages. Typically, it is not possible to have Microcosm buttons serviced by this class of application.

Unaware.

These are applications that have no explicit communication path with Microcosm. However the viewer can be launched with the correct document and the user can communicate *selections* from the application to Microcosm using the clipboard.

*Microcosm:
An environment
for integrating
applications*



2.4 Microcosm Filters

Filters are processes which provide functionality to the user and the viewers. They receive the messages, take particular actions, and may generate further messages for viewers and other filters. At any time a Microcosm system has a chain of filters, the *Filter Chain*, defining the types of action currently available; messages are processed by each filter in turn, with each filter achieving its results and communicating with other filters by changing, adding, and removing messages.

The filters currently provided with Microcosm are:

- Linkbases
- Show Links
- Compute Links
- Annotation Filter
- Navigational aids (the Results and Tour Filters)
- Link construction

The user can control the order in which the filters appear in the chain. Filters may be installed and removed in order to configure the system according to the user's preference.

Linkbases

A Linkbase holds all the information referring to a particular set of links. More than one linkbase may be installed at a time, making it possible to provide different views of the information by installing two separate linkbases. A 'public' linkbase may contain all the links made, say, by the original author, and a 'private' linkbase may contain links made by the individual user. This ensures that private annotations and links are not visible in the public system.

Show Links

Although a passage in a text document may not exhibit any visible links (buttons), it may still contain a number of invisible (generic, local and specific) links. If the user selects a text from the passage and uses the **Show Links** action, all possible links from the selected text are made available to the user. The system achieves this by sending every word, and every pair of consecutive words, from the selected text through the filter chain to determine every *Available Link*.

Navigational Filters

There are two further filters which are of particular interest in aiding navigation. The **Result** filter keeps a list of all documents (a *History List*) that have been visited and allows the user to return to a particular document. Histories may be saved at the end of a session. The **Tour** filter allows the user to follow a pre-defined tour through the documents. All the normal Microcosm actions are still available while following a mimic. This means that the user may branch out from the predefined tour at any time, while still being able to return to the tour whenever required.

2.5 The Document Management System

Microcosm's **Document Management System (DMS)** maintains data about the documents known to Microcosm, including various attributes of these documents. Typical attributes are an English description of the file, the full filename, the physical type of the document, the folder(s) in which it appears, the author and descriptive keywords. In addition, users can define their own attributes.

The **DMS** provides two classes of service:

- it provides a safe method for moving the physical position of documents without having to change all the linkbases.
- it provides a method for accessing documents by their attributes.

2.6 Utilities and Wizards

A range of Utilities are provided to manage the hierarchy of Microcosm *objects* such as users, applications, and linkbases. These include a Link Editor for maintaining Link bases, and Indexing tools to prepare the indexes used by the Compute Links filter. A number of other utilities are implemented as wizards to carry out the common management and maintenance tasks. These include the application creation wizard, the users management wizards, the system configuration wizards and the application publication wizards.

2.7 The Microcosm Registry

Since Microcosm is highly configurable it is necessary to maintain a large amount of information about the state of the system. This is achieved by maintaining all the information required in databases known as the Registries.

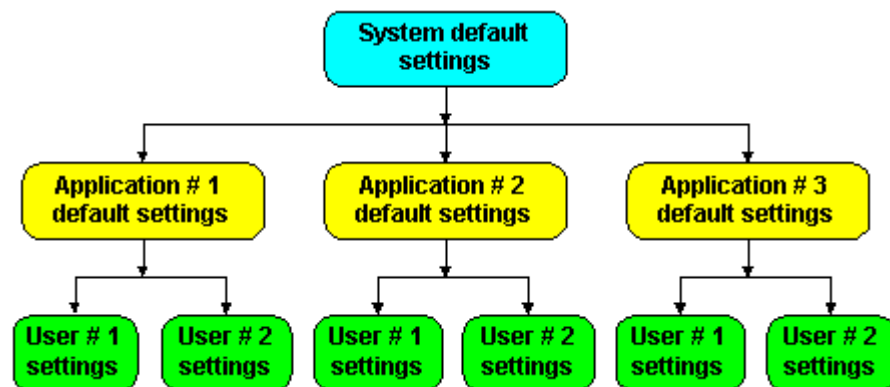
There is one registry for the Microcosm system as a whole, and this is stored in a file called `mcsystem.reg` found in the Microcosm Pro `bin` directory (or whatever directory `Microcosm.exe` is stored in; by default `C:\Program Files\McmPro\bin`).

In addition, each application has its own registry. This will be a file with the `*.mcm` extension. By default this file will have the same name as the application, and will be found in the application root directory. The application provided with Microcosm has the description `Caerdroia` but its name is `mazes`. By default its application registry will be found in `C:\McmApps\mazes\mazes.mcm`. This is the file that the user must point Microcosm at, in order to run the application. This can be done either by running the `*.mcm` file or by pointing the Microcosm application selector at the file so that the application appears in the list of available applications.

When an application is running the system registry and the application registry will be combined. The two files will be saved back separately when the user exits Microcosm.

Any component with appropriate permissions may write to the registry, and all applications may read from the registry. Typical information that is kept in the registry includes the list of filters that are available, the viewers to use for various data types, the filters and their default settings when the system starts, the list of registered users and their permissions, the font sizes, colours and window sizes for various files, and any other information that might normally be kept in an `.ini` file.

*Hierarchy of
Settings
maintained by
registry*



The figure above shows how the registry decides which settings to use. There are various system defaults, set by the System Administrator (in the system registry): these may be overridden or added to by each application that is in use, and then each user may override or add to those settings to arrive at a personalised environment.

Any Microcosm component may query the registry, for example a viewer may query the registry to enquire which filters are currently installed, and thus to build a dynamic menu of actions available: users with appropriate permissions may change entries.

NOTE The DMS and Registry are internal components of Microcosm accessed by other components such as viewers and filters. They are not visible on the desktop as icons, but are accessible to the user via the *Select a Document* window and *Registry Viewer* (which is accessed from the configuration program when you log-on as the system administrator).

3 Installing Microcosm Pro

In this chapter

- **Hardware and Software Requirements**
 - **Existing Applications**
 - **Using the Setup Program**
 - **Microcosm WIN.INI Settings**
 - **Changing the Microcosm Key**
-

3.1 Hardware and Software Requirements

To install and use this version of Microcosm, you need an IBM-PC compatible computer running Windows 95, Windows 98 or Windows NT or later. The recommended minimum specification includes:

- A 486 processor
- 16 megabytes of memory
- 50 megabytes of hard disk space (for a full authoring version).

NOTE If Microcosm is to be run on diskless workstations then 16 megabytes of memory are required to avoid excessive paging across the LAN.

NOTE Performance is improved by enhancements to the requirements listed above. Extra hardware to enable the integration of sound and video may be required.

3.2 Retaining Existing Applications and Settings

Already existing applications will be retained when you install a new version of Microcosm Pro, with one exception. The default installation (the *typical* option) will *overwrite* the existing sample application (normally Caerdroia) but will *retain* any user settings. It will also overwrite the existing application list so that so that you will need to create a new list of current applications. The *compact* install option will not overwrite your sample application, and the *custom* option will allow you to remove previous user settings and to retain the existing application list.

3.3 Using the Setup Program

Before you start the installation.

➔ Write down the Serial Number on the CD-ROM. You will need this during the installation process.

➔ Insert the Microcosm Pro CD-ROM in the CD-ROM drive.

When you load the CD-ROM into the CD drive, Microcosm Pro should start automatically. (If it fails you can Run the Setup program).

If you do not wish to install Microcosm Pro:

➔ Click on **Exit**

To install Microcosm Pro:

➔ Click on **Install Microcosm**

The Setup program will start. There are a number of progress messages and dialogues in which you are invited to supply information. In many cases you will be able to accept the default values.

Welcome

➔ Please read this notice carefully.

NOTE You can stop the Setup program at any time by pressing the F3 key on the keyboard.

➔ If you wish to continue click Next

Product Key

➔ You must now enter your name, organisation and the Product Key printed on the CD-ROM. If you do not have a product key, please contact Multicosm on +44 1703 767678

➔ Click Next

All the files will be loaded from the CD-ROM. A Gas Gauge at the bottom of the screen will tell you how the installation is proceeding.

Microcosm Pro program directory

You will be asked you to specify a directory into which Microcosm program files should be installed. The default is `c:\Program Files\McmPro`. The drive can be changed to any drive known to the system. The directory can be new or can already exist. If you specify a new directory then the installation will be a completely new Microcosm. If the directory already exists, this installation will update the existing Microcosm.

➔ Change the directory if necessary, and continue

Microcosm Application Directory

You will now be asked for the directory in which Microcosm Applications should be installed. The default is `C:\McmApps`.

➔ Change the directory if necessary, and continue

Installation options

You will now be offered three types of installation; **Typical**, **Compact** or **Custom**.

➔ If you choose **Typical**, Microcosm will be installed with all the available sample applications. (Typically the Caerdroia application). If you have an application already installed in a location where Microcosm is about to install sample application, you will be asked whether to overwrite it. If you choose not to, you will be able to unselect that application from the list, or press Back to change the applications directory.

➔ If you choose **Compact** on the next screen, Microcosm will be installed on its own, with no additional applications.

➔ Choosing **Custom** will yield a number of other dialog boxes.

⇒ The next screen allows you to choose whether or not to install Microcosm and which sample applications to install. (Microcosm will warn you if you are about to overwrite an existing application, so that you can rectify your selection).

⇒ The **Settings** screen comes next. It allows you to specify whether you want your existing user settings (personal linkbases, docuverse or viewer settings) to be overwritten or preserved. Similarly the old applications list, can be kept or dropped.

⇒ If you choose **install viewer files for web download**, users browsing to your hypertext applications over the World Wide Web using Netscape or Internet Explorer, will be able to download a Microcosm viewer (plugin) from your computer to see your work.

→ Just press Next and watch microcosm install itself.

Microcosm will now be installed and ready to run. A sample application called Caerdroia, about mazes and labyrinths, is provided for you to explore the features of the system. Refer to **Discovering Microcosm: A Tutorial** for an overview of the features of Microcosm.

3.4 Microcosm WIN.INI Settings

The only Win.ini that Microcosm will attempt to retain is the Autorun setting for the installation CD. If this is not successfully stored or retained then the CD will always Autorun on insertion.

Microcosm will also attempt to install a couple of lines for the re-distributable Toolbook viewer which it uses to view Toolbook files. If it fails to store or retain these lines the Toolbook viewer will not work, but no other aspect of Microcosm will be affected.

3.5 Changing the Microcosm Key

When you installed Microcosm you were asked to provide a key for the installation of Microcosm. This key was provided by Multicosm and identifies the particular customer and date of release. Sometimes you may need to change this key (for example if the key you were provided with originally was time expiring and is about to expire).

The Security Wizard (accessed by logging in to the configuration program as System Administrator) will allow you to alter your key, or to enter a new key.

This is a simple wizard, which only requires one entry - the new key!

Note	If the key you enter is invalid it will be ignored.
Note	If the current key becomes invalid (for example, because it has already time expired) then Microcosm will prompt you to enter the new key at the next time that you attempt to login. If you do not own a valid key you will need to contact Multicosm.

4 The Microcosm Configuration Program

In this chapter

- **Microcosm Configuration Program**
 - ♦ Configuration as Microcosm System Administrator
 - ♦ Configuration as User or Application Owner
 - **Microcosm Configuration Summary; How to ...**
-

4.1 Microcosm Configuration: Overview

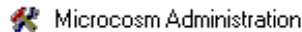
The *Microcosm Configuration Program* (Maintain.exe) will only start if Microcosm is **not** running.

The *Microcosm Configuration Program* can be started in two ways.

- As the Microcosm Administrator
- As a regular user or application owner

4.1.1 As the Microcosm Administrator.

In the Microcosm start menu there is a shortcut to Microcosm Administration.



- Choose this option. It will allow you to log-on as the system administrator by offering the following login screen.

*Administrator
Login*

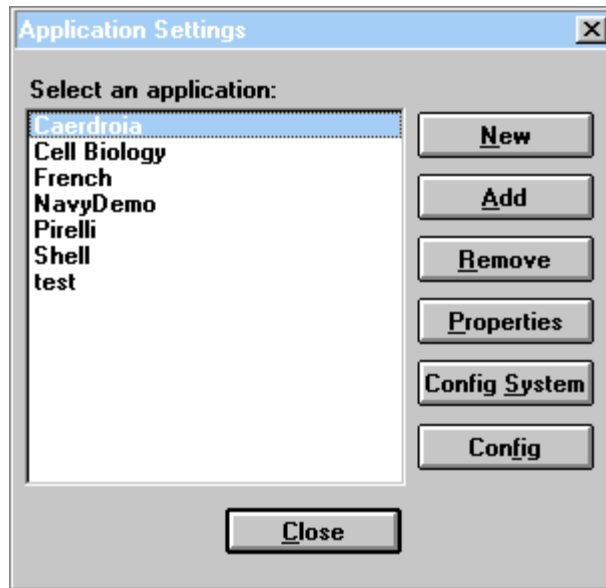
A screenshot of the "Microcosm Login" dialog box. It has a title bar with "Microcosm Login" and a close button. Inside, there are three sections: "Login Level" with two radio buttons, "User" (selected) and "Application"; "Users" with a dropdown menu showing "administrator"; and "Password" with an empty text field. At the bottom are "OK" and "Cancel" buttons.

- Maintain the User Setting. By default there is no password; leave the password field blank, and press OK.

Note: If the Administrator logs in with the Application Setting, then this will allow the administrator to behave as if they were the owner of the given application. The administrator will only be offered the same tools and permissions with those tools as the owner of the application would be offered.

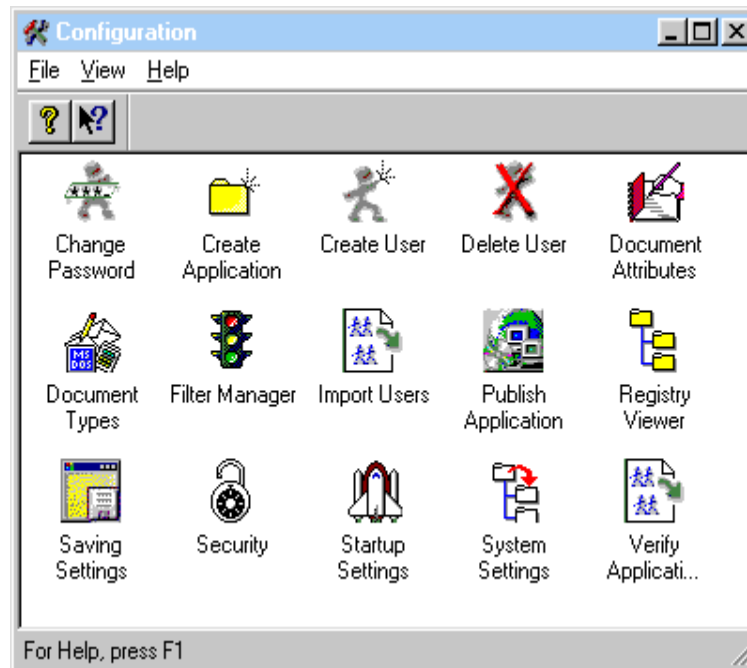
You will now be offered the Application Setting Dialog, from which you can choose to edit only the system settings (Config System) or the selected Application (Config).

*The Application
Settings Dialog*



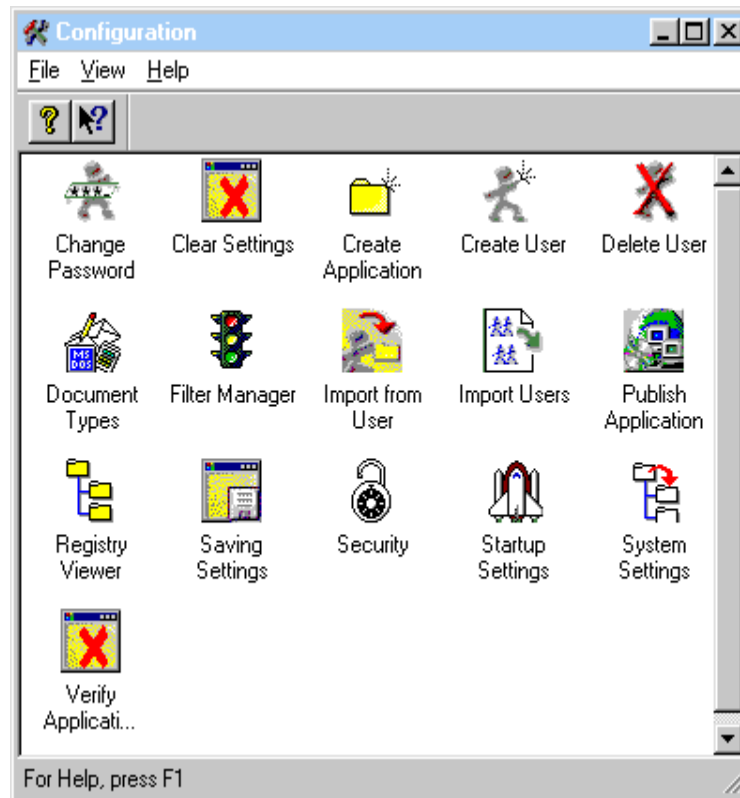
If you select to configure the system (**Config System**), you will be offered the following wizards which will allow you to make changes to the system settings.

*The system
configuration
wizards*



Whereas if you select to configure an application (select the application from the application list and choose config, you will be offered the following wizards, which will give you the ability to configure all aspects of the system and the selected application.

*The application
and system
configuration
wizards*



4.1.2 As a Microcosm User or Application Owner

The above sub-section described how you might get to the configuration program as the Microcosm Administrator. In a shared networked Microcosm system, it is possible that you might not have administrator's privileges. In this case you will need to login as either a regular user or as the owner of an application. In either case

➔ Click on **Start, Programs** then **Microcosm Pro**

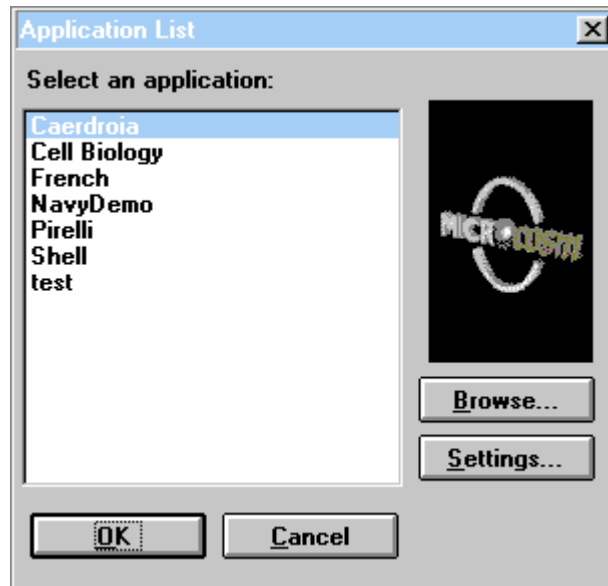
In the list of Microcosm components

➔ Click on **Microcosm Pro Login**

➔ Login, either as a user, or as the application owner

You will now see the application list;

The Application List

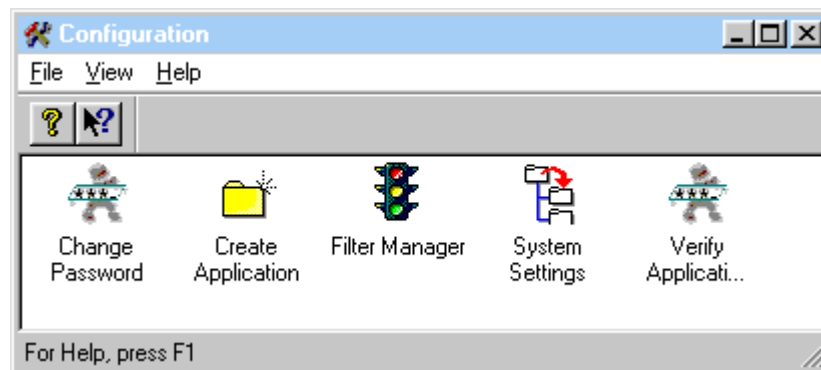


➔ Select an application and press **Settings**

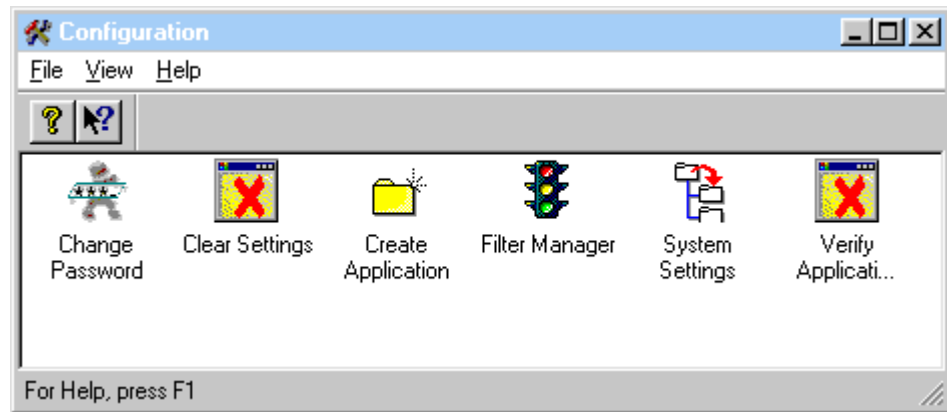
You will be offered an application list, from which you may choose to **Config User** (change your user settings only) or **Config** (the selected application) in which case you may configure your user settings and your user settings for the selected application.

Note: If the Settings option is not available to you in the Application List, this will be because you are not an authoring user. Only the system administrator may change this.

Config User Wizards

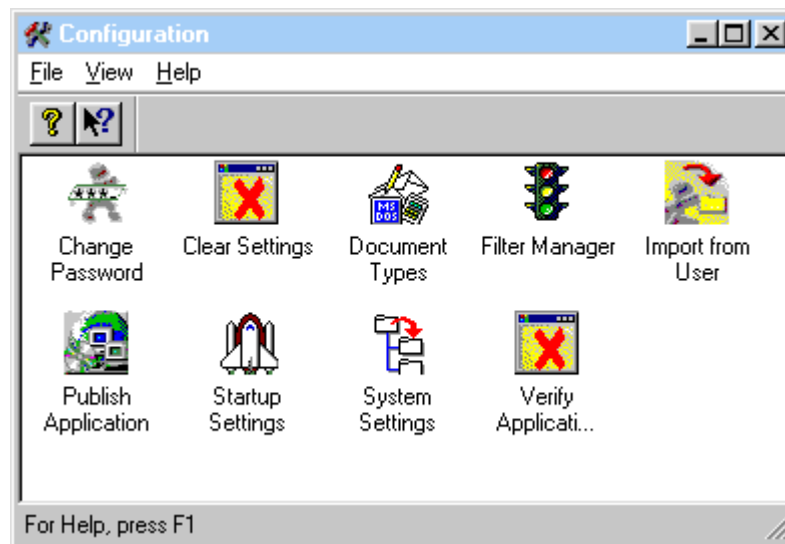


*User's Application
Configuration
Wizards*



Whereas if you logged in as an application owner and selected **Config** you will be offered wizards that allow you to make changes to this application's settings.

*Application
Owner's
Configuration
Wizards*



4.2 Microcosm Configuration Summary; How to...

How to...	See
Start the Microcosm Configuration Program as a user, as an application owner or as the system administrator	The Microcosm Configuration Program Overview
Create a new Microcosm Application	The Create Applications Tutorial
Index An Application for Computed Linking	Utilities
Install Microcosm Pro	Installing Microcosm Pro
Install Microcosm or Microcosm applications on a network for shared use	Networks
Install Microcosm applications for use over on the World Wide Web	Publishing Applications in the Creating Applications Tutorial.
Install Microcosm for use on a CD	Publishing Applications in the Creating Applications Tutorial.
Manage the application list	Adding and Removing Applications
Use the Change Password Wizard	User Management
Use the Clear Settings Wizard	Viewer Settings
Use the Create Application Wizard to create a new Microcosm application	The Create Applications Tutorial
Use the Create User Wizard	User Management
Use the Delete User Wizard	User Management
Use the Document Types Wizard to make new types of document	Documents
Use the Filter Management Wizard to manage the installed filters (linkbases etc).	Filter Chain
Use the Import From User Wizard to promote settings from a user to an application	Application Management
Use the Import Users Wizard to create multiple user accounts	User Management
Use the Publish Application Wizard to publish applications to CD and the World Wide Web	Publishing Applications in the Creating Applications Tutorial.
Use the Registry Viewer Wizard to view and alter the internal Microcosm	Registry

system, application and user settings.	
Use the Saving Settings Wizard to determine which settings Microcosm will save when you close a document.	Viewer Settings
Use the Security Wizard to change the Microcosm key	Installing Microcosm
Use the Startup Settings Wizard to say which documents will be displayed at start-up.	StartUp
Use the System Settings Wizard	Settings
Use the Verify Applications Wizard to check that an application is well formed.	Application Management

5 Microcosm Startup

In this chapter

- **StartUp: Overview**
 - **Startup Documents**
 - **Startup System Settings**
 - Auto Application, User and User Password
 - Filter Manager
 - Users Home Directory
-

5.1 Microcosm Startup: Overview

You can set Microcosm so that, each time it is started, a number of actions are taken automatically. The important feature that you would normally wish to set is the document or documents which will be displayed when Microcosm starts - the **startup documents**. These options are accessed from the **Startup Wizard** within the configuration program.

5.2 Startup Documents

Startup Documents are automatically shown when Microcosm starts. There can be **application startup documents** (documents that will be displayed automatically when that application starts) and **system startup documents**, that will be displayed when any Microcosm application starts (in addition to any application startup documents). If there are no startup documents then Microcosm will display the **Select a Document** Dialog box (unless this option has been disabled).

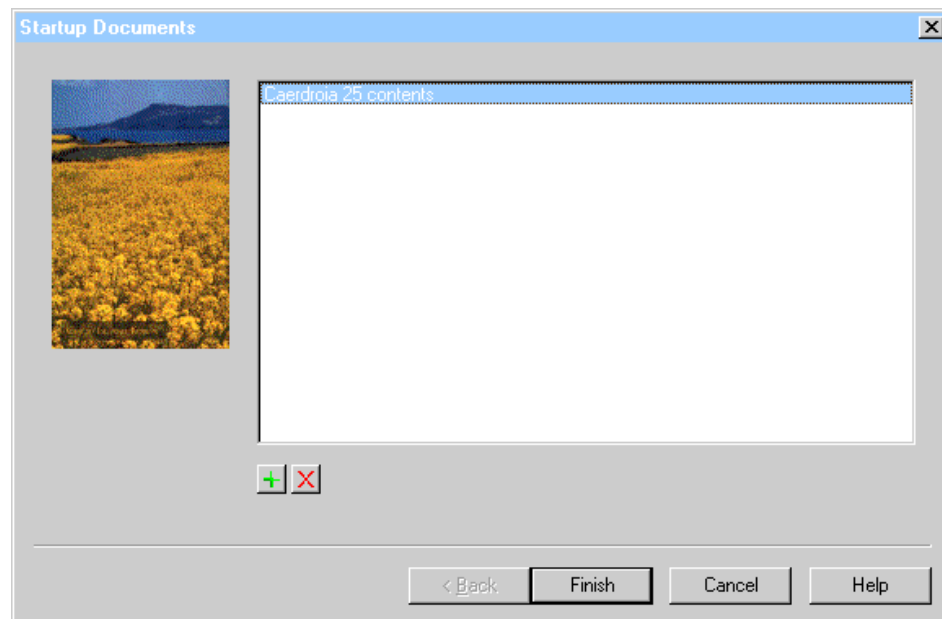
- If you wish to set the application startup documents you must logon to the configuration program as the application owner. If you wish to change the system startup documents then you must logon as the system administrator (See “The Microcosm Configuration Program”)





Startup
Settings

- Click on the **Startup wizard** in the *Microcosm Configuration* window

*Microcosm
Configuration:
Startup Documents*



In this example, the document `Caerdroia 25 contents` has been selected as the Startup document for the `Caerdroia` application.

Pressing the green  button to gain access to the document list to add new documents, or the red  button to remove the selected document.

If you logged on as the system administrator you will be offered access to the system startup settings also.

5.3 Startup System Settings

On the whole, these settings should not be changed!

◆ Auto Application

Specify an application that you wish to automatically select when Microcosm starts. This application will always be selected automatically and the user will not be given access to the application list. This application will override the application given in any command line parameters to Microcosm.

➔ Choose an application from the list in the drop-down menu

NOTE The application must already have been created. The selected application will be started only if **Auto User** is also specified

◆ Auto User

Specify a user with which to start up automatically.

➔ Choose a user from the list in the drop-down menu

NOTE The user must have already been added to the system

◆ Auto User Password

Type the password that belongs to the Auto User.

NOTE If **Auto Application**, **Auto User** and **Auto User Password** are all specified, Microcosm will start without presenting the log-in dialogue.

◆ Filter Manager

You can specify an alternative program to use as the Filter Manager.

➔ Click on the **Change...** button and select a .exe file from the dialogue box.

OR

➔ Type a full pathname for the .exe file

NOTE Unless you are developing your own components for Microcosm, you should **not** change this setting as Microcosm will cease to function properly.

◆ Users Home Directory

Microcosm holds information about each user and it is possible to specify the directory under which **all** users' settings are stored. You may wish to do this if you are installing Microcosm on a read-only server and want to allow users to create

their own linkbases. In this case you could specify that the Users Home Directory is held on local, writable storage.

➔ Click on the **Change...** button to select a directory from the dialogue box

OR

➔ Type a full pathname for the directory

6 Users

In this chapter

- **Adding a New User**
 - **Removing an Existing User**
 - **Changing the Password of a User**
 - **Adding Many New Users**
-

6.1 Adding a New User

- ➔ In order to register a new User you should logon to the configuration program as the system administrator (See “The Microcosm Configuration Program”)



- ➔ click on the Create User Wizard *Create User* in the *Microcosm Configuration Program* window.

*Microcosm
Configuration:
Create User
Wizard*

Create User

Please enter the details for the new user.

The user ID and password must be remembered at login time.

Real Name

User ID

Password

Confirm Password

< Back Next > Cancel Help

- ➔ Enter the new user’s Real Name, e.g. John Smith.
- ➔ Enter the new user’s ID., e.g. jsmith. This will be the login name, and the name of the directory allocated to this user in the user area.
- ➔ Enter the password for the user. For security, each character you type is displayed as *
- ➔ Enter the password again to confirm that you have typed it correctly.
- ➔ Press Next, and you will see the final screen which has a checkbox labeled **User Is an Author?** Putting an X here indicates that the user will be an author.

Note: An authoring user will be allowed their own linkbase, annotations, and docuverse, and will be able to create new applications. Databases for these will be created automatically by the wizard.

- ➔ Click on **Finish**

The new user will be added to the user information in the Microcosm Registry. An empty directory with the name of the new user will be created below the *users* directory.

If the message *Could not create user directory* appears, then there may already be a directory with the name of the new user. Either use a different user name, or use the Windows File Manager to delete the existing directory.

6.2 Removing an Existing User

To remove an existing user from the Microcosm system:

- ➔ In order to remove an existing User you should logon to the configuration program as the system administrator (See “The Microcosm Configuration Program”)



- ➔ click on the Delete User Wizard **Delete User** in the *Microcosm Configuration Program* window.

- ➔ You need to identify the login id of the user you wish to remove. The system will display the real name of the selected user. When you are happy press the **Finish** button.

That user will no longer be able to sign onto Microcosm.

NOTE When a user is removed, the user directories in the Windows File System are not deleted.

6.3 Changing the Password of a User

Which passwords you will be able to change will depend how you logon to the configuration program. (See “The Microcosm Configuration Program”).

To change	Logon Method
Your Own Password	Logon, then choose Config User from the Settings screen.
Your Own Application Password	Logon as the application then choose Config from the Settings screen.
Any Users Password	Logon as the System Administrator then choose Config System from the Settings screen
Any Application Password	Logon as the System Administrator, select the appropriate application and choose Config from the Settings screen.



- ➔ click on the Change Password Wizard **Change Password** in the *Microcosm Configuration Program* window;

- ➔ Select the User or application whose password you wish to change;

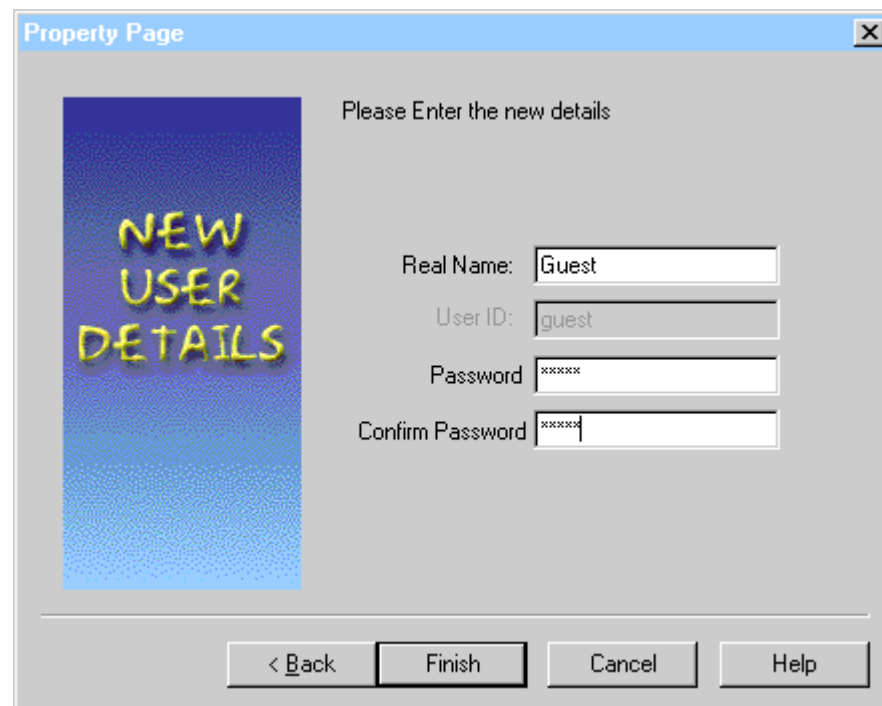
Selecting the user
whose password
will be changed



The 'Change Password' dialog box has a blue title bar and a grey background. On the left is a blue vertical rectangle with the text 'SELECT USER' in yellow. To the right, there is instructional text: 'Please select the name for which you wish to change the password. Unless the password box is greyed out you should enter the old password.' Below this, there are two input fields: 'User ID:' with a dropdown menu showing 'guest' and 'Real Name:' with a text box containing 'Guest'. At the bottom are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- Press Next;
- Type the new password and then the new password again to confirm that you have typed the new password correctly.

Microcosm
Configuration:
Change Password



The 'Property Page' dialog box has a blue title bar and a grey background. On the left is a blue vertical rectangle with the text 'NEW USER DETAILS' in yellow. To the right, there is instructional text: 'Please Enter the new details'. Below this, there are four input fields: 'Real Name:' with a text box containing 'Guest', 'User ID:' with a text box containing 'guest', 'Password:' with a text box containing 'xxxxxx', and 'Confirm Password:' with a text box containing 'xxxxxx'. At the bottom are four buttons: '< Back', 'Finish', 'Cancel', and 'Help'.

- When you have entered and confirmed the new password correctly, the **Finish** button will appear.

6.4 Adding Many New Users

In some cases it will be necessary to add several users to the Microcosm system.

Rather than add each user individually, you can add them all in one go. To access this functionality you will need to logon as the system administrator (See “The Microcosm Configuration Program”)

- ➔ Create an ASCII text file containing all the user names, user directory names and passwords.

The file must have one line per user, and each line must be in the following format:

```
USER NAME , DIRECTORY , PASSWORD , AUTHOR , REAL NAME
```

If any of the parameters are missing, the following defaults are applied:


Missing Item	Default
User Directory Name	User Name
Password	User Name
Author	No
Real Name	User Name

Note An example .lst file containing comments, and called `users.lst` with comments is provided with Microcosm and is stored in the Microcosm BIN directory.

- ➔ Save the file with the .lst extension in a convenient place in the Windows File System.



- ➔ click on the Import Users Wizard `Import Users` in the *Microcosm Configuration Program* window.
- ➔ In the first Window, enter the path and name of the (.lst) file containing the list of users. And press **Next**.
- ➔ The following screen will appear which allows you to edit the details.



Make Changes

User ID	Password	Directory	Author	Real Name
Name1	Name1	Name1	No	Name1
Name10	Pass10	Name10	NO	Name9
Name2	Name2	Dir2	NO	Name2
Name3	Pass3	Dir3	NO	Name3
Name4	Pass4	Dir4	Yes	Name4
Name5	Pass5	Dir5	Yes	Name4
Name6	Pass6	Name6	Yes	Name6
Name7	Pass7	Name7	NO	Name7
Name8	Name8	Name8	Yes	Name8
Name9	Name9	Dir9	Yes	Name9

< Back Finish Cancel Help

- ➔ Press **Finish**. The users specified in the list will be added to the users known to Microcosm, and appropriate user docuverses, linkbases and annotation files will be created within the user directories.

7 Settings

In this chapter

- **Settings: Overview**
 - **Clipboard Options**
 - **Computed Links Filter**
 - **Status Window**
-

7.1 Settings: Overview

This *Microcosm Configuration Program* wizard allows you to make changes to the way in which the following components work:

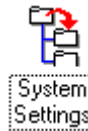
- **Clipboard options.** It is possible to set Microcosm so that, if a user copies data to the clipboard, that data is used for any of the link actions. In addition, the Clipboard Options can be used to set the Retain Select Status of the **Select a Document** window.
- **Computed Links filter.** The Computed Links filter requires an index file and can also have a file of special words (Stop and Cut words). The location of these files can be changed.
- **Status Window** indicates what is going on within the Microcosm system. The settings allow the window to be show a number of different types of information.

The Microcosm Registry holds all the information about the Microcosm system. These settings can be held at three different levels in the Microcosm Registry and should be seen as a hierarchy, with System at the top and User at the lowest level.. **System** settings apply to all the applications and users, **Application** settings apply only to the specified applications and **User** settings determine the settings for a particular user when using a given application.

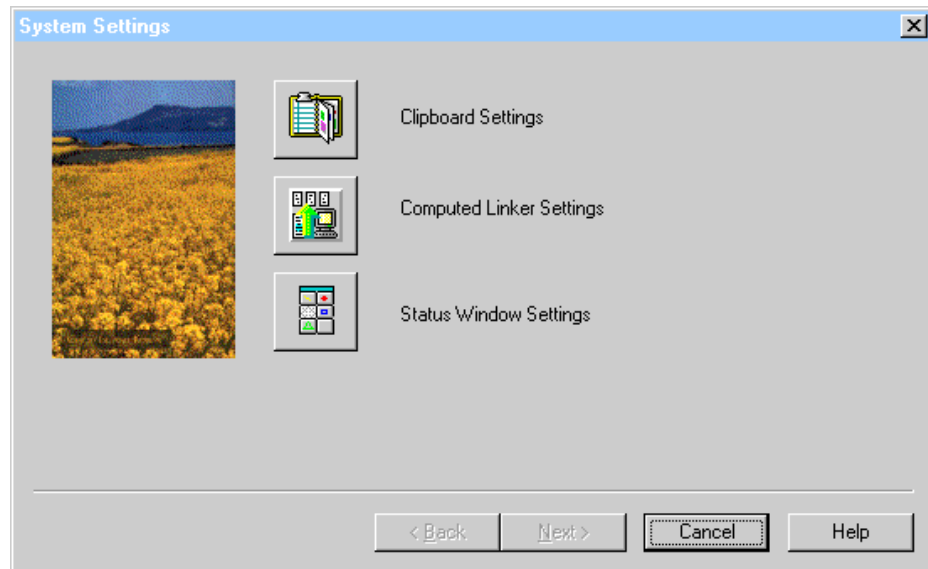
The way that you login to the configuration program determines which settings will be changed

To Change:	Login
Microcosm Settings for the whole System	Login as Administrator and choose Config System from the Settings screen
Settings for an application to override the system settings	Login as the application owner, and choose Config from the settings menu
Settings for a user when using a particular application to override the above settings.	Login as the user, choose the desired application and choose Config User from the Settings menu.

In order to make changes to these components:



➔ click on the Ssystem Settings wizard in the *Microcosm Configuration* window.



➔ Click on the component you want to configure.

The window for that component will appear. When you have made the required changes, click on **Finish**.

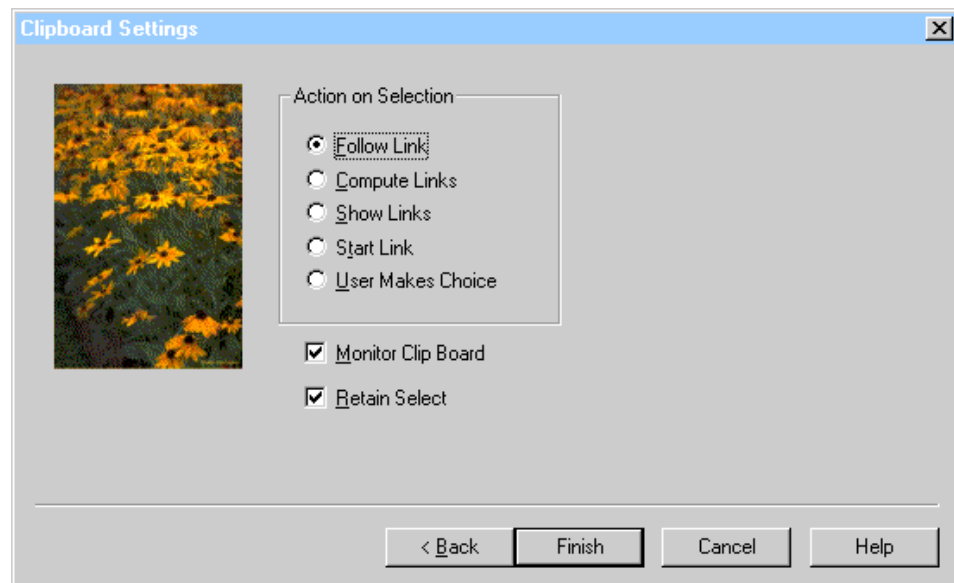
NOTE When using this feature it is important to remember the hierarchical nature of the Registry and that the Registry is scanned for settings in the direction User, Application and System. It is common to make a setting (e.g. to monitor the clipboard) and for tis to be ineffective. This is because there is an equivalent setting lower down the hierarchy. Thus, if you set Microcosm, at the System level, to monitor the clipboard and the User has a setting to not monitor the clipboard, the system level setting will not be effective for this user.

7.1.1 Clipboard Options

It is possible to set Microcosm so that, if a user copies data to the clipboard, that data is used for any of the link actions.

➔ Click on **Clipboard Options** icon.

*Settings:
Clipboard Options*



◆ **Retain Select**

Retain Select is used to ensure that the Select a Document window remains open when a document is selected for viewing. The option can be set at the User level from the Microcosm menu when Microcosm is running. See the Select a Document window in the Microcosm User Guide.

◆ **Monitor Clipboard**

Monitor Clipboard is used to set Microcosm to take special actions when data is copied to the clipboard. The option can be set from the Microcosm menu when Microcosm is running. See The Clipboard: Following Links in the Microcosm User Guide.

If the clipboard is being monitored, every time data is placed on the clipboard one of the Clipboard Actions is taken.

Follow Link, Compute Links, Show Links, Start Link

The data on the clipboard is treated as a selection and the specified Link Following Action is initiated.

User Makes Choice

If this option is set (with a X), when data is copied to the clipboard the Select Action window will appear.

*User Makes
Choice:
Select the required
action*



The user must then select which action to take.

7.1.2 Computed Links Filter

You can specify where Microcosm is to find the files used by the Computed Links filter.

Stop Words are words that are removed from a selection before the selection is searched for any links. The words are defined in the **Stop Word** file. When Microcosm is first installed the Stop Word file is `words.stp` in `mcmpro\bin`.

The **Cut Word** file contains a list of words which effect the way in which Phrases are identified. If a word in a Phrase appears in the Cut Word file, that word effectively ends the phrase. When Microcosm is first installed the Cut Word file is `words.cut` in `mcmpro\bin`.

The **Index File** field is reserved for future use. You should not change this. At present index files are always called `INVERT1.TAB` and are stored in the application's `system\indexes` directory.

- ➔ Click on **Computed Links** option
- ➔ Type the full path name of the location of the Stop Word file and the Cut Word File or click on **Browse...** button and identify the file in the Open dialogue box.
- ➔ Click on **Finish**

7.1.3 Status Window

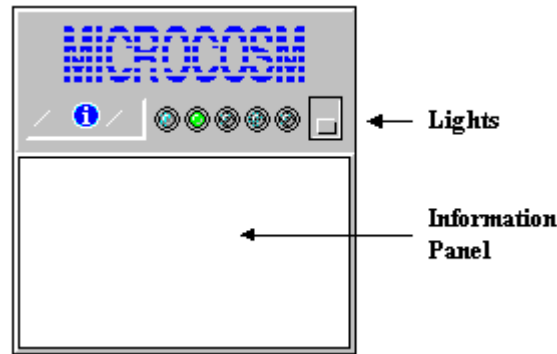
The **Status** window gives information about the state of Microcosm and its associated processes. It can take up valuable screen real estate, and, as a result, you may wish to move it, show it at the minimum size or turn it off completely (It is turned off by default).


*Microcosm Status:
Minimum Size*



Microcosm is designed as a message passing system, with messages being processed by the chain of filters. The lights show the activity in the filter chain.

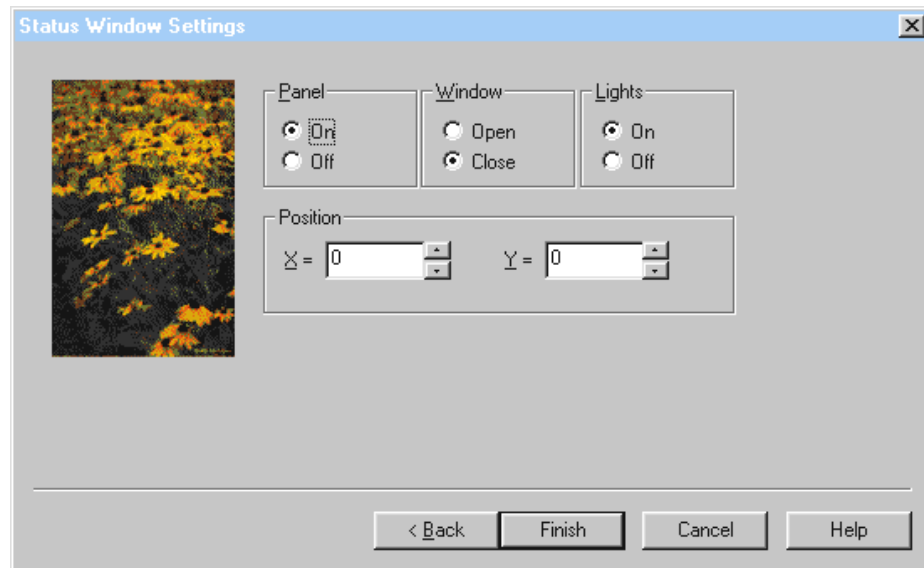
*Microcosm Status:
with the
Information panel*



The Information Panel can be turned on and off by clicking on the  button.

➔ Click on the **Status Window Settings** icon.

*Microcosm
Status: window
settings*



◆ **Panel**

On: **Status** window is visible while Microcosm is running

Off: **Status** window is not visible while Microcosm is running

◆ **Window**

On: **Information panel** is visible when Microcosm starts

Off: **Information panel** is not visible when Microcosm starts

◆ **Lights**

On: **Lights** are flashing green when Microcosm is idle. When Microcosm is doing something, the lights go solid red.

Off: **Lights** go solid red while Microcosm is doing something. Otherwise the lights are off.

◆ **Position**

X and Y screen (pixel) co-ordinates of the **Status** window. If the **Status** window is moved and then Microcosm is closed, the Window will open in that position when the next Microcosm session is started.

8 Microcosm Registry Editor

In this Chapter

- **Overview**
 - **Adding a new Branch to the Registry**
 - **Removing an Existing Branch from the Registry**
 - **Renaming an Existing Branch to the Registry**
 - **Adding a new Entry to the Registry**
 - **Removing an Existing Entry from the Registry**
 - **Changing an Existing Entry in the Registry**
 - **Importing and Exporting Branches**
-

8.1 The Microcosm Registry Editor: Overview

In the overview of the Microcosm System there is an introduction to the Microcosm Registry.

The Registry data is a database of all the information required for Microcosm to run correctly and is stored in coded form (i.e. it cannot be read by a text processor). Registries come in two parts; the **System Registry** is held in a file called `mcsystem.reg` which is located in the same directory as `microcosm.exe`. The **Application Registry** is held in a file with the (`*.mcm`) extension which will be in the root directory of each application. At run time the **application registry** is combined with the **system registry**.

NOTE The Microcosm Registry Editor allows you to change any part of the **System** or **Application Registry**. Other parts of the *Microcosm Configuration Program* provide access to all the settings you will need to change for normal use of Microcosm. It is recommended that the Registry is modified by this *Registry Editor* only if you are developing your own Microcosm components.

DO NOT make changes using this *Registry Editor* unless you are absolutely certain that you know what you are doing.

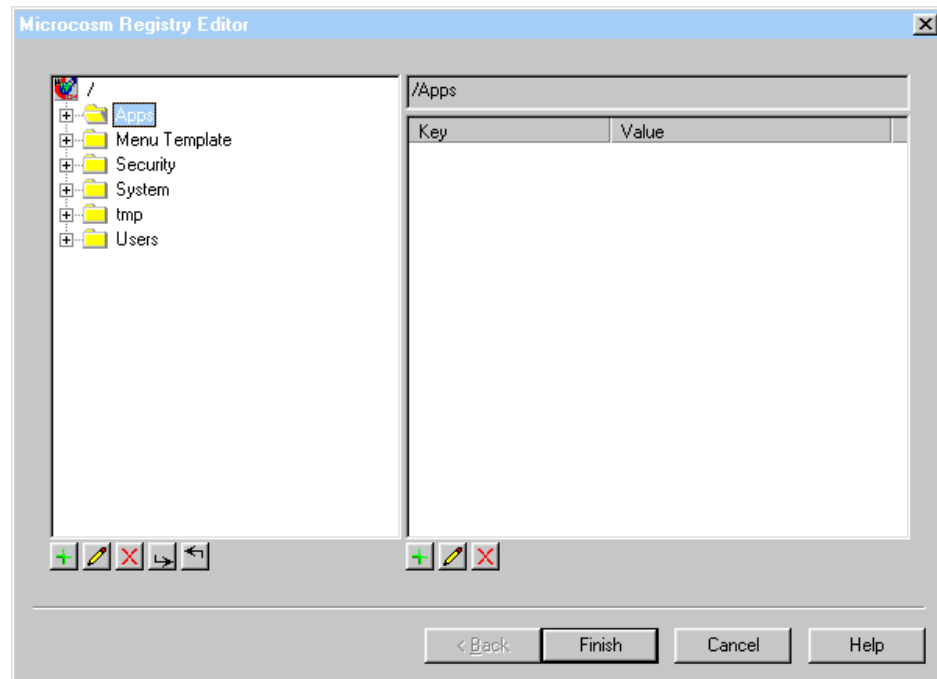
In order to view or change the Registry

- ➔ Logon to the configuration program as the system administrator (See “The Microcosm Configuration Program”). In the Application Settings Window, if you choose **Config System** then only the **System Registry** will be loaded, but if you select an application and press **Config** then both the **system registry** and **application registry** will be loaded. Changes to either will be saved back when you quit the registry editor.



- ➔ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

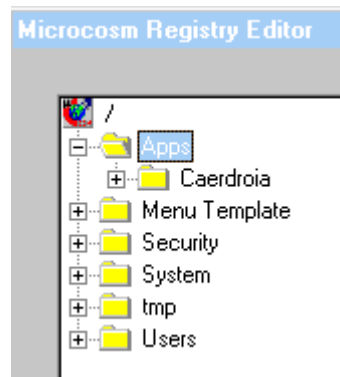
*Microcosm
Configuration:
Registry Editor
window*



The left hand pane contains the Registry hierarchy, each part of the hierarchy is known as a **Branch**. When a Branch in the left hand pane is selected (by a single click), the **Entries** associated with that branch are shown in the right hand pane.

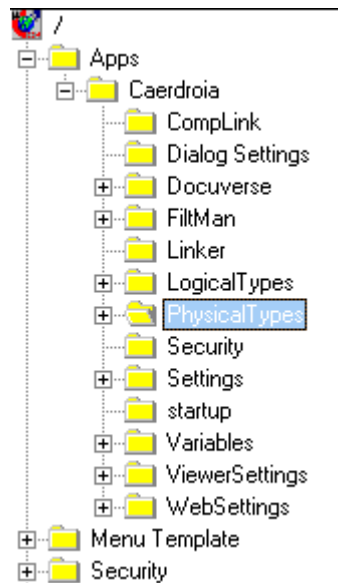
The Branches can be expanded by double clicking on any item. For instance, if you have the Caerdrioia application loaded, double clicking on Apps will expand the Apps Branch to reveal the lower level Caerdrioia branch.

*Registry Editor:
the hierarchy of
branches*



If you then double click on Caerdrioia, you will see the lower level Branches for that application.

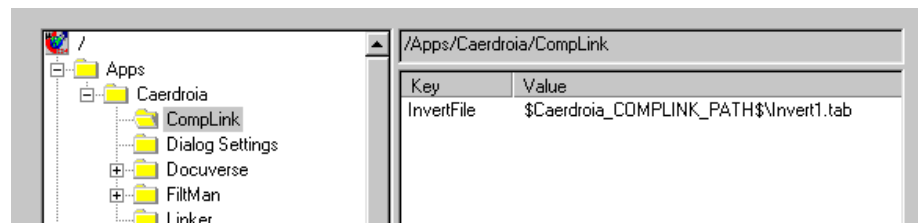
Registry Editor:
the expanded
hierarchy



A double click on an expanded branch will contract it.

The Entries associated with each Branch are shown in the right hand pane.

Registry Editor:
Branch Entry



In the example above, the CompLink branch has been selected. This branch has just one entry, defining the location of the Computed Links Index file.

8.1.1 Adding a New Branch to the Registry

To add a new branch to the Registry



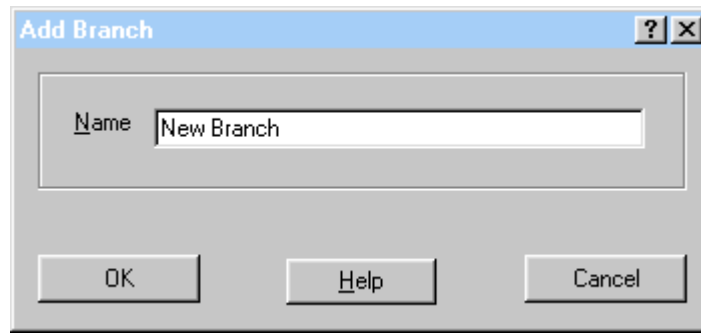
Registry
Viewer

➔ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

➔ Select the branch of the registry under which you want to create the new branch.

➔ Click the green  button under the left hand pane.



- ➔ Type the name of the new branch in the New Branch dialogue box and then click on **OK**.

In this example the new branch is called, imaginatively, New Branch.

The new branch will be added to the registry. If the selected branch has been already expanded, the new branch will be seen immediately. However, if the selected branch is a closed branch the new branch will not appear immediately. You must double click on the selected branch in order to see the lower level branch that has been added.


8.1.2 Removing an Existing Branch from the Registry

To remove an existing branch from the Registry



- ➔ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

- ➔ Select the branch of the registry you want to remove.
- ➔ Click on the red  button under the left hand pane.

You will be asked to confirm that you really wish to delete the branch

- ➔ Click on **OK**

The branch will be deleted from the displayed hierarchy of the registry. However, you will have to exit from the Registry Editor for the deletion process to be completed.

8.1.3 Renaming an Existing Branch in the Registry

To rename an existing branch in the Registry



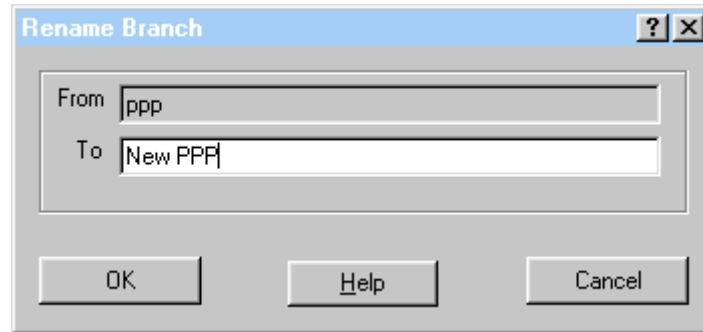
- ➔ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

- ➔ Select the branch you wish to rename.

➔ Click on the description button  under the left hand pane

*Registry Editor:
renaming branch*



➔ Type the new name of the branch and then click on **OK**.

In this case a branch ppp is being renamed to New PPP.

The branch will be renamed.

8.1.4 Adding a New Entry to a Branch of the Registry

To add a new entry in a branch of the Registry




➔ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

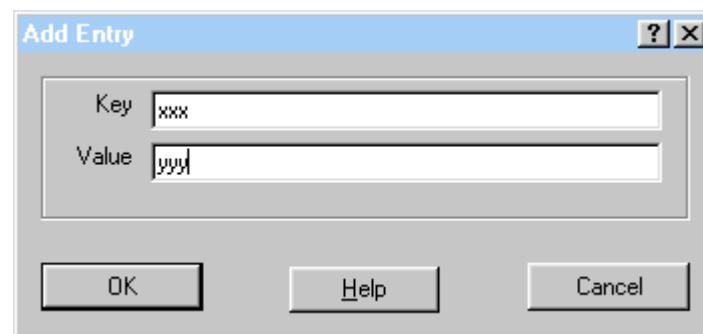
In the right hand pane of the **New Registry Editor**, an entry appears as a single line in the form

Entry Value

➔ Select the branch of the registry within which you want to create the new entry.

➔ Click on the green  button under the Entries (right hand) pane.

*Registry Editor:
Adding a new
entry*



➔ Type the name of the new entry in the Entry line and the value for that entry, in the Value line.

➔ Click on **OK**.

The new entry will appear in the Entries pane.

In the example above, the new entry will be xxx=yyy

8.1.5 Removing an Existing Entry from a Branch of the Registry

To remove an existing entry in a branch of the Registry




→ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

→ Select the branch of the registry from which you want to remove the existing entry.

→ Select the entry you want to remove.

→ Click on the red  button under the right hand Entry pane.

You will be asked to confirm that you wish to delete the entry.

→ Click on **Yes**

The entry will disappear from the right hand side of the window.

8.1.6 Changing an Existing Entry in a Branch of the Registry

To change an existing entry in the Registry



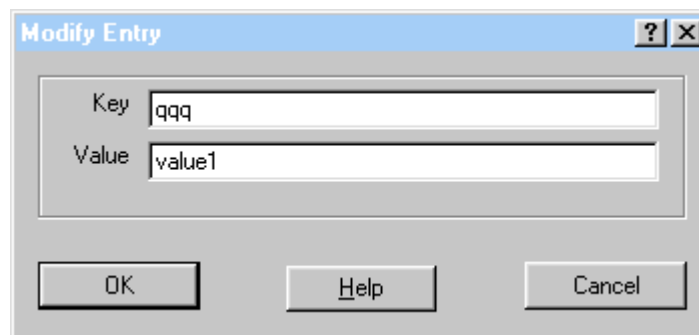
→ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

→ Select the branch of the registry from which you want to remove the existing entry.

→ Double-click on the entry you want to modify.

*Registry Editor:
modifying an entry*



In this example, the entry being modified is `qqq=value1`.

→ Type the changes for the Entry and/or its Value (you can change one or both of these items).

→ Click on **OK**

8.1.7 Importing and Exporting Branches

There are a number of circumstances in which it is desirable to process all or part of the Registry in an external (ASCII text) form, for instance:

- Moving or Copying a branch of the Registry. For instance, it may be necessary to move a set of settings developed by an author for a particular application to the application branch itself
- If parts of an application are being developed on a number of different systems, the various pieces of the Registry can be combined by exporting the relevant branches and then importing them into the system where the complete application is being built.

The exported branches are written to a text file in the form of an .ini file.

```
[Branch]
EntryName=EntryValue
```


◆ Exporting a Branch



→ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

→ Select the branch of the registry which you wish to export

→ Click on the export button  below the left pane.

→ In the **Save As** window, indicate where you wish the INI file to be placed and press “open file”.

◆ Importing a Branch



→ click on the Registry Viewer Wizard in the *Microcosm Configuration Program* window.

In the **New Registry Editor** window

→ Select the branch of the registry below which you wish to import the INI file.

→ Click on the Import Branch button .

→ In the **Open** window, say which INI file you wish to import.

9 Filters and the Filter Chain

In the Chapter

- Overview
 - The Filter Chain
 - Available Filters
 - Linkbases
 - Defining the Filter Chain
 - Defining the Available Filters
 - Create a New Linkbase
 - Create a New Annotation Database
 - Create a New Computed Link Index
 - Re-indexing a Computed Links Index
-

9.1 Filters and the Filter Chain: Overview

Filters are the processes which actually do the things that make Microcosm behave in its own particular way. If you wish to modify the way in which Microcosm behaves, then it is necessary to change the filters in some way.

The filters are arranged in a linear sequence known as the *Filter Chain* and the presence of filters and their ordering in the chain governs the way in which Microcosm behaves. The easiest way to change Microcosm behaviour is to modify the Filter Chain by moving filters into and out of the chain.

Messages generated by viewers are passed along the chain and messages generated by filters early in the chain can be received, and reacted to, by filters later in the chain. Messages received by the last filter in the chain are passed back to the viewers. Thus, the ordering of filters dictates how the system will behave, as some filters are designed to act in response to messages that arrive from other filters earlier in the filter chain and will fail to operate if they are not placed sensibly.

For example, the *Show Links* filter receives SHOW.LINKS messages and generates a series of FOLLOW.LINK messages which are processed by the *Linkbase* filter to produce DISPATCH messages. The *Computed Links* filter receives COMPUTE.LINK messages and generates DISPATCH messages. The *Result* filter receives DISPATCH messages and launches the required viewer.

The table below will help in understanding the best ordering of the filters:

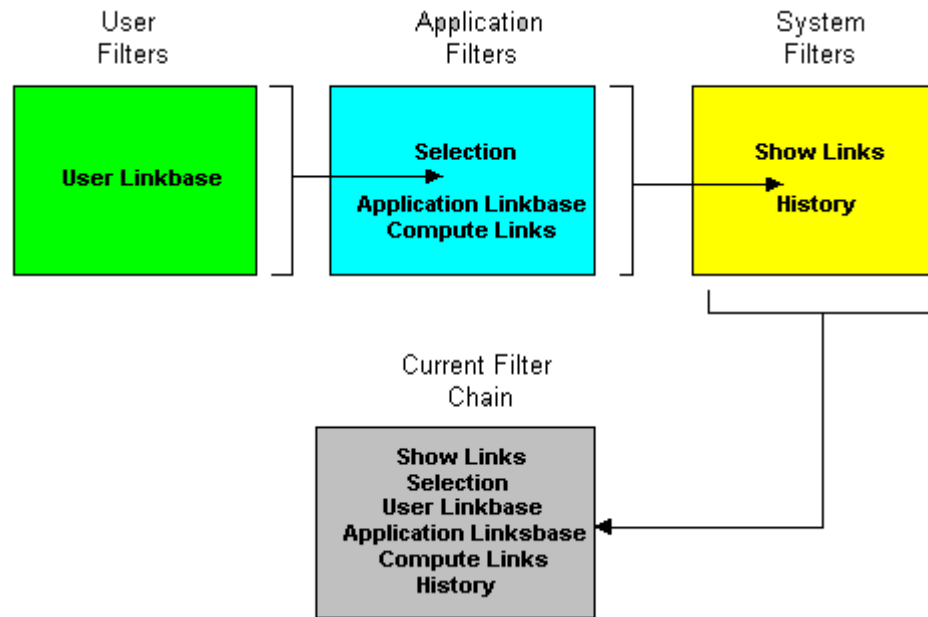
Filter	Positioning
<i>Link Maker</i>	This is the filter that creates links. It must be in front of any <i>Linkbase</i> filters otherwise links will not be saved in the linkbase.
<i>Selection</i>	Must be in front of any filter that makes use of text selection (<i>Computed Links</i> , <i>Show Links</i> , <i>Linkbase(s)</i> and <i>Link Maker</i> filters).
<i>Tour Engine</i>	Can appear anywhere in the Filter Chain
<i>Show Links</i>	Must be in front of <i>Linkbase(s)</i>
<i>Compute Links</i>	Must be in front of <i>Result</i>
<i>Linkbase(s)</i>	Must be in front of <i>Result</i>
<i>Result</i>	Must be after all filters which generate DISPATCH messages (<i>Linkbase(s)</i> , <i>Computed Links</i> filters) otherwise if more than one link is retrieved from a Follow Link action, all documents will be launched automatically

Filters that are to be used by Microcosm are defined in the list of Available Filters. These filters can then be selected to build the Filter Chain.

9.2 The Filter Chain

It is possible to create a Filter Chain which is specific to an application and user. Using the *Microcosm Configuration Program* Filter Manager, lists of filters are specified for the System, Application and User and are arranged in a hierarchy (there is a brief description of the hierarchy in the section about the Microcosm Registry). When the user logs in and chooses the application, the filters that have been defined for each of the three levels are integrated to form a complete Filter Chain:

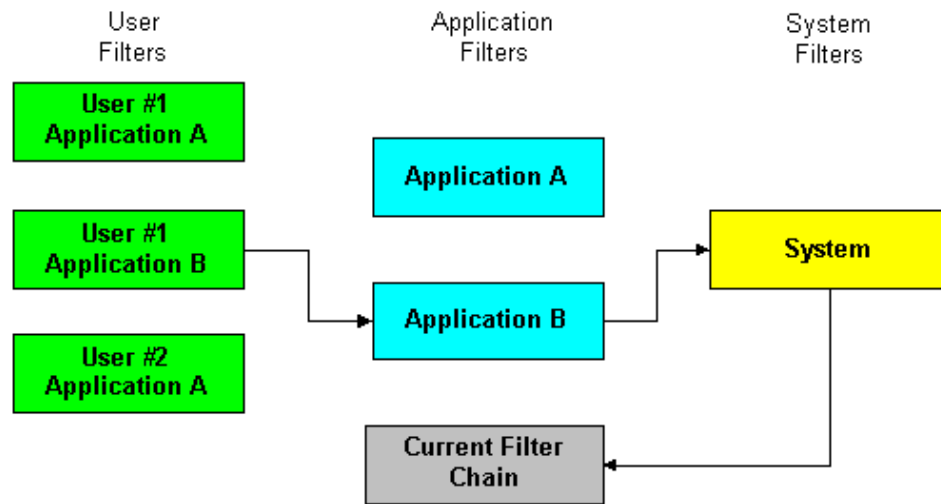
Generation of the filter chain from three levels of default filters



The Users filters are merged into the Application filters which are, in turn, merged into the System filters. The result is a complete Filter Chain. The Filter Manager in the *Microcosm Configuration Program* is used to define which filters to use at each level, and where to merge the various lists.

It is possible for a user to have a Filter Chain which is specific to a particular application. The *Microcosm Configuration Program*, can be used to define a set of Filters which will be used by a specific user for a specific application. When the Filters are merged the application is taken into account.

Generation of an Application and Use specific filter chain



In the diagram above, User #1 has logged in to use Application B. Microcosm merges the Filters for User #1, Application B and System to create the Filter Chain.

9.3 Available Filters

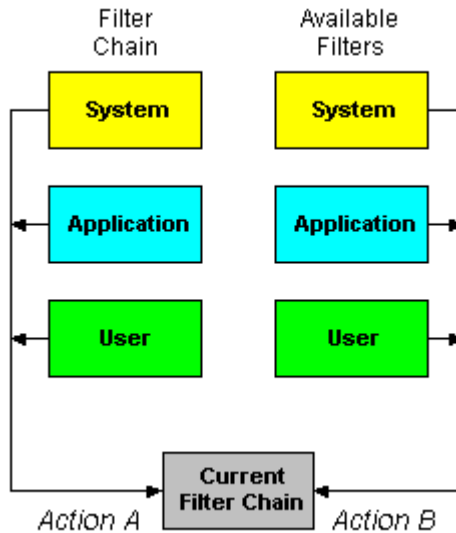
All Filters in an installation are defined in a list of Available Filters. A user can modify the way in which Microcosm is operating by moving Available Filters into the Filter Chain while an Microcosm is running.

Since the user has this power to modify the Microcosm system, an author should construct the list of Available Filters to match the type of user and application.

Suppose a filter is written that performs a very extensive and long running process such as performing some analysis of the documents that the user has looked at in the current Microcosm session. It would be inappropriate to have this special filter always present in the Filter Chain but it is possible for the user to move it into the Chain at the appropriate moment. To allow this to happen, the special filter is placed in the list of Available Filters but not in the Chain. While Microcosm is running the user can use the Filter Manager to move the special filter into the chain where it can perform the required processes.

As a further refinement, Microcosm can be set so that the special filter in the list of Available Filters can be seen only if a specific application is chosen, and can be further restricted to a specific user of that application.

The **Microcosm Configuration Program** allows you to specify which filters are to be included in the Filter Chain and also to specify a list of Available Filters from which the user can configure the Filter Chain.



In the diagram above, *Action A* is taken after the user has selected an application. *Action B* represents the user using the Filter Manager while Microcosm is running to add filters from the list of Available Filters to the Filter Chain.

9.4 Linkbases

One of the features of Microcosm that distinguishes it from other hypertext and hypermedia systems is that the links within and between documents are held separate from the documents to which they refer. The links are held in linkbases. Microcosm can be tuned for a particular system, application and user environments by selecting particular linkbases. More than one linkbase can be in operation at any time. For a Linkbase to be effective it must be included in the Filter Chain.

◆ Linkbase Files

Each Linkbase consists of three files, a **.ddf** file, a **.raw** file and a **.nix** file.

The **.ddf** (Data Definition File) file can have any name and be located anywhere in the File System, but probably is to be found in the same directory as the other Linkbase files, and with the same filename (but with the extension **.ddf**).

The **.raw** file contains all the link data. Whenever a link is created, the link data is placed in this file.

The **.nix** file is built by Microcosm and if it is missing, a new **.nix** file will be created when the Linkbase is read. This is what is happening when Microcosm displays a Gas Gauge saying “Building Indexes”. If many changes are made to the Linkbase (e.g. by creating or deleting links, or when using the Link Editor) the **.nix** file will be rebuilt. When this is happening the Gas Gauge will appear.

E.G. the **.ddf** file associated with the mazes Application Linkbase has the following contents

```
[Database]
RawFile=$Caerdroia_LINKBASE_PATH$\maze.raw
IndexFile=$Caerdroia_LINKBASE_PATH$\maze.nix
Description=Caerdroia Linkbase
DatabaseType=Linkbase
```

These files are built automatically when a Linkbase is created using the *Filter Manager Wizard* feature of the *Microcosm Configuration Program*, or when a new application is created using the *Create Application Wizard*.

◆ Multiple Linkbases

Microcosm allows any number of linkbases to be included in the Filter Chain when a Microcosm application is started. For instance, when Microcosm is first installed, the Caerdroia application has two linkbases, one for the Caerdroia application and one for the user guest. When guest signs on and chooses the Caerdroia application, both linkbases are included in the Chain.

When links are created, they are placed in the first linkbase in the Chain that is not read-only. If several sets of links (i.e. several linkbases) are required, then a linkbase for each set must be placed in the Filter Chain. For instance, it is normal to set up the Microcosm system such that when Microcosm is started there are no linkbases in the Filter Chain. When the user and application have been chosen, the system then includes a linkbase for the specific user together with a linkbase for the specific application. This facility allows Microcosm to have many applications, each with its own linkbase, and many users, each with their own linkbases.

The *Filter Manager Wizard* of the *Microcosm Configuration Program* is used to define the order of the linkbases in the Filter Chain, and to create new linkbases

9.5 Defining the Filter Chain

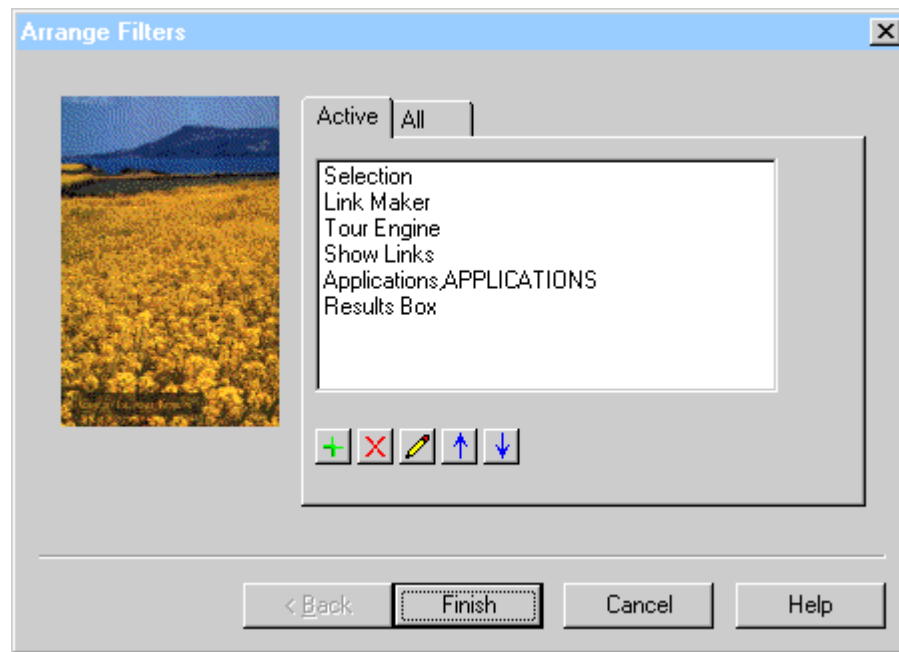
In order to define the Filter Chain and create the list of Active or Available Filters;



➔ click on the Filter Manager Wizard Filter Manager in the *Microcosm Configuration* window.

The list of Active and Available Filters that you see will depend on how you have logged on to the Configuration Program.

To Alter	Logon
System Filters	Logon as System Administrator and choose the Config System button in the application settings window.
Application Filters	Logon as the Application and choose the Config button from the application settings window.
User Filters for all applications	Logon as the User and choose the Config User button from the application settings window.
User Filters that apply only to one application	Logon as the User and choose the Config button from the application settings window.





Each list (at the System, Application and User levels) of filters is accessed and modified separately, as explained above. Defining the Active Filter Chain and list of Available Filters (All) is treated in exactly the same manner.


In the System List (as shown above) the line Applications, APPLICATIONS indicates the current position of the Merge Point (where the application filters will be placed). A similar line Users, USERS appears in the application filter list. The position of the Merge Point can be moved up or down the System and Application lists. There is no merge point when you are working on Available Filters.



◆ To Define the Filter Chain

Under the list of Active and Available Filters are a number of buttons.


The green  button allows you to add new filters to the currently selected list.

The red  button allows you to remove a filter from the currently selected list.

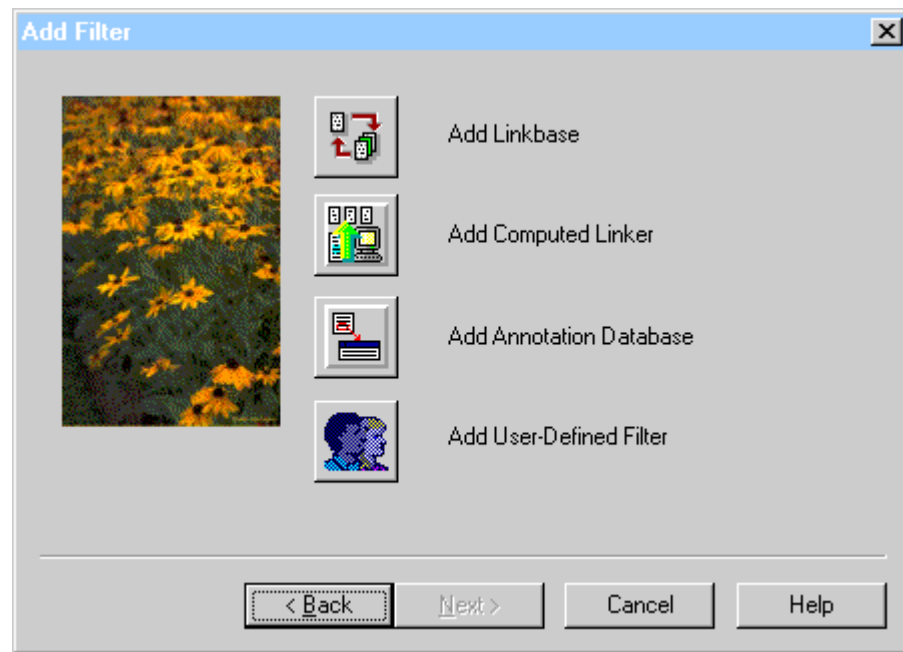
The description button  allows you to change the details of the currently selected filter

The Up  and Down  buttons allow you to change the position of a filter in the currently selected list.

◆ To Add a New Filter to a List

- ➔ Click on the green  add button in the relevant list. The following window will appear, which allows you to add new filters;

*Adding
Filters from the
Filter Manager
Wizard*




Further details of adding Filters are given in

- Create a New Linkbase
- Create a New Annotation Database
- Create a New Computed Link Index

◆ **To Delete a Filter from a List**

➔ Click on the filter you wish to delete from the relevant list.

➔ Click on the red  button

The filter will be removed from the list immediately. You will not be asked to confirm the deletion.

◆ **To Move a Filter from one List to another**

If, for instance, you wish to move a filter from the Application list to the System list, you must Add the filter to the System list and Delete it from the Application list.

NOTE You can have a filter in more than one list. However, when the lists are merged, there will be more than one copy of the filter in the Filter Chain. This will lead to unpredictable results.

◆ **To Move a Filter Up or Down a List**

➔ Click on the filter you wish to move in the relevant list

➔ Click on the Up  or Down  buttons under that list

◆ **To Move the Merge Point Up or Down a List**

➔ Click on the merge point (the dashed arrows indicate the points at which merges take place.) you wish to move

→ Click on the Up  or Down  buttons for that list.

NOTE If the system does not move your filter or merge point down, try moving the next lower filter or merge point up

9.6 Defining the Available Filters

Microcosm maintains two lists of filters at each of the System, Application and User levels. **Active Filters** and **Available Filters**. **Available Filters** (shown as the **All** Tab in the Filter Manager Wizard) are defined in exactly the same way as the active filters, but if a filter is not in the active list then it will not be loaded automatically at run time. Rather the user will be able to install it dynamically from the list of available filters in the run time Filter Manager.

9.7 Create a New Linkbase

New Linkbases should be placed in the User, Application or System list with which they are to be associated. Which list you work with is decided by the way you logon to the Microcosm Configuration Program.

In the example below, a new linkbase is being added to the **Active Filters** (Those that will be run when Microcosm starts) for the application `Caerdroia`.

→ Start Microcosm Configuration logging on as the **Application Owner** (See “The Microcosm Configuration Program”)

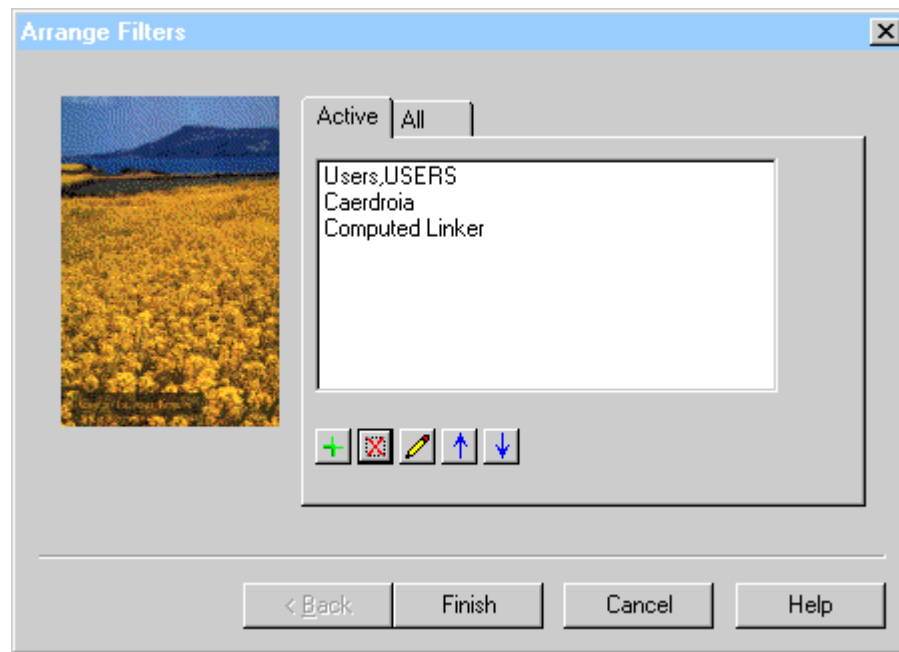
Note If you wish to add the linkbase to the user list then you must login as user, and if you wish to add it to the system list you must login as the system administrator. (See “Defining the Filter Chain”)


→ Start the **Filter Manager Wizard**.

→ Make sure the “Active” Tab is chosen.

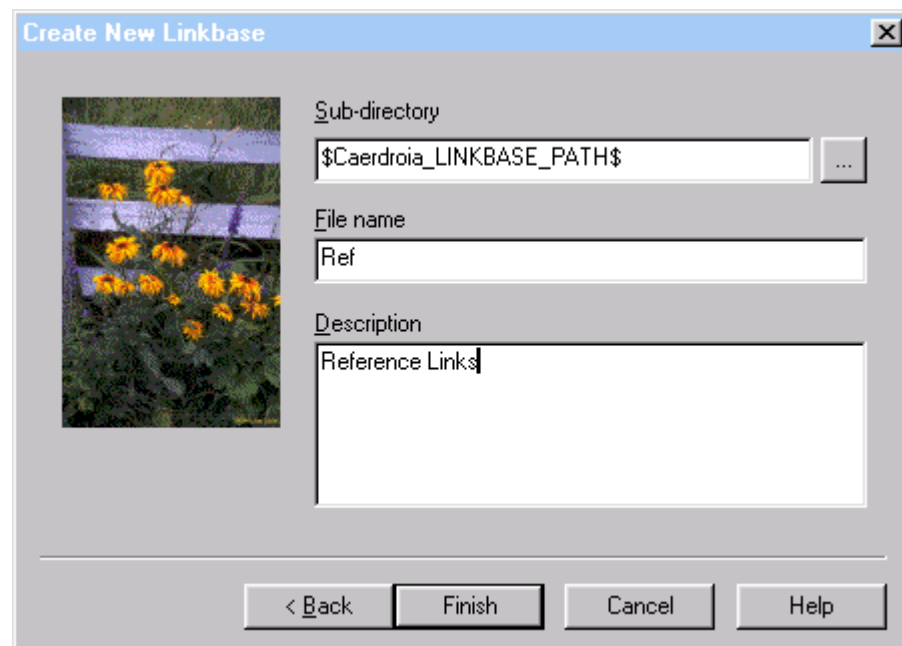
Note Adding a filter to the active list will automatically also add it to the All (Available) list. Filters that are in the All list but not in the Active List may be started by the user dynamically at run time.



*Filter Manager:
showing Active
Caerdroia
application filters*



- ➔ the green  button.
- ➔ From **Add Filter** window, select Add Linkbase
- ➔ Type the linkbase details. A default value will be chosen automatically for the **Sub-directory**, and will generally be sensible. The **file name** will be the name given to the (.ddf), (.raw) and (.nix) files that will be created for you. The **description** will appear by the linkbase when it is shown in the list of installed filters.

*Filter Manager:
Details to Create a
new Linkbase*



- ➔ The new linkbase will appear at the bottom of the list in the **Arrange Filters** Window. Select the linkbase and move it to the correct place in the filter chain using the up  and down  buttons.

Note A new linkbase would normally go next to other linkbases in the chain. In this case you might put it one *above* the Caerdroia linkbase if you wanted new links to go into the new linkbase by default, or one *below* it otherwise.

➔ Click on **Finish**. The new linkbase will be created. Quit the configuration program, and next time you start Microcosm this filter will be available.

9.8 Create a New Annotation Database

New Annotation Databases should be placed in the User, Application or System list with which they are to be associated. Which list you work with is decided by the way you logon to the Microcosm Configuration Program.

In the example below, a new Annotation Database is being added to the **Active Filters** (Those that will be run when Microcosm starts) for the application Caerdroia.

➔ Start Microcosm Configuration logging on as the **Application Owner** (See “The Microcosm Configuration Program”)

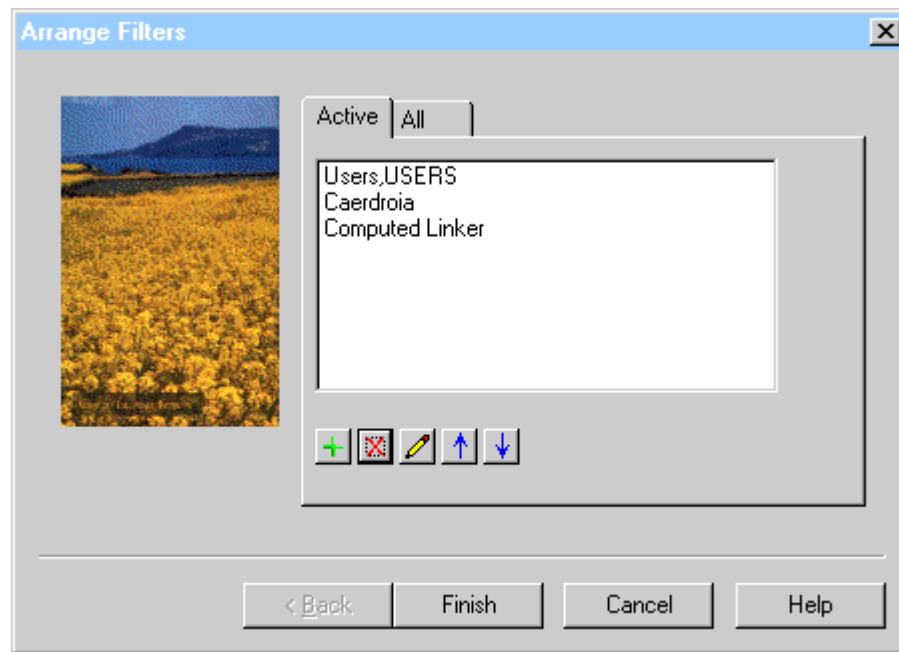
Note If you wish to add the Annotation Database to the user list then you must login as user, and if you wish to add it to the system list you must login as the system administrator. (See “Defining the Filter Chain”)

➔ Start the **Filter Manager Wizard**.

➔ Make sure the “Active” Tab is chosen.

Note Adding a filter to the active list will automatically also add it to the All (Available) list. Filters that are in the All list but not in the Active List may be started by the user dynamically at run time.

*Filter Manager:
showing Active
Caerdroia
application filters*

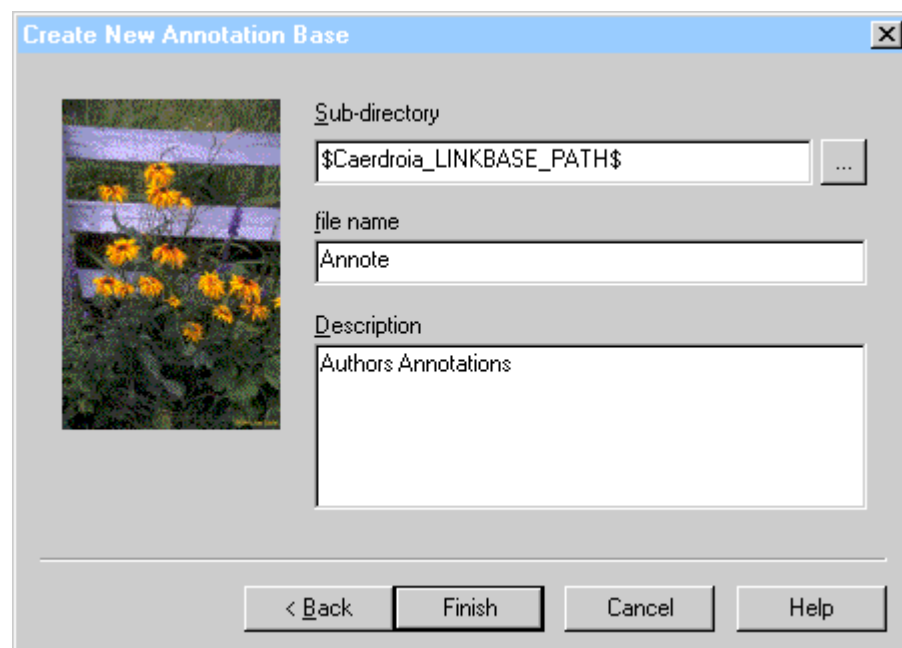




→ the green  button.

→ From **Add Filter** window, select Add Annotation Database

→ Type the Annotation Database details. A default value will be chosen automatically for the **Sub-directory**, and will generally be sensible. The **file name** will be the name given to the (.ddf), (.raw) and (.nix) files that will be created for you. The **description** will appear by the Annotation Database when it is shown in the list of installed filters.

*Filter Manager:
Details to Create a
new Annotation
Database*



→ The new Annotation Database will appear at the bottom of the list in the **Arrange Filters** Window. Select the linkbase and move it to the correct place in the filter chain using the up  and down  buttons.

Note A new Annotation Database would normally go immediately after any linkbases in the chain. In this case you might put it one *below* the Caerdroia Linkbase

➔ Click on **Finish**. The new Annotation Database will be created. Quit the configuration program, and next time you start Microcosm this filter will be available.

9.9 Create a New Computed Link Index

New Computed Linkers should be placed in the User, Application or System list with which they are to be associated. Which list you work with is decided by the way you logon to the Microcosm Configuration Program.

The task of adding a new computed link filter is essentially the same as adding a new linkbase. You can tell the filter to use an existing index if you wish.

Note Only one copy of the Computed Linker can be in the filter chain at any time. For this reason, it is better to include the Computed Links filter in the application level. This will have been done automatically by the Create Application Wizard, so this wizard is not often needed.

9.10 Re-indexing a Compute Links Index

Generally speaking, the **Create Application** Wizard will install the **Compute Links** Filter into your application filter chain. However, it will *not* create an index of the documents in your system automatically.

For the **Compute Links Filter** to work, you must build and from time to time re-build and index of all the words that are used in all the text based documents known to your application. If this index is not present at the expected place, the computed linker will quietly fail to start, and the **Compute Links** option on the viewer menus will be greyed out.

The **Computed Links Index Generator** builds the index that is required by the Compute Links filter.

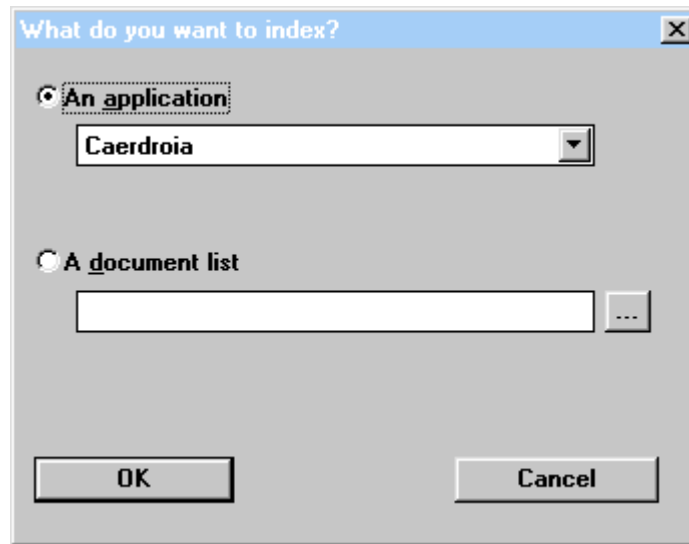
In order to index (for the first time) or to re-index your application;

- ➔ Make sure that neither Microcosm nor the Microcosm Configuration Program are currently running
- ➔ From the Microcosm Pro Start menu on the task bar, choose **Computed Links Index Generator**.

Note: It is essential to make sure that no Microcosm component is running. If you run the Computed Links Index Generator when other Microcosm components are running, it may succeed in building the index, but Microcosm will crash subsequently.

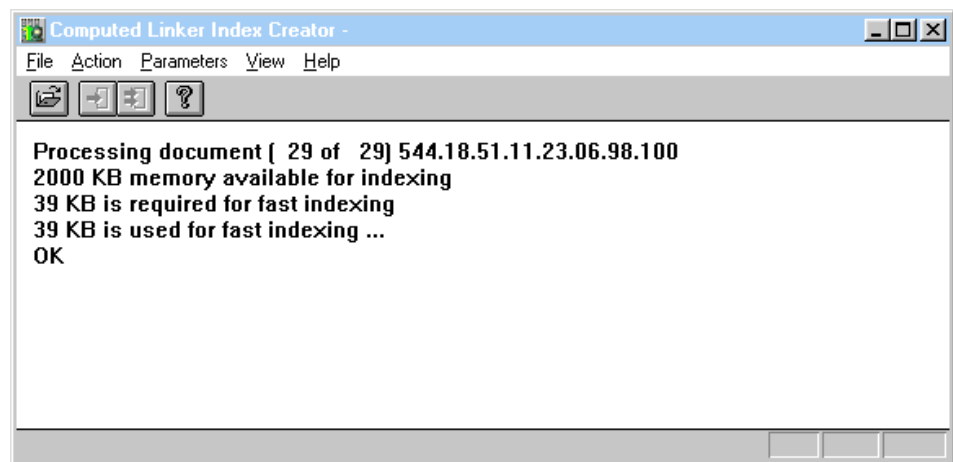
- ➔ Choose the application you wish to index. In this example the user has chosen the Caerdroia application.

*Computed Link
Index Generator;
Choosing the
application to
index.*



The main Index Generator window will appear and run automatically. When completed it will give a message similar to the one below

*Computed Links
Index Generator*



➔ Close the Computed Links Index Generator Window. The index will be built (the default file will be called INDEX1 .TAB and will be in the application's System\Indexes subdirectory. Next time you start the application the computed linker will work.

NOTE The **Index Generator** is capable of indexing any files for which Microcosm can extract the text content. Microcosm will attempt to do this if the document's physical type (See **Document Types**) has been marked as indexable. The Microcosm Physical Types TEXT and WP have been marked as indexable by default.

10 Applications

In this chapter

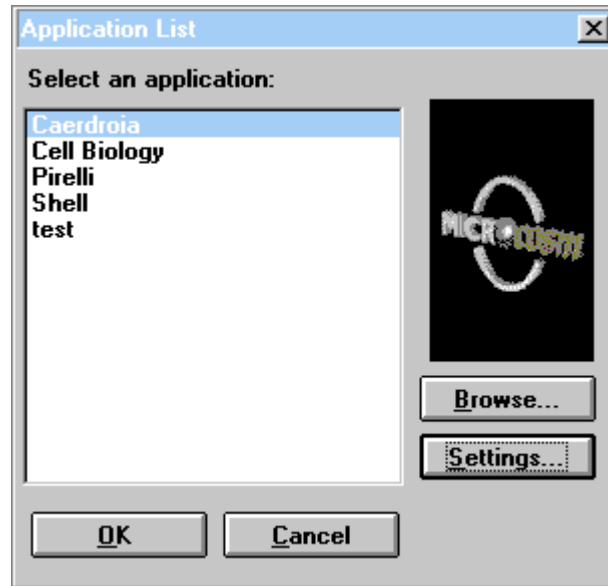
- **Managing the Application List**
 - **Creating an Application**
 - **Portable Applications**
-

10.1 Managing the Application List

A Microcosm application is defined by its **application registry file** which will have a (.mcm) extension and will be found in the root level of the application directory.

The Microcosm System maintains a list of applications that it knows about, and these are the applications that appear in the **application list** when you log on.

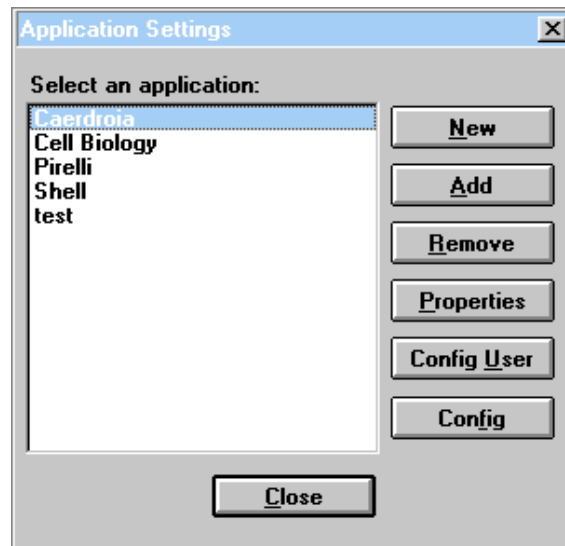
The Application List



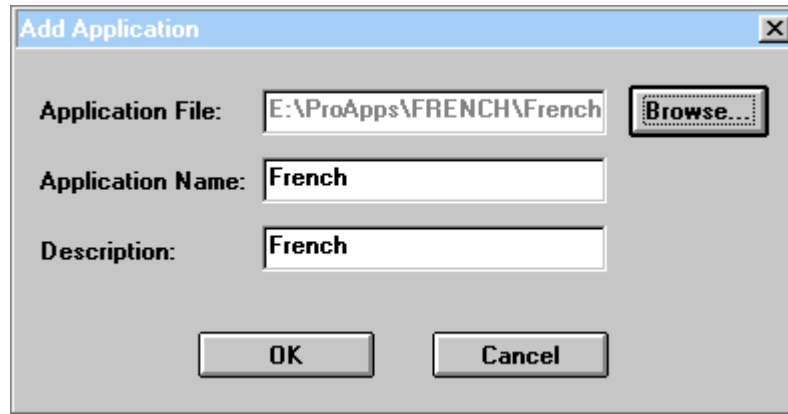
Any user who has write access to the directory where the Microcosm binaries (Mcmpro/Bin) are stored can maintain the application list as follows;

- ◆ **To add an existing application to the application list,**
 - ➔ Press the **Settings** button on the **Application List** window in order to get to the **Application Settings** window..

The Application Setting window



- press the Add Button.
- Enter the full path of (or Browse to) the application registry file (.mcm) . Microcosm will fill in the application name (which was the name chosen by the author and may not be changed) and the description (which is the name that will appear in the application list). You may change the description if you choose.



- Press OK. The application will immediately be accessible from the application list.

Note: To add an application, the application must have already been created (See Creating an Application)

◆ To remove an existing application from the application list

- Press the **Settings** button on the **Application List** window in order to get to the **Application Settings** window.
- Select the application you wish to remove
- press the **Remove** button on the **application settings** window. The system will prompt you to confirm that you wish to remove the application from the application list.
- Press **OK**.

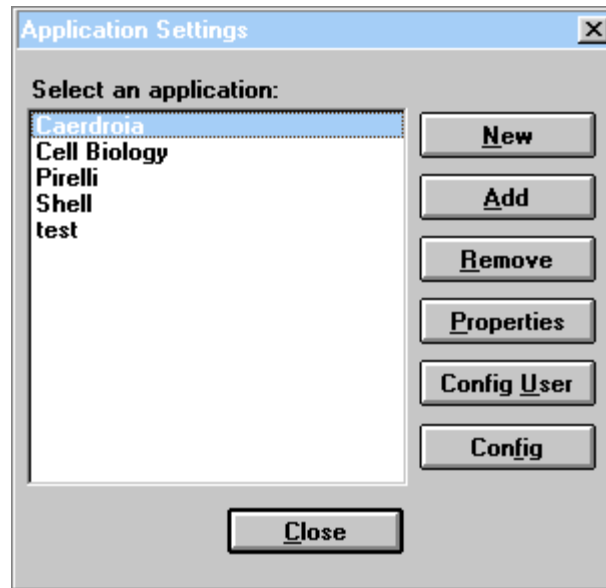
Note: Removing an application from the **application list** does not change or delete any part of the application itself. The application could still be run by double clicking on its **application registry** (.mcm) file within the Windows Explorer, or by starting Microcosm and pressing the **Browse** Button on the **Application List** window to locate the **application registry** (.mcm) file.

10.2 Creating an Application

Creating a new Microcosm Application is carried out by the Create Applications Wizard. Any user with authoring rights can access this wizard in two ways.

- Press the **Settings** button on the **Application List** window in order to get to the **Application Settings** window..

*The Application
Setting window*



➔ press the **New** Button to get to the Create Application Wizard.

Alternatively,

➔ Logon to the configuration program (See “The Microcosm Configuration Program”) and choose the Create Applications Wizard.

The Create Application Wizard is documented in the Creating Applications Tutorial.

10.3 Portable Applications

Microcosm has been designed to be extremely flexible when constructing an application. Documents that reside anywhere on the Windows File System can be included in an application while the Microcosm databases (Registry, Data Management System and Linkbases) can also be located anywhere on the File System. However, there are many cases where the individual parts of an application can be usefully organised into a coherent structure. For instance, if, after an application has been built on a single Microcosm system, the application will be installed on a network, on the World Wide Web or if it is intended that the application be copied from one Microcosm system to another, things will be a lot easier if the application is *Portable*.

A portable application is one where you can move or copy the application directory from one place to another, and by pointing at the application registry (.mcm) file at the new place, the application will immediately run.

A *Portable* application has the following characteristics.

- The Settings that say where files are all make use of Path Variables rather than hard coded absolute path names.
- All application documents are located under the application Data directory.
- All application **linkbases**, **computed link indexes** and **annotation databases** are located under the application System/Indexes directory.
- The Application **Docuverse** is located in the System/Docuvers directory

The Create Application Wizard will form an application that is entirely portable, and conforms to the above specification. Some hints to making sure that as you continue to build applications you do not affect portability are;

- Copy all documents into the applications Data directory (or a subdirectory within that directory) before you import them to Microcosm. The exception to this rule is that documents that are addressed by some naming scheme that is absolute in the environment within which the application will be used may be imported using this universal naming scheme. Examples are URL's over the whole internet and UNC's within some local network environment.
- Whenever you change settings do so at the application level rather than at the system level (See "The Microcosm Configuration Program"). This will ensure that the changes affect all users of your application rather than just users of the current Microcosm System. For example, do create new physical types at the application level rather than the system level, so that this type will be available on another installation.
- Whenever you change settings ensure that you describe file locations using Path Variables rather than absolute file names. The Wizards always offer these by default.

The Verify Application Wizard (See "Application Management" will check that an application is well formed and portable.

11 Document and Viewer Settings

In this Chapter

- **Document and Viewer Settings: Overview**
 - **Clearing Settings**
 - **State Saving Control**
-

11.1 Document and Viewer Settings: Overview

It is possible to control some of the behaviour of the Text, Graphics and MultiViewer viewers. For instance, you can make all buttons have underlining when the viewer displays any document that contains buttons. To make the viewer acquire these styles, you should open a document, use the Options menu to make the necessary changes (for instance, specifying that in the Text Viewer all buttons should be underlined).

Then either

- use the **Options/Viewer Settings** menu item in the viewer to save the setting which will then apply to *all documents of this physical type*.

Alternatively

- use the **Options/Document Settings** menu to save the settings for *just this document*.

The settings that you save, whether document settings or viewer settings will only apply to the current user (or the current application if you are logged on as the application). The setting will not be known anywhere else in the system, either by other users or by other applications.

Note	If you are an application author and want other users to see the same settings as you make, then you should logon as the application so that the settings that you save are experienced by all users of this application.
-------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The settings that a user or author can control include;

- the size and position of viewer windows
- the zoom level of the display contents
- the display of buttons
- the text font
- the colour of the background, foreground and buttons.

The Microcosm Configuration Program provides three wizards to help you control the settings

- **The Clear Settings Wizard** which allows you to remove the current settings
- **The Saving Settings Wizard** which allows you to control exactly which settings will be saved when you save a document or viewer's settings.
- **The Import from User Wizard** which allows you to promote a users settings into an application. (This Wizard is covered in the section on Application Management.)

11.2 Clearing Settings

The options that you will be offered in this wizard will depend on how you logon to the Microcosm Configuration Program (See “The Microcosm Configuration

Program”). If you wish to clear application settings then you need to logon as that application, and if you wish to clear user settings you must logon as that user.

To clear viewer settings

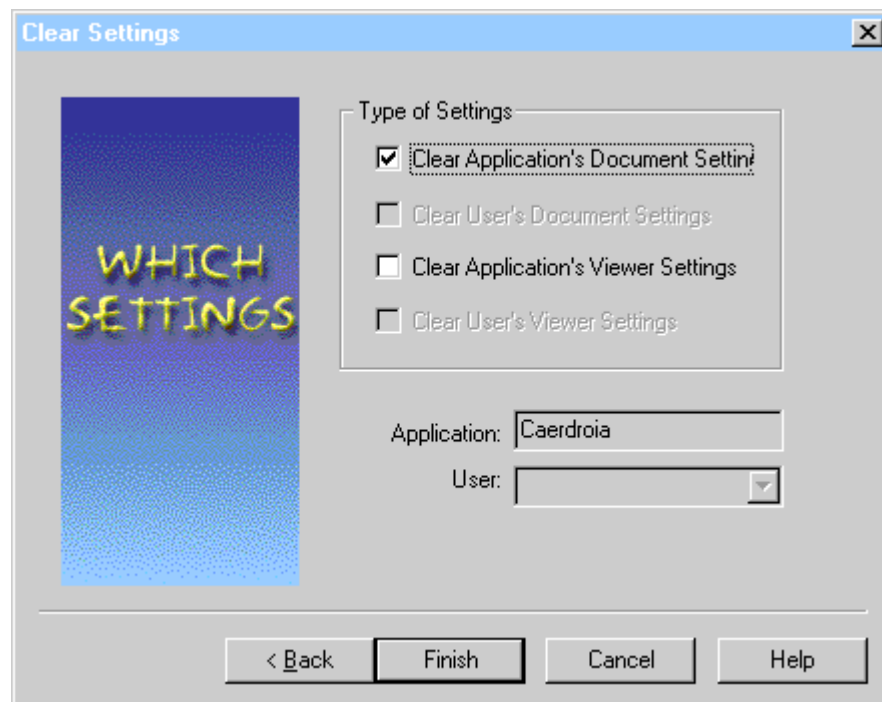


- Click on the **Viewer Settings** wizard **Saving Settings** in the *Microcosm Configuration Program* window

In this example the user has logged on as the Caerdroia application owner, so the user settings have been greyed out.

- Choose which settings to clear
- Press **Finish**. When you next run Microcosm the documents or physical types will revert to their default display parameters.

*Clearing
Document and
Viewer Settings*



11.3 State Saving Control

The **Saving Settings Wizard** implements the state saving control which allows you to specify which of the settings will be saved when a user uses the **Options/Save Viewer Settings** or **Options/Save Document Settings** menu item in the Text, Graphics or MultiViewer viewers.

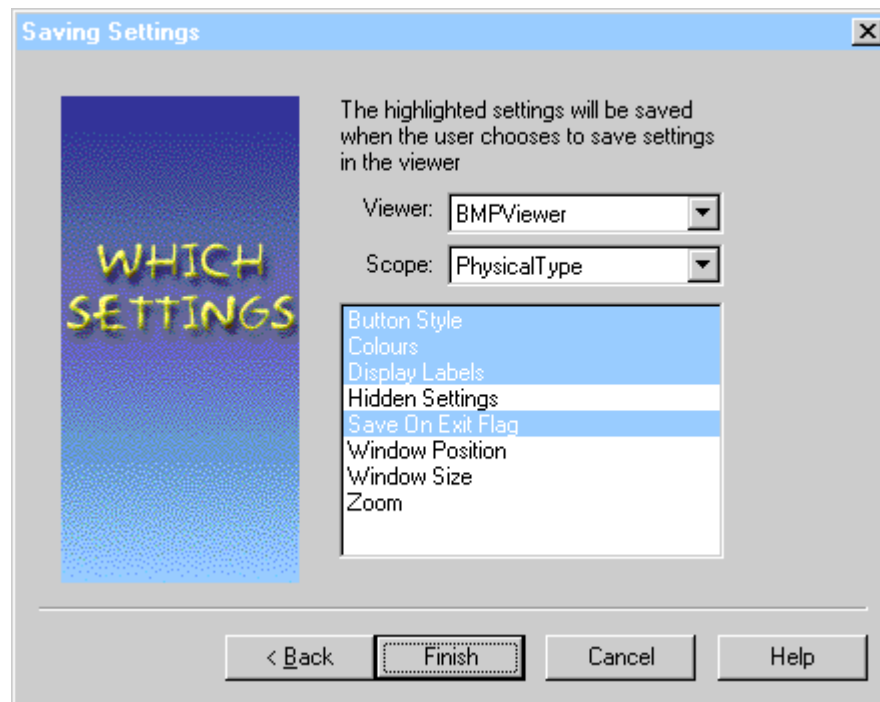
To set which characteristics you wish to save



Saving

- Click on the **Saving Settings** wizard in the *Microcosm Configuration Program* window

Viewer Settings:
State Saving
Control



- Choose which viewer you wish to work on.
- Choose the Scope (Document or Physical Type)
- Select and deselect the Settings offered (different viewers offer different settings)

If an item in the list is selected, that setting in the viewer will be saved when you ask to save the document setting or viewer setting.

Note You may configure Microcosm to save the current settings automatically when a document is closed by selecting the Save on Exit Flag. By default the Save on Exit Flag is set for document settings but not for viewer settings. This means that the settings for each document you visit will be recorded, and remembered next time you visit the document

Note: Scope of State Saving Control. Any changes you make using the Saving Setting Wizard will be stored in the System Registry. This means that only users with write access to the System Registry will be able to successfully use this wizard. It also means that any changes that you make will affect how the system behaves for *all* users and applications.

The list below shows all the possible settings that can be saved. In the Viewer column, T means that this setting can be saved for the Text Viewer, G for the Graphics Viewer and MV for the MultiViewer.

State	Viewer	Description
Button Style	T, G, MV	<p>If selected, the viewer will save the current Button Style.</p> <p>To save Underline buttons you should select the Underline Button item lower in this list.</p>
Colours	T, G, MV	If selected, the viewer will save the current Colour settings.
Font	T, MV	<p>If selected, the viewer will save the current font.</p> <p>The setting is saved only if the document does not specify internally which font is to be used and you have chosen a font you wish the viewer to use.</p>
Display Label	G, MV	Save the setting of the Display Label option.
Fit to Window Width	MV	<p>If selected, the MultiViewer will save this option..</p> <p>The option causes the viewer to fit the document to the current window width. This is the only way to zoom the font size in the MultiViewer. It will only be effective if the document is being displayed in Page Layout.</p>
Page Layout	MV	<p>If selected, the MultiViewer will save the Normal/Page Layout setting of the viewer.</p> <p>In Page Layout, the viewer will display documents as a number of scrollable pages. In Normal view, the document is not formatted.</p>
Save on Exit Flag		If this item is selected , the other selected items in this list will be recorded when the document is closed.
Underline Button	T, MV	<p>If selected, the viewers will save the setting of the option.</p> <p>Underlined buttons are particularly useful on monochrome screens where coloured buttons may not be easily distinguished.</p>
Window Position		If selected, the Window Position is recorded.
Window Size		If selected, the Window Size is recorded
Zoom	T, G, MV	<p>If selected, the viewer will save the Zoom setting.</p> <p>In the Multiviewer, the zoom setting will only be saved for VECTOR and RASTER document types.</p>

12 Documents

In this chapter

- **Document Attributes Overview**
 - **Document Types Overview**
 - ◆ Adding a New Document Type
 - ◆ Changing an Existing Document Type
 - ◆ Removing an Existing Document Type
-

12.1 Document Attributes Overview

Microcosm maintains information about each document in the form of attributes stored in its Document Management System. Document attributes apply across for the whole of the Document Management System with the implication that all your Microcosm applications have the same set of document attributes.

Required Document Attributes

Some attributes are **required**: if they are removed from the Document Management System, Microcosm will cease to work. The attributes that must not be removed or changed in any way are:

Attribute	Description
Description	A description of the document. This description appears in the <i>Select a Document</i> window, in the title bar of the Text and Graphics viewers, and in the Result filters. When a document is first imported (using <i>Select a Document</i>) the document description is set to the Windows file name of the document.
FileName	The full Windows file name of the document.
LogType	The Logical Type of the document is actually another name for the Folder in which it is stored. When the document is imported into the Microcosm application (using <i>Select a Document</i>) it is placed in a branch of the Folder Structure for the application. The document can appear more than once in the structure and this attribute defines which branch(es) holds the document.
Type	The physical type of the document. There is a one-to-one relationship between the physical document type and the document viewer. If you wish to introduce a new document type then you must have a viewer to associate with the new type. See Document Types for a full description.
UniqueID	An internal reference used by Microcosm to identify the document. It is in an abstract form (e.g. 100.03.22.94.17.28.01.6069542). All references to documents (e.g. in a link) are carried as the UniqueID.

Additional Document Attributes

There are a number of other attributes that are **not required** but are included for the convenience of authors. They can be removed or changed if required.

Attribute	Description
Author	This attribute can be used to hold the name of the person creating and/or importing the document. This data can be added (using <i>Select a Document</i>) after the document has been imported

Attribute	Description
ImportDate	If this attribute is present in the Document Management System (it is there by default), this attribute holds the date and time that the document was imported into Microcosm.
Keyword	A text string describing the document in some way. Use <i>Select a Document</i> to add this text after the document has been imported.












12.2 Document Types Overview





Microcosm can handle a number of different Document Types and each Document Type is handled by a particular viewer. When you add a new document type you must specify which viewer is to handle the new type of document.

It is possible for a viewer to handle a number of different Windows file types. For instance, the Text Viewer will handle both ASCII files (usually given the file extension `.txt` and generated by a simple text handler like Windows Notepad) and RTF files (usually given the extension `.rtf` and generated by Word for Windows).

Each document type is assigned a different icon, so that you can identify individual document types.

In a standard Microcosm installation the following document types are defined:

Microcosm Type	Icon	Extensions	Viewer Used by Type
ANIMATION		*.ANI	ANIVIEWER.EXE
BITMAP		*.BMP;*.JPG	BMPVIEW.EXE
DATABASE		*.MDB;*.DBS;*.DEZ;*.PDX;*.SMT;*.FMT	MVIEWR32.EXE
LAUNCHER		*.EXE	[none]
MIMIC		*.MMC	MIMVIEW.EXE
RASTER		*.GIF;*.JPG;*.TGA;*.TIF;*.PNG;*.BMP;*.PCD;*.PCX	MVIEWR32.EXE
SOUND		*.WAV	MPLAYER.EXE
SPREADSHEET		*.XLS;*.WKS	MVIEWR32.EXE
TEXT		*.RTF;*.TXT	RTFVW.EXE
TOOLBOOK		*.TBK	MCMLINK.EXE
VECTOR		*.CDR;*.PDF;*.DXF;*.PS;*.PPT;*.DWG;	MVIEWR32.EXE

		*.WMF	
VIDEO		*.AVI	BMPVIEW.EXE
WP		*.DOC;*.WP5;*.WP6;*.WPD;*.RTF;*.TXT;*.HTM;*.HTML	MVIEWR32
WWW		*.HTM;*.HTML	<SHELLEXECUTE>
ZDEFAULT		*.*	<SHELLEXECUTE>

You can create new Document Types. These may be completely new types, which have their own viewers, and maybe handle data types which Microcosm does not currently handle. Alternatively they may be abstract types. These are simply existing types but with a new name. Abstract types allow application designers to sort documents by their intention. E.g. In the Caerdroia application there is an abstract type, Glossary which is simply another name (and icon) for a Text document.

Each Physical Type (whether abstract or not) has its own document and viewer settings.

12.2.1 Adding a New Document Type

New types may be added at the System level (so they will be available to all applications) or at the application level (so they will only be available to that application). Generally speaking authors should be encouraged to add them at the application level as this ensures that the application will be portable to another Microcosm installation.


In order to add a completely new document type

- ➔ Logon to the Microcosm Configuration program as either the system Administrator or as an application owner. (See “The Microcosm Configuration Program”)



- ➔ Click on the **Types wizard** in the *Microcosm Configuration Program* window

In the Physical Document Types window

- ➔ Click on the green  button

The next window will ask you for a name for your new type;

- ➔ Type a **Name** for the Type and press **Next**

The next window will ask you if this is an abstract or physical type?

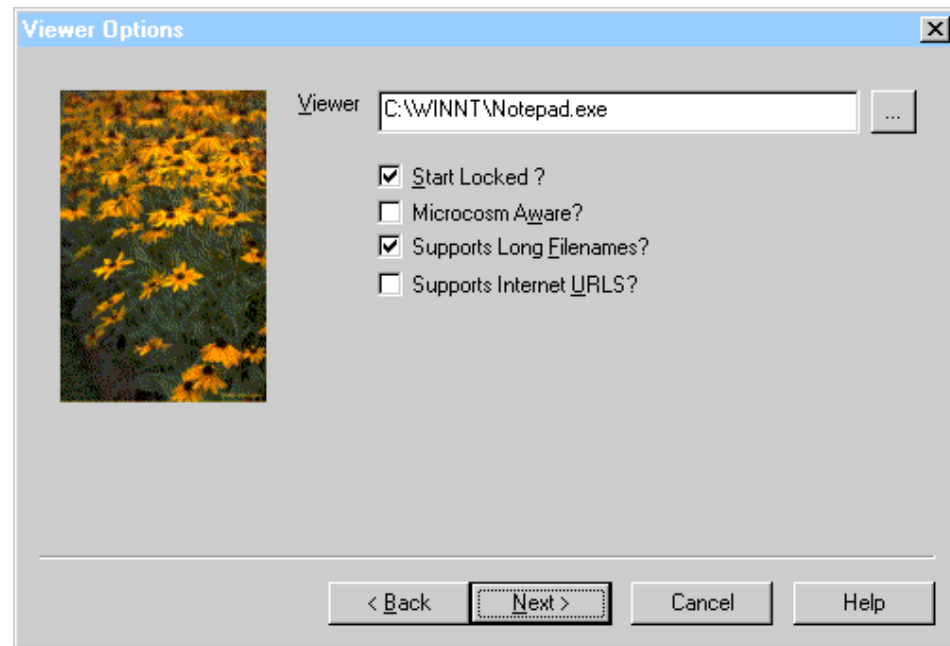
- ➔ Select the **Brand New Type** radio control and press **Next**

The next window will ask you to select an icon for your new type.

➔ Press the Icon button and select an appropriate icon from the list available then press **Next**

NOTE The list of icons is obtained from the icons in the Document Management System. If you wish to use a special icon you have designed yourself, it must already have been placed with the other Document Management System icons.

.NOTE Icons must be 21x21 pixel 16 colour Windows bitmaps (not .ico files)



◆ Viewer Options

Viewer

➔ Click on the browse .. button to select a .exe program from the dialogue box
OR

➔ Type a .exe filename. If the .exe program is not in mcmpro/bin type the full pathname for the program.

Start Locked

The *Text Viewer* and *Graphics Viewer* both have a lock/unlock feature, by which the user can decide whether a window should be left on screen or replaced by the next document to be displayed. If **Start Locked** is unchecked, and the viewer has this feature, windows will be displayed unlocked and documents will replace each other unless the user actively locks them. If **Start Locked** is checked, documents will be displayed in locked windows, and the user will have to unlock them in order for windows to be replaced. Viewers that do not have this feature should be marked as Start Locked so that each document starts a new copy of the viewer.

Microcosm Aware?

If the viewer has been written expressly to communicate with Microcosm, or alternatively has been adapted to do so, **Microcosm Aware?** should be checked in order for Microcosm messages to be sent to the viewer.

If **Microcosm Aware?** is unchecked, when documents of this Type are displayed, the viewer will be started with the filename of the document requested as a Command Line parameter, and no subsequent communication will occur from Microcosm to the viewer.

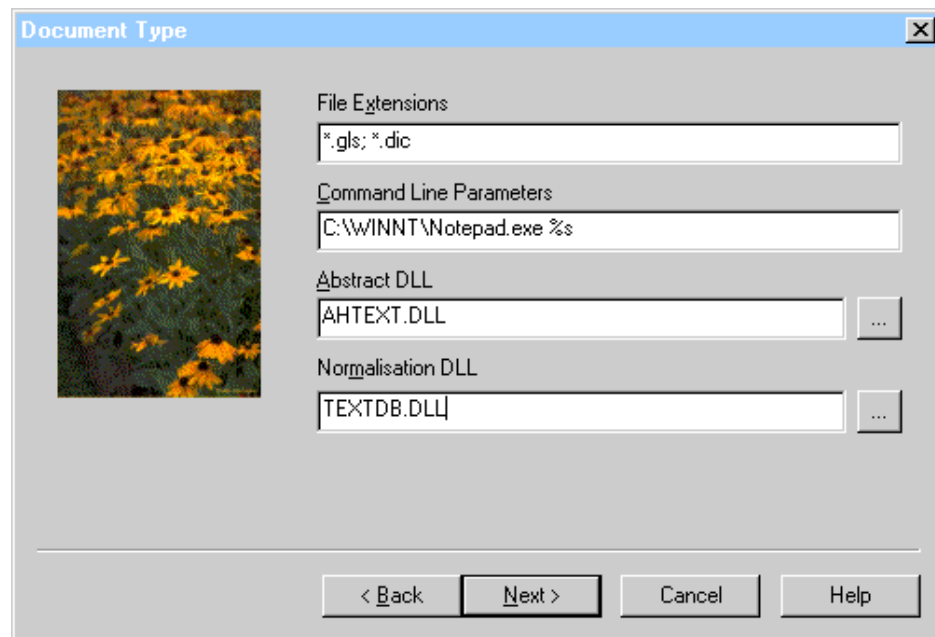
Supports Long Filenames?

→ Check this box if the application is capable of dealing with windows long filenames (greater than the old DOS 8.3 format)

Supports URL's?

→ Check this option if the application understands URL's

→ Press **Next**



File Extensions

→ Specify the **File Extensions** which are associated with this Type in the format `*.txt`.

Multiple extensions can be associated with a single Type. If multiple Types are specified, they must be separated by a semicolon. For instance if a Document Type is to handle three file types, then the File extensions definition could read:

```
*.txt;*.rtf;*.ini
```

See Document Types Overview for a complete list of file extensions.

Command Line

Specify any additional parameters which will be sent to the viewer when it is started by Microcosm.

For example, the Media Player is sent /PLAY on the command line for VIDEO documents, which causes the video sequence to be played automatically upon loading.

For the standard document types, the following Command Lines are defined

Document Type	Command Line	Required
ANIMATION	OL.LAUNCHED	Yes
BITMAP	OL.LAUNCHED	Yes
DOC	WINWORD	Yes
MIMIC	OL.LAUNCHED	Yes
SOUND	/PLAY	No
TEXT	OL.LAUNCHED	Yes
TOOLBOOK	TOOLBOOK	Yes
VIDEO	/PLAY	No
EXCEL	EXCEL	Yes
WWW	Nothing on Command Line	-

OL.LAUNCHED **must** be in upper case letters.

Abstract DLL

An Abstract DLL is used to build representations (icons) of documents. These representations are used by the **Result** filter. In the standard Microcosm, the following Abstract DLLs are used.

Document Types	Abstract DLL
ANIMATION, BITMAP, MIMIC (Tour), SOUND, VIDEO	AHBMP.DLL
DOC, EXCEL, TEXT, TOOLBOOK	AHTEXT.DLL

Normalisation DLL

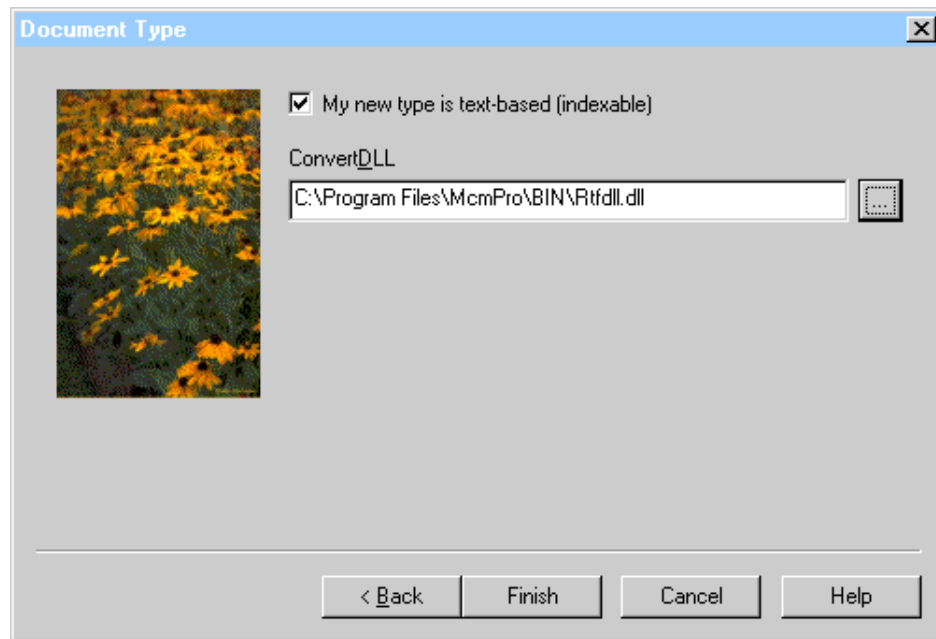
The Normalisation DLL converts any text selection into a standard format which is used as the basis for linkbase queries. Therefore any viewer for a Document Type which has a textual component should use a Normalisation DLL. The standard Normalisation DLL is `textdb.dll` found in the Microcosm \bin directory.

➔ Click on the browse... button to select a DLL from the dialogue box

OR

➔ Type a full pathname for the DLL into the edit field

Press **Next**



Text indexable

If the document type is actually ASCII or RTF text, or if it contains a form of text that the multiviewer INSO DLL's can extract, then this option allows us to indicate this and to point at the DLL that the computed linker index generator will use to extract the text from the document.

➔ Press **Finish**

12.2.2 Adding an Abstract Type

New types may be added at the System level (so they will be available to all applications) or at the application level (so they will only be available to that application). Generally speaking authors should be encouraged to add them at the application level as this ensures that the application will be portable to another Microcosm installation.


In order to add a completely new document type

➔ Logon to the Microcosm Configuration program as either the system Administrator or as an application owner. (See "The Microcosm Configuration Program")



➔ Click on the **Types wizard** in the *Microcosm Configuration Program* window

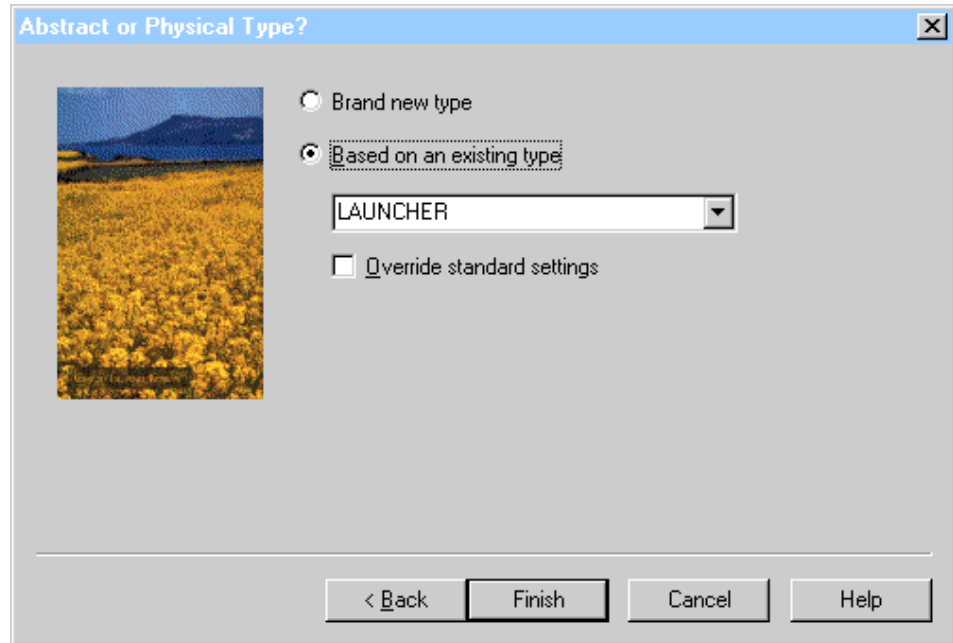
In the Physical Document Types window

→ Click on the green  button

The next window will ask you for a name for your new type;

→ Type a **Name** for the Type and press **Next**

*Creating an
Abstract Type*



The next window will ask you if this is an abstract or physical type?

→ Select the Based on an Existing Type

→ Select the type you wish to base the new type on from the drop down list.

→ If you select override existing settings you will be taken through the same dialogs and in the same order as if you were creating a brand new type. At each dialog you can choose whether to continue on to the next dialog or stop at that point. Normally you might choose to override existing settings just as far as the icon.

12.2.3 Deleting an Existing Document Type


→ Logon to the Microcosm Configuration program as either the system Administrator or as an application owner. (See “The Microcosm Configuration Program”)



→ Click on the **Types wizard** in the *Microcosm Configuration Program* window

In the Physical Document Types window

→ Select the type you wish to delete

→ Click on the red  button

The Document Type will be removed from the Document Management System.

Note.	The actual documents will not be removed from the Document Management System and the files will not be removed from the Windows File System
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13 Application Management

In this chapter

- **Overview**
 - **Verifying Applications**
 - **Importing the Application Data from a User**
 - **Publishing Your Application**
 - **Command Line Parameters**
-

13.1 Application Management: Overview

If a Microcosm Pro Application is “well formed” then it will be possible to move the whole of the application directory and its subdirectories to a new location in a different directory or in a different drive, a CD drive, a network drive or even on the World Wide Web, and by pointing your Microcosm Pro at the application registry (.mcm) file it will be possible to run that application without alteration. See **Portable Applications**.

Portability of Microcosm applications depends on the author being careful about a few things such as ensuring that all data files are stored within the application directory, and ensuring that no “hard coded” paths are used within any part of the application, but rather **Path Variables** are used.

This chapter describes various utilities to do with application management and publication.

13.2 Verifying Applications

The Verify Application Wizard allows you to check that an application is

Complete

All link anchors are in documents within the document management system and all documents in the document management system actually exist on the file system.

Correct

All linkbase, filter chain and docuverse entries are understood by Microcosm.

Portable

All documents used in the application are within the application directory and all paths use **path variables** rather than hard coded paths.

Exactly what the Verify Application wizard will verify depends on how you logon to the Microcosm Configuration Program. If you logon as an application or as the System Administrator, then the wizard will verify all the system and the selected application components. If you logon as a user, then Verify Application will also check that users components. (See the “Microcosm Configuration Program”).

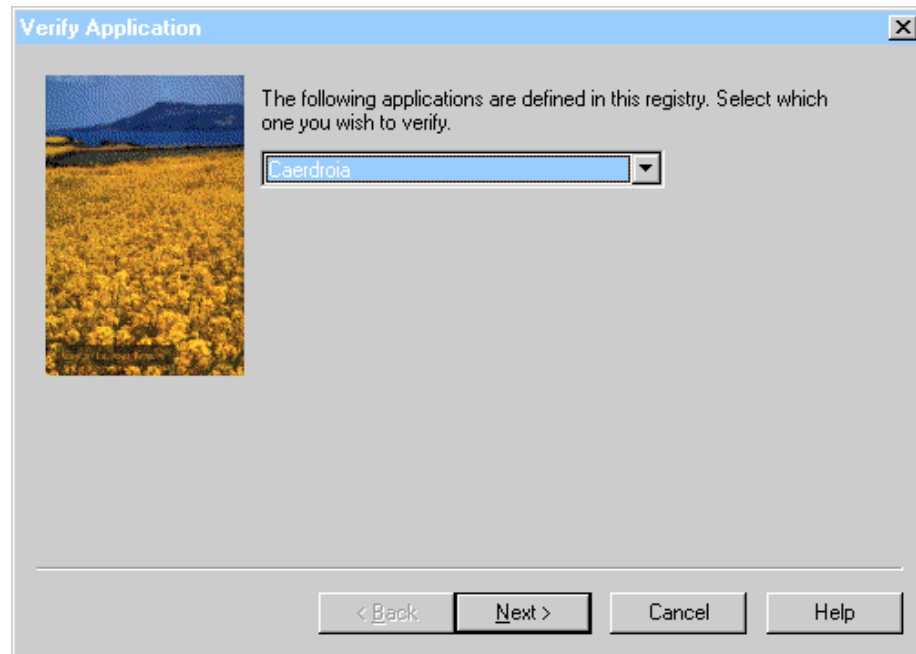
To use the Verify Application Wizard



Verify

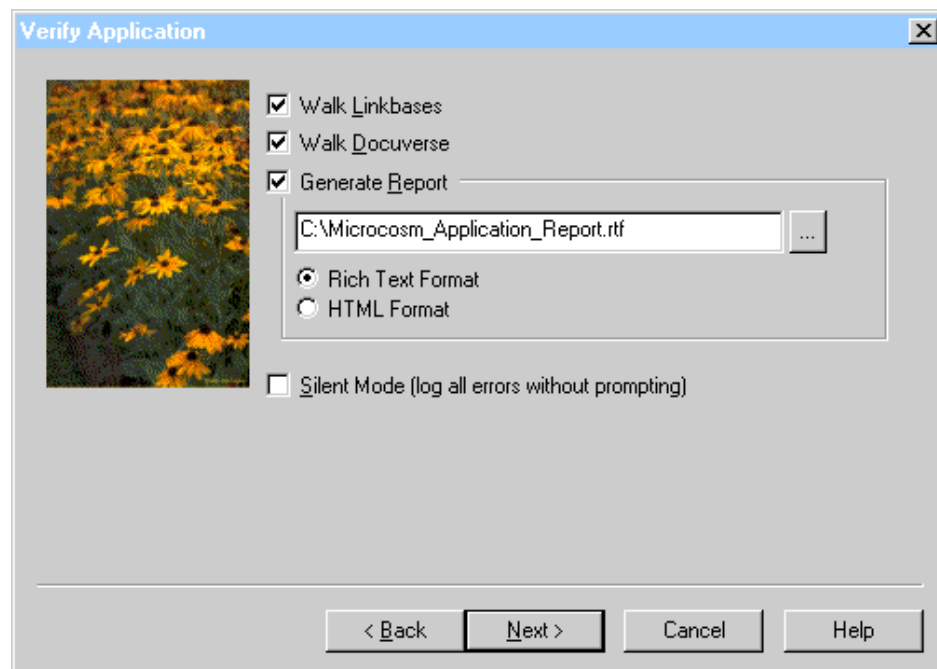
- ➔ click on the Verify Application Wizard Application in the *Microcosm Configuration Window*.

*Verify
Application:
Selecting an
Application to
Check*



→ Select the application you wish to check.

→ Press **Next**



→ Select the options. Generally it is best to choose to Walk Linkbases and Docuverses, and to generate a report.

→ Press **Next**.

You will see the wizards progress as it checks all the components. If there are any potential problems with your application it will inform you in a list box prior to terminating. If you have asked for a report, then you can now view the report.

The report is self explanatory, and informs you which components it checked and what problems it encountered.

13.3 Importing the Application Data from a User

Sometimes a user may have worked with an application for some time and have introduced some interesting new documents and links (and other settings) and the author may wish to copy these (or some of these) user objects into the application. The **Import from Users wizard** enables you to do this.

To use the **Import from Users wizard**;

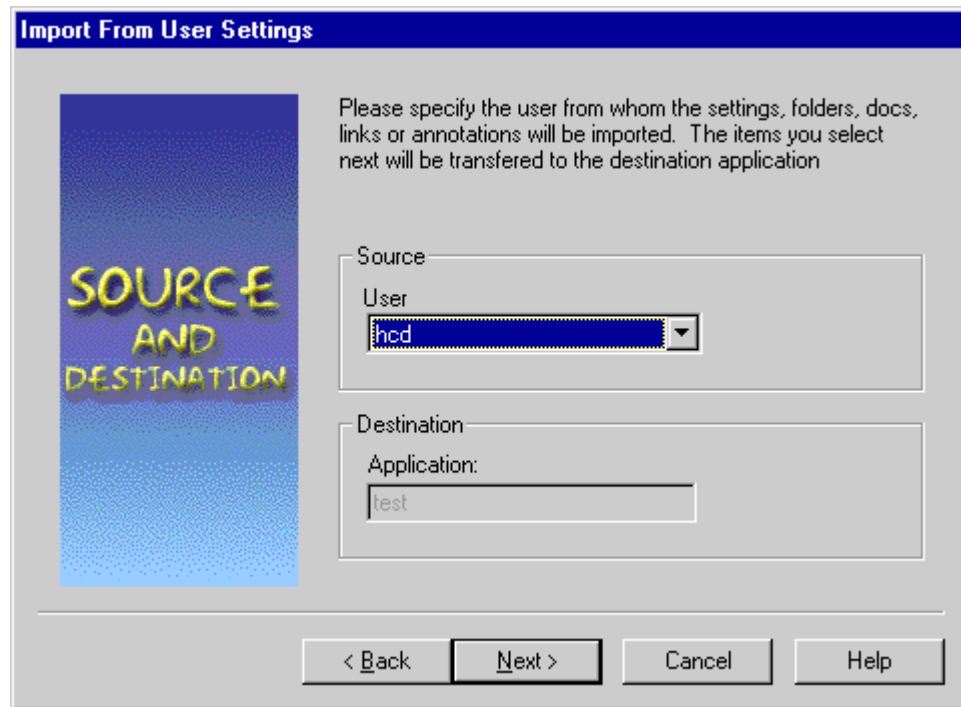
- ➔ Logon to the **Microcosm Configuration Program** as the System Administrator or owner of the application, select the application you wish to promote settings into, and choose **Config** from the Application Settings Window.



Import from
User

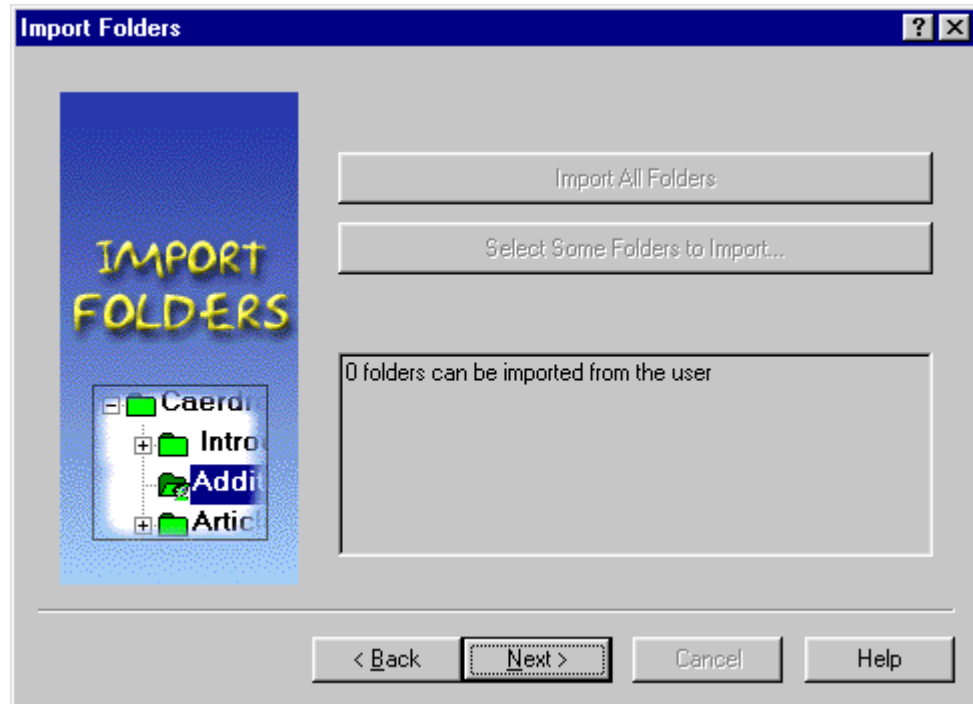
- ➔ Choose the **Import from Users Wizard** and advance past the welcome screen.

*Import from User:
Identifying the
User*



- ➔ In the user list box, select the user whose settings you wish to import.
- ➔ Press **Next**

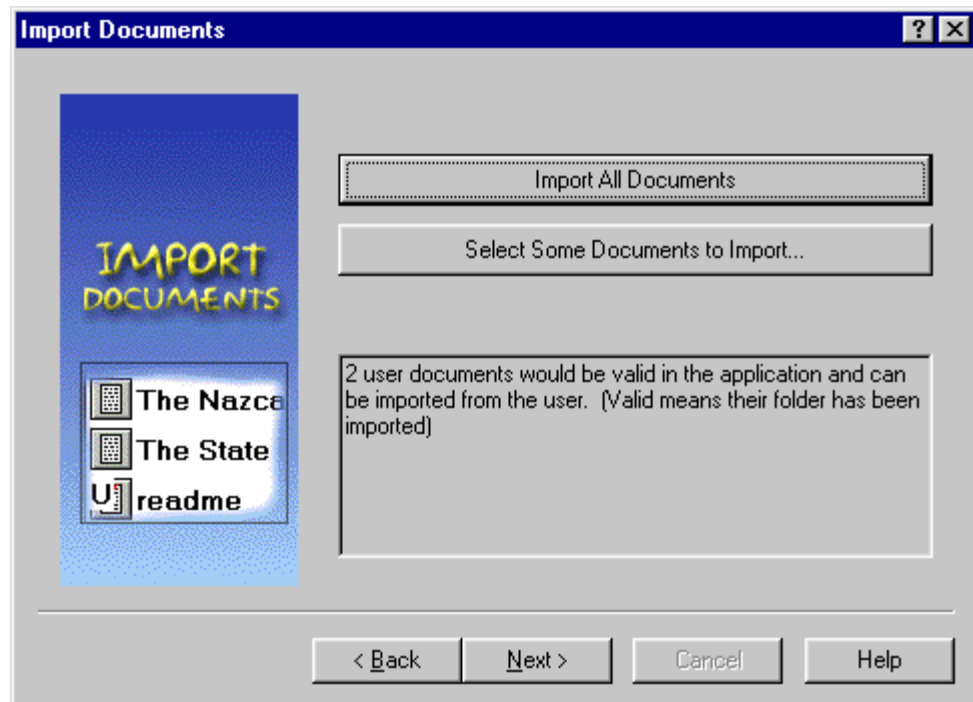
*Import from user:
Selecting folders
to import*



→ The first option is to import any user folders. In this example the user has not created any folders, so there are no options available

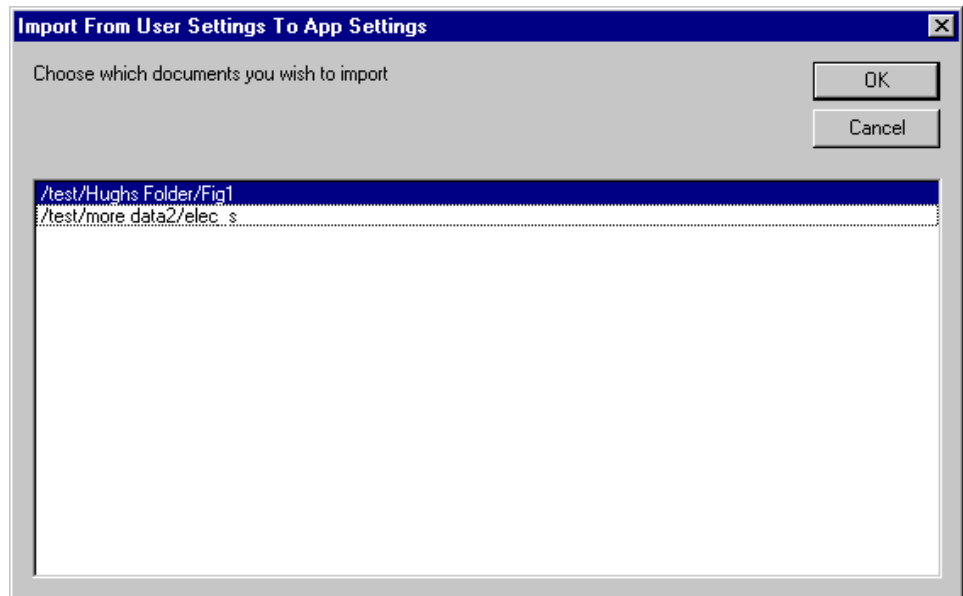
→ Press Next

*Import from User;
selecting
documents to
import*



→ Next we see that there are two user defined documents that we may import. In this example the user chooses Select Some Documents to Import.

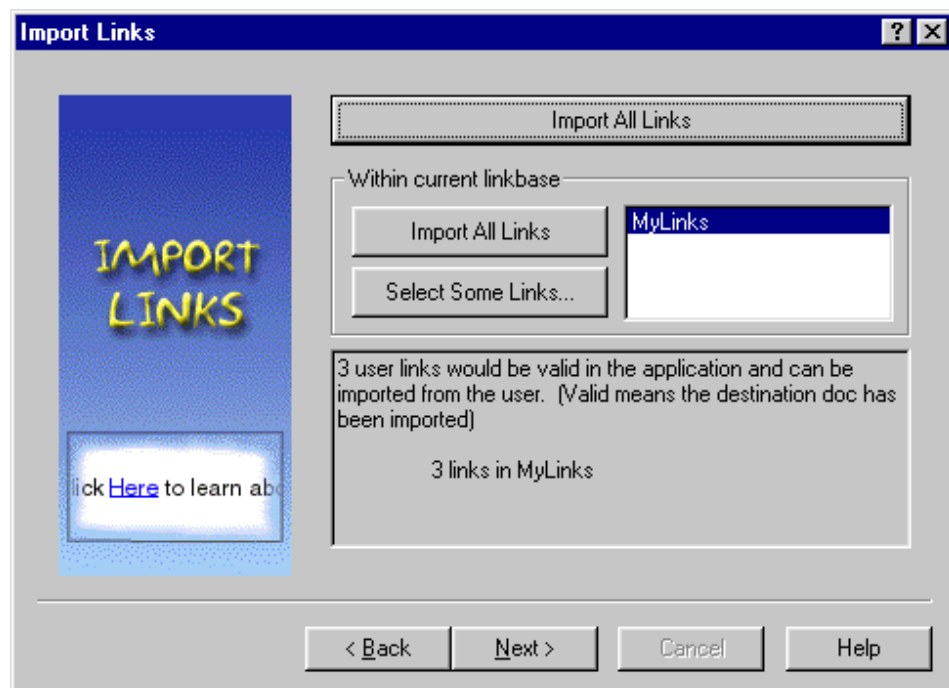
*Import from User:
Identifying which
document*



The user is now offered a list of documents that the user may import, and may select from this list using the standard Windows conventions (Ctrl-Click for multiple items).

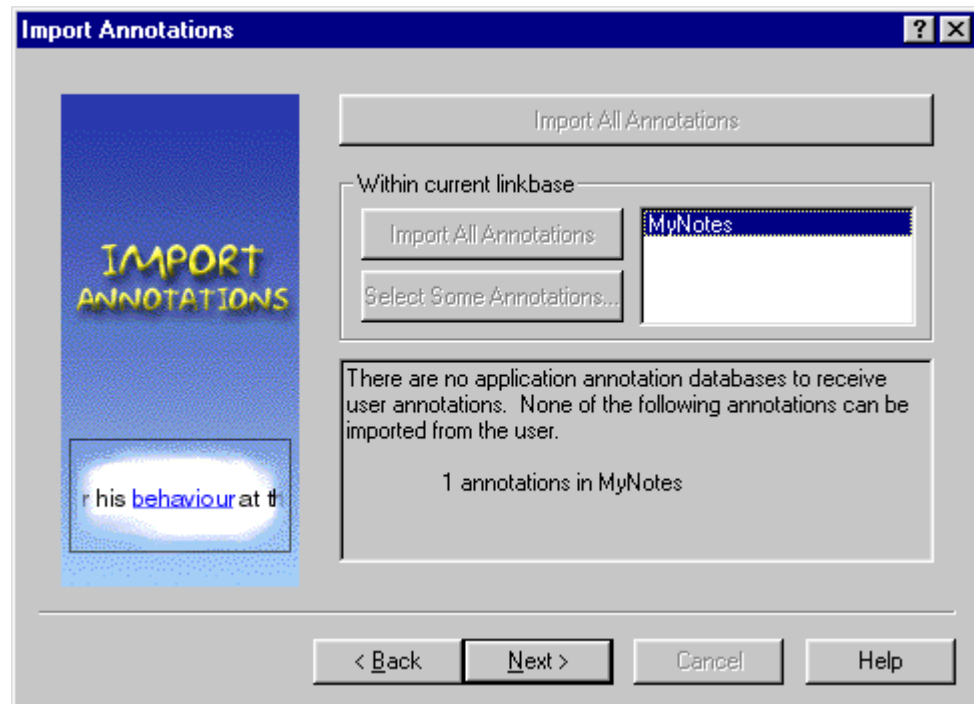
Note The only documents that will appear in this list are documents that are in folders that already belong to the application (or the system). Documents that are in user folders will not show unless they have already been imported in the previous step.

*Import from User;
selecting links to
import*



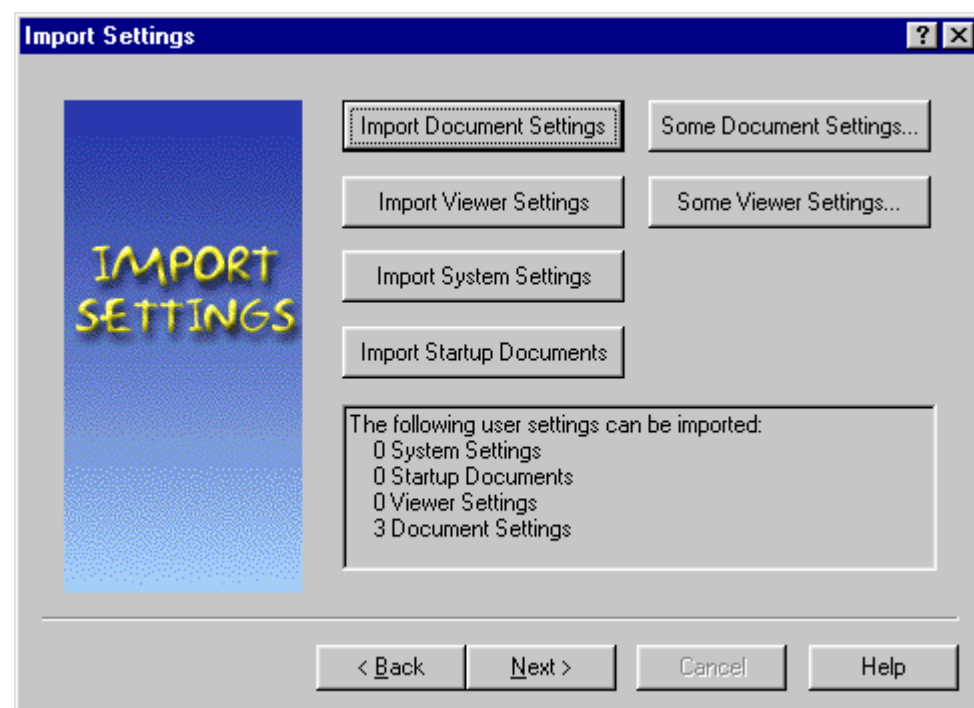
In this example, you can identify which user linkbase you wish to import links from. In this example the user does not wish to import any of the three links.

*Import from User:
Annotations*



In this example, although there is a user annotation, it is not possible to import it, as there is no application annotation database to import it into.

*Import from User:
Document and
Viewer Settings*



In this example we see that the only viewer and document settings that the user has made are three document settings, which may be imported.

When all changes have been made, press Close. Next time you logon as the application you will see that all the selected settings are promoted into the application.

Note	All settings (links, annotations, documents etc) that have been imported into the application will have been removed from the user settings.
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13.4 Publishing Your Application

Once you have created an application you may wish to make it available to other users.

The first thing to do is to verify that the application is well formed and therefore portable. See **Portable Applications** and **Verifying Applications**.

Once you are happy that the application is complete and portable you can move it to other places ready for use by others. You can;

- ◆ **Move the Application to another directory or another disk or another machine.**

If a Microcosm Pro application has been well formed, it can be moved to another location without change. Simply copy or move the application directory to the new location and point Microcosm at the application registry file on the new machine. See **Starting Microcosm** in the **User Guide**.

- ◆ **Publish the Application on a Local Area Network**

Both Microcosm Pro and its Applications may be placed on a server on a local area network so that the application may be shared by many users. Such users each have their own linkbases, docuverses and annotation databases. See **Networks**.

- ◆ **Publish the Application to run from a CD**

You can make you application available on a CD along with a viewer version of Microcosm Pro so that the application will run straight from the CD. See **Publishing an Application** in the **Creating Applications Tutorial**.

Note	The distribution of the Microcosm Pro Viewer will be subject to licence restrictions. Contact Multicosm Ltd on mcm@multicosm.com or +44 (0)1703 767678 if you have any questions.
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- ◆ **Produce an install CD of Microcosm Pro which has your application as the installed Application**

Microcosm was delivered to you on an install CD, with Caerdroia as the sample application. You can produce a new Microcosm install disk which has your application (or applications) as the applications that will be installed.

See **Publishing an Application** in the **Creating Applications Tutorial**.

Note	The distribution of Microcosm Pro on CD will be subject to licence restrictions. Contact Multicosm Ltd on mcm@multicosm.com or +44 (0)1703 767678 if you have any questions.
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◆ Publish your Application for Delivery over the World Wide Web

You can place you application on a World Wide Web server so that Microcosm users elsewhere can access the application by pointing their browser at the app.html file that will be created automatically for each application.

Furthermore, for users that do not already have Microcosm Pro installed, you can distribute a Microcosm Pro Viewer which comes as a Web (Netscape or Internet Explorer) plugin, which may be downloaded and installed over the Web.

See **Publishing an Application** in the **Creating Applications Tutorial**.

Note The distribution of the Microcosm Pro Viewer Plugin will be subject to licence restrictions. Contact Multicosm Ltd on mcm@multicosm.com or +44 (0)1703 767678 if you have any questions.

13.5 Creating Shortcuts

The major entry point to Microcosm Pro is the program `Microcosm.exe` (sic).

This program can take a number of command line parameters which allow you to specify things like the name of the user and the application to run.

If you create a shortcut (e.g. on your desktop or in your start menu), with such command line parameters, this will allow you to login directly as required rather than having to go through the process of choosing a user and application every time you login.

To create a new menu entry in your Microcosm Program menu,

- ➔ right click on the Windows **Start** button
- ➔ select **Open All Users**
- ➔ double click on **Programs** then on **Microcosm Pro**.
- ➔ Select the **Microcosm Pro Login** Shortcut, **Copy** it, and **Paste** it back into the same window (or onto the desktop). You will now be able to enter command line parameters and a shortcut name that you can use to start Microcosm as you wish.

In the shortcut the command line consists of the Microcosm path (such as "`C:\Program Files\Mcmpro\Bin\Microcosm.exe`") followed by a space separated set of options (such as `/u:guest`). Note that the `MICROCOSM.EXE` is missing an "O" to keep its length to 8 characters.

The Command Line Options you may use are:

- | | |
|----------------------------------|------------------------------------------------------------------------------------------------------|
| <code>/u:<USERNAME></code> | Specifies the user name Microcosm should use when starting up. |
| <code>/p:<PASSWORD></code> | Specifies the password Microcosm should use when starting up. |
| <code>/a:<APPFILE></code> | Specifies the full path of the application registry file that Microcosm should use when starting up. |

/np	Specifies that if an Autologin is specified it's password should not be used, and should be left for the user to type.
/c	Requests to start microcosm in configuration mode rather than to view an application.

Using /u:<USERNAME> together with /p:<PASSWORD> allows you to bypass the login prompt. Specifying the application as well will immediately display the startup screen of your hypertext application without interfering with the user.

To automatically log in as the administrator, use **/u:Administrator** **/p:<PASSWORD>** this password is left blank when Microcosm is first installed. An administrator can configure Microcosm or an application but cannot run applications. Unless you use an administrator shortcut, the administrator will not be visible in the list of users.

To log on as the application, use /u:<APPFILE> /p<APPPASSWORD>,

e.g. **Microcosm.exe /u:C:\mcmapps\mazes\mazes.mcm /p:**

in the above example we know that Caerdroia, the Mazes application has no password, so we use /p: on its own. To change the password of an application, log on as the application and click configure. You will see the **change password wizard**.

The installed version of Microcosm Pro comes with various example shortcuts.

14 Networks

In this chapter

- **Using a Network: Overview**
 - **Setting Up Microcosm on a Network**
 - ◆ **Preparing the Server**
 - ◆ **Preparing the Client Workstations**
 - ◆ **Preparing the User Accounts**
 - **Performance Considerations**
-

14.1 Using a Network: Overview

There are number of reasons for installing Microcosm so that it will run over networks:

- To have one central Microcosm installation that can be accessed by many users
- To allow remote users access to a Microcosm system
- To protect the Microcosm system from unauthorised changes by users
- To allow Microcosm to run on PCs with no hard disks.

14.2 Setting Up Microcosm Pro to run on a Network

This section describes how you can set up Microcosm to run from a fileserver environment.

It assumes that you will be keeping your Microcosm installation on a read-only location on a fileserver, your Microcosm applications at some other read-only location on a fileserver, and your users will have directories which they individually have write access to on which they may keep their private linkbases, annotations and document management system. This might be on a network fileserver or on the local machine.

There are two ways that Microcosm can address a network filestore

- By a UNC, e.g. `\\Server1\Programs` (where SERVER1 is the name of the machine on your network and PROGRAMS is the name of a share on that server)
- By a mapped drive letter, e.g. we could have mapped `P:\` to the UNC above.

Whichever convention you are using, it is necessary the System Administrator has write access to the drive. (This could be done by creating a second share on the same directory, which has write access for the System Administrator only)

14.2.1 Preparing The Server

(Assuming `\\Server1` or `P:\` is the fileserver on which we wish to install the Microcosm programs and `\\Server2` or `N:\` is the fileserver on which we wish to install the Microcosm Applications)

The stages are as follows:

- ➔ Install Microcosm from the CD to the server, using either of the conventions above.
- ➔ Install Microcosm Programs to `\\Server1\Mcmpro` or install Microcosm Programs to `P:\Mcmpro`
- ➔ Install Microcosm Applications to `\\Server2\Mcmapps` or install Microcosm Applications to `N:\Mcmapps`
- ➔ Select the Custom Installation

- ➔ Normally you would choose to **install the program files** and the **Caerdroia** application. You would select to **install files for the web viewer**, and you would select the **reliable web download** option.
- ➔ When the installation is complete you will have a set of shortcuts on **your** desktop. You may wish to copy these to some place on your server for later distribution to your users.

Note If you were using a different drive mapping or share name from the one your users will be using, then you will need to change this in the **Properties | Shortcut**, under both *Target* and *Start-In*, for each shortcut you intend to distribute.

- ➔ Place any other Microcosm Pro Applications you may have into the Applications directory (e.g. \\Server2\Mcmapps or N:\McmApps) alongside the MAZES directory that will already be there.
- ➔ Point Microcosm at these applications. For example if you have an application called **MyTest** in a directory called Test, then the process will involve logging into Microcosm as user guest (password guest) and choose **Settings**, then choose **Add**. Press the **Browse** button, then in the Filename line, type in e.g. \\Server2\or N:\ , then Enter. You should now be able to browse and locate the file which will be called MYTEST.MCM inside the TEST directory. Once you have selected this file, you should see that the application is added to the list of applications. Repeat the process for all applications you own.

NOTE You must have write access to the Microcosm Program directory at the time you do this. If not Microcosm may appear to work, but will not be able to find its files at run time.

- ➔ You must now run each of the applications in order to make sure that the indexes are “in synch” with the files that they index. When you have started each application, simply quit the application and the up to date indexes will be written back to the disk.

NOTE You must have write access to the Microcosm Program directory at the time you do this. If you fail to do this, every time any user uses the system it will have to make the indexes again. This is very tiresome!

NOTE2 Windows 95 can have trouble with time when it changes due to daylight savings, and this can cause Microcosm to think its indexes are out of sync. The solution is for the system administrator to get read access, and repeat the above step.

14.2.2 Preparing the Client Workstations

- ➔ You must copy at least the **Microcosm Pro Login shortcut** onto each client machine (making sure that the **Target** and **Start-In** reference the Microcosm program directory in the way that the user machines expect).
- ➔ The final stage of preparing a Network machine to run Microcosm from a fileserver, is to ensure that client workstations have the correct Windows System files. These are DLL's released by Microsoft, and some features in Microcosm

depend on the latest versions being available. There is a program on the CD called `\Publish\NoSetup\bin\setupsys\Setupsys.exe` which will check your windows system files, and update them if, and only if, they are out of date. This update happens automatically when you install straight to a workstation, but where the workstation will run Microcosm from a server installation, you should may encounter problems if this program has not been run first.

At this stage it is possible for users to login as guest and run your applications. Assuming that they have Read-only access to the program drive, any links, new documents, annotations, setting etc that they make will only be transient. They will not be saved when the user exits.

It may well be that this environment is quite adequate for most application delivery. **The next section of this document describes the steps necessary to allow users to keep their own links, annotations and documents.**

14.2.3 Preparing the User Accounts

Users may own private **linkbases**, **docuverse** and **annotations**, and this data is stored in the **user's home directory**. By default, Microcosm assumes that users' home directories will be held in a sub directory called **USERS** which is stored under the **McmPro** directory. If this directory is read-only then Microcosm will work exactly as normal except that when you leave Microcosm, the changes that you have made will not be saved. If you wish to put the user directories somewhere where they will not be read only, such as a user's `U:\` drive, or the `C:\USERS` drive, then the procedure is as follows.

Logon as **Microcosm Administrator**, then go to **Settings**, and choose **Config System**. From the list of wizards, choose the **Registry Viewer**.

In the Microcosm Registry, expand the `System, Variables` branch. You will see a key called `USERS_PATH`. Change it's value to point to the correct place, e.g. `U:\` or `C:\USERS`

You now need to move any existing users directories to the appropriate place. New directories created using the **CreateUser** Wizard will now be created in the `U:\` or `C:\USERS` drive as understood by the current network drive mappings. Alternatively, you could make a directory for one user (in their `U:\` drive) and then copy it to the other user drives.

14.3 Performance Considerations

When Microcosm is installed with components distributed over a network, the performance of Microcosm depends critically on the performance of the network.

While there are a number of small data transfers for some of the Microcosm processes, the principal amount of data is without doubt associated with documents.

◆ Start Up

When Microcosm is started the Code, Registry, and the `.nix` file of the DMS are read and cached locally.

When the user signs on and chooses an application, the `.nix` file of the Application Linkbase(s) and User Linkbase(s) are read and cached locally.

If the DMS has a large number of documents the `.nix` files can become quite large. Application linkbases can hold many hundreds, if not thousands of links, resulting in large `.nix` files.

Although these files are only read once, when Microcosm is started (Code, Registry and DMS) and when the user signs (on linkbases), there may be a delay if the network is slow.

◆ **Viewing Documents**

When a document is selected for viewing, either by *Select a Document* or by one of the link following actions, there are two stages to the process. First the internal cached `.nix` file for the DMS is used to identify the part of the `.raw` file to be read to identify the full document information like such as the title and full path file name. The data transferred from the `.raw` file for each document is small and does not depend upon the size of the DMS.

The second stage is for the viewer to use this data to read the document file. With most viewers, the whole document is transferred before it is displayed by the viewer. This data transfer is the most significant part of the whole process. If the network is slow, there can be significant delays while the whole document is transferred.

◆ **Following Links**

The internal cached `.nix` file for the linkbase is used to identify the part of the `.raw` file to be read to identify the target document of the link. The data transferred for each document is the same (small) and does not depend upon the size of the linkbase. Thus when the Follow Link results in a document being displayed, the significant delay will occur when the document is being transferred and being displayed.

◆ **Show Links**

Show Links turns the selected text into a series of Follow Links, the actual number depending upon how many words have been selected to pass to Show Links, how many Stop Words have been eliminated from the selection, and whether Word Pairs are being processed. The Word Pair option effectively doubles the number of Follow Links that are generated.

While the network overhead for a single Follow Link is small, it can become significant for Show Links.

◆ **Compute Links**

Computed Links reads the Index File (`invert1.tab`) every time Computed Links is used. If a large number of documents have been included in the Index when it was generated, this file can be large.

◆ **Network Segments**

Experience with Novell networks has shown that the performance of the network and Microcosm can be improved dramatically by limiting the number of PCs on each network segment.

If more than 13 machines are run on one segment then the network can become over-loaded with Windows swap file traffic. Adding additional network cards to the server will reduce the number of PCs on each segment and improve the performance of both Windows and Microcosm.

15 Path Variables

In this Chapter

- Overview
 - Application Paths and Variables
 - System Paths and Variables
-

15.1 Path Variables: Overview

Microcosm has incorporated the concept of Path Variables, which can be defined at the System level (System Path Variables) and also, if required, at the Application level (Application Path Variables). Path Variables are specified in a branch in the Registry. Each Variable is defined with the entry

```
VariableName = text string
```

and referred to in other entries in the Registry with the syntax `$VariableName$`. When `$VariableName$` is found, it is replaced with the text string in the definition.

The purpose of the path names is to allow Microcosm or its associated applications to be easily installed on a number of different disk drives or directories and perhaps, at a later time, moved to other drives and directories (the application can be *portable*). This can be achieved by moving the required component (e.g. by moving the directory containing a Microcosm application to a different drive).

System Path Variables define the location of the Microcosm system (the drive on which Microcosm is located), the name of the root Microcosm directory and the name of the `Mcmpro\bin` directory. Application Path Variables define the location of the application directory (the directory containing all the application files). Microcosm Wizards use the two types of variable to allow, e.g. Microcosm to be configured on a network with one Microcosm system and a number of separate applications.

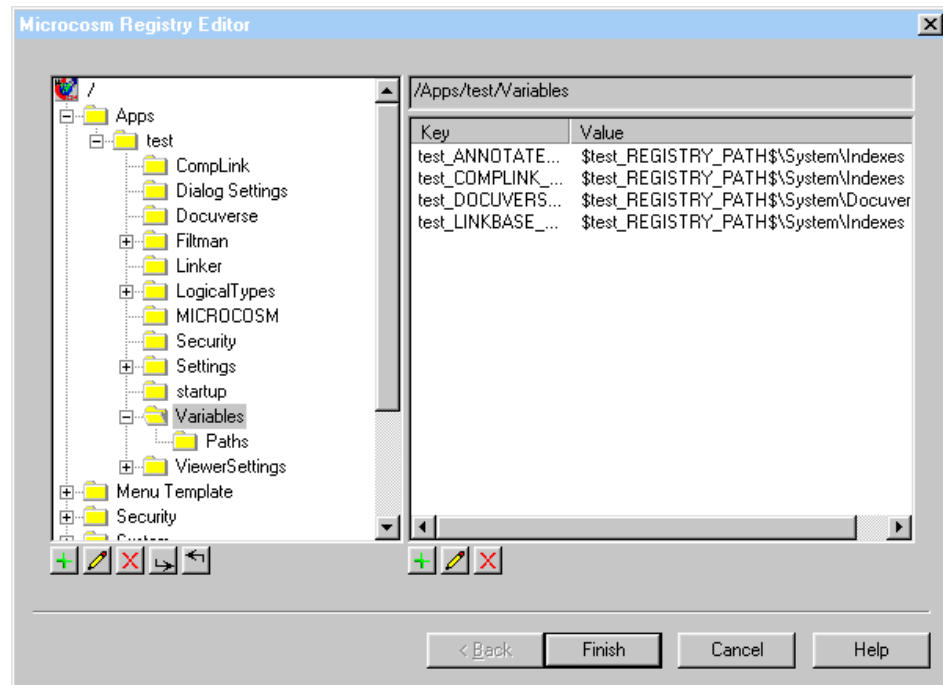
The ordinary Microcosm user or application author need not be aware of these variables. The Microcosm System uses them automatically where possible. This section is of interest only to system administrators and advanced users who wish to configure the system in ways other than the default.

15.2 Application Variables and Paths

These are the variables that are created by the **Create Application Wizard**. You can see them by logging on to the **Microcosm Configuration Program** as the **Microcosm Administrator**, then selecting an application and pressing **Config**, then using the **Registry Viewer Wizard**.

In this example an application called `test` was selected.

Expand the selected Apps | test | Variables branch. You will see variables have been defined for the position of the application's annotation database, computed link index, docuverse and linkbases.



For example test_LINKBASE_PATH has been defined as:

`$test_REGISTRY_PATH$\System\Indexes`

This information is used, for example, in the Apps | test | Filtman | Filters section where there is an entry:

`Filter1 = test,linkbase.exe $test_LINKBASE_PATH$\test.ddf`

Wherever a Microcosm Wizard is used, in this example, to enter a new linkbase, it will use this variable to determine where the linkbase should be put, and it will use this variable in any registry entries.

You will see that the variable refers to `$test_REGISTRY_PATH$` which is another variable. This variable is created at run time and identifies the place that the application registry that Microcosm is actually using was found, typically the root of the application directory . The other variables are also defined in terms of this variable.

In the end *all application variables* and paths are defined in terms relative to the **application registry path**, and this ensures that the application can be moved to a new position, as there are no “hard coded” paths.

15.3 System Paths and Variables

The system has just one pre-defined variable.

In the System | Users branch of the registry you will see an entry

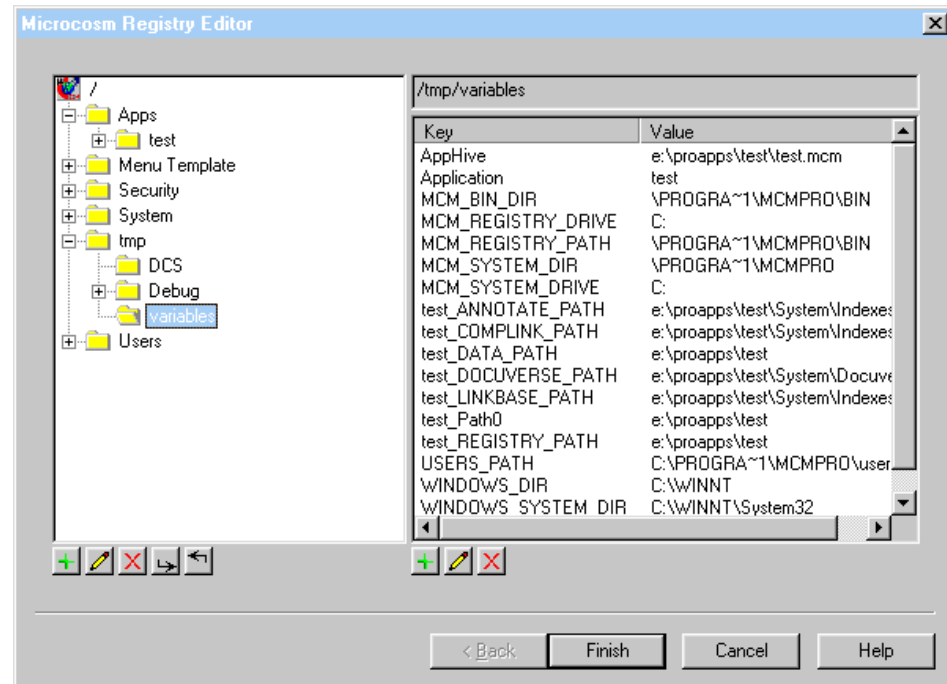
`USERS_PATH=MCM_SYSTEM_DRIVEMCM_SYSTEM_DIR$\users`

which defines where the users’ home directories will be. By default this is within the Mcmpro directory, but may be changed if you wish.

All other variables are determined at run time, as Microcosm know when it starts where it is, where the system registry is, and where the application registry is. If

you examine the tmp | variables section of the registry you will see the actual variables that Microcosm currently knows. E.g;

All Paths and Variables



For example, in this case we can see that the application registry was at E:\Proapps\test and that the MCM_BIN_DIR was at \Program Files\McmPro\BIN on the MCM_SYSTEM_DRIVE which was C :

16 Index

—\$—

\$...\$, 123

—A—

- Abstract Types, 99–100
- Adding a new linkbase, 72–74
- Adding an Annotation Filter, 74–76
- Adding an Application, 81–82
- Adding Many Users, 42–43
- Adding New User, 39
- Administrator Login, 23–25
- Annotation Filter
 - New, 74–76
- Application, 125–26
 - Copying
 - Importing the Data, 107–10
 - Creating an Application, 82–83
 - Existing, 17
 - MachineID, 82–83
 - Management, **103**
 - Microcosm, **79**
 - Portable, 83–84
- Application List, 81–82
- Application Management
 - Overview, 105
- Application Shortcuts, 112
- Applications, 103
 - Portable, 105–6
 - Publishing, 111–12
- Architecture
 - Microcosm Architecture, 7–9

—B—

- Branch
 - Registry
 - Adding New, 57–58
 - Definition, 55–57
 - Importing and Exporting, 61
 - Moving and Copying, 61
 - Removing, 58
 - Renaming, 58–59
- Button Properties, 88–90

—C—

- Clipboard
 - Clipboard Actions, 48–50
 - Clipboard Options, 48–50
 - Monitor Clipboard, 48–50
- Compute Links
 - File Locations, 50

- Index Generation, 76
- Compute Links Index, 76
- Configuration
 - Administrator, 23–25
 - application owner, 25–27
 - user, 25–27
- Configuration Program, 21
 - Overview, 23
- Configuration Program Shortcuts, 112
- Configuring Microcosm, 28
- Copying Registry Branches, 61
- Creating a new linkbase, 72–74

—D—

- ddf
 - Linkbase, 68–69
- Deleting User, 40
- Display Settings, 88–90
- DMS
 - Microcosm System, 12
- Document Management System
 - Microcosm System, 12
- Document Settings, 85
 - Overview, 87
- Documents, **91**
 - Attributes
 - Overview, 93–94
 - Startup, 33–34
 - Types
 - Abstract, 99–100
 - Adding, 95–99
 - Deleting, 100
 - Overview, 94–95

—E—

- Entry
 - Registry
 - Adding, 59
 - Changing, 60
 - Definition, 55–57
 - Removing, 60
- Error 1
 - When viewing a Document, 95–99
- Exporting Registry Branches, 61

—F—

- Filter Chain, 63
 - Overview, 65–66
- Filters, **63**, 68–69
 - Adding a New Linkbase, 72
 - Available Filters, 67–68
 - Defining the Available Filters, 72

- Defining the Filter Chain, 69–72
- Filter Chain, 66–67
- Microcosm Filters, 11–12
- Overview, 65–66
- Following Links
 - Microcosm Architecture, 7–9

—H—

- Hardware requirement, 17

—I—

- Importing Registry Branches, 61
- Index Generation, 76
 - Compute Links, 76
- Installing
 - Hardware and Software, 17
 - Setup Program, 17–19
- Installing Microcosm, **15**
- Introduction, **1**
- invert1.tab
 - Generation, 76

—K—

- Key
 - changing, 19–20

—L—

- LANs, 117
- Linkbase
 - A Microcosm Filter, 11–12
 - Adding to the Filter Chain, 72
 - ddf, raw and nix files, 68–69
 - Files, 68–69
 - Multiple Linkbases, 68–69
 - New, 72–74
- Links
 - Microcosm Architecture, 7–9

—M—

- MachineID
 - Creating an Application, 82–83
- Microcosm
 - Architecture, 7–9
 - Configuration, 28
 - Configuration Program, **21**
 - DMS, 12
 - Document Management System, 12
 - Filters, 11–12
 - Hardware and Software, 17
 - Installing, 15
 - Integrating Software Applications, 9–11
 - Overview, 7
 - Registry, 12–14, **53**
 - Setup Program, 17–19
 - Startup, **31**
 - System, **5**
 - Utilities, 12
 - Viewers, 9–11

- Wizards, 12
- Microcosm key
 - changing, 19–20
- Microcosm Shortcuts, 112
- Moving Registry Branches, 61

—N—

- Navigation Filters, 11–12
- Network, 117–18
 - User Accounts, 119
- Networks, **115**, 117
 - Performance Considerations, 119–21
 - Using a Network, 117
- nix
 - Linkbase, 68–69

—O—

- Overview
 - Configuration Program, 23
 - Document and Viewer Settings, 87
 - Filters and Filter Chain, 65–66
 - Microcosm, 7
 - Path Variables, 125
 - Registry, 55–57
 - Settings, 47–48
 - Startup, 33

—P—

- Password
 - Changing User Password, 40–41
- Path Variables, **123**
 - Overview, 125
 - Portable Applications, 83–84
- Paths, 125–26
 - System, 126
- Portable Applications, 105–6
- Publishing Applications, 111–12

—R—

- Racing Lights, 50
- raw
 - Linkbase, 68–69
- Registry, 53
 - Adding a New Branch, 57–58
 - Adding an Entry, 59
 - Changing an Entry, 60
 - Microcosm System, 12–14
 - Moving and Copying Branches, 61
 - Overview, 55–57
 - Removing a Branch, 58
 - Removing an Entry, 60
 - Renaming a Branch, 58–59
 - WIN.INI, 19, 55–57
- Removing User, 40
- Retain Select, 48–50

—S—

- Save on Exit, 88–90
- Security Wizard, 19–20

- Server Configuration, 117–18
- Server Configuration on a LAN Network, 117–18
- Setting Up on a Network, 117
- Settings, **45**
 - Clipboard Options, 48–50
 - Compute Links File Locations, 50
 - Document and Viewer, 85
 - Overview, 47–48
 - Status Window, 50
- Setup Program, 17–19
- Shortcuts, 112
- Show Links
 - A Microcosm Filter, 11–12
- Software Requirements, 17
- Startup, 31
 - Overview, 33
 - System Settings, 34–35
- Startup Documents, 33–34
- Status Window, 50
- System Settings
 - Startup, 34–35

—U—

- User
 - Adding Many Users, 42–43
 - Adding New User, 39
 - Changing Password, 40–41
 - Removing User, 40
- User Accounts on a Network, 119
- User Makes Choice, 48–50
- User Settings
 - Existing, 17

- Users, **37**
- Utilities
 - Microcosm, 12

—V—

- Variables
 - Application, 125–26
 - System, 126
- Verifying Applications, 105–6
- Viewer Settings, **85**
 - Button Properties, 88–90
 - Clearing, 87–88
 - Display Settings, 88–90
 - Overview, 87
 - Save on Exit, 88–90
 - State Saving Control, 88–90
 - Window Position, 88–90
 - Window Size, 88–90
- Viewers
 - Microcosm Viewers, 9–11

—W—

- Well-Formed Applications, 83–84
 - Copying an Application, 105
- WIN.INI, 19
- Window Position, 88–90
- Window Size, 88–90
- Wizards, 12
- Workstation Configuration on a LAN., 118–19