Introduction to Gentia

(ref: int06)

Gentia Millenium Applications Platform
v 5.0.3.0

ACCURACY

Every effort has been made to ensure the accuracy of the features and techniques presented in this publication. However, Gentia Software plc accepts no responsibility, and offers no warranty, whether expressed or implied, for the accuracy of this publication.

RESTRICTED RIGHTS

Contents

Introduction to Gentia

GENTIA™

Objectives

- To understand the concepts of Gentia
- To become familiar with the Gentia environment and its features
- To learn how to utilise Gentia's tools to develop applications
- To become familiar with the Application Framework and its features
- To learn how to use the Application Framework supplied with Gentia to help with application development

GENTIA™

Before we get started...

- Timings
  - End of the day
  - Lunch
  - Breaks
- Toilets
- Fire
- Messages
- Evaluation form

GENTIA™

Agenda

- Slide presentation
  - A few words about Gentia Software plc
  - Overview of Gentia
- Introduction to Gentia
  - Multi-dimensionality
  - Important concepts
- Gentia demonstration
- Getting started, configuration file
- The Case Study
  - Page building
  - Practical exercises
- Publishing the application
- The Application Framework

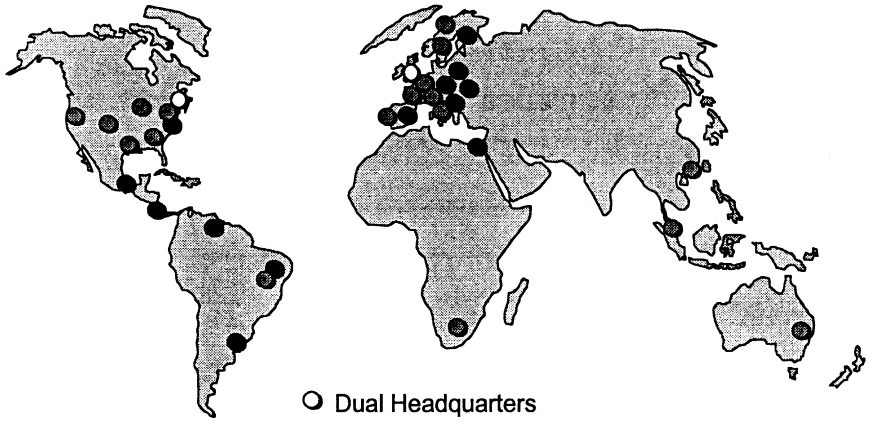
GENTIA™

Gentia Software plc

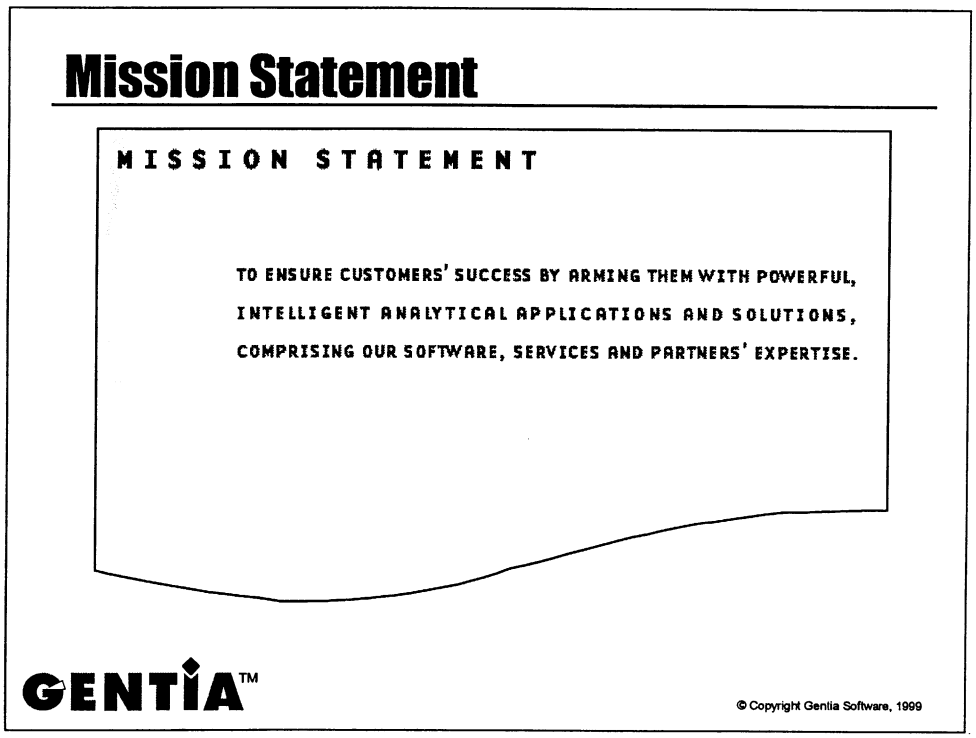
- Dual headquartered company
  - UK (Wimbledon) & USA (Boston)
  - Subsidiaries & distributors world-wide
- Founded 1983 - consistent ownership
- More than 500 global customers
- Track record for quality products
- IPO - April 1996

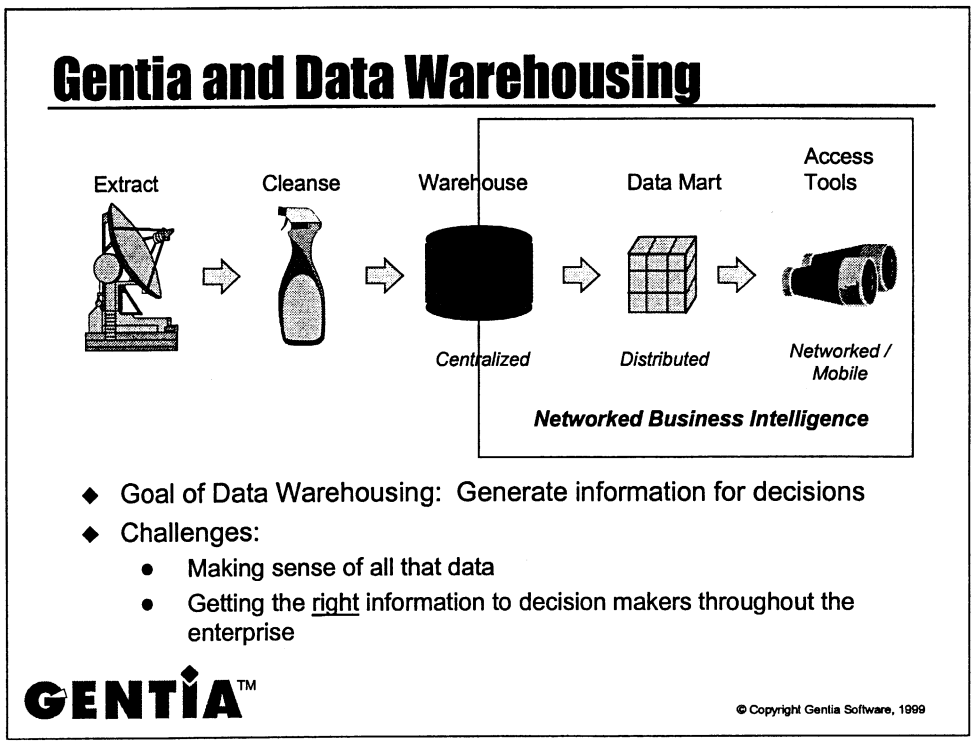
GENTIA™

A Global Company



GENTIA™





We see Gentia as fitting into the Data Warehousing marketplace, whose goal is to generate information from data upon which business decisions can be made.

Data Warehousing consists of a number of stages, from extraction of data through to users accessing the data on a networked basis.

Gentia's strength's are more about pulling together data from a number of disparate sources into a centralised multi-dimensional database, from which the data can be accessed and analysed by the users.

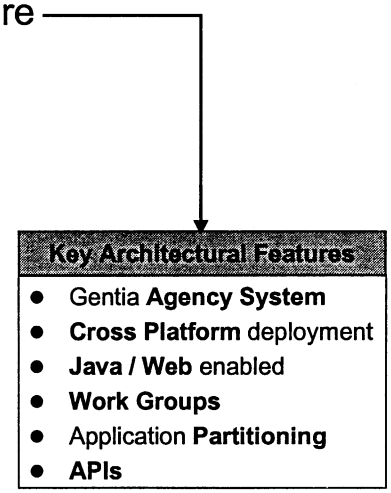
Gentia's Key Strengths

- Open network architecture
- Visual development environment
- Comprehensive analysis
- Enterprise scaleability

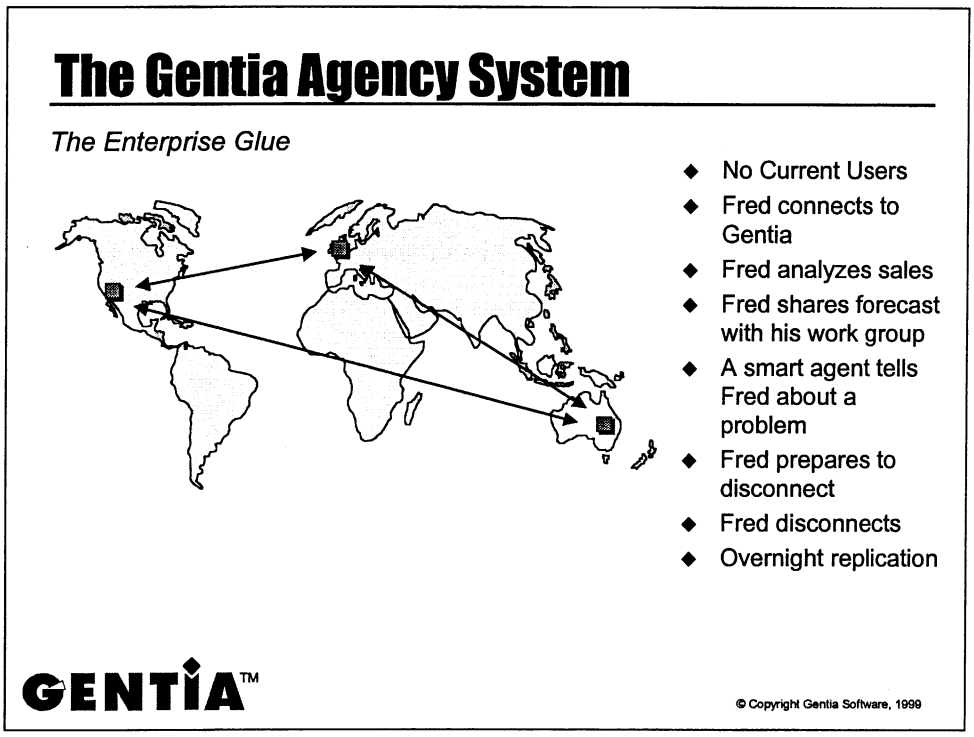
GENTIA™

Open Network Architecture

- Open network architecture



GENTIA™



Fred is based in the US.

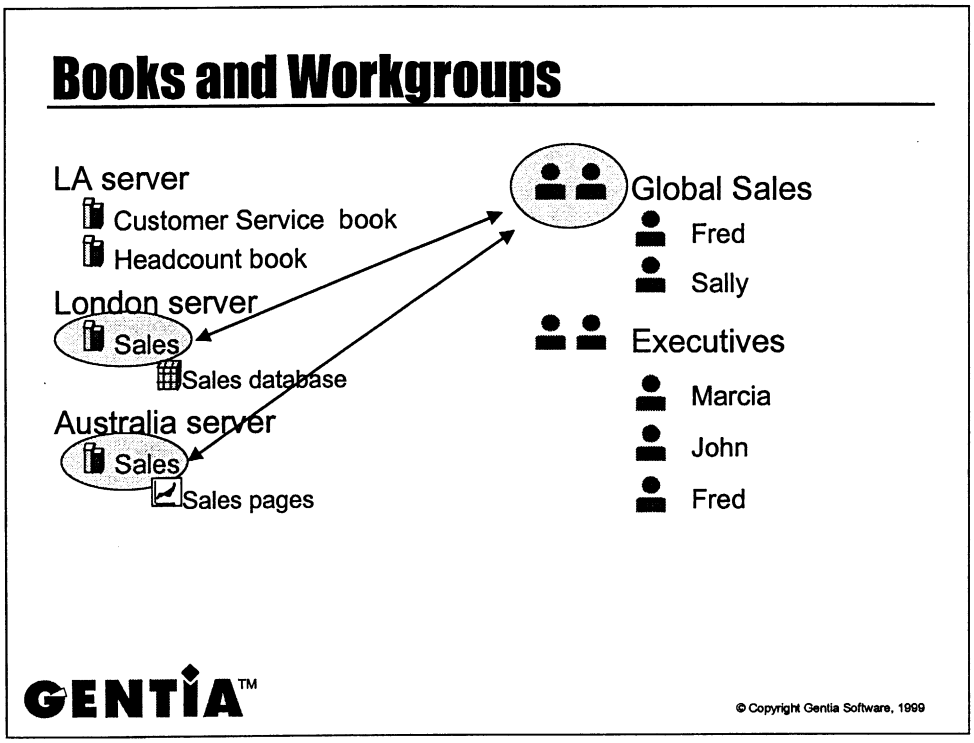
He connects to Gentia and analyses sales information in the UK and Australia.

He shares his forecast with his work group, based in Australia.

A smart agent tells Fred about a problem with the data in the UK.

Fred disconnects.

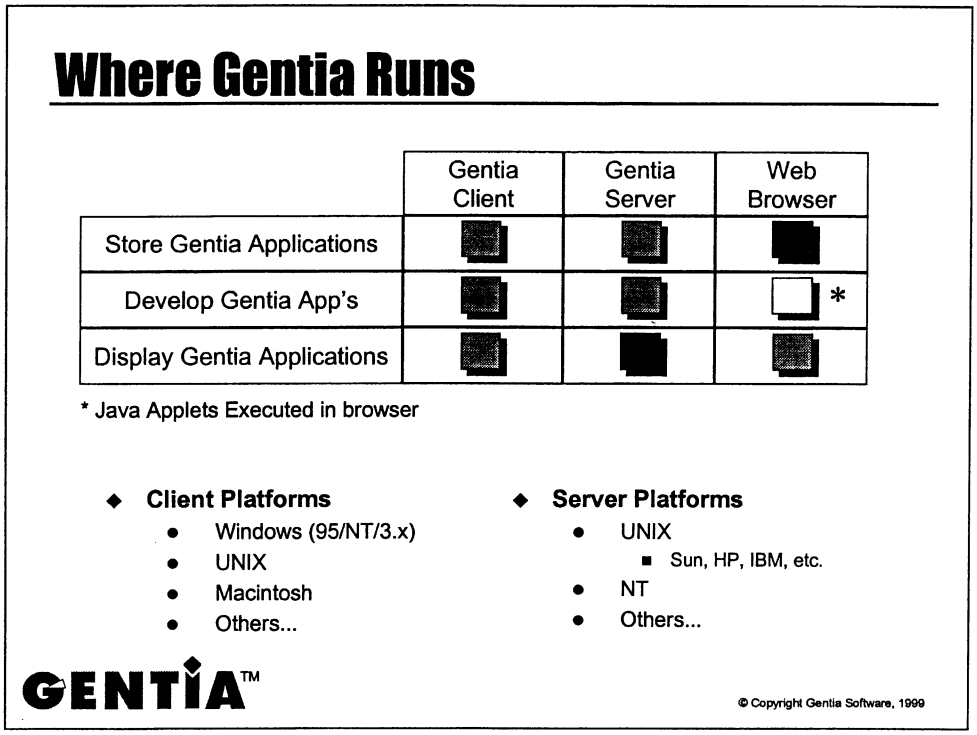
Application replication is carried out overnight.



Each screen in Gentia is known as a page.

The pages are grouped into chapters (or sections) and then books. Typically, an application would be held in one book. In this example, a number of applications held in books are located in various servers in different places.

On the user side, a number of users have been grouped into 'Global Sales'. This user group has been given access to books, thereby giving each user in the group access the pages in the books.

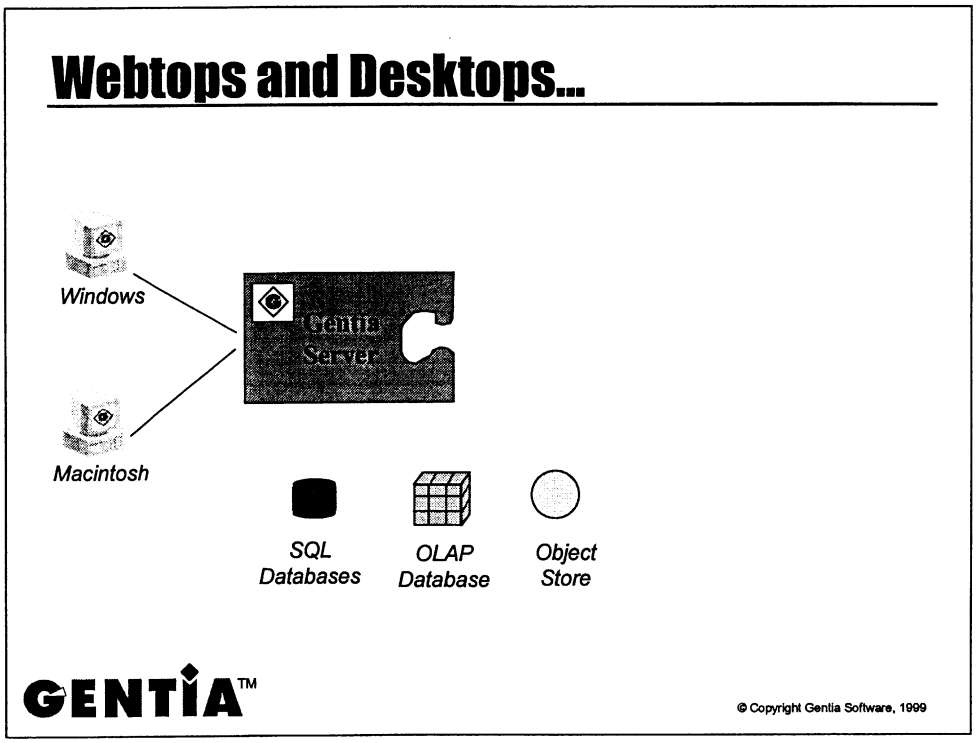


Gentia applications can be developed on both the Gentia server and on the client machine, not on a web browser.

The application itself can be stored on the server and/or the client machine. For instance, you may store the database on the server, some of the books on the server, and some of the books on the client.

Gentia applications can be displayed for users on Gentia clients or via web browsers.

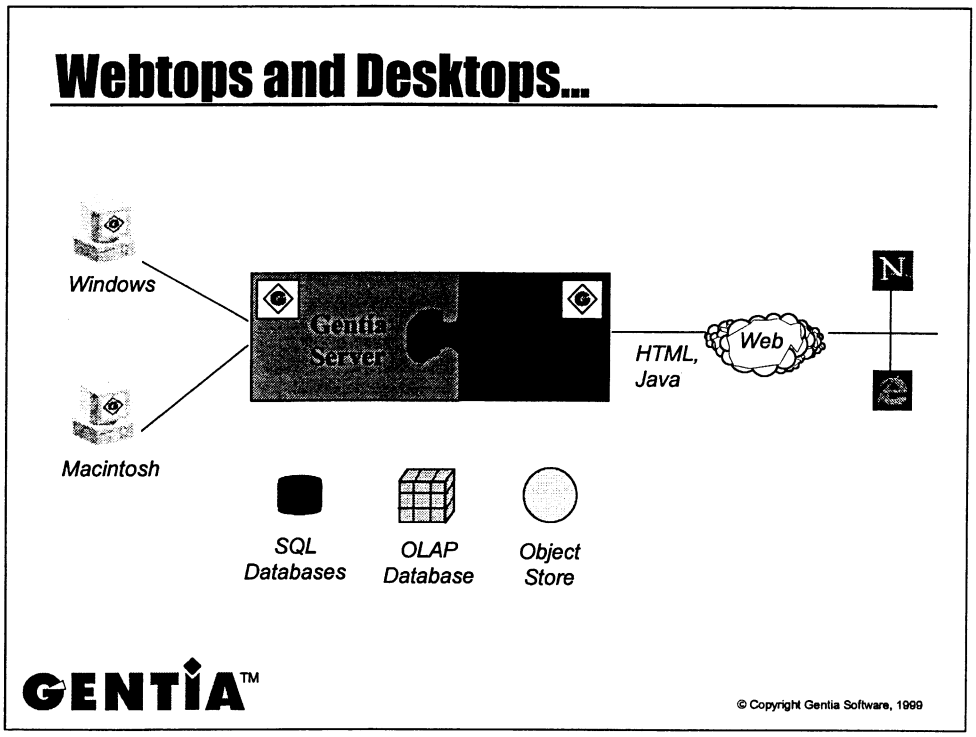
Gentia supports many platforms and can be, for instance, developed on Windows 95 and displayed to a combination of Macintosh, Windows 3.1 and Web browser users.



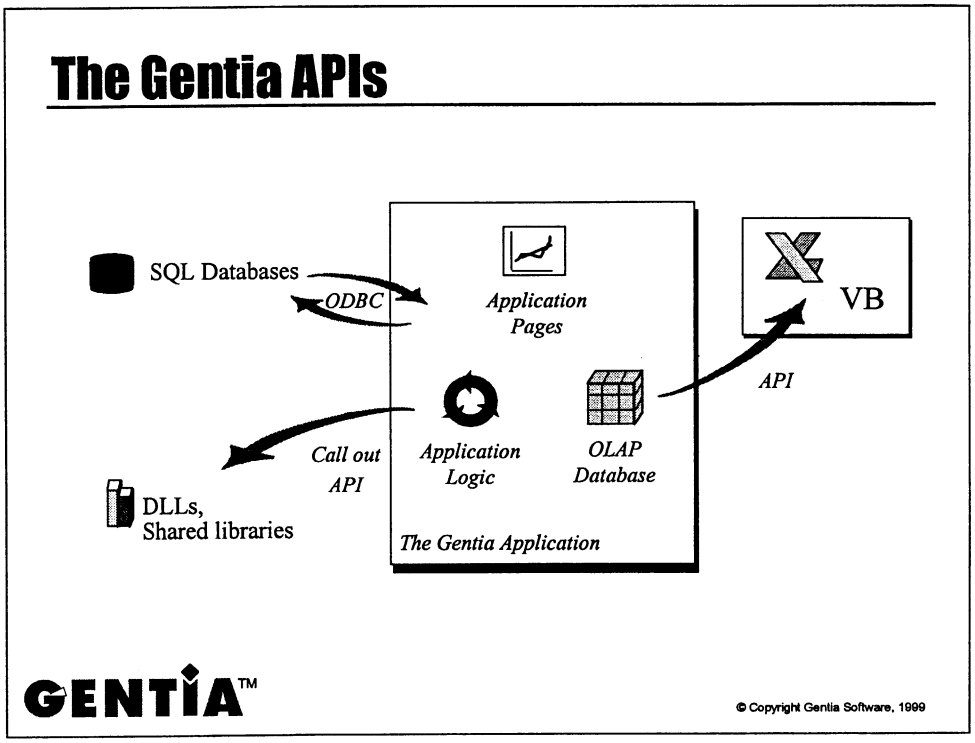
Here, a number of different client machines access the Gentia application on the server.

The application is made up of the following:

- An object store, containing the user interface (essentially the books and pages)
- A GentiaDB database, holding the data multi-dimensionally
- Access to SQL data sources to provide lower-level data by triggering queries from a page within Gentia.



Gentia WebSuite provides access to the Gentia application via web browsers. This means that Gentia applications can be easily and cheaply distributed to huge user bases (thousands of users), without having to upgrade users' client machines.



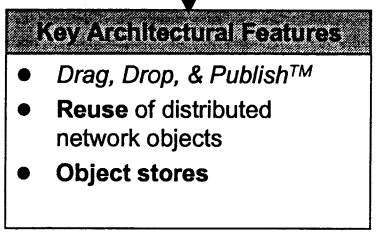
Gentia's APIs (application program interface) provide access to other products in the following way:

The ODBC API allows you connect to external data sources and execute queries. This can be done from a page, on a parameterised basis if necessary, to give users access to low-level data.

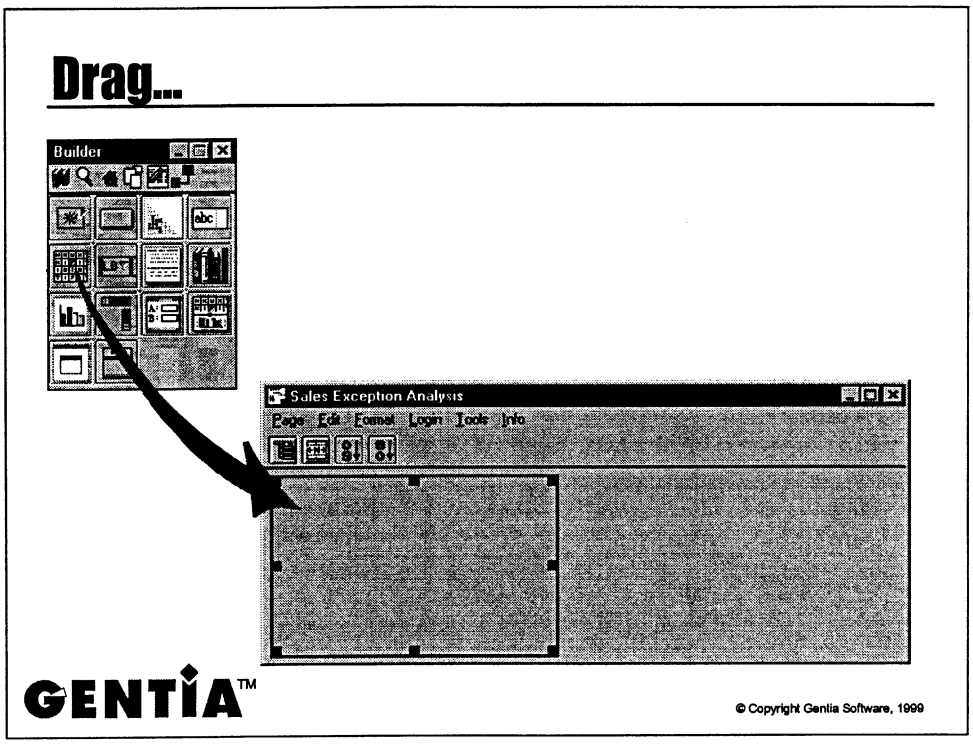
The GentiaDB OpenAPI provides access to the Excel Addin, allowing you to access GentiaDB data directly from Microsoft's Excel, on a read/write basis. It also provides access to SDK, Gentia's software development kit, which allows you to build your own applications using languages such as Visual Basic.

Visual Development Environment

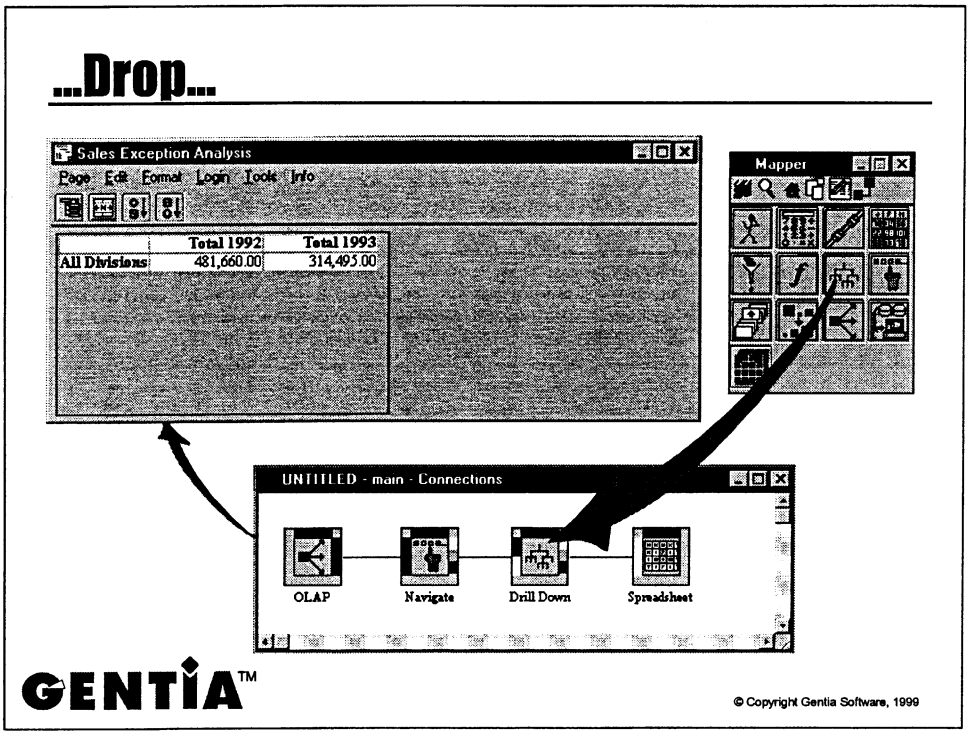
- Open network architecture
- Visual development environment



GENTIA™

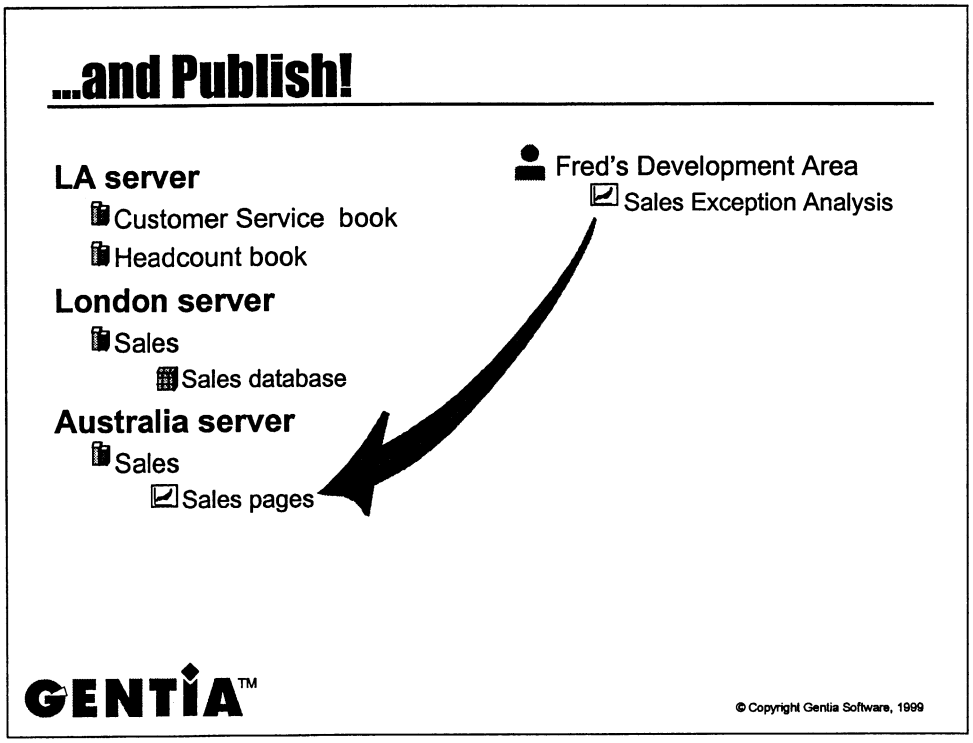


A Gentia developer can easily create pages by simply dragging widgets onto pages. In this example a table widget has been dragged onto the page, where it is to display data...



Each page has a connections mapper associated with it, which can be thought of as a map of the page. The connections mapper is used to build up the functionality of the page.

Each widget on the page is represented by an icon in the connections mapper. The mapper keypad contains further icons called connectors which each have a specific role, e.g. the filter allows you to filter out unrequired items. The connectors are dropped on the mapper and connected together to determine how the data is to be displayed on the page, e.g. with or without drill-down enabled, and what is to happen if the user interacts with the page, e.g. highlights data on the table.

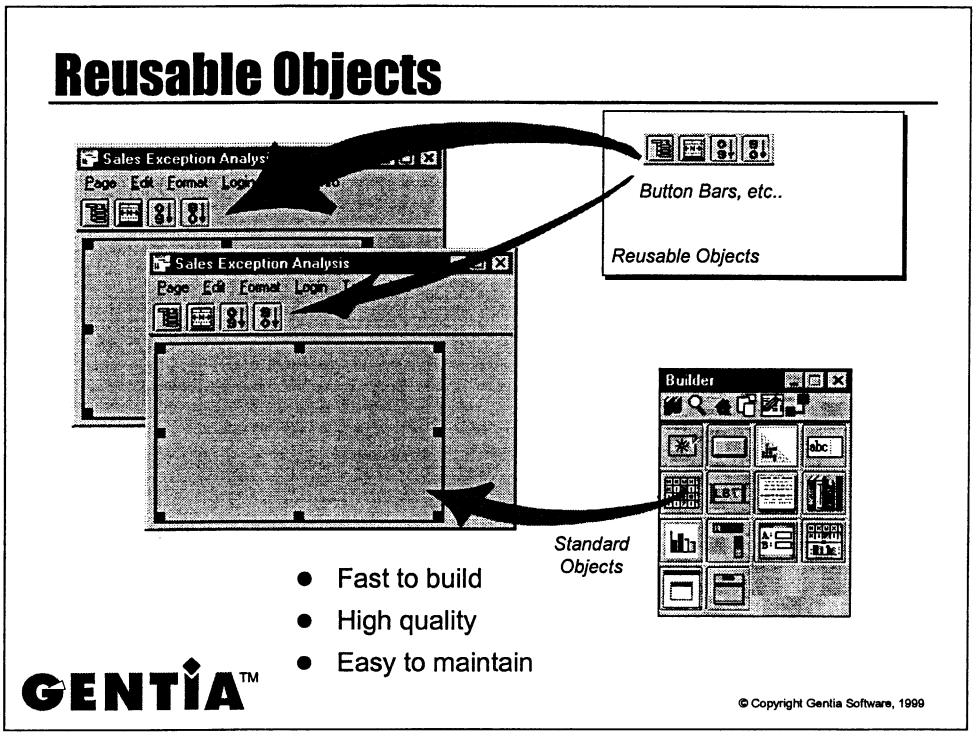


Having built a series of pages, they need to be made available to the user base. This is known as publishing.

Pages can be easily copied into books, which can then be accessed by particular users.

Here, Fred has developed a *Sales Exception Analysis* page, which he copies to the *Sales* book, which happens to be on the Australian server.

Any users who can access the Sales book will be able to view Fred's newly updated page.

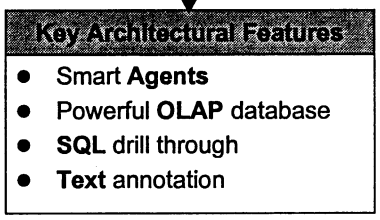


Gentia is object oriented. Creating high quality objects is easy using the graphical interface; no coding is necessary. Once you have created an object, e.g. a page or a chart, you can reuse these objects, rather than having to create them from scratch. This means that applications can have a very fast development time, since having built up a library of objects, you rarely have to build something new.

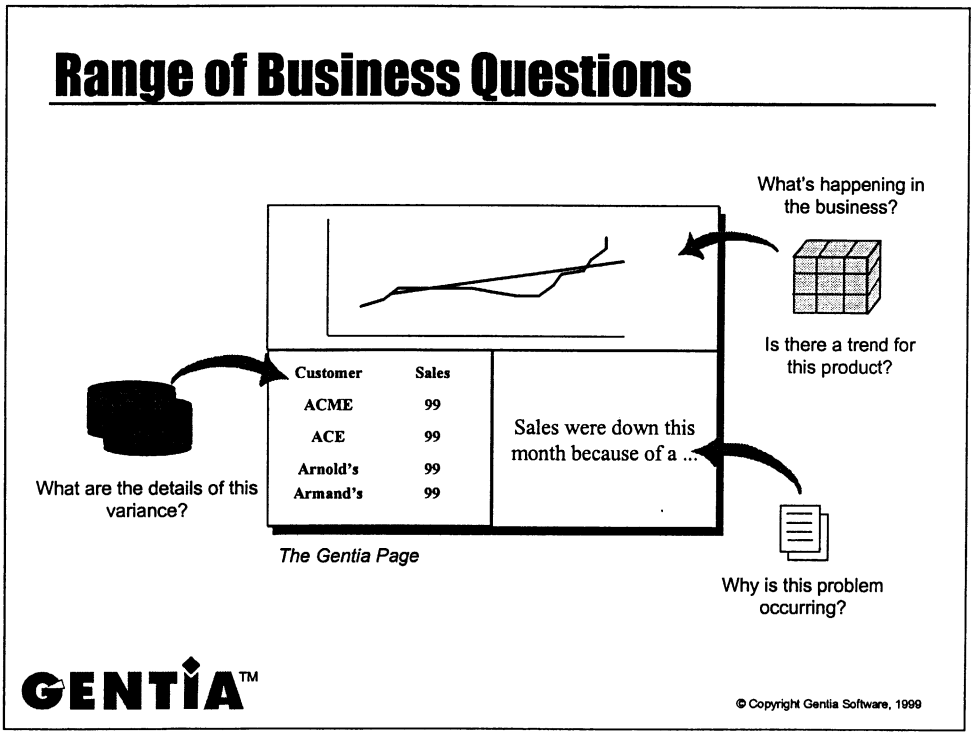
As well as being fast to build, applications are quick and easy to maintain.

Comprehensive Analysis

- Open network architecture
- Visual development environment
- Comprehensive analysis



GENTIA™



Information can be displayed to the user in different ways, depending on what is required.

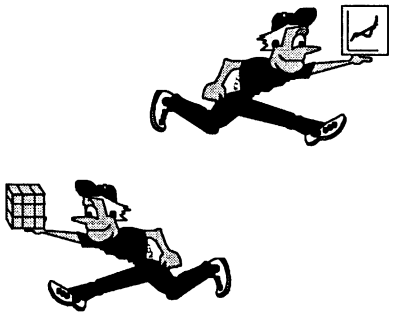
Charts can be used to give the user an instant feel for the data by displaying trends, whilst tables provide that underlying data used to give more specific detail. With the table displaying data from Gentia's OLAP database, the user can easily slice and dice, and drill-down through the data to get the required view of the information.

In order to drill-down to the low-level transactional data not held with a Gentia database, you can execute an SQL query on the the fly to provide the required information.

Text annotation can easily be provided on a page to give further information.

Smart Agents

- Automated exception alerting
- "Tell me whenever" queries
- Controlled execution
  - Scheduled
  - Triggered
- Give the answers to the questions we forget to ask

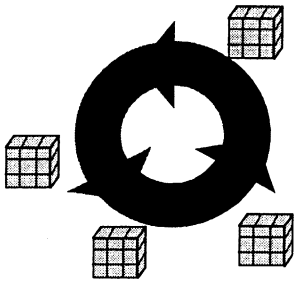


GENTIA™

Agents are objects within Gentia which can be set up to typically carry out repetitive tasks, like data mining and automated database updates.

Business Modelling

- Interactive 'what if'
- On-screen calculations
- Workgroup collaboration
  - Forecasts
  - Scenarios
- Text annotation



GENTIA™

In addition to GentiaDB, Gentia provides other data sources, each suited to different types of analysis, as follows:

• Scenarios are used for identifying the effect of change,

e.g. What if analysis, forecasting.

• Analytical models (formerly known as GADBs) are great for more complex modelling,

e.g. budgeting, top-down allocations.

Calculations can be carried out in-flight (as opposed to being stored on the database), in 3 different ways:

• As defined in the GentiaDB, the calculation would carried out on the server.

• Using a calculator connector on the page, the calculation would be carried out on the page.

• By providing the user with access to the ad-hoc calculator, in which case the user can create and name new items, as they wish.

Enterprise Scaleability

- Open network architecture
- Visual development environment
- Comprehensive analysis
- Enterprise scaleability

Key Architectural Features

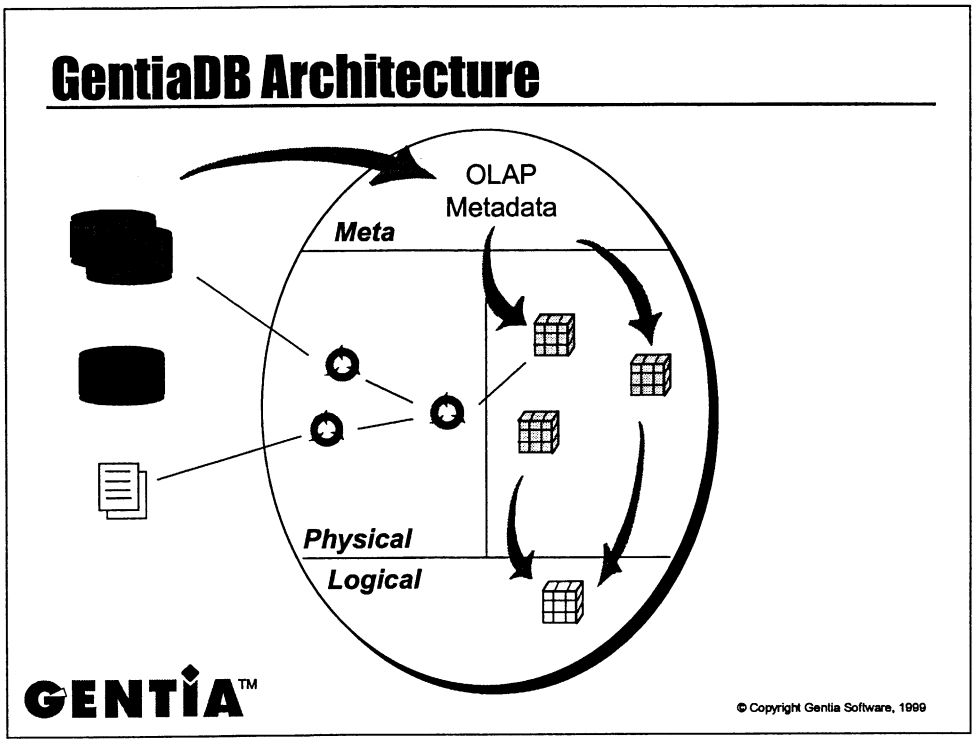
- Huge OLAP Databases
  - **Hundreds** of Gigabytes
- Huge User Bases
  - **Thousands** of Users

GENTIA™

GentiaDB Database Highlights

- Scaleability
  - Large data volumes
  - Join models
- Data management
  - Visual data transformation
  - Live updates
  - Commit & rollback
- Metadata management
  - Central Metadata
  - Synchronization with DW
- Performance
  - Very fast consolidation
- Open API

GENTIA™



GentiaDB's architecture is made up of metadata, physical, and logical components, as follows:

Metadata

The structural elements are defined in the data dictionary known as the business model. All the dimensions, members and rules are defined, but no data is held here.

Physical

Multi-dimensional base models are defined by selecting a sub-set of the business model. The base models store the data.

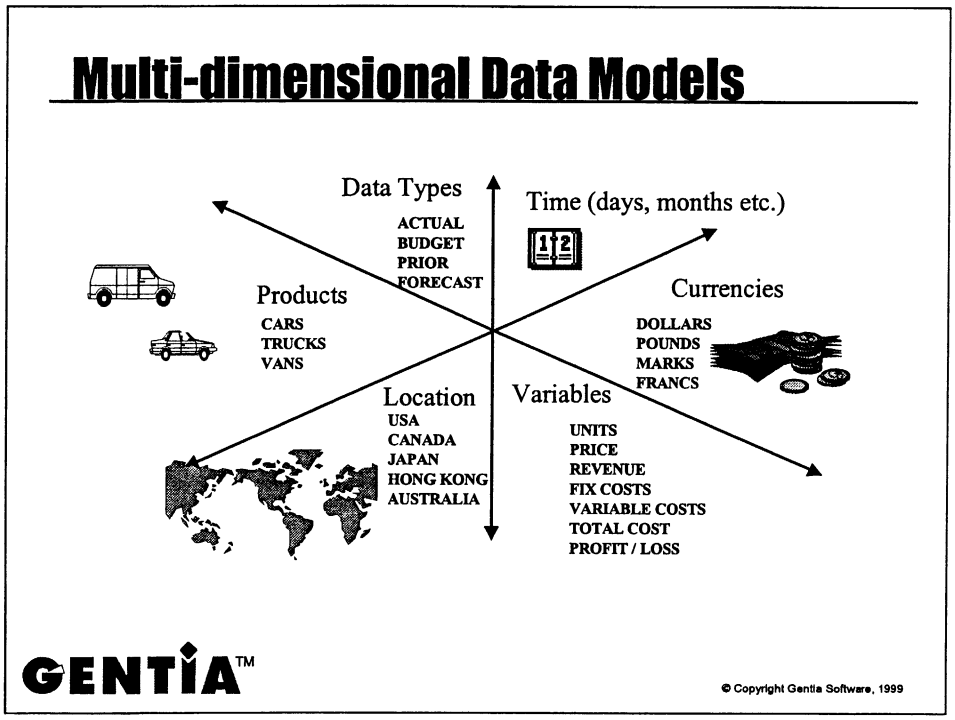
Tasks are defined to:

1. read information from text files or direct from SQL data sources, to define the business model in terms of the dimensions and members and

2. load data into base models.

Logical

Join models are created from data held in one or more base models, and can carry out cross-model calculations. Join models do not hold any data as such, they merely provide a view of data already stored in base models.



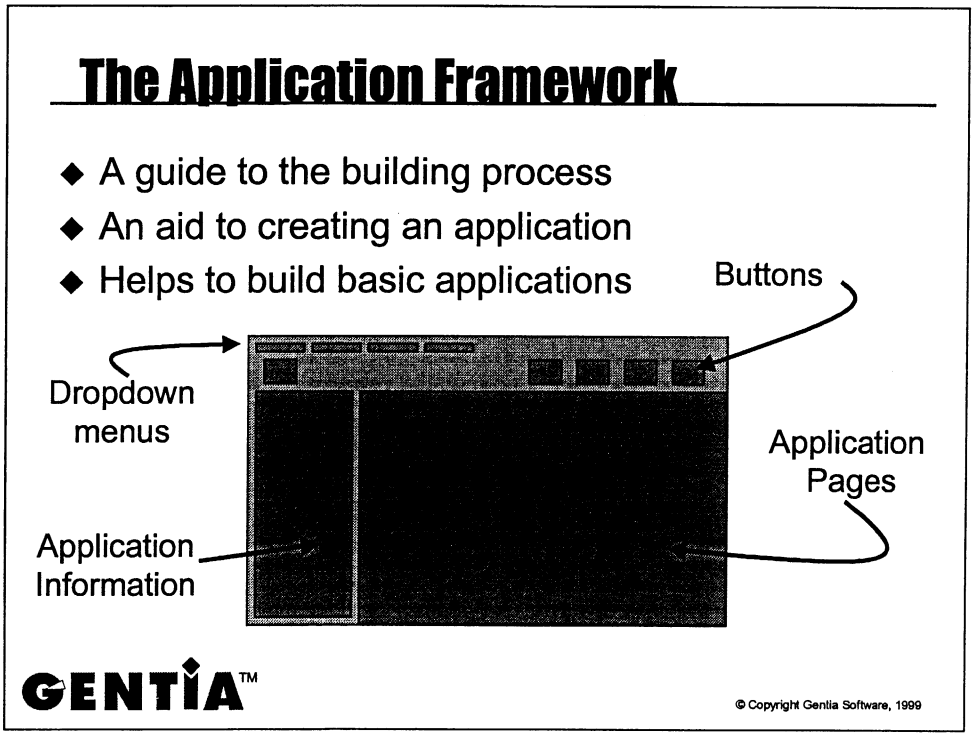
Gentia data is held multi-dimensionally. This allows you to categorise your data in terms of its attributes, which will be specific to your business and application. By storing your data in this way, you will be providing your users with a very flexible way to access the data quickly and easily, which will become clearer as the course progresses.

We will explain multi-dimensionality in more detail later.

Examples of Gentia Applications

- Financial reporting/analysis
  - Profitability analysis
  - Budgeting,
  - Planning
- Sales & Marketing
  - Promotion tracking
  - Customer profiling
- Customer Applications
  - Client satisfaction
  - Retention management
- Operations
  - Order fulfillment
  - Process modelling

GENTIA™



The Application Framework – which is covered on the last day of the Introduction course – is a Gentia application which enables a developer to create applications simply and easily. There are page templates to use, many wizards for loading data, creating complex menuing systems and an ad-hoc analysis page to look at the data.

Summary

- Gentia Software plc
- Gentia's key qualities
  - Open network architecture
  - Visual development environment
  - Comprehensive analysis
  - Enterprise scaleability
- Examples of applications

GENTIA™

Introduction

In this section, we will be covering some of Gentia's concepts with which you will need to be familiar before you can get started with building pages. These are:

- Multi-dimensionality
- Configuration files
- Author and user modes
- Pages, books and object stores

The following have been included for reference purposes:

- Gentia toolbar
- Builder keypad
- Connections mapper
- Mapper keypad

Then, we will have a look at the structure of the fictitious company upon which this course is based, to see how the database, Salemodel is defined.

Multi Dimensional Data Storage

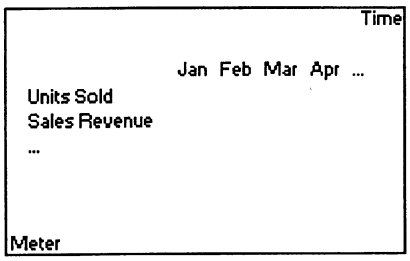
The information required to build a Gentia application can come from many disparate sources. For example, SQL extracts, general ledger systems, users spreadsheets or outside news services.

Where data is being drawn from multiple sources and needs to be combined prior to delivering to the user, Gentia provides its own database, which is optimised for fast retrieval and consolidation of the data.

The database models the structure of the data coming from the different sources. The model can also define new elements to be added to the structure that are calculated from existing members. For example, for a financial model drawing information from a database containing details of sales and costs, new elements providing gross profit and gross profit percentage could be calculated.

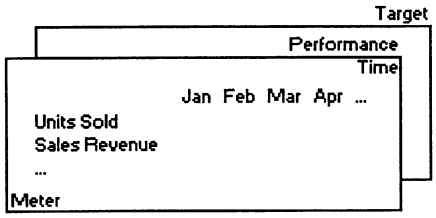
Whatever the data source, the definition of the Gentia database describes the structure of the data in terms of **dimensions**, each dimension being a different data type.

For example, a car manufacturing company may wish to monitor their business by several financial meters, such as, units sold, sales revenue, etc. over time. This could be represented by the following two dimensional model:



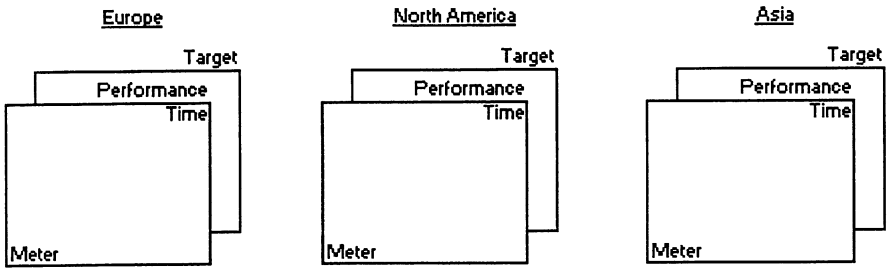
2 Dimensional Model

This model could extended to monitor this information by Performance and Target data using a three dimensional model:



3 Dimensional Model

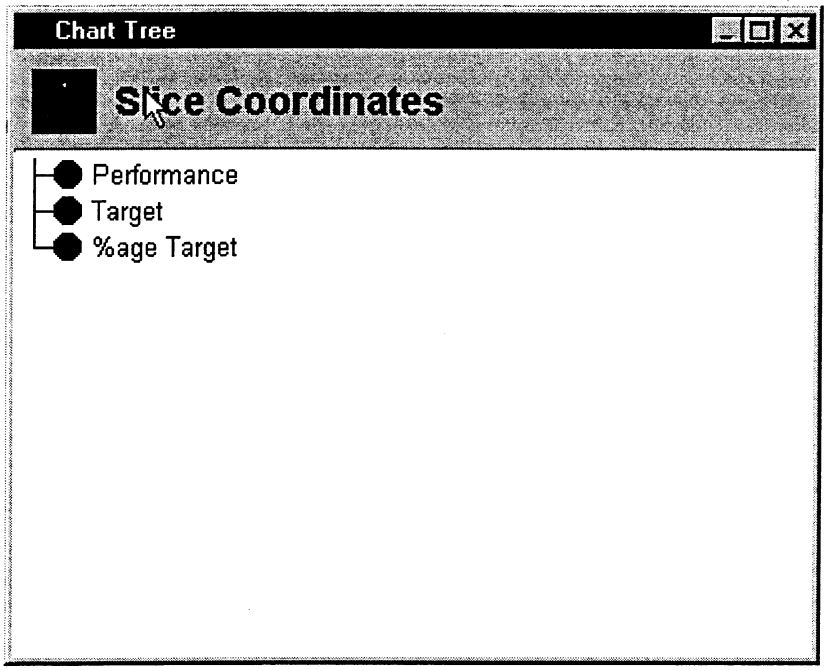
If the company was interested in monitoring the business by location, a fourth dimension could be added to the model:



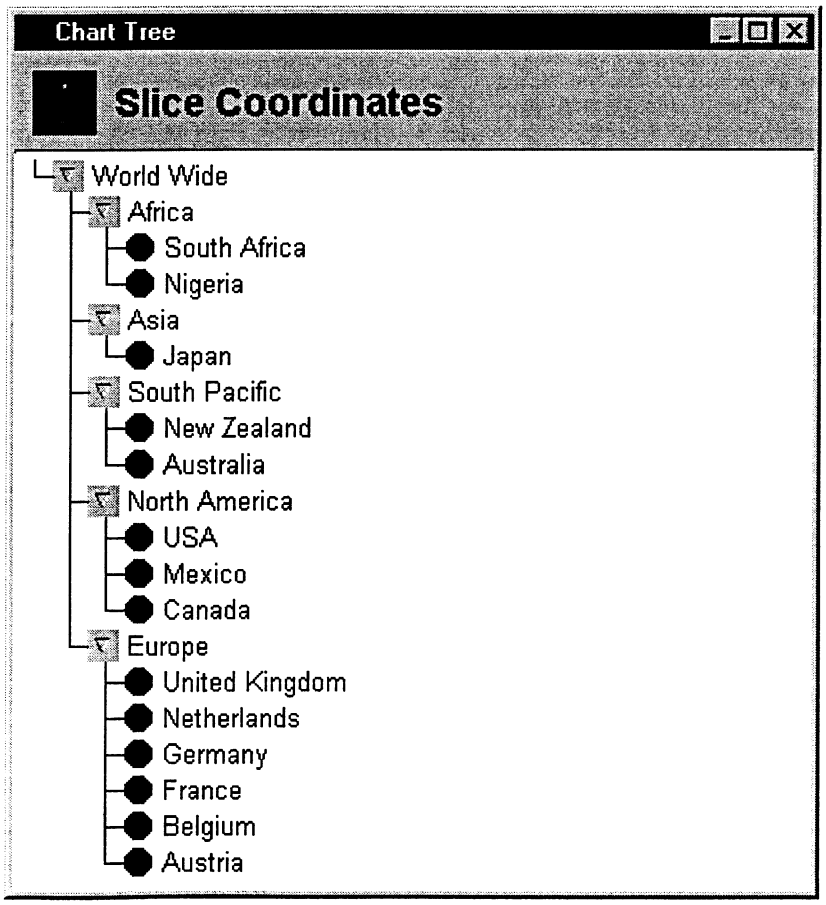
4 Dimensional Model

There are no limits on the number dimensions in a model and the Dimensions can be linear or hierarchic.

A Linear Dimension:



A Hierarchic Dimension:



Configuration Files

The configuration file is used to specify values to Gentia, such as the application and databases to be accessed. This file can have any name and extension and is referenced in the command line, along with the Gentia executable file. If no configuration file is specified, Gentia will use default settings. For this course, Gentia starts using the following command line:

c:\gentia\gentia.exe c:\gentia\intro\intro.cfg

The configuration file is *intro.cfg*, as follows:

```
STORE Introduction c:\gentia\intro\intro.gos
STORE Library c:\gentia\intro\library.gos
BUSINESS "Introduction"
ROUTE_FILE "c:\gentia\intro\intro.rte"
```

The first word in each line must be in uppercase and is known as a **keyword**, to indicate the nature of the information in the line.

STORE references the file to which the application will be saved which is *intro.gos*, and the application's alias name within Gentia which is *Introduction*. The *intro.gos* file is known as an **object store**, or **GOS** (Gentia Object Store) and everything in the application, except the data, will be saved to this file. Within Gentia itself, the object store is known as a **Warehouse** and in this case is called *Introduction.*

The second STORE line refers to another object store which can be accessed by the application. The *Library* is used to store commonly used objects which can be copied and re-used in other areas of the application.

There is no limit to the number of STORE lines being used in a configuration file, and therefore the number of object stores being accessed by a Gentia application.

The BUSINESS and ROUTE_FILE keywords work as a pair to refer to the GentiaDB database being used in the application. Every BUSINESS line must always be immediately followed by a ROUTE_FILE line. BUSINESS specifies the alias name of the GentiaDB i.e. how the GentiaDB will be named inside Gentia. ROUTE_FILE points to the *.rte* file which contains a list of the file names into which the GentiaDB will be saved.

As with the STORE line, your configuration file can contain as many BUSINESS and ROUTE_FILE references as necessary.

The route file for this course is called *intro.rte* and is a list as follows:

```
c:\gentia\intro\intro1.bm
c:\gentia\intro\intro2.bm
```

These two files will store the contents of the GentiaDB database, although it can be stored over any number of files and additional files can be added if necessary. This allows for the size of the database to exceed any maximum file sizes imposed by operating systems.

This will be covered to a much greater degree in the *Building a GentiaDB database* training course.

When you start Gentia, you will be presented with a login window, prompting you to enter a username and password, as follows:

Username:	Intro
Password	<enter> since there is no password

Author and User Modes

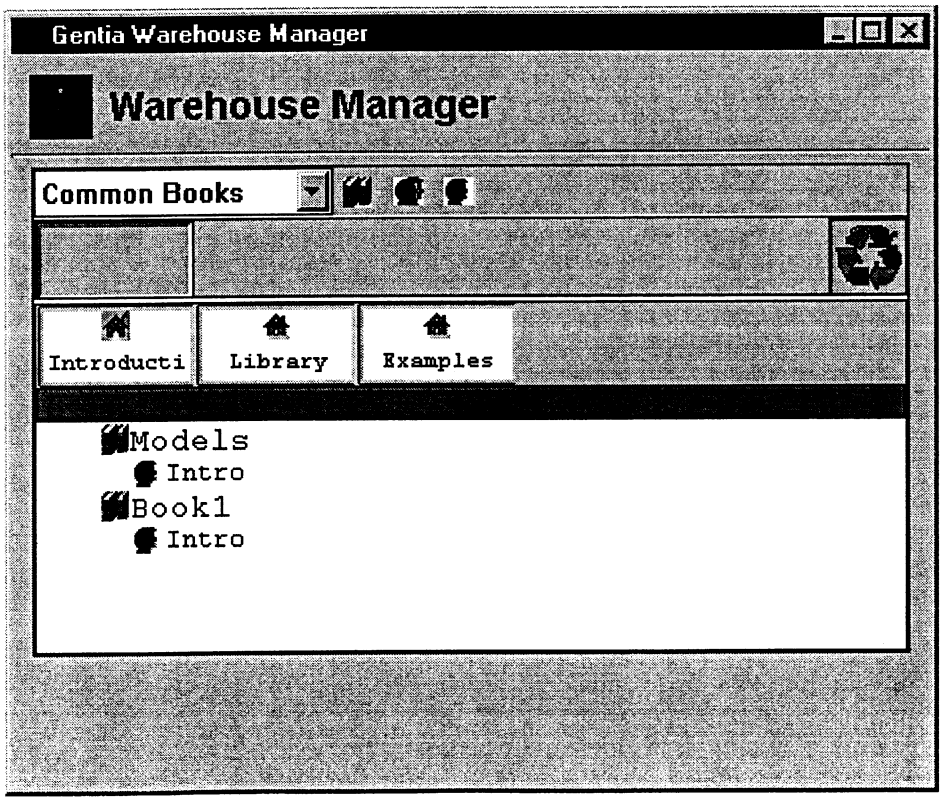
Gentia operates in two different modes, author mode and user mode. Author mode is used to develop applications and user mode to view and test the application. Users can be set up to have access to both modes or just user mode, i.e. a developer would be set up as a user with access to both author and user mode.

Pages, Books and Object Stores

In Gentia, a screen is known as a page. Pages can be organised into Sections (also referred to as chapters) and then into Books. The books can then be grouped into a warehouses, or GOS (Gentia Object Store)

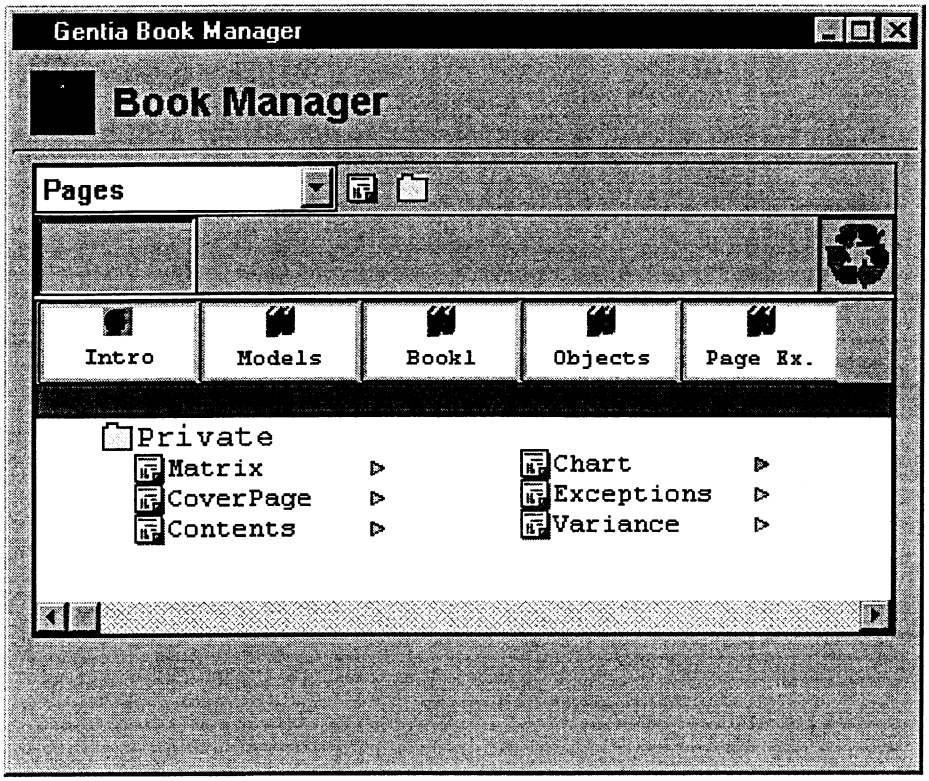
Warehouse Manager

The warehouse manager is accessible only from author mode and allows the Gentia developer to control the contents of the object stores, in terms of the books contained in each warehouse, and the users who have access to each of the books.



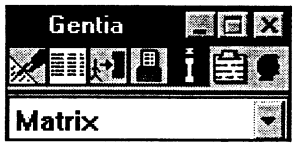
Book Manager

The book manager allows the developer to control the contents of each of the books, in terms of the objects contained within each book, and the chapter/section into which the objects have been grouped. The drop down menu provides a list of possible objects which can be stored in a book. The book manager can also only be accessed from author mode.



To the left of the books on the bookshelf, is the user work area for the *Intro* user. Pages and other objects are typically developed in the author's local work area and then published to the application books in order to make them accessible to other application users. This will be covered in greater detail later in the course.

The Gentia Toolbar



The Gentia toolbar can be displayed in both author and user mode, and provides the following functionality:

The *Switch* icon, to change between user mode and author mode.

The *Text Editor* icon, to use the Gentia text editor to change text within a text widget.

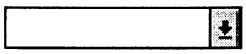
The *Exit* icon, to quit from Gentia..

The *Printer* icon, to print a page or a specific widget on a page.

The *Information* icon shows copyright, version, help etc.

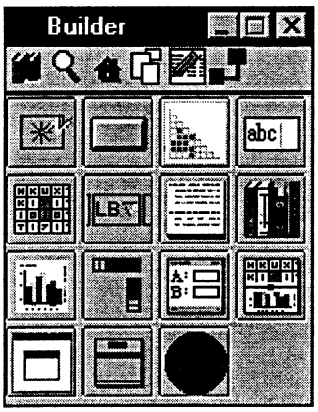
The *Clipboard* icon, to copy any widget or page to the system clipboard to paste to another package.

The *User* is used to carry out user-related functions, e.g. to login as another user, to change your password.



The *Page List Bar* displays a list of previously accessed pages, to allow you to move directly to another page.

Builder Keypad



The builder keypad is only available in author mode and gives access to the warehouse manager, the book manager and shows all the widgets which can be used on a page. Widget is a general term used to describe the objects that can be displayed on a page. Each widget is represented by an icon on the Builder Keypad.

The *Book Manager*. This allows you to view the contents of each Book and to open, save, and close pages.

The *Inspector*. This instructs the system to display the Inspector window for the currently selected page or widget, enabling you to modify its attributes and functions.

The *Warehouse Manager*. This allows you to view the contents of each warehouse, create books, users and groups of users, and add security to the warehouse.

The *Layout tool*. This allows you to modify certain aspects of the layout of the elements on a page.

The *Edit tool* This allows you to cut, copy and paste widgets in a page. This function also allows the author to create object libraries and retrieve objects from libraries.

The *Connections Mapper* tool. This takes you the Connections Mapper to establish rules about the data to be displayed on a page.

The widget icons allow you to select a widget for inclusion on a page as follows:

Table
Displays data in a matrix, similar to viewing data in a spreadsheet format.

Chart
Displays data in a graphical format.

List Bar
Used to display information about the data and to allow the view of the data to be changed.

Slider Bar
Used to allow values (typically threshold-style values) to be changed dynamically by the user.

Button
Used to execute certain functions, e.g. moving to another page, selecting an option from a menu.

Hotspot
Similar to buttons, but may be made transparent; useful for making areas on maps active.

Bitmap
Displays graphic images such as logos.

Text
Used to display textual information.

Edit Field
Used to display messages, or to allow users to enter text.

Contents
Used to display a contents list of objects (such as pages) to users, enabling them to directly move to pages of their choice.

Form
Used to display SQL data, possibly results from a query; can also be used to delete and update SQL records.

Splitview
Used to make a widget, e.g. table or chart smaller or larger.

Custom View
Used for imbedding pages into other pages; useful for creating templates.

Box
Used to group widgets.

External Viewer
Used to link a Java Applet to a page that is being viewed using a web browser.

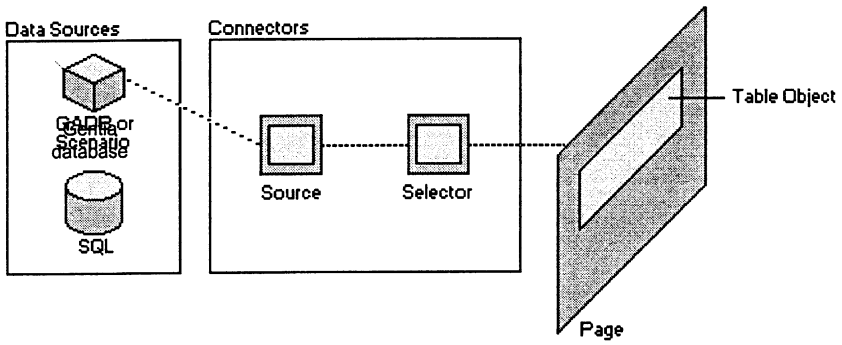
The Connections Mapper

Each page has a connections mapper which can be thought of as a map of the page, sitting behind the page. It controls the data to be displayed on the page, and how it is to be displayed, e.g. whether it is to be sorted, filtered, or calculated.

When the connections mapper for a page is open, the builder keypad changes to become a mapper keypad, with icons to represent the various connectors for use on the connections mapper. It is the connectors that determined how the data is to be displayed, by allowing you to manipulate the data before it is displayed, and link it to page widgets for display.

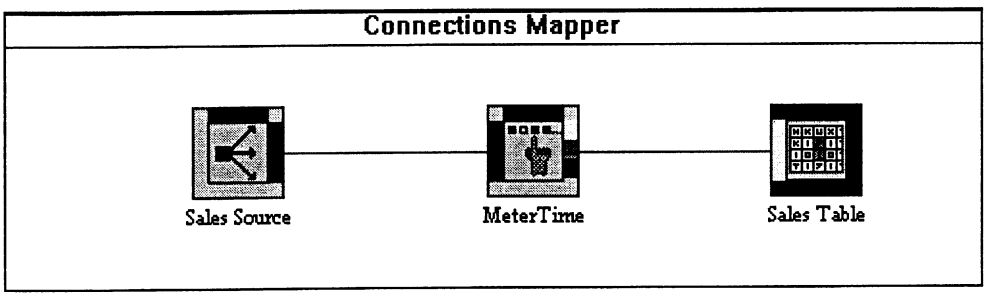
For example, you could use connectors to select the database from which data is to be drawn, create a filter defining which data elements are to be displayed, and then select a sort order for the data. You could then link this information to both a table and a chart - without having to define it separately for each.

The diagram shown below describes the flow of data from a specified data source to the page, where the data is displayed using a table widget. In this example a source connector specifies the data to be accessed. The data is then passed through a selector connector which will define which dimensions are to be displayed as the rows and columns of the table.

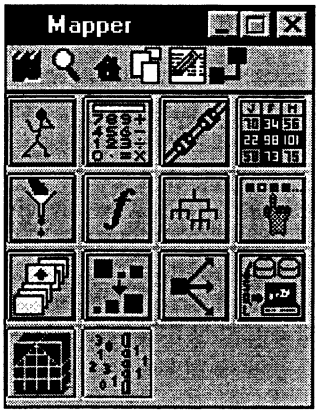


This diagrammatic approach to understanding the flow of information from data source to the page, and the subsequent relationships between the different connectors, helps to provide a clear understanding of the development process for both user and author.

The connections mapper, with its connector, might look like this:



The Mapper Keypad



The connectors are as follows:

Actor: Used to reflect the actions selected by a user on a page, e.g. to allow users to select a block of data in a table to then be displayed on an associated chart.

Calculator: Used to add new members and rules to the data displayed on the page, e.g. to calculate half-year total figures.

Chain: A quick and easy way of applying GDL code to the page. Covered on the *Gentia Application Development* course.

Editable: Used to control the editability of cells in a table.

Filter: Used to control which co-ordinates/members are displayed on the screen.

Formatter: Used to modify the display format for one or more specified co-ordinates.

Hierarch: Used to show the hierarchic structure of a dimension and give the user drill-down capabilities.

Selector: Used to define the dimensions that are to be displayed as rows and columns, and the slice co-ordinates on the page.

Slicer: Used to restrict how many slices of data are passed to the page, e.g. to set an initial view for a list bar, or to hide a dimension.

Sorter: Used to define the basis for a sort, in terms of a particular co-ordinate.

Source: Used to identify the source of data as an analytical model (GADB) or scenario.

SQL: Used to identify the source of data as an SQL database.

Business Source: Used to identify the source of data as a GentiaDB model

Value Filter: Used to filter co-ordinates by data value.

Using the Connections Mapper

When you open the connections mapper, you will see that every page widget is represented in the connections mapper area, as an icon. You can move the icons representing the widgets around the Mapper area by using the mouse to drag them in the usual way.

Adding a Connector

From the mapper keypad, drag the appropriate connector onto the connections mapper. You can then use the mouse to move it around as required.

Connecting Connectors

Most connections are side-to-side connections, i.e. from the right-hand side of one icon to the left-hand side of the other. Icons (connectors or widgets) can only be connected together if they display a common colour on their connecting sides. Where icons do not have a coloured right-hand side, i.e. page widgets, no connections can be made from them, only to them. The same is true for icons without coloured left-hand sides, i.e. source connectors; they cannot have connections to them, only from them.

The link is made by dragging the mouse from the right-hand coloured side of one icon to the other icon. If the connection is valid a box will appear around the target icon. When you release the mouse button you will see a blue line drawn between the sides of the two icons. This blue line indicates a flow of data from left to right.

If you make a connection that creates a conflict with an existing connections, the older connections will automatically be removed.

A red bar displayed at the bottom of a connector shows the ability to send information to another connector or page widget, by a bottom-to-top connection. Similarly, a red bar displayed at the top of the icon means that the connector or page widget may be selected as a target for a bottom-to-top connection.

Bottom-to-top connections indicate the passing of information (as opposed to data) and have an action associated with them to indicate to Gentia what is to happen with the information. These connections are shown in red.

Disconnecting Connectors

To break a blue data connection, draw a line from the left hand side of the target connector into a space on the connections mapper and release the mouse button.

To break a red information connection, draw a line from the bottom of the sending connector to a space on the connections mapper.

Drawing a new connection which creates a conflict with the current connection link will automatically delete the current connection and allow the new connection.

Deleting Connectors

Use either cut or delete from the widgets editor or use ctrl+X as in other windows applications.

The Salemodel Example

The *Introduction to Gentia* course is based upon an application for a fictitious car company to report on the different types of car as they are sold throughout the world, to different classifications of customers, and to track the sales over each month, quarter and year.

Below is a definition of the model used:

Salemodel

Dimension	Co-ordinate	Co-ordinate Description
Item	contrib	Contribution
	contribpc	Contrib. % Sales
	cost	Transfer Cost
	disc	Discount
	discpc	Discount %
	listp	List Price
	reven	Sales Revenue
	units	Units Sold
Time	cyear	Current Year
	q1	Qtr 1
	jan	January
	feb	February
	mar	March
	q2	Qtr 2
	apr	April
	may	May
	jun	June
	q3	Qtr 3
	jul	July
	aug	August
	sep	September
	q4	Qtr 4
	oct	October
	nov	November
	dec	December
Version	Performance	Performance
	Target	Target
	targpc	%age of Target

Dimension	Co-ordinate	Co-ordinate Description
Product	allcars	All Car Models
	exec	Executive Cars
	fam1	Large Family Cars
	fam2	Medium Family Cars
	fam3	Small Family Cars
	perf	Performance Cars
Location	world	World Wide
	Europe	Europe
	Austria	Austria
	Belgium	Belgium
	France	France
	Germany	Germany
	Netherlands	Netherlands
	UK	United Kingdom
	NthAm	North America
	Canada	Canada
	Mexico	Mexico
	USA	USA
	SthPac	South Pacific
	Australia	Australia
	NZ	New Zealand
	Asia	Asia
	Japan	Japan
	Africa	Africa
	Nigeria	Nigeria
	SA	South Africa
Fuel	allfuel	All Fuels
	Petrol	Petrol
	Diesel	Diesel
Customer	allcust	All Customers
	fleet	Fleet Managers
	rental	Car Rental Fleets
	othfleet	Other Fleets
	business	Business Users
	private	Private Users

The calculations are as follows:

Discount = List Price - Sales Revenue
Contribution = Sales Revenue - Transfer Cost
Discount % = Discount as a percentage of List Price
Contrib. % Sales = Contribution as a percentage of Sale Revenue
%age of Target = Performance as a percentage of Target

N.B.
In order to keep the database to an easily manageable size, data exists only in the following locations: UK, USA, Australia.

1. Building a CoverPage

The instructor will demonstrate how to build a CoverPage.

CoverPage

Key Points

The name **CoverPage** is a reserved word in Gentia. By default, Gentia will look for this page to be used as the initial page for an application.

Gentia will search through all the available books for this page. If it finds a CoverPage, it will display it to the user, otherwise they will get the login menu. If more than one CoverPage exists, the one which is stored first will be shown. Gentia searches the bookshelf displayed in the book manager from left to right.

Gentia is case sensitive.

The bitmap widget stores the imported bitmap as an image in the GOS (Gentia object store, held in the .gos file). If the original bitmap gets updated or deleted the changes will not be reflected in Gentia unless the path and name are re-entered.

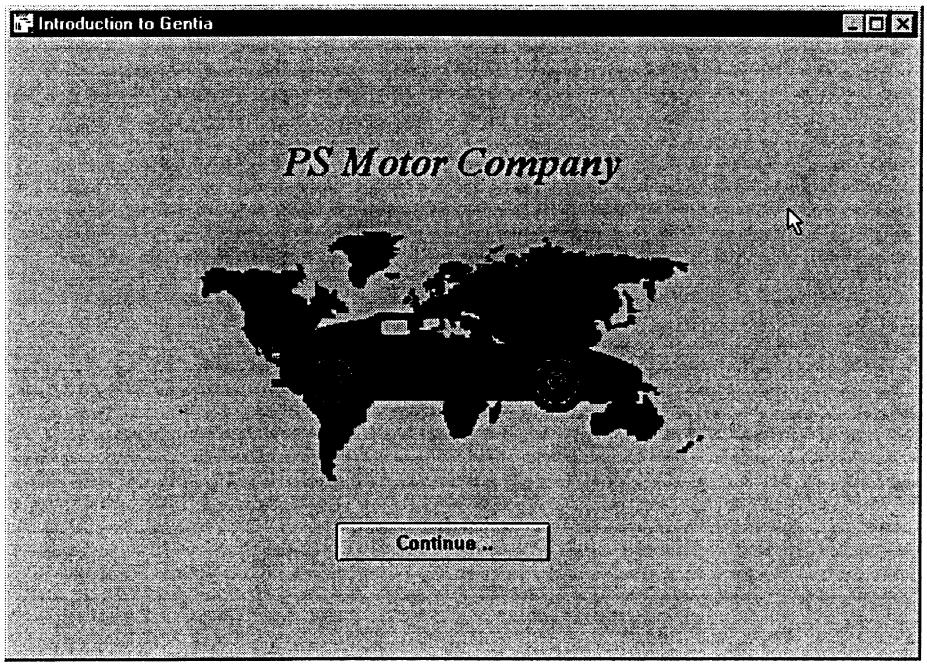
Widgets such as the text and bitmap widgets can have their borders switched off. However, in builder mode, the borders remain in view to allow you to see the edge of the widget. In user mode, any switched off borders will not be shown.

To save your work, use the save option in the book manager menu on the builder keypad. To unsave changes, close the page, and you'll be prompted to save? yes or no. However, moving from builder mode to user mode will automatically save the latest changes on the page. This means that you can never accidentally forget to save your work.

Should you want to make changes to your page, you can re-open a page from the book manager. You can also create new pages from here, by dragging a page icon into the appropriate chapter, releasing the mouse button when the chapter name becomes highlighted.

Practical Exercise 1 - CoverPage

Objective: To build an initial page for an application.



Objects introduced: Page

Widgets introduced:


Bitmap


Text


Button

1. Open a new page object

- Select the book manager menu (from the builder keypad) and choose the *New Page* option.
- Size the page on the screen as required.

2. Use the page inspector to set the page attributes

- Select the inspector from the builder keypad.
- Use the *Normal Attributes* option to title the page, e.g. Introduction to Gentia.
- Use the *Code Attributes* option to name the page CoverPage (note the capitalisation used).
- If you wish, you can use the *Colour Attributes* option to set a background colour other than grey for the page.

3. Add a bitmap widget to show an image on the page

- Drag the bitmap icon from the builder keypad and drop onto the page.
- Size and position as required.

- Use the bitmap inspector to set the *Bitmap Attributes* to the path and name of the bitmap: c:\gentia\intro\cars.bmp. Alternatively, you can use Windows Explorer to drag the cars.bmp file onto the bitmap widget.

4. Add a text widget to the page to give a title to the CoverPage.

- Drag the text icon from the builder keypad and drop on the page.
- Size and position as required.
- Double-click on the text object to get a cursor to appear, and type PS Motor Company.
- Highlight the text.
- Select the text edit icon in the Gentia toolbar, and choose *Font Panel.*
- Change the font, colour and size as you wish.
- Select the text edit icon, choose *Paragraph* and then *Centre*.
- In the text inspector, select *Normal Attributes* to switch off the bordered option.
- Select *Text Attributes* and make sure *Scrollable* is un-checked.

5. Add a button widget to allow you to move to the next page (Contents page)

- Drag the button icon from the builder keypad and drop onto the page.
- Size and position as required.
- Use the *Normal Attributes* option on the button inspector to title the button.
- Use the *Code Attributes* option on the button inspector to set the action of the button to *Go To Page* and enter a page name (this name will be used in Practical exercise 2).

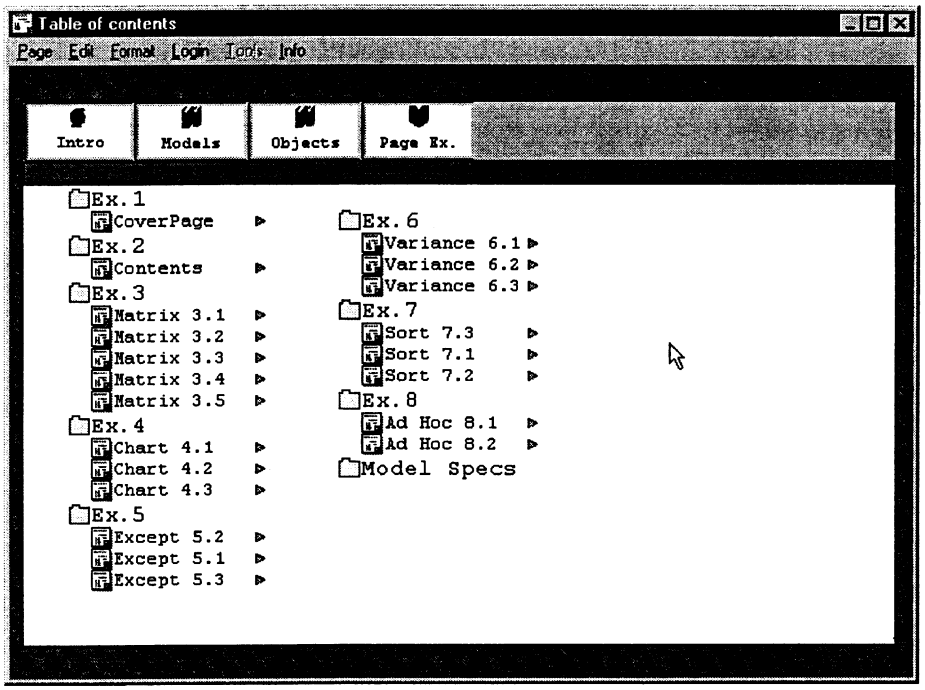
6. Save, close and test the page in user mode

- From the Gentia toolbar use the switch icon to move to user mode.
- You will not be able to test the move to the next page, since the next page has not yet been created!

2. Building a Contents Page

The instructor will demonstrate how you can use the contents list widget to build a contents page in your Gentia application.

Contents Page



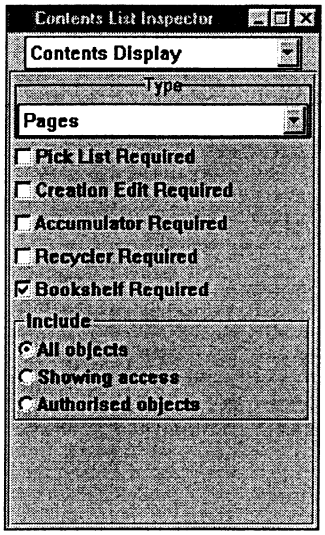
Key Points

Contents List Widget

The *Contents Display* option in the inspector allows you to refine the functionality of the contents list widget for the user, as follows:

- *Pick List Required* will allow the user to switch between pages and other Gentia objects; if not selected, the user will only be able to access pages.
- *Creation Edit Required* allows the user to create new chapters
- *Accumulator Required* allows the user to copy and move pages and other objects.
- *Recycler Required* allows the user to delete objects.
- *Bookshelf Required* will display all the pages (and other objects), one book at a time. Use of this option is recommended, since the display will appear much more organised.
- The *Include* option determines how any unauthorised objects will be displayed:

All objects	everything shown fully
Showing access	unauthorised objects greyed out
Authorised objects	unauthorised objects not displayed

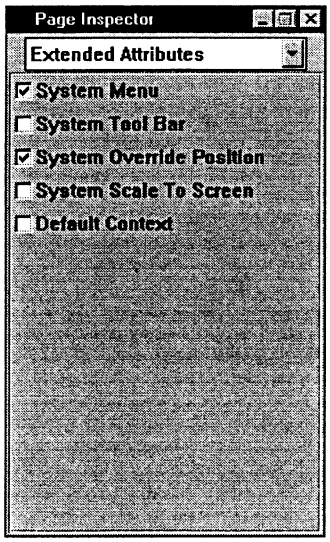


N.B. The contents list widget provides standard navigation for an application, where the user can open pages in any order. You may prefer to navigate your users through a particular route of pages, which will require a slightly more sophisticated menu system, making use of buttons, hotspots, listbars, and schemes.

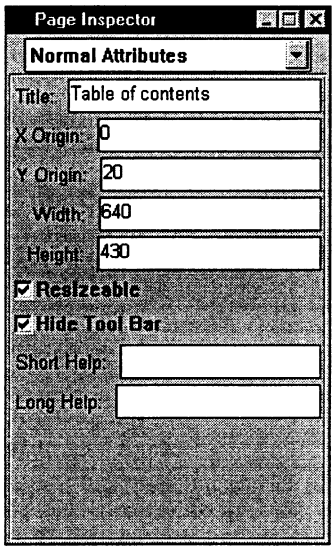
System Menu

This can be switched on to give a more 'Windows style' look to your pages. The options in the pull-down menus are equivalent to the options in the Gentia toolbar, except that the system menu does not provide a list of the previously accessed pages, as the Gentia toolbar does.

In the page inspector, the *Extended Attributes* option allows you to switch on the system menu:



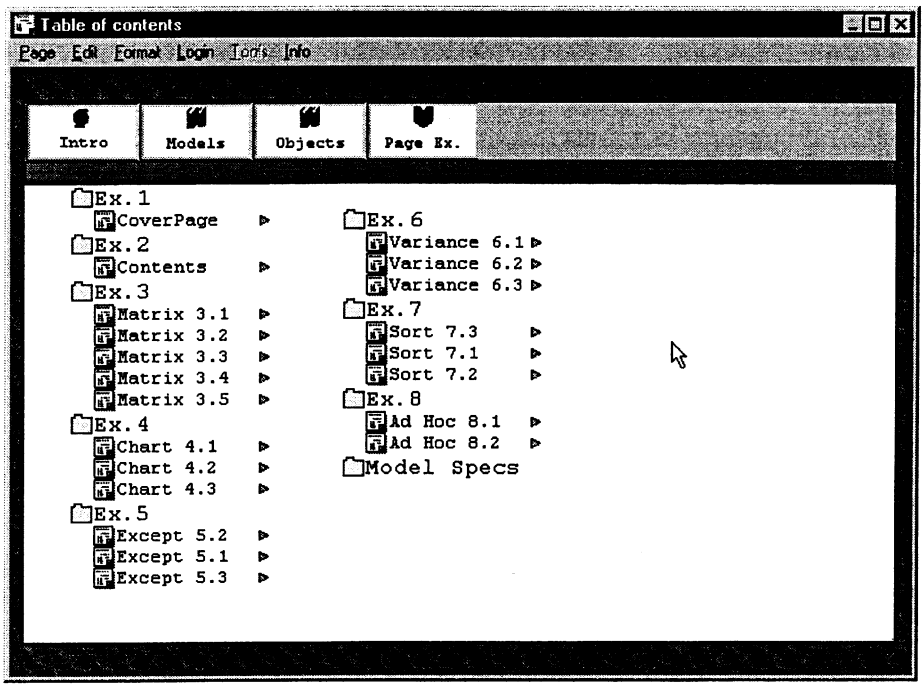
Having enabled the system menu, the Gentia toolbar can be switched off using the *Hide Tool Bar* option:



You may wish hide both the Gentia toolbar and the system menu, and instead customise the functionality provided, by building your own series of buttons which carry out certian functions. Should you need to access the Gentia toolbar in user mode, you can unhide it using the CTRL key whilst clicking on the page background, away from any page widgets.

Practical Exercise 2 - Contents Page

Objective: To make use of the contents list widget as a form of navigation for the application.



Widgets introduced: 

Contents list

1. Open a new page object

- Select the book manager menu (from the builder keypad), and choose the *New Page* option.
- Size and position the page on the screen as required.

2. Use the page inspector to set the page attributes

- Select the inspector from the builder keypad.
- Use *Normal Attributes* to title the page.
- Use *Code Attributes* to name the page (use the name that you set on the CoverPage button in the last practical).
- Use *Colour Attributes* to set a background colour for the page.

3. Add a contents list widget to the page

- Drag the contents list icon from the builder keypad and drop onto the page.
- Size and position as required.
- Use the *Contents Display* option on the contents list inspector to show a *Bookshelf*. Experiment with the other options.
- Ensure the *All Objects* option is selected.

4. Switch on the system menu at the top of the page

- Use the *Extended Attributes* option in the page inspector to switch on the system menu.
- Hide the Gentia toolbar, by checking the appropriate box under *Normal Attributes*.

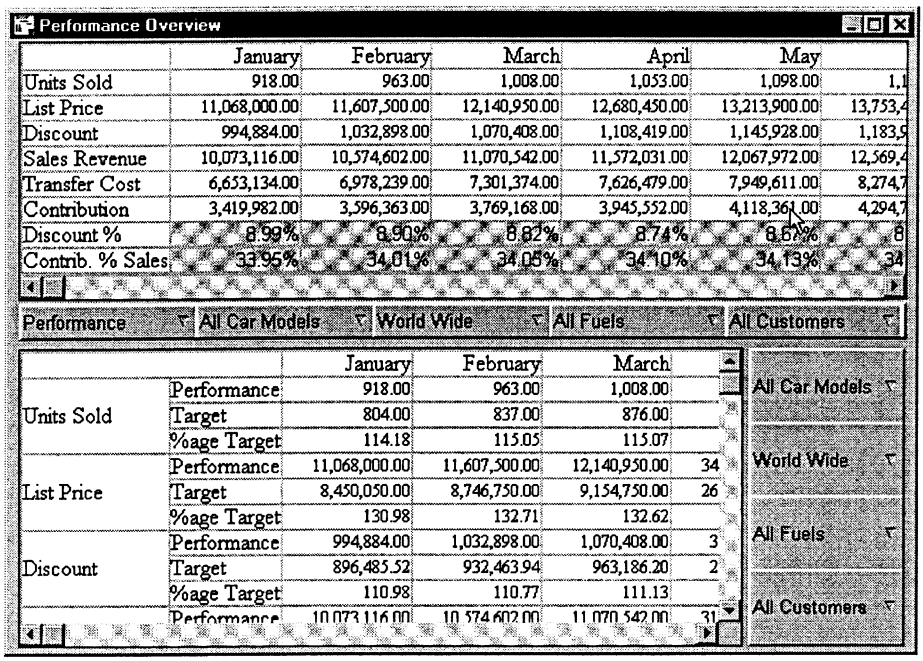
5. Test the Page in User Mode

- From the Gentia toolbar use the switch icon to move to user mode.
- Check that clicking on the CoverPage button takes you to your Contents page.

3. Displaying Data in a Table

The instructor will demonstrate how to build a page with a table that displays data from a Gentia base model.

Matrix Page



Key Points

In order to display data in a table, you will need to access the connections mapper, which allows you to define the data source and exactly how the data is to be displayed on the page.

Data Sources

The business source connector points to the GentiaDB data, via a model spec object. The model spec object is created in the book manager, and is used to point to the business model and base/join model, as well as providing different display options for the data. For more information on business and base/join models, book onto the *Building a GentiaDB database* training course.

You may wish to display data from an analytical model (formerly known as a GADB) or a scenario, in which case you would need to use a *source* connector to point to the associated model. For more information book onto the *Building Analytical Models and Scenarios* training course, formerly known as the *Building GADB's and Scenarios* training course.

Connections Mapper

In the connections mapper, note how the coloured edges of the connectors help you determine which connectors and widgets can be conneted together.

Side-to-side connections, which appear in blue, signify a flow of data, from the data source on the left through to the page widgets on the right.

Formatting Tables

To table can be divided into five main areas each of which can be formatted individually in the table inspector by using the approriate format option:

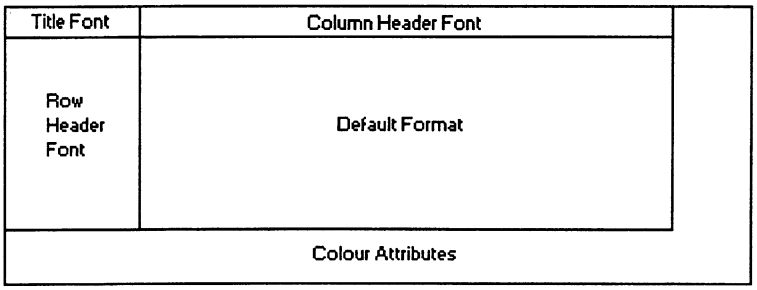


Table Object

When using the format inspector, the option used to open the format inspector is important. E.g. if you used the column header font option, then any formatting will only apply to the column headers. To format a different area of the table, you will need to return to the table inspector, and select the correct option.

Formatting individual rows, columns and cells in a table, is also possible, as we shall see later, but not using the table inspector.

The settings to the table formats can be done without a database present. Each of the data display objects are independent of the data they show. This allows for example, interchangeable data sources to one table.

Listbars

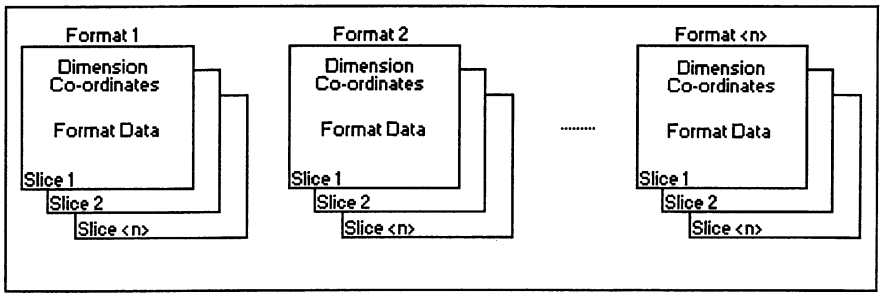
When using listbars, don't forget to set the listbar style. Until you do, you won't be able to connect the listbar in the connections mapper, since it will not have a coloured left side.

Formater Connector

The formater connector is used to format individual rows, columns, cells, and slices in the table.

The settings you select in the formater connector will always override those you set using the table inspector.

Formatting works on intersections; i.e. defining a number of coordinates will mean that the format will only apply at the intersection of all coordinates. If you want to duplicate a format from one row to another, say, then you should use the *Add New Slice* option. The *Add New Format* option will allow you do define a totally different format.

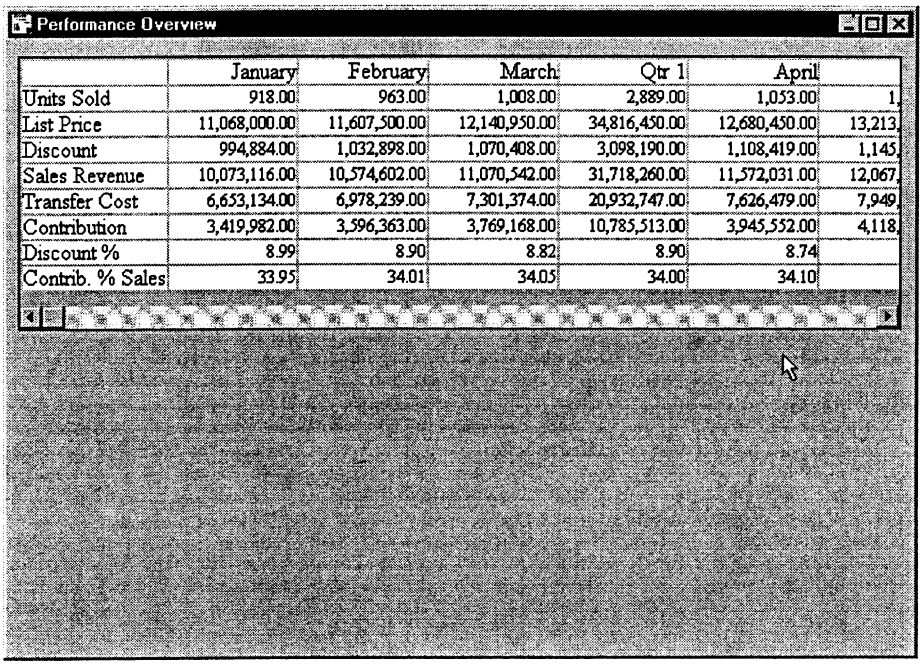


Formatter Connector

Using the *Sign Text* option allows you to place characters before and after positive and negative numbers. Use of the *Positive After Float* option rather than the *Positive After* option means that the character will be positioned next to the data value, irrespective of the justification of the data value.

Practical Exercise 3.1 - Matrix Page

Objective: To use a table to display data on a page.



	January	February	March	Qtr 1	April	
Units Sold	918.00	963.00	1,008.00	2,889.00	1,053.00	1,
List Price	11,068,000.00	11,607,500.00	12,140,950.00	34,816,450.00	12,680,450.00	13,213
Discount	994,884.00	1,032,898.00	1,070,408.00	3,098,190.00	1,108,419.00	1,145
Sales Revenue	10,073,116.00	10,574,602.00	11,070,542.00	31,718,260.00	11,572,031.00	12,067
Transfer Cost	6,653,134.00	6,978,239.00	7,301,374.00	20,932,747.00	7,626,479.00	7,949
Contribution	3,419,982.00	3,596,363.00	3,769,168.00	10,785,513.00	3,945,552.00	4,118
Discount %	8.99	8.90	8.82	8.90	8.74	
Contrib. % Sales	33.95	34.01	34.05	34.00	34.10	

Widgets introduced:

Table

Connectors introduced:

Selector

Business Source

OR

Source

1. **Open a new page object**
   - Select the book manager menu (from the builder keypad), choose the *New Page* option.
   - Size the page on the screen as required.

2. **Use the page inspector to set the page attributes**
   - Select the inspector from the builder keypad.
   - Use *Normal Attributes* to title the page.
   - Use *Code Attributes* to name the page, e.g. Matrix.
   - Use *Colour Attributes* to set a background colour for the page.

3. **Add a table widget to the page**
   - Drag a table icon from the builder keypad and drop onto the page.
   - Size and position as required.
   - Use the table inspector option *Code Attributes* to set a name for the table.

4. **Use the connections mapper to bring data from the GentiaDB to the page**
   - Open the connections mapper.

- Drag a business source connector from the mapper keypad to the connections mapper.
- Use the help on the business source inspector to set the *Model Spec* to Salemodel.
- Give the business source connecctor a name in the source field, e.g. Sales Source.

5. Set the rows and columns for the table

- Drag a selector connector from the mapper keypad to the connections mapper.
- Connect the business source to the selector.
- Use the selector inspector to name the selector something like, **ItemTime**.
- Use the *Row Dimensions* option from the selector inspector to set the row dimension to be the **Item** dimension.
- Use the *Column Dimensions* option from the selector inspector to set the column dimension to be the **Time** dimension.
- Connect the selector connector to the table widget.
- Close the connections mapper.

6. Use the table inspector to set the table format

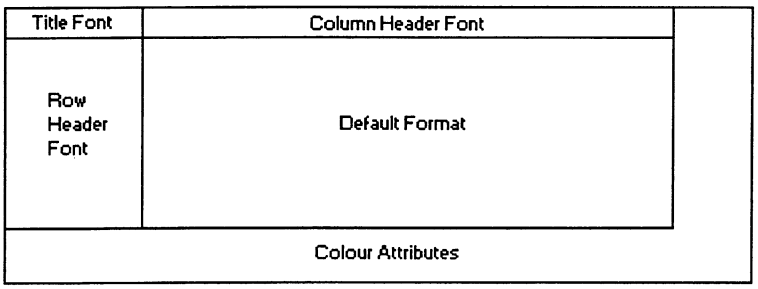


Table Object

- Choose the *Default Format* option from the Table Inspector to open the format inspector.
- Use the *Basic Data* option on the format Inspector to set decimal places and column width (a width of 14 is about right).
- Use the *Modify Font* option on the format inspector to set font and size.
- Use the *All Ranges* option to set colours.

Go to the end of the menu options on the format inspector to choose the *Table Inspector* option to move back to the table inspector.

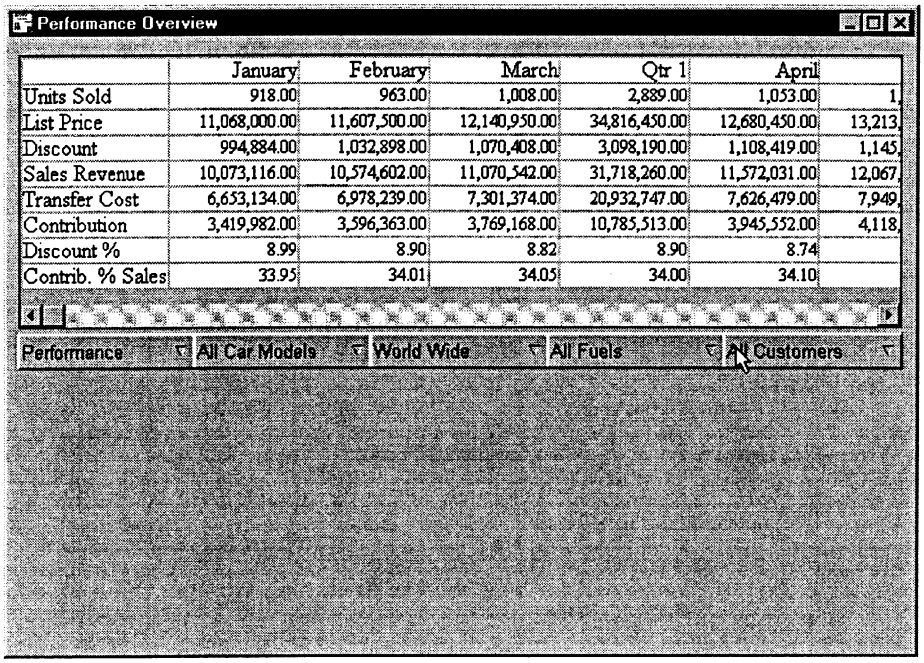
- Repeat the formatting as above, for the row headers, the column headers, and experiment with introducing a formatted title on your table.

7. Test the page in user mode

- From the Gentia toolbar, use the switch icon to move to user mode.

Practical Exercise 3.2 - Matrix Page

Objective: To use a listbar to display different slices of data.



Widgets introduced:

Listbar

1. Open the matrix page

- Select the book manager.
- Select the Matrix page.

2. Add a list bar to the page

- Drag a list bar widget from the Builder keypad and drop onto the page.
- Size and position as required.
- Use the *Listbar Style* option in the listbar inspector and choose *Slice Selector.*

3. Connect the list bar on the connections mapper

- Open the connections mapper.
- Connect the selector ItemTime to the list bar.
- Close the connections mapper.

4. Test the page in user mode

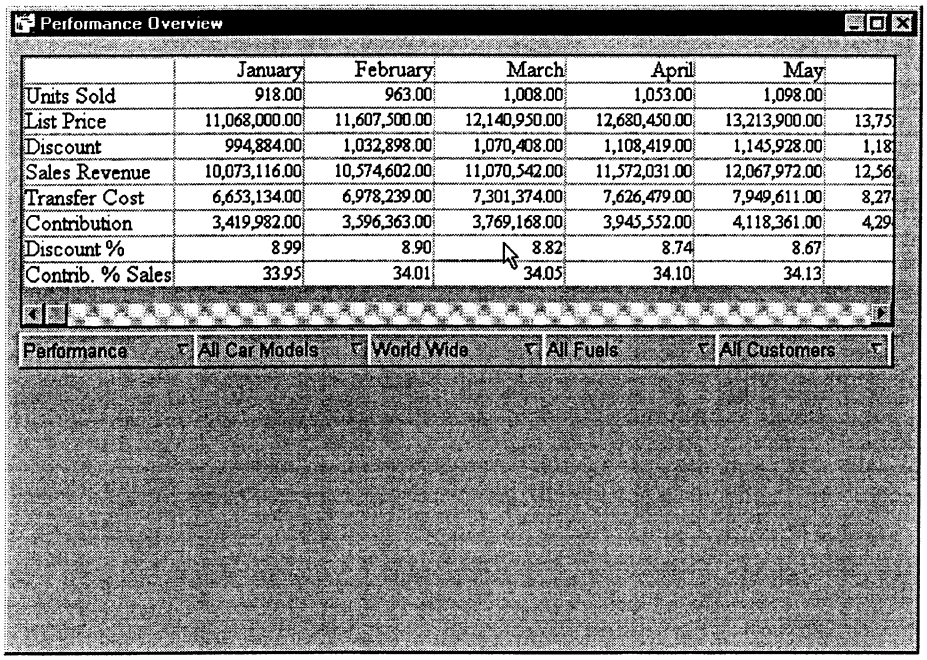
- From the Gentia toolbar use the switch icon to move to user mode.
- Spend a few moments checking that the listbar functions as expected.

Optional:

- Test the initial expansion option on the *List Bar Style* option on the list bar inspector.
- Try to match the fonts set on the listbar with those on the table by choosing the *Font Attributes* option on the list bar inspector.

Practical Exercise 3.3 - Matrix Page

Objective: To restrict the amount of data displayed in the Time dimension.



Connectors introduced:

Filter

1. Open the matrix page

- Select the book manager.
- Open the Matrix page.

2. Add a filter connector to the connections mapper

- Drag a filter connector from the mapper keypad to the connections mapper.
- Connect the business source connector to the filter.
- Connect the filter to the selector.
- Use the filter inspector to name the filter something like TimeFilter.
- Set the filter to be negative.
- Choose the *Edit Current Dimension* option on the filter inspector.
- Use the help option to set the *Current Dimension* to be Time.
- Use the help option to set the members to be cyear, q1,q2,q3 and q4.
- Close the connections mapper.

3. Test the page in user mode

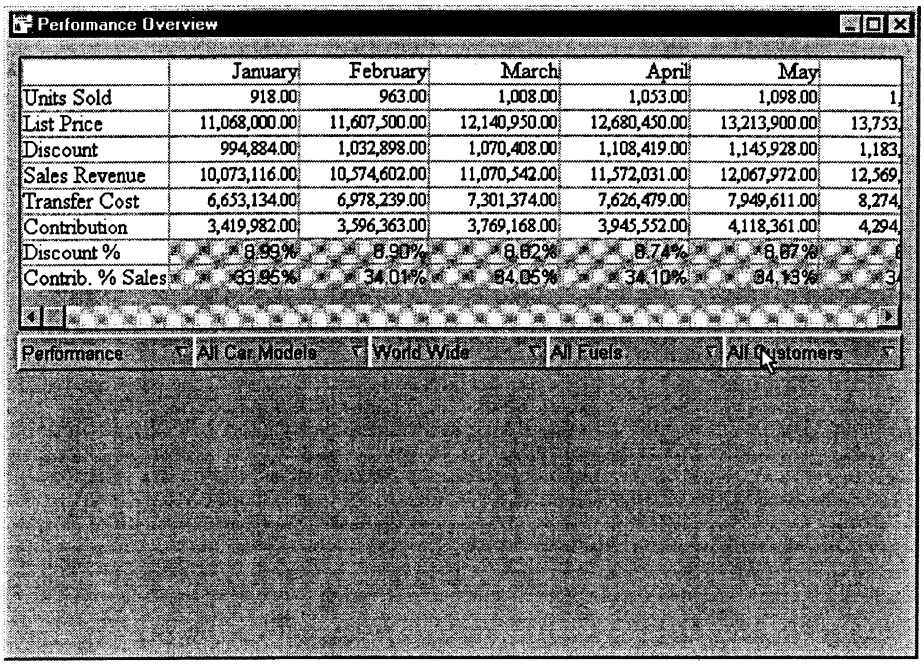
- From the Gentia toolbar use the switch icon to move to user mode.

Optional:

Look at the effect of making the filter connector positive.

Practical Exercise 3.4 - Matrix Page

Objective: To format individual rows in the table, with % signs and highlighting.



Connectors introduced:

Formater

1. Open the Matrix page

- Select the book manager.
- Open the matrix page.

2. Add a formater connector to the connections mapper

- Open the connections mapper.
- Drag the formater icon to the mapper area.
- Position and connect the formater between the selector and the table.
- Use the inspector to name the formatter, Percent.
- Use the help option to add contribpc as the coordinate to format.
- Choose the *Edit Current Format* option to take you to the format inspector (not that same as the formater inspector).
- Use the *Basic Data* option to set decimal places.
- Use the *Modify Font* option to set font and size.
- Use the *Sign Text* option to set a % in *Pos After Float.*
- Use the *All Ranges* option to set colours.
- Go to the end of the menu options and select *Formater Inspector.*

3. Copy the format set for contribpc to another coordinate

- Choose the formater inspector option *Add New Slice*.
- Add the coordinate, discpc.
- Close the connections mapper.

4. Test the page in user mode

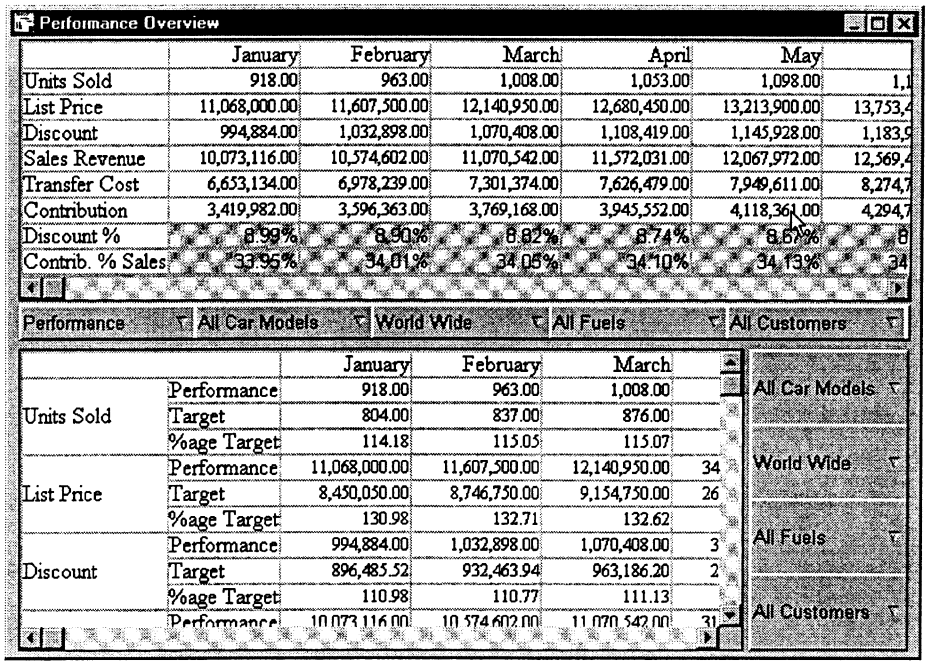
- From the Gentia toolbar use the switch icon to move to user mode.

Optional:

- Add a second format within the Percent formatter to set % symbols and fonts etc. for the percentage values in the Version dimension (targpc and worldpc).
- Experiment with the automatic format facility, by reducing the width of the cells in the table, and set the *Places to Scale* to be **-1**

Practical Exercise 3.5 - Matrix Page

Objective: To add a second table and listbar to the page, by copying the existing widgets.



Functions introduced:

widgets editor

1. Open the Matrix Page

- Select the Book Manager.
- Open the matrix page.

2. Copy the table and list bar widgets

- Select both the table and list bar either by using the *shift* key, or by dragging the mouse over both widgets, ensuring that your initial click with the mouse is not touching any widgets, i.e. that you click on the page background. Both widgets will become highlighted.
- Choose the copy option from the widgets editor.
- Choose the paste option from the widgets editor.
- Position and resize the new table and list bar on the page.
- In the listbar inspector, under the *Listbar Style* option, check the *Show Vertically* option.

3. Connect the new table and list bar widgets on the connections mapper

- Open the connections mapper.
- Add a new selector connector.
- Use the selector inspector to name the selector ItemVersionTime.
- Connect the selector ItemVersionTime to the business source.
- In the *Selector Attributes,* deselect *Force Single Row.*
- Set the *Row Dimensions* of the selector to be the Item and Version dimensions.
- Set the *Column Dimensions* of the selector to be the Time dimension.
- Connect the selector ItemVersionTime to the copied table and list bar widgets.

4. Test the page in user mode

- From the Gentia toolbar use the switch icon to move to user mode.
- Spend a few moments ensuring that your listbars work as expected.

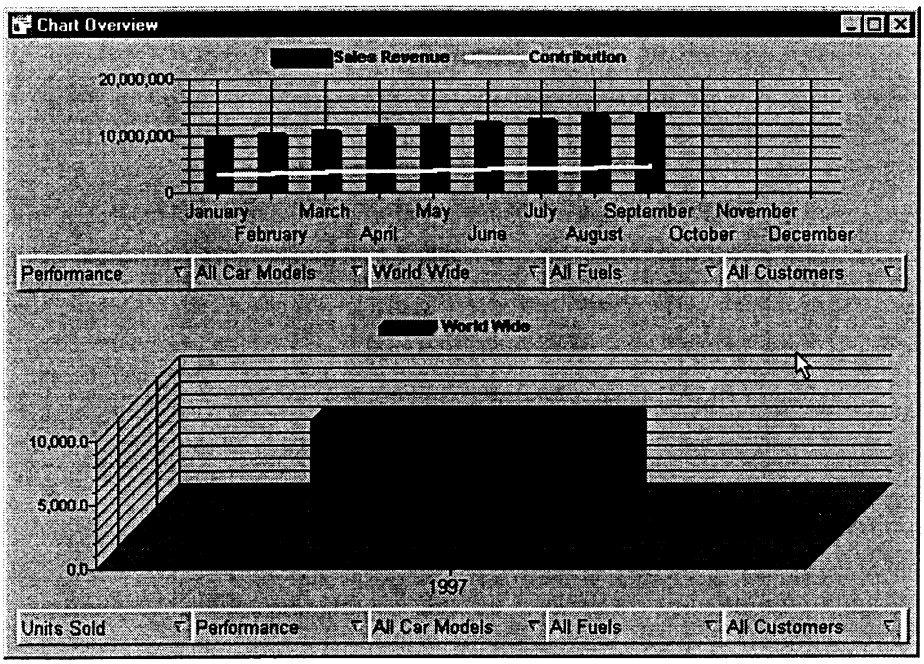
Optional:

- Experiment with the *Turn Grid On*, *Grid Attributes* and *Show Grid* options under the layout tool menu to align the widgets on the page.

4. Displaying Data in a Chart

The Instructor will demonstrate how to build a page that has two charts, displaying data from a Gentia base model.

Chart Page



Key Points

Charts

Charts are used in a similar way to tables. You need to define the data source, by using a source or business source connector, and you will need to use a selector to define the dimensions to be displayed in the chart, as follows:

- The dimension to be displayed along the x-axis — use the *Row Dimension* option
- The dimension to be measured by the y-axis — use the *Column Dimension* option

As with tables, the data to be displayed in a chart is not generally controlled in the chart widget itself, but by using the appropropriate connectors, e.g. filter, slicer. Most of the settings in the chart inspector control the format of the chart, i.e. how the information is displayed.

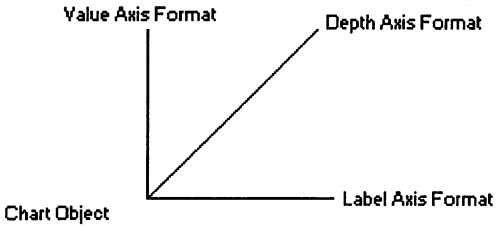
Filtering

As with tables, a filter can be used to restrict the data being displayed on a chart.

Formatting an Axis on the Chart

The *Default Row Formats* option allows you to set the maximum and minimum row and column members to display. Zero (0) means all of the coordinates/members will be displayed, which is useful should the total number of members change.

When formatting the axes, take care to select the format option corresponding to the correct axis, as shown below:



Selecting any of the axis format options will open the format inspector. You will need to return to the chart inspector in order to format another axis.

Formatting an Individual Row Member

With the *Default Row Formats* option in the chart inspector, *Current Format* refers to a particular row member, by number, i.e. 1 is the first row, 2 is the second row...etc. You can therefore change the format of a row member, e.g. its colour, by changing the *Current Format* number, and then using the *Current Row Format* option to open the format inspector.

The Library

A library warehouse is supplied with Gentia on the CD, and contains pre-formatted objects which can be used in your applications. You can add to this library with your own objects. This is done in the widgets editor, using the *Copy to Store* option.

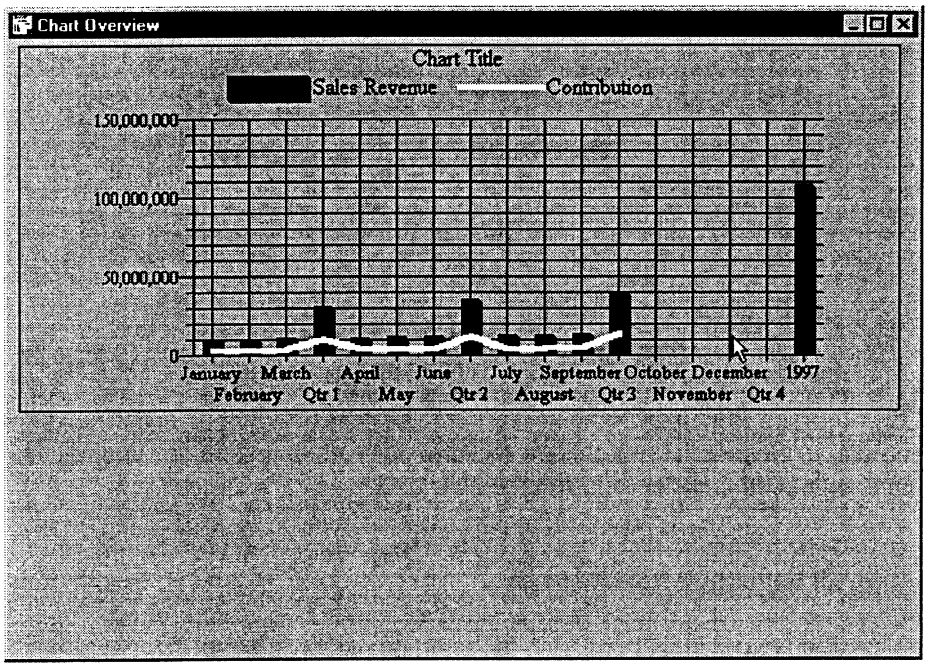
The *Load Pasteboard from Store* option is used to copy opjects from the store.

Hierarch Connector

The hierarch will provide the drill-down capability, according to the hierarchic dimensions defined within Gentia. By default, all dimensions which are hierarchic in structure will appear with the drill-down facility enabled. However, you may wish to restrict the drill-down to particular dimensions, which can be done by defining the dimensions concerned in the hierarchic connector. Once dimensions have been specified they will be the only ones to work hierarchically.

Practical Exercise 4.1 - Chart Page

Objective: To use a chart widget to display data on a page.



Widgets introduced:

Chart

1. Open a new page object

- Select the book manager menu and choose the *New Page* option.
- Size the page on the screen as required.

2. Use the page inspector to set the page attributes

- Select the inspector from the builder keypad.
- Use the *Normal Attributes* to title the page.
- Use the *Code Attributes* to name the page, e.g. **Chart**.
- Use the *Colour Attributes* to set a background colour for the page.

3. Add a chart widget to the page

- Drag a chart icon from the builder keypad and drop onto the page.
- Size and position as required.
- Use the chart inspector option *Code Attributes* to set the name of the chart.

4. Use the connections mapper to bring data from the GentiaDB to the page

- Open the connections mapper.
- Drag a business source connector from the mapper keypad to the connections mapper.
- Use the help on the business source inspector to set the *Model Spec* to Salemodel.
- Give the business source connecctor a name in the source field, e.g. Sales Source.

5. Set the rows and columns for the chart

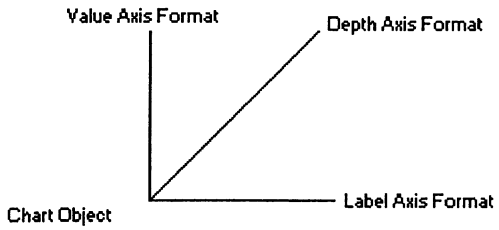
- Drag a selector connector from the mapper keypad to the connections mapper.
- Connect the business source to the selector.
- Use the selector inspector to name the selector **ItemTime**.
- Use the *Row Dimensions* option from the selector inspector to set the row dimension to be **Item**.
- Use the *Column Dimensions* option from the selector inspector to set the column dimension to be **Time**.

6. Restrict the rows for the chart to Sales Revenue and Contribution

- Drag a filter connector from the mapper keypad to the connections mapper.
- Position and connect the filter between the selector and chart.
- Use the filter inspector to name the filter, e.g. **ItemFlt.**
- Use the *Edit Current Dimension* option in the filter inspector and set the dimension to filter to be **Item**.
- Use the help icon to add **reven** and **contrib** as the coordinates to filter in.
- Close the connections mapper.

7. Use the Chart inspector to format the Chart

- To show all the selected columns and rows on the chart, choose *Default Row Formats* from the Chart Inspector.
- Set the *max rows* and *max cols* to be **0.**
- Use the *Graph Title* option from the Chart Inspector to edit the chart title.



- To format the value (y) axis, choose *Value Axis Format* from the Chart Inspector.

This will move you to the Format Inspector.

- Use the *Basic Data* option to set decimal places and width of the margin.
- Use the *Modify Font* option to choose a display font.
- Use the *Zero,Comma,Point* option to set thousand separators.

From the format inspector choose the last menu option, *Chart Inspector*, to close the format inspector.

- Use the *Label Axis Format* option to make similar changes to the label (x) axis.
- Return to the chart inspector and remove or change the title of the chart, if you wish.

8. Set one of the rows to display as a line instead of a bar

- From the chart inspector, select *Default Row Formats.*
- Set the *Current Format* to **2.**

Use the *Current Row Format* option to open the format inspector.

- Use the *Basic Data* option to set the *Graph Shape* to be a **line.**
- To make the line thicker, change the *Line Thickness* setting in the *All Ranges* option. You can use the *Foreground Colour* on the *All Ranges* option to set the colour of the line.

9. Save and test the page in user mode

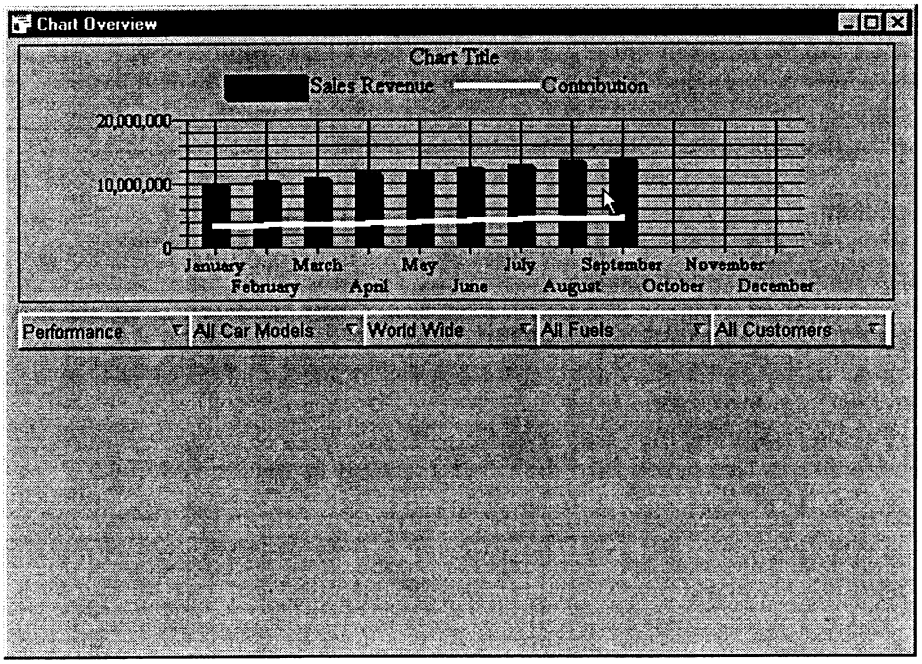
- From the Gentia toolbar use the switch icon to move to user mode.

Optional:

- Experiment further with the options in the chart inspector and format inspector. You may want to change the colour of the bars on the chart.

Practical Exercise 4.2 - Chart Page

Objective: To use a listbar to display different slices of data, and to add a filter to hide the totals in the Time dimension.



1. Open the chart page
- Open the book manager.
- Choose the chart page.

2. Add a listbar to the page
- Drag a list bar widget from the builder keypad to the page.
- Size and position as required.
- Use the listbar inspector to set the *ListBar Style* to be a **slice selector**.
- Open the connections mapper and connect the listbar to the selector.

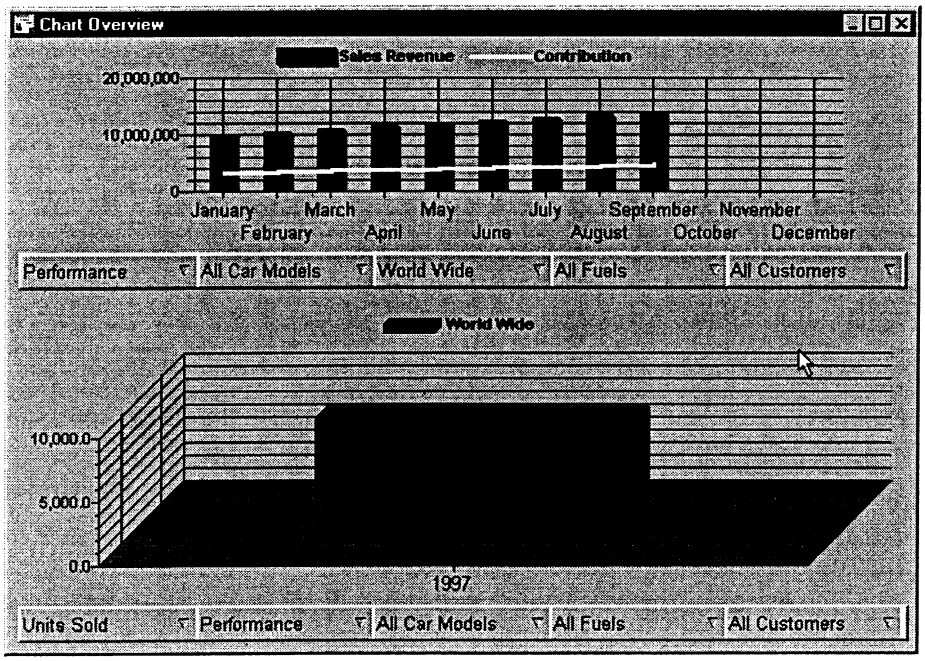
3. Add a filter connector to hide the parents of the Time dimension
- Drag a filter connector from the mapper keypad to the connections mapper.
- Position and connect the filter between the business source and the selector.
- Use the *Filter Inspector* to name the filter **TimeFilter.**
- Set the filter to be a **negative filter.**
- Choose the *Edit Current Dimension* option on the filter inspector.
- Use the help option to set the current dimension to **Time.**
- Use the help option to set the members to be **cyear**, **q1**,**q2**,**q3** and **q4.**
- Close the connections mapper.

4. Save and test the page in user mode
- From the Gentia toolbar use the switch icon to move to user mode.

Optional:
- Experiment with the *Label and Depth Axis* options to make the lables more readable.

Practical Exercise 4.3 - Chart Page

Objective: To introduce a second chart with drill-down capability.



Connectors introduced:

Hierarch

1. Open the chart page

- Open the book manager.
- Choose the chart page.

2. Add a second chart to the page

- Drag a second chart widget onto the page, from the builder keypad.
- In the chart inspector use the *Graph Type* option to change to a *3D Vertical Bars* chart.
- Size, position and name the new chart as required.

3. Connect the chart to the business model

- Open the connections mapper.
- Drag a second selector connector to the connections mapper, and connect it to the business source connector
- Set the *Row Dimension* of the selector to be **Location**.
- Set the *Column Dimension* of the selector to be **Time**.
- Connect the selector to the chart, which will cause the chart to appear, but it will look overcrowded.
- Drag a hierarch connector from the mapper keypad to the connections mapper.
- Position and connect it between the selector and the chart, to give the drill-down capability.

4. Save and test the page in user mode

- From the Gentia toolbar use the switch icon to move to user mode.

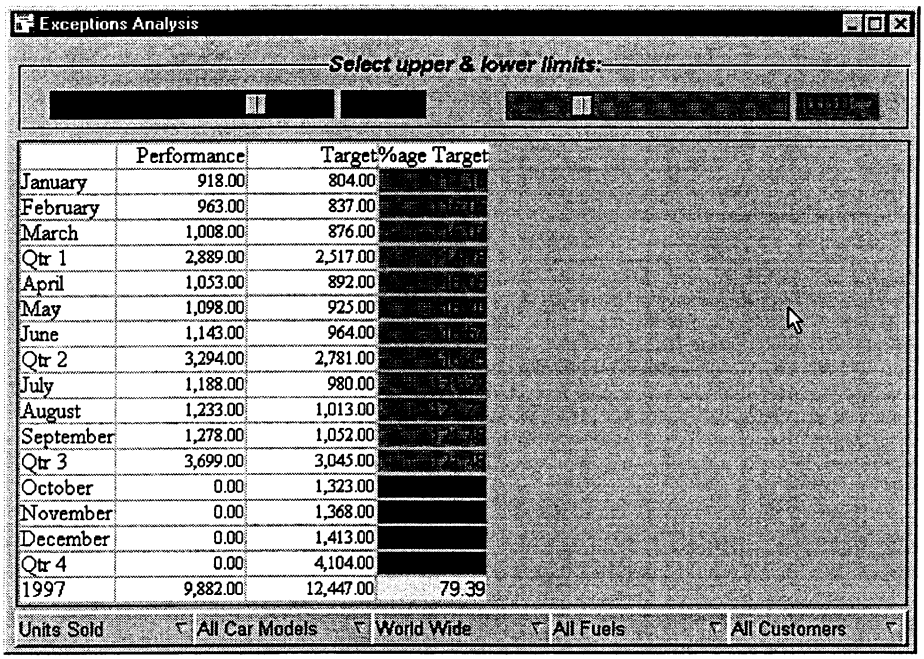
- Test the drill-down functionality.

Optional:
- Add another listbar to the page to work with the second chart.
- Experiment with the hierarch connector, to restrict the drill-down functionality to the Location dimension only.
- Experiment with the position of the hierarch connector, by connecting it between the business source and the selector.
- Ensure that both charts have the same font throughout (legend, axes, title...).

5. Colour-Coded Exceptions

The Instructor will demonstrate on a step-by-step basis, how to build a page that displays colour-coded exceptions, and give the user the ability to change the upper and lower limits that determine the colour of the values.

Exceptions Analysis Page



	Performance	Target	%age Target
January	918.00	804.00	
February	963.00	837.00	
March	1,008.00	876.00	
Qtr 1	2,889.00	2,517.00	
April	1,053.00	892.00	
May	1,098.00	925.00	
June	1,143.00	964.00	
Qtr 2	3,294.00	2,781.00	
July	1,188.00	980.00	
August	1,233.00	1,013.00	
September	1,278.00	1,052.00	
Qtr 3	3,699.00	3,045.00	
October	0.00	1,323.00	
November	0.00	1,368.00	
December	0.00	1,413.00	
Qtr 4	0.00	4,104.00	
1997	9,882.00	12,447.00	79.39

Key Points

Copying Pages

When copying pages in Genta, use the following steps:

1. Open the original page.
2. Use the *Code Attributes* option to change the name of the page.
3. Use the book manager menu to save the page.

From this point, both pages can be seen in the book manager. Any changes thereafter will apply to the copy, under its new name.

Colour-Coded Exceptions

Gentia has the ability to provide traffic-lighting, by colour-coding the data according to defined upper and lower limits. These limits can be altered in user mode, if necessary. The key benefit of this is that the data has an immediate impact to the user.

The colour coding is defined by using a formater connector, to define the following:

1. The data to be affected by the traffic lighting

2. The upper and lower limts - in the format inspector

3. The three colours for the values below the lower limit, above the upper limit, and inbetween the two limits - in the format inspector

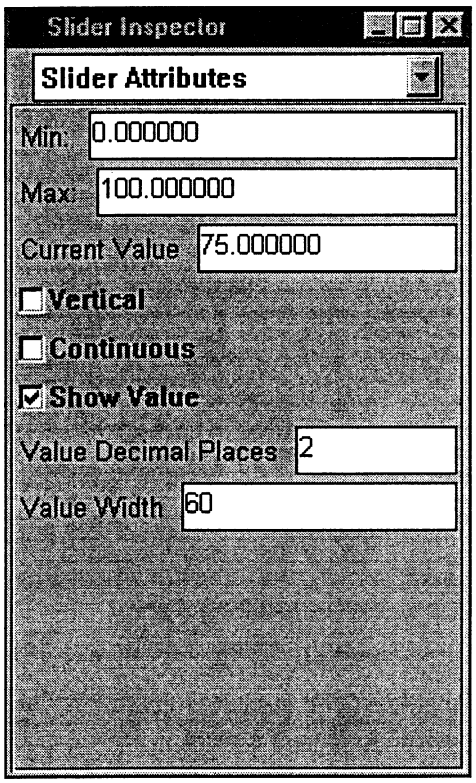
Remember that the formater connector will override any formatting you have done using the Table Inspector. You may need to reset fonts, column widths etc.

Slider bars

Slider bars provide a way of allowing the user to change values on the page on an interactive basis.

On this course we will be using them in conjunction with colour-coded exceptions, in order to permit the user to change the upper and lower limits by which the colours of the numbers are determined.

In the slider inspector, the following slider attributes can be changed:



Min and *Max* determine the range of the slider bar, i.e. the mimimum and maximum values that can be selected on the slider bar.

Current Value sets the starting point for the slider bar, i.e. the value to which it will be set when the page first opens. In our example, this should match with the limit defined in the formater, in order to maintain the integrity of the page; otherwise the slider bar will not reflect the way in which the data has been colour-coded.

The *Vertical* option allows you to change the orientation of the slider bar.

The *Continuous* option will change the way the slider bar works in user mode, i.e. the change to the upper/lower limit will be applyed instantly, as the user drags the mouse across the slider bar, without releasing the mouse button. A non-continuous slider bar, will not apply the change to the data until the user has released the mouse button.

Overlapping Slider Bars

If the range of a slider bar overlaps with another slider bar, and the current value of the lower one is greater than the current value of the higher one, the low limit will take precedence. Consider the following example:

A value of say, 79 is both less than 100 and greater than 75, but it would appear according to the low limit, which would be red in this example.

Bottom-to-Top Connections

Side-to-side connections appear in blue and signify a flow of data between the connectors and widgets. Data constitutes values form the data base, member names or dimension names.

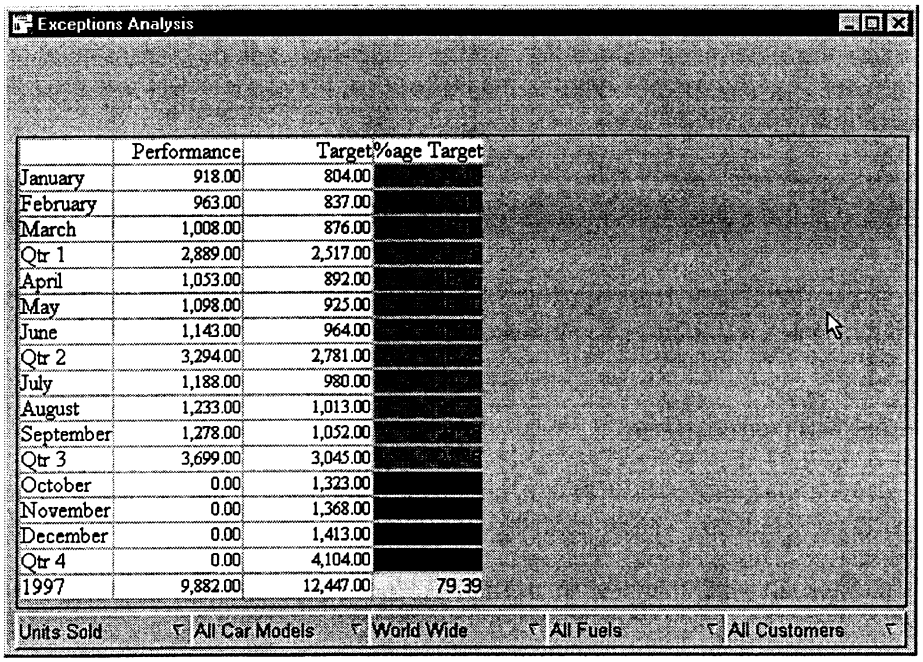
Bottom-to-top connections appear in red and signify a flow of information between widgets and connectors. Information constitutes a value of a piece of text, as well as an action, to tell Gentia what to do.

When making a bottom-to-top connection, Gentia will prompt you to supply a modifier, by presenting you with a list of relevant ones. It is the modifier that tells the connector what to do with the information being passed to the connector/widget. The modifiers are equivalent to the fields in the inspector, and they therefore determine which field is to be modified with the information supplied.

For example, the value of 50 could be chosen by the user. It is passed from the slider bar to the formater. This number could represent anything in the formater, e.g. the font size, the width of the column, etc. The modifier, lowLimitsAre tells the formater that the number 50 is to be used to update the low limits for the exceptions.

Practical Exercise 5.1 - Exceptions Analysis Page

Objective: To create a page containing a table that displays a colour-coded column. The page will be copied from a previously created page.



1. Make a copy of the matrix page

- Open the book manager and select the matrix page.
- Open the page inspector, and move to *Code Attributes* to change the name of the page to **Exceptions Analysis**.
- In the builder keypad, use the book manager menu to save the page.
- Open the book manager to check that the new page has been created.
- Use the widgets editor to remove the lower table and listbar.
- Open the connections mapper to delete the unwanted connectors, to leave a source or business source, a selector, the top table and its listbar.
- Resize and position the remaining table and listbar, as above.

2. Change the row and column dimensions of the table

- In the connections mapper, open the selector inspector.
- Rename the selector **TimeVersion**.
- Use the *Row Dimension* option to set the row dimension to be **Time**.
- Use the *Column Dimension* option to set the column dimension to be **Version**.
- Close the connections mapper, and check that the page is displaying the same data as above.

3. Colour code the Target% data

- Open the connections mapper.
- Drag a formater connector to the connections mapper, and position and connect it between the selector and the table.
- Open the formater inspector, and name it something like **exceptions**.
- Select **targpc** as the coordinate to format.
- Choose the *Edit Current Format* option from the formater inspector, to open the format inspector.

- Use the *Basic Data* option to set the High and Low limits of the exceptions, **75** & **100**.
- Choose *Low/Axis/Front* to set the colour to be red for the low numbers.
- Choose *High/Minor Grid/Top* to set the colour to be green for the high numbers.
- Choose *Mid/Grid/Side* to set the colour to be yellow for the numbers inbetween.

4. Save and test the page in user mode

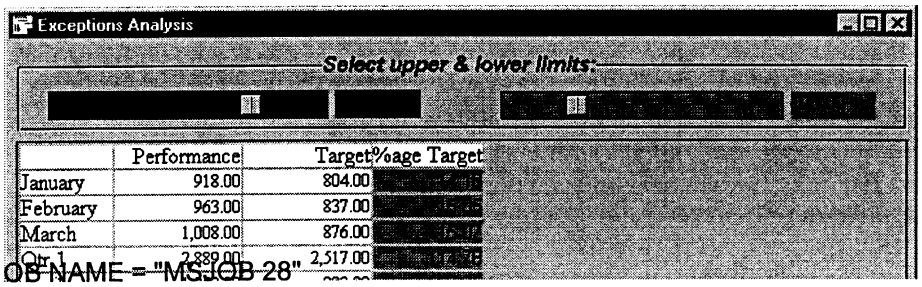
- From the Gentia toolbar use the switch icon to move to user mode.

Optional:

- Use the *Basic Data* option to change the column widths and decimal places.
- Use the *Modify Font* option on the format inspector to set fonts and pitch size.
- Use the *Sign Text* option to set a **%** symbol after all figures.
- Experiemnt with some of the other options in the format inspector.

Practical Exercise 5.2 - Exceptions Analysis Page

Objective: To introduce the ability for the user to change the upper and lower limits for the colour-coded values, using slider bars.



OB NAME = "MSJOB 28"
@PJL USTATUS JOB = ON
@PJL USTATUS PAGE = OFF
@PJL USTATUS DEVICE = ON
@PJL USTATUS TIMED = 30

Widget Introduced:

Slider bar

1. Open the Exceptions Analysis page

- Select the book manager and select the Exceptions Analysis page.

2. Add a slider bar to the page

- Drag a slider bar widget from the builder keypad to the page.
- Size and position as required.
- Use the slider bar inspector, *Code Attributes* to name the slider bar, e.g. **low**
- Use the *Colour Attributes* option to set the background colour of the slider bar to red, to match the low numbers.
- Use the *Slider Attributes* option to set a range for the slider bar, e.g. between **0** and **100**.
- Set the *Current Value* to be the same number as the *Low Limit* set in the formater, i.e. **75**.

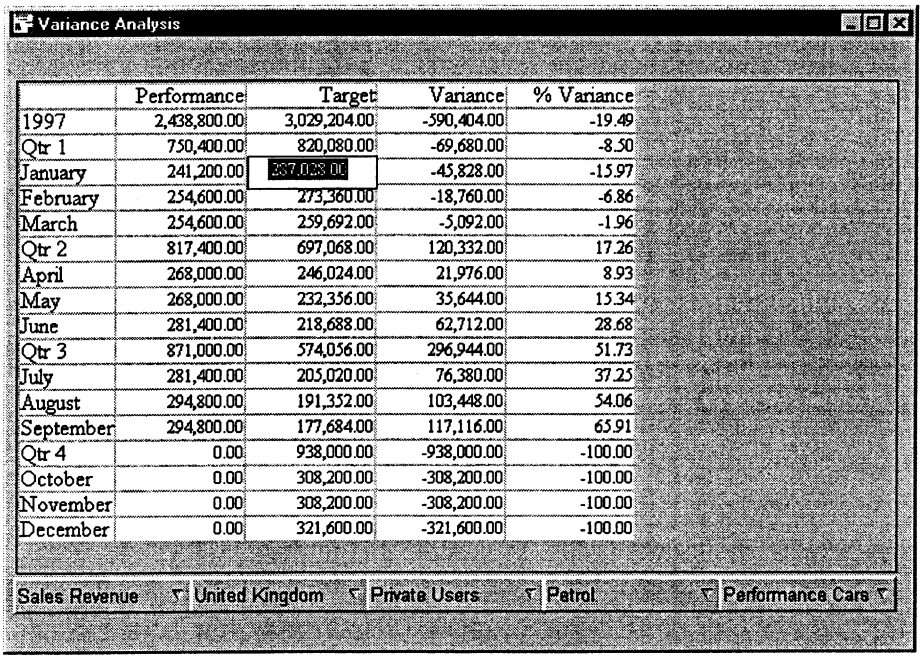
3. Add a second slider bar to the page

- Either add a second slider bar from the builder keypad, or copy the existing one using the widgets editor.
- Use the *Code Attributes* option on the inspector to name it, e.g. **high**
- Use the *Colour Attributes* option to set the background colour of the slider bar to red, to match the low numbers.
- Use the *Slider Attributes* option to set a range for the slider bar, e.g. between **75** and **175**.
- Set the *Current Value* to be the same number as the *Low Limit* set in the formater, i.e. **100**.

6. Calculated Variance Page

The Instructor will demonstrate on a step-by-step basis, how to build a page upon which variance is calculated from the budget and actual figures. The calculated values are not held in the base model; they are calculated as the page opens and are lost when the page closes. Some of the cells in the table, are editable; if the user edits a value, the calculated values will re-calculate to reflect the change.

Calculated Variance Page



	Performance	Target	Variance	% Variance
1997	2,438,800.00	3,029,204.00	-590,404.00	-19.49
Qtr 1	750,400.00	820,080.00	-69,680.00	-8.50
January	241,200.00	287,028.00	-45,828.00	-15.97
February	254,600.00	273,360.00	-18,760.00	-6.86
March	254,600.00	259,692.00	-5,092.00	-1.96
Qtr 2	817,400.00	697,068.00	120,332.00	17.26
April	268,000.00	246,024.00	21,976.00	8.93
May	268,000.00	232,356.00	35,644.00	15.34
June	281,400.00	218,688.00	62,712.00	28.68
Qtr 3	871,000.00	574,056.00	296,944.00	51.73
July	281,400.00	205,020.00	76,380.00	37.25
August	294,800.00	191,352.00	103,448.00	54.06
September	294,800.00	177,684.00	117,116.00	65.91
Qtr 4	0.00	938,000.00	-938,000.00	-100.00
October	0.00	308,200.00	-308,200.00	-100.00
November	0.00	308,200.00	-308,200.00	-100.00
December	0.00	321,600.00	-321,600.00	-100.00

Key Points

Calculator Connector

This is used to perform calculations on an in-flight basis, as the page opens. The calculation is carried out on the client machine, which means that all data required for the calculation will also be passed to the client. The calculated figures are not stored in the database; they will be lost when the user moves to a different slice, or if the page closes.

Errors in the calculator e.g. mis-spelt names, case sensitivity errors, will cause a number of error messages to appear. Disconnect the calculator from the source to prevent further messages appearing before you have made the amendments.

The effect of the calculator is for the data to be held in memory. Therefore there is a limit to the amount of data that can be held in the calculator; its maximum capacity is 2Mb. Most base and analytical models will exceed 2Mb, and therefore it is necessary to restrict the data

that reaches the calculator. At any time, the page will only display the calculated values for the slice being shown. If the user changes to a different slice, the calculated values will change, accordingly. This means that it is really only necessary to load a slice at a time into the calculator. This is done using a slicer connector (see below).

When using a calculator the data is resident in memory, and the user has the ability to edit data on the page, at which point the values calculated by the calculator will automatically update. However, it is only the values provided by the calculator that will update to reflect the changes; any values calculated by the database will not update. This means that the integrity of the data on the page will not necessarily be maintained. For instance, a user could change a consolidated value (e.g. Qtr1), not realising that its children (e.g. Jan, Feb, Mar), do not update to reflect the change to the parent value. Therefore the editability of the data needs to be controlled. This is done using an editable connector (see below).

Slicer Connector

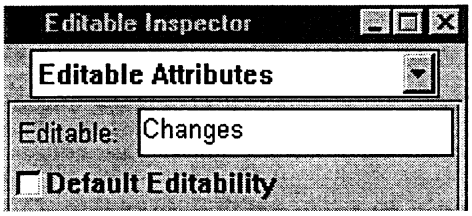
A slice is used to restrict the number of slices reaching the page. It could be used to 'remove' a dimension, by selecting one coordinate from that dimension. We will be looking at using a slicer to restrict the data to one slice at a time, by selecting a coordinate from **each** slice dimension.

When using a slicer in this way, it is no longer the selector that is controlling the slice on the page, and the listbar (being connected to the selector) becomes ineffective. Since the slicer is controlling the slice on the page, the listbar needs to be connected to the slicer.

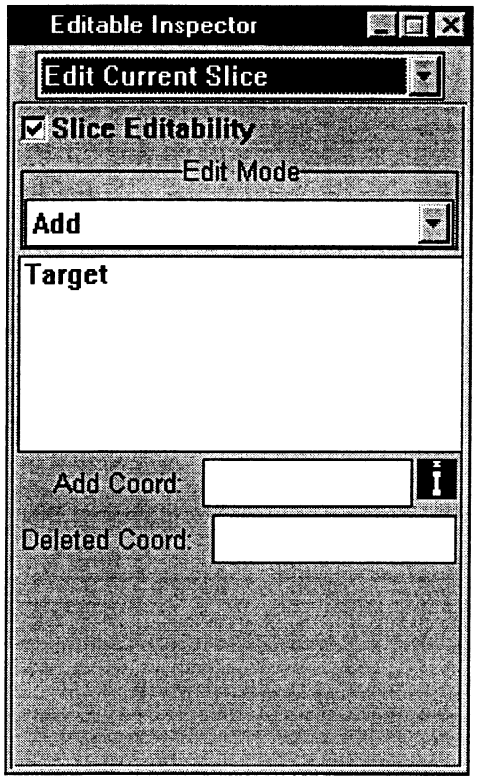
Editable Connector

When using a calculator connector, all values on the table are automatically editable, even though the integrity of the data may be lost by making any changes. In order to ensure that the user is only able to change base level data values that are not calculated, i.e. that have no expressions associated with them, the editable connector can be used.

Simply introducing an editable, and leaving the *Default Editability* option unchecked will automatically switch off any editability.

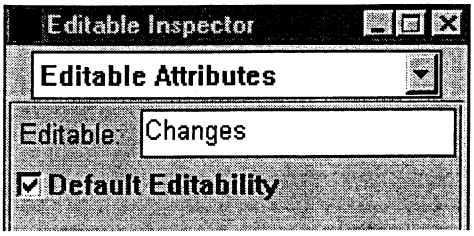


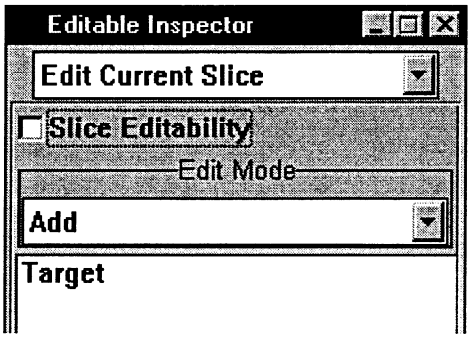
Thereafter, you can define which areas of the data are to be editable, using the *Edit Current Slice* option:



The *Slice Editability* option determines whether or not the specified coordinate is to be editable or not. In the above example, Target is editable. Adding coordinates to the list allows you to refine the editable areas, by defining the points of intersection, in the same way as you would define cells to be formatted, using the formater connector.

Alternatively, you can check the *Default Editability* option to switch on editability, and you can then specify which areas of the data are not to be editable, by leaving the *Slice Editability* option unchecked.





Efficiency: In-flight calculations Vs. pre-computed calculations

A calculator connector will calculate the values on an in-flight basis, as the page opens, which could have an impact on performance. Alternatively, you could specify for the values to be pre-computed and stored in the database, which has an impact on the size of the database. Basically, the decision is a question of balance. Thought needs to be given to how often the values in question will need to be viewed, how on-line performance is affected, and what sort of effect pre-computing them will have on the size of the database, and the calculation time.

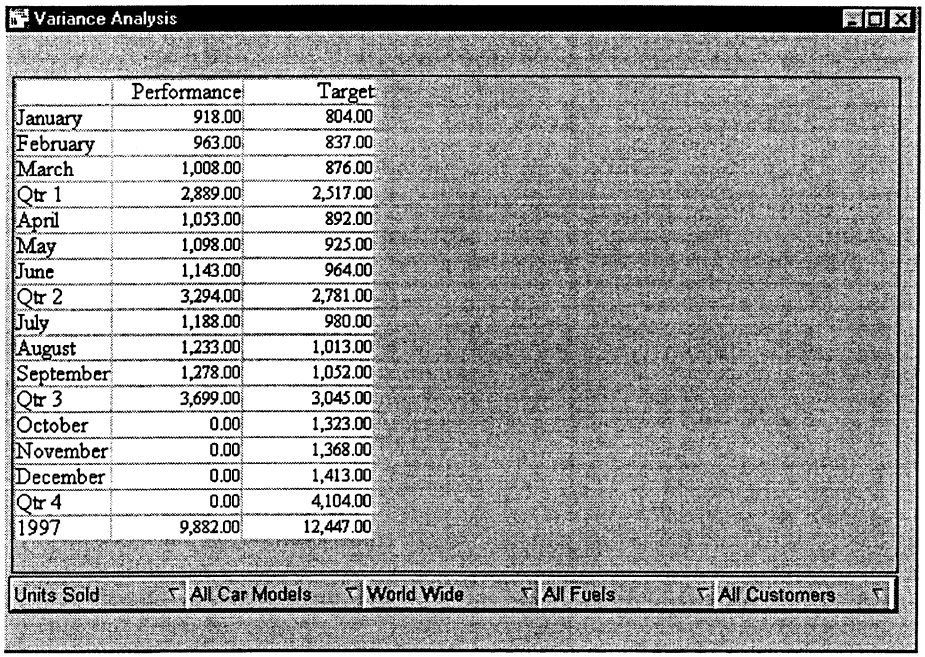
However, values can also be calculated by GentiaDB on an in-flight basis, so the question arises: should in-flight calculations be controlled by a calculator connector, or by the base model? A calculator connector will calculate the values on the client machine, and therefore

all components of the calculation will need to be sent from the server. If the base model calculates the values in-flight, the calculation takes place on the server and only the calculated value is sent to the client. So, it is always quicker (speed of calculation, network traffic) to have the base model carry out the in-flight calculation.

However, using the calculator does have its advantages. The syntax used in the calculator is GDL-based, and at times some complex calculations are simpler to define using the calculator. Another benefit is that you may not be able to easily access your business and base models in order to make the necessary changes to calculations, in which case, using the calculator may be much more straightforward, even if the on-line performance for the user is slightly slower.

Practical Exercise 6.1 - Calculated Variance Page

Objective: To prepare a page which is to have the calculated values introduced in the next practical. The page will be created by copying a previously created page.



	Performance	Target
January	918.00	804.00
February	963.00	837.00
March	1,008.00	876.00
Qtr 1	2,889.00	2,517.00
April	1,053.00	892.00
May	1,098.00	925.00
June	1,143.00	964.00
Qtr 2	3,294.00	2,781.00
July	1,188.00	980.00
August	1,233.00	1,013.00
September	1,278.00	1,052.00
Qtr 3	3,699.00	3,045.00
October	0.00	1,323.00
November	0.00	1,368.00
December	0.00	1,413.00
Qtr 4	0.00	4,104.00
1997	9,882.00	12,447.00

1. Make a copy of the Exceptions Analysis page

- Open the book manager and select the Exceptions Analysis page.
- Open the page inspector, and move to *Code Attributes* to change the name of the page to **Variance Analysis**.
- In the builder keypad, use the book manager menu to save the page.
- Open the book manager to check that the new page has been created.
- Open the connections mapper and use the widgets editor to remove the formater that controls the colour-coded exceptions.

2. Add a filter connector to restrict the columns to performance and target data

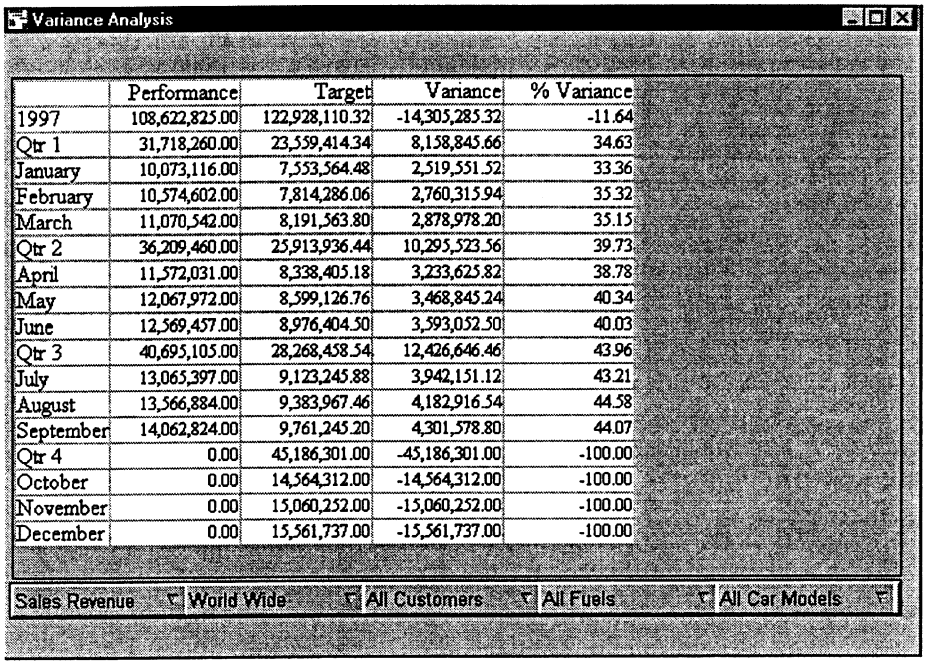
- Drag a filter connector from the mapper keypad to the connections mapper.
- Connect the filter between the selector and the table.
- Use the Filter Inspector to name the filter.
- Choose the *Edit Current Dimension* option on the filter inspector to set the dimension to **Version.**
- Select the coordinates to filter to be **Performance** and **Target**
- Close the connections mapper

5. Close the page

- Close the page, ensuring that you save it.

Practical Exercise 6.2 - Calculated Variance Page

Objective: To show variance and % variance figures on the page. The two new columns will be added using a calculator connector to calculate the values as the page opens.



	Performance	Target	Variance	% Variance
1997	108,622,825.00	122,928,110.32	-14,305,285.32	-11.64
Qtr 1	31,718,260.00	23,559,414.34	8,158,845.66	34.63
January	10,073,116.00	7,553,564.48	2,519,551.52	33.36
February	10,574,602.00	7,814,286.06	2,760,315.94	35.32
March	11,070,542.00	8,191,563.80	2,878,978.20	35.15
Qtr 2	36,209,460.00	25,913,936.44	10,295,523.56	39.73
April	11,572,031.00	8,338,405.18	3,233,625.82	38.78
May	12,067,972.00	8,599,126.76	3,468,845.24	40.34
June	12,569,457.00	8,976,404.50	3,593,052.50	40.03
Qtr 3	40,695,105.00	28,268,458.54	12,426,646.46	43.96
July	13,065,397.00	9,123,245.88	3,942,151.12	43.21
August	13,566,884.00	9,383,967.46	4,182,916.54	44.58
September	14,062,824.00	9,761,245.20	4,301,578.80	44.07
Qtr 4	0.00	45,186,301.00	-45,186,301.00	-100.00
October	0.00	14,564,312.00	-14,564,312.00	-100.00
November	0.00	15,060,252.00	-15,060,252.00	-100.00
December	0.00	15,561,737.00	-15,561,737.00	-100.00

Connectors introduced:


Calculator


Slicer

1. Open the Calculated Variance page

- Open the book manager.
- Select the *Calculated Variance* page.

2. Add a slicer to the connections mapper

- Open the connections mapper.
- Drag a slicer connector from the mapper keypad to the connections mapper.
- Give the slicer a name, e.g. *default*, using the slicer inspector.
- Connect the slicer between the business model source and the selector.
- In the slicer inspector, use the help icon to add one coordinate from each of the slice dimensions, i.e. from Item, Location, Customer, Fuel and Product.
- For example, you could add: **reven, world, allcust, allfuel, allcars**.
- Move the listbar, and connect it to the slicer, instead of the selector.

3. Add a calculator to the connections mapper

- Drag a calculator connector from the mapper keypad to the connections mapper.
- Connect the slicer to the calculator between the slicer and the selector.
- Use the calculator inspector to name the calculator, e.g. **Variance.**
- Choose the *Add New Dimension* option in the calculator inspector, which will then show *Edit Current Dimension* as the menu option.
- Use the help icon to select **Version** as the *Current Dimension*.
- Enter the first calculated coordinate: **var display as "Variance"**
- Enter the second calculated coordinate: **varp display as "% Variance"**

- Choose the *Edit Rules* option from the inspector.
- Enter the rule for the first coordinate: **var = Target - Performance**
- Enter the rule for the second coordinate: **varp = var % Target**

If you have any errors, you will get a number of error messages. To prevent the messages from appearing until you have amended your errors, disconnect the calculator, so that Gentia cannot validate your entries. Reconnect the calculator when you have made the changes.

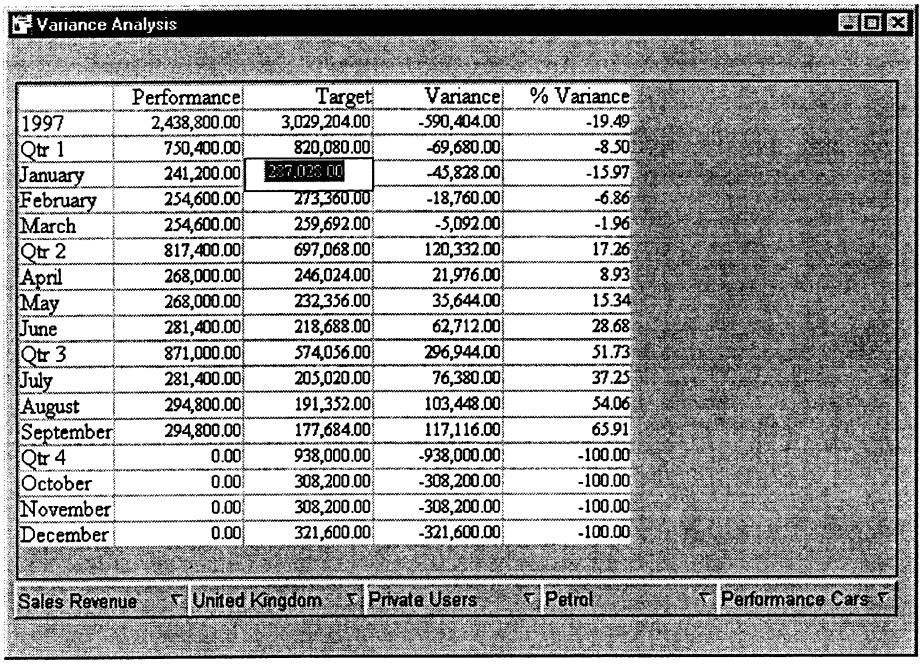
- Close the connections mapper, and examine the results of the calculated columns.
- Close the page.

Optional:

- Experiment with the calculator, to introduce further columns, and a row; what happens when the calculated rows and columns intersect - which calculation takes precedence?

Practical Exercise 6.3 - Calculated Variance Page

Objective: To control editability of the data on the Calculated Variance page, now that a calculator connector has been introduced.



	Performance	Target	Variance	% Variance
1997	2,438,800.00	3,029,204.00	-590,404.00	-19.49
Qtr 1	750,400.00	820,080.00	-69,680.00	-8.50
January	241,200.00	287,028.00	-45,828.00	-15.97
February	254,600.00	273,360.00	-18,760.00	-6.86
March	254,600.00	259,692.00	-5,092.00	-1.96
Qtr 2	817,400.00	697,068.00	120,332.00	17.26
April	268,000.00	246,024.00	21,976.00	8.93
May	268,000.00	232,356.00	35,644.00	15.34
June	281,400.00	218,688.00	62,712.00	28.68
Qtr 3	871,000.00	574,056.00	296,944.00	51.73
July	281,400.00	205,020.00	76,380.00	37.25
August	294,800.00	191,352.00	103,448.00	54.06
September	294,800.00	177,684.00	117,116.00	65.91
Qtr 4	0.00	938,000.00	-938,000.00	-100.00
October	0.00	308,200.00	-308,200.00	-100.00
November	0.00	308,200.00	-308,200.00	-100.00
December	0.00	321,600.00	-321,600.00	-100.00

Connectors introduced:

Editable

1. Open the Calculated Variance page

- Open the Book Manager.
- Select the Calculated Variance page.

2. Add an editable to the connections mapper

- Open the connections mapper.
- Drag an editable connector from the mapper keypad to the connections mapper; position and connect it between the filter and the table.
- Use the editable inspector to name the editable e.g. **Changes**
- Choose the *Edit Current Slice* option from the editable inspector, and use the help icon to select **Target** as the coordinate.
- Check the *Slice Editability* box, in order to make Target editable
- Close the connections mapper.

3. Test the page in user mode

- From the Gentia toolbar use the switch icon to move to user mode.
- Test the editability of the table, but ensure that you only try to edit base members, i.e. coordinates without any parents. What happens if you try to edit consolidated coordinates?

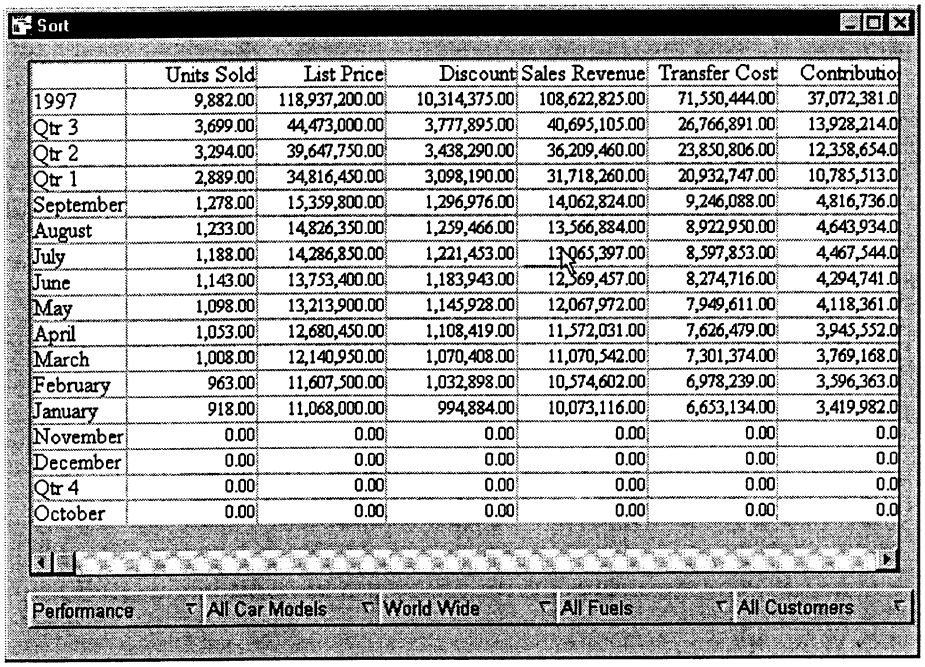
Optional:

- Experiment further with the editable connector, in order to refine the editability to prevent the user from trying to edit consolidated data.

7. Sort Page

The Instructor will demonstrate how to build a page that sorts the time dimension (rows) according to the values in a column selected by the user.

Sort Page



	Units Sold	List Price	Discount	Sales Revenue	Transfer Cost	Contributio
1997	9,882.00	118,937,200.00	10,314,375.00	108,622,825.00	71,550,444.00	37,072,381.0
Qtr 3	3,699.00	44,473,000.00	3,777,895.00	40,695,105.00	26,766,891.00	13,928,214.0
Qtr 2	3,294.00	39,647,750.00	3,438,290.00	36,209,460.00	23,850,806.00	12,358,654.0
Qtr 1	2,889.00	34,816,450.00	3,098,190.00	31,718,260.00	20,932,747.00	10,785,513.0
September	1,278.00	15,359,800.00	1,296,976.00	14,062,824.00	9,246,088.00	4,816,736.0
August	1,233.00	14,826,350.00	1,259,466.00	13,566,884.00	8,922,950.00	4,643,934.0
July	1,188.00	14,286,850.00	1,221,453.00	13,065,397.00	8,597,853.00	4,467,544.0
June	1,143.00	13,753,400.00	1,183,943.00	12,569,457.00	8,274,716.00	4,294,741.0
May	1,098.00	13,213,900.00	1,145,928.00	12,067,972.00	7,949,611.00	4,118,361.0
April	1,053.00	12,680,450.00	1,108,419.00	11,572,031.00	7,626,479.00	3,945,552.0
March	1,008.00	12,140,950.00	1,070,408.00	11,070,542.00	7,301,374.00	3,769,168.0
February	963.00	11,607,500.00	1,032,898.00	10,574,602.00	6,978,239.00	3,596,363.0
January	918.00	11,068,000.00	994,884.00	10,073,116.00	6,653,134.00	3,419,982.0
November	0.00	0.00	0.00	0.00	0.00	0.0
December	0.00	0.00	0.00	0.00	0.00	0.0
Qtr 4	0.00	0.00	0.00	0.00	0.00	0.0
October	0.00	0.00	0.00	0.00	0.00	0.0

Key Points

Sorter connector

The sorter connector will sort rows of data, based upon the value in a particular column, or columns of data based upon values in a particular row. The sorter can only sort on one co-ordinate at a time, i.e. secondary, or nested sorting is not possible using a sorter. However, GDL can be used to achieve this. You can learn about GDL on the *Gentia Application Development* training course.

The sort will take place on the client machine, rather than the server. If the sort process takes some time, which will mean that the page is slow to open, the use of a slicer on the page may speed things up.

Actor Connector

The role of an actor is to make the page interactive. It works by picking up input, usually from a page widget, and passing it to another connector.

In this example, the actor is taking a co-ordinate name from the table and passing it to the sorter connector, so that the sorter can re-perform the sort based upon the new co-ordinate.

The instructor will demonstrate how the actor should be connected, as follows:

1. Drag the actor from the mapper keypad, and position near to the widget from which data/information is to be passed, see **fig. 1**

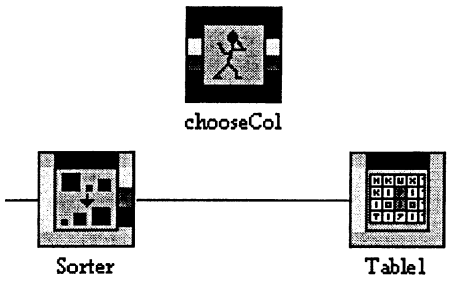


fig. 1

2. The actor must be connected to the side of the widget from which it is taking information/data, e.g. a table. This will break the connection which is currently going into the widget, so that the data will no longer reach the table, see **fig. 2**

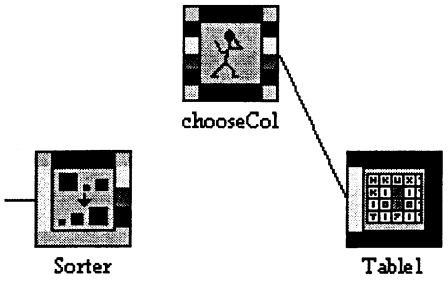


fig. 2

3. So, the left side of the actor must be connected to wherever the widget was previously connected, (e.g. the sorter) in order for the data to pass through the actor to the page, and then back to the actor, see **fig. 3**

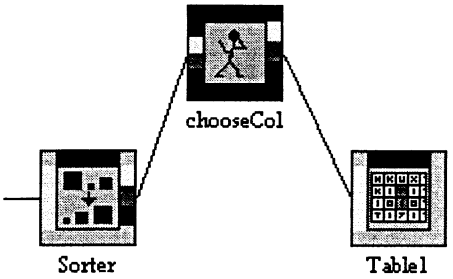


fig. 3

4. The actor now has the information, and needs to pass it on, with a modifier to determine how to use the information. To pass information from the actor to the sorter, use a bottom to top connection and select the appropriate modifier, (i.e. sortCoordinate) see **fig. 4**

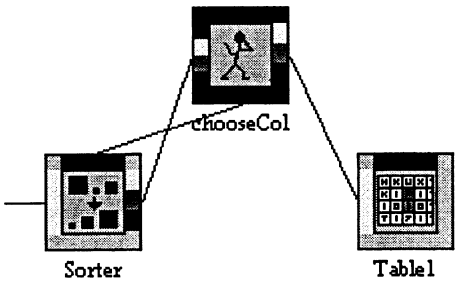
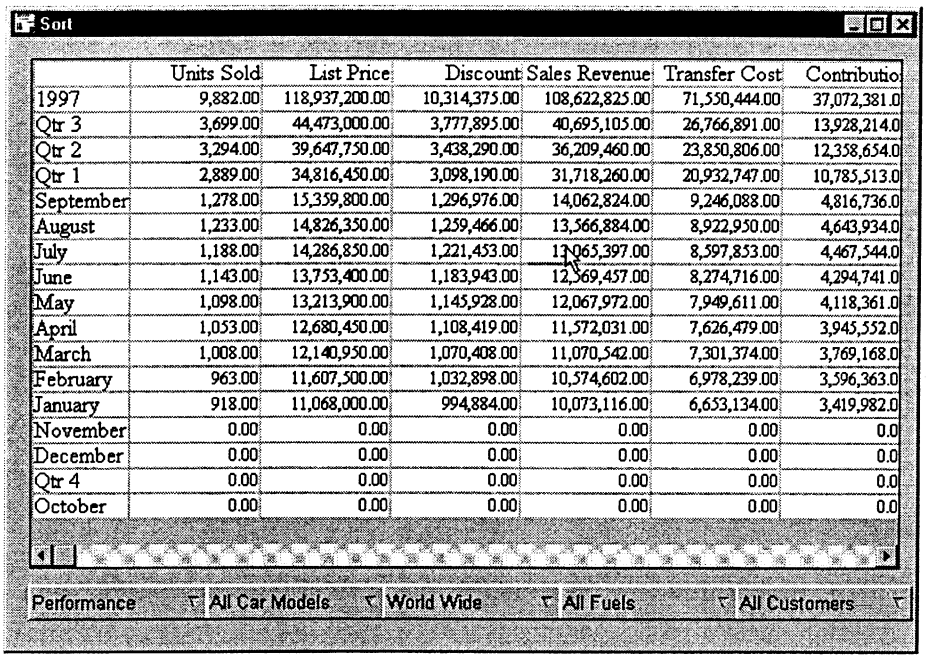


fig. 4

Practical Exercise 7.1 - Sort Page

Objective: To create a page which sorts the rows according to the value in the first column.



	Units Sold	List Price	Discount	Sales Revenue	Transfer Cost	Contributio
1997	9,882.00	118,937,200.00	10,314,375.00	108,622,825.00	71,550,444.00	37,072,381.0
Qtr 3	3,699.00	44,473,000.00	3,777,895.00	40,695,105.00	26,766,891.00	13,928,214.0
Qtr 2	3,294.00	39,647,750.00	3,438,290.00	36,209,460.00	23,850,806.00	12,358,654.0
Qtr 1	2,889.00	34,816,450.00	3,098,190.00	31,718,260.00	20,932,747.00	10,785,513.0
September	1,278.00	15,359,800.00	1,296,976.00	14,062,824.00	9,246,088.00	4,816,736.0
August	1,233.00	14,826,350.00	1,259,466.00	13,566,884.00	8,922,950.00	4,643,934.0
July	1,188.00	14,286,850.00	1,221,453.00	13,065,397.00	8,597,853.00	4,467,544.0
June	1,143.00	13,753,400.00	1,183,943.00	12,569,457.00	8,274,716.00	4,294,741.0
May	1,098.00	13,213,900.00	1,145,928.00	12,067,972.00	7,949,611.00	4,118,361.0
April	1,053.00	12,680,450.00	1,108,419.00	11,572,031.00	7,626,479.00	3,945,552.0
March	1,008.00	12,140,950.00	1,070,408.00	11,070,542.00	7,301,374.00	3,769,168.0
February	963.00	11,607,500.00	1,032,898.00	10,574,602.00	6,978,239.00	3,596,363.0
January	918.00	11,068,000.00	994,884.00	10,073,116.00	6,653,134.00	3,419,982.0
November	0.00	0.00	0.00	0.00	0.00	0.0
December	0.00	0.00	0.00	0.00	0.00	0.0
Qtr 4	0.00	0.00	0.00	0.00	0.00	0.0
October	0.00	0.00	0.00	0.00	0.00	0.0

Connector Introduced:

sorter

1. Make a copy of the Variance Analysis page

- Open the Variance Analysis page and save it to a new name, **Sort**; look in the book manager to check that the new page has been created.
- Remove the slicer, calculator, filter and editable connectors, and reconnect the remaining widgets and connectors, so that the table is displaying data.
- Change the column dimension to be Item, and rename the selector appropriately.

2. Add a sorter connector to the connections mapper

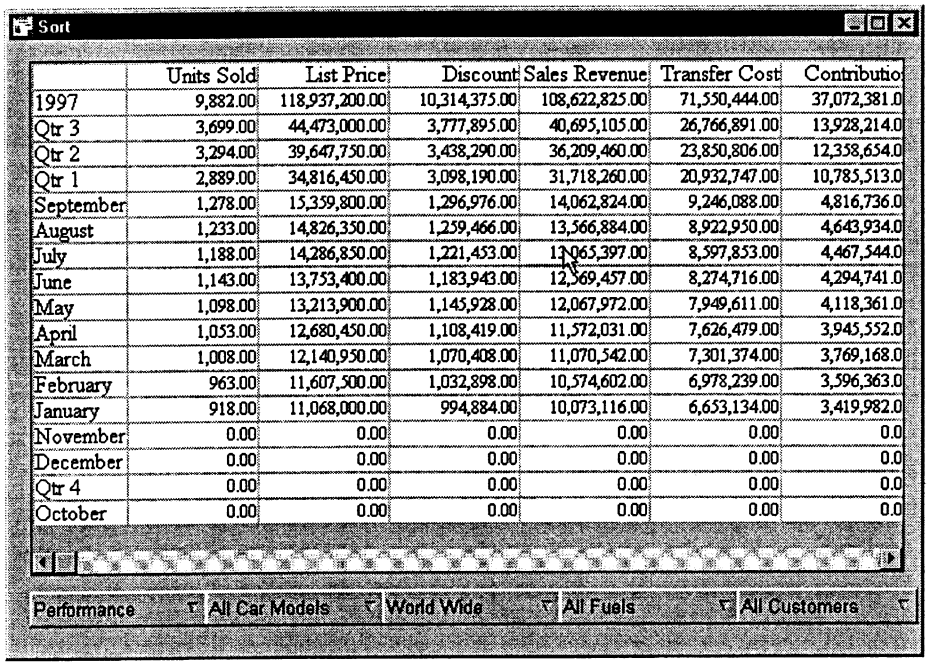
- Drag a sorter connector from the mapper keypad and position on the connections mapper and connect it between the selector and the table.
- Name the sorter, e.g. **Sorter**
- Add the name of one of the co-ordinates from the Item dimension, e.g. **units**
- Close the connections mapper.

7. Test the Page in User Mode

- From the Gentia toolbar use the switch icon to move to user mode.

Practical Exercise 7.2 - Sort Page

Objective: To give the user the ability to select the basis for the sort, by clicking on the appropriate column heading.



	Units Sold	List Price	Discount	Sales Revenue	Transfer Cost	Contributio
1997	9,882.00	118,937,200.00	10,314,375.00	108,622,825.00	71,550,444.00	37,072,381.0
Qtr 3	3,699.00	44,473,000.00	3,777,895.00	40,695,105.00	26,766,891.00	13,928,214.0
Qtr 2	3,294.00	39,647,750.00	3,438,290.00	36,209,460.00	23,850,806.00	12,358,654.0
Qtr 1	2,889.00	34,816,450.00	3,098,190.00	31,718,260.00	20,932,747.00	10,785,513.0
September	1,278.00	15,359,800.00	1,296,976.00	14,062,824.00	9,246,088.00	4,816,736.0
August	1,233.00	14,826,350.00	1,259,466.00	13,566,884.00	8,922,950.00	4,643,934.0
July	1,188.00	14,286,850.00	1,221,453.00	13,065,397.00	8,597,853.00	4,467,544.0
June	1,143.00	13,753,400.00	1,183,943.00	12,569,457.00	8,274,716.00	4,294,741.0
May	1,098.00	13,213,900.00	1,145,928.00	12,067,972.00	7,949,611.00	4,118,361.0
April	1,053.00	12,680,450.00	1,108,419.00	11,572,031.00	7,626,479.00	3,945,552.0
March	1,008.00	12,140,950.00	1,070,408.00	11,070,542.00	7,301,374.00	3,769,168.0
February	963.00	11,607,500.00	1,032,898.00	10,574,602.00	6,978,239.00	3,596,363.0
January	918.00	11,068,000.00	994,884.00	10,073,116.00	6,653,134.00	3,419,982.0
November	0.00	0.00	0.00	0.00	0.00	0.0
December	0.00	0.00	0.00	0.00	0.00	0.0
Qtr 4	0.00	0.00	0.00	0.00	0.00	0.0
October	0.00	0.00	0.00	0.00	0.00	0.0

Connector Introduced:

actor

1. Open the Sort page and add an actor to the connections mapper

- From the book manager, open the sort page.
- Open the connections mapper.
- Drag an actor to the connections mapper.
- Connect the table to the actor, which will break the original connection to the table from the sorter.
- Connect the sorter to the actor, so the data flows through the actor on its way to the table.
- Use the Actor Inspector to name the actor, e.g. **selectColumn**
- Set the *Actor Attributes* to **Action Column Selection**
- Connect the bottom side of the actor to the top of the sorter, which will present you with a menu from which to select a modifier.
- Choose **sortCoordinate** from the modifier list.
- Close the connections mapper.

3. Test the page in user mode

- From the Gentia toolbar use the switch icon to move to user mode.
- Test the page thoroughly to ensure that it's working as it should. You will probably need to scroll the table to view the **Discount %** and **Contrib.% Sales** columns, in order to see the sort working.

Optional:

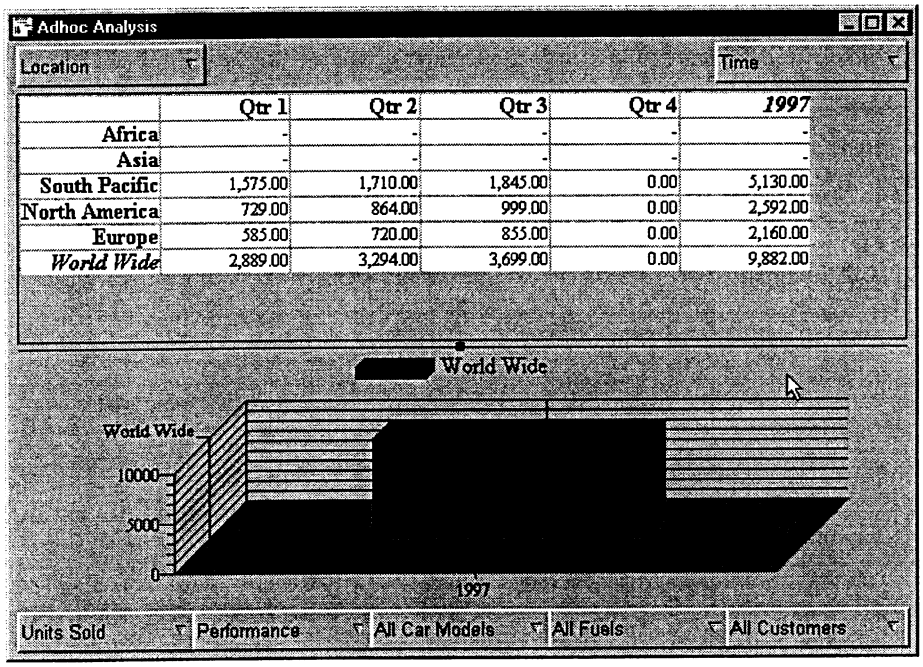
- Try to introduce shaded columns, such that the column upon which the sort is based is coloured differently. Your instructor can demonstrate an example of this.

Hints:
Think about how to achieve the shaded column when the page first opens, and then think about how to get the shading to apply to a different column when the user selects a new column heading.

8. Adhoc Analysis Page

The Instructor will demonstrate how this page gives the user the ability to carry out analysis on an adhoc basis. Whilst the concepts behind new areas will be discussed, the Instructor will not demonstrate a full page-build; instead, you will need to apply previously learnt skills to build the page with less guidance.

Adhoc Analysis Page



Key Points

Splitviews

The splitview widget is used to allow users to vary the amount of space allocated to page widgets, usually tables and charts. This will allow the user to re-size or hide any page widgets held in the splitview.

A widget can be placed into the splitview in the same way as a widget is placed into a box, as follows:

1. Drag a splitview widget onto a page.

2. Double click on the splitview to make the highlighting become dark grey, rather than black.

3. Drag the widget which is to be placed inside the splitview, e.g. a table, from the builder keypad onto the splitview widget. The table will then resize, to fully occupy the splitview.

4. Drag another widget, e.g. a chart or another table, onto the split view widget. The two widgets will then occupy half of the split view each.

5. Any additional widgets put onto the splitview will occupy an equal share of the splitview.

Any widgets contained in the splitview are effectively grouped, e.g. moving the splitview will also move the widgets contained within the splitview.

The directional split can be changed form horizontal to vertical using the *splitview attributes* option in the inspector.

Split views can be embedded inside each other. For example, to achieve the 'quartile' effect, you will need to position two horizontal splitviews inside a vertical splitview (or vice versa) and the position two widgets inside each of the inner horizontal splitviews. Ask your instructor to demonstrate this.

Row and Column Listbars

These are created in the same way as a slice listbar, except that the *listbar style* needs to be set to *row*, or *column* instead of *slice*. Connect the listbar to the selector, just as you would with a slice listbar, so that the selector has three listbars 'hanging' from it.

The row and column listbars will automatically display the dimension name in the row and column positions in the table (or chart). In user mode, the user can click on the row or column listbars to change the orientation of the table (or chart) by selecting a new row or column dimension.

Hierarch Connector

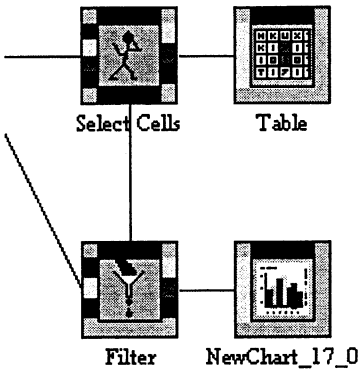
We have already seen how to using the hierarch connector on a chart, to provide the drill-down facility. With the adhoc analysis page, we will be providing hierarchic drill-down on the table. When using hierarch on a table, the parents in the hierarchy are formatted to clarify to the user that drill-down is available. The default formats are as follows:

- Breakable headers (parents which drill-down to reveal children) are **bold.**
- Backtrack headers (parents which revert back up the hierarchy) are ***bold italic.***
- Other headers (base level children at the bottom of the hierarchy) are plain text.

The default formats can be changed using the *breakable headers, backtrack headers,* and *other headers* options in the hierarch inspector.

Driving the Chart by Selecting Data on the Table

This functionality is created by the use of an actor connector. The user clicks on a block of data which is picked up by the actor. The actor passes the block of data to a filter which controls the data being sent to the table.



The actor is connected to the table in the same way as on the slider bar page, in order to collect information from the table. Certain actor attributes are required to ensure that the entire block of data is passed on, not just the rows or columns, for example. These are as follows:

- Action row selection - to pass on information about the rows selected in a table
- Action column selection - to pass on information about the columns selected in a table
- Ignore columns for row - to make rows the only actionable selection, i.e. only the row information will be passed on, irrespective of which columns have been selected.
- Ignore rows for column - to make columns the only actionable selection, i.e. only the column information will be passed, irrespective of which rows have been selected.
- Switch on both *Ignore...* options - to make neither *Ignore...* action selected, i.e. if you wish to select a block of data, and the row-column relationship is relevant (like in this example), you will need to switch on both *Ignore...* options.

The bottom-to-top connection from the actor to the filter is required since a modifier is necessary (makeFilter) in order to tell the filter what is to be done with the block of data.

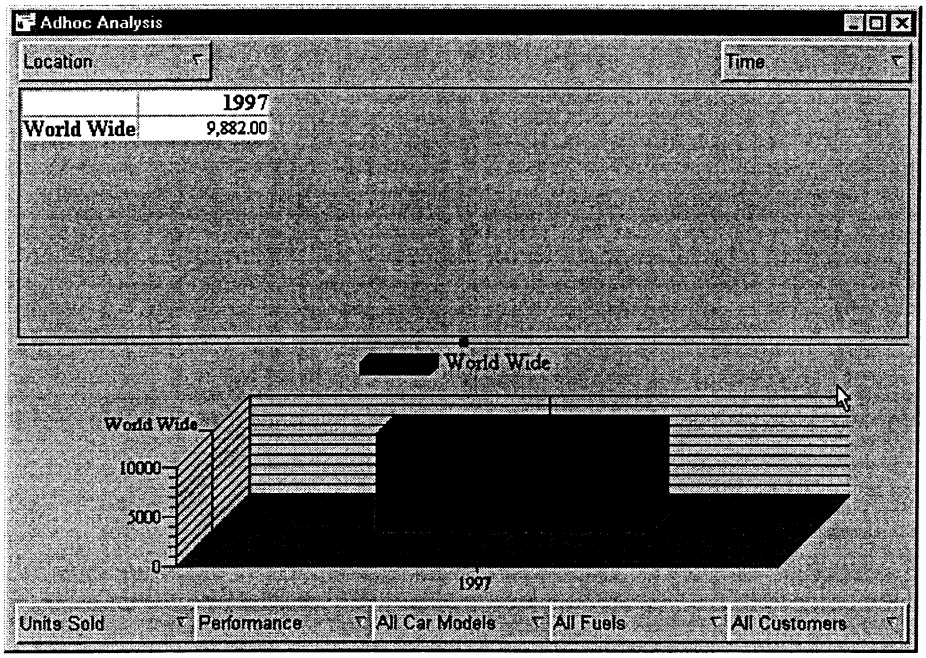
The filter is required as the actor is unable to pass the block of data direct to the chart, since the chart inspector does not have any options which control the data being displayed. Controlling the data to be displayed must be done before reaching the chart; the chart (and table) is purely a method is displaying previously defined data.

In Gentia, filters cannot be created from scratch dynamically, but the contents of a filter can be replaced dynamically. The block of data passed to the filter will be in terms of the row and column dimensions, which means that the contents of the filter must include the row and column dimensions. Since the user could change the orientation of the table such that any dimension could appear in the row and column position, the filter needs to setup to initially include all dimensions. By not entering any co-ordinates (members) in the filter for each dimension, the filter will not be restricting any data flow.

Practical Exercise 8.1 - Adhoc Analysis Page

Objective: To create a page where the user can view data as follows:

- in a table and chart, with a split view
- drill-down functionality
- ability to change the slice, and the row and column dimensions



Widgets Introduced:

Splitview

Guidelines:

- Create a page called **adhoc analysis**, by saving an existing page to a new name, or by creating a new page and copying widgets and connectors from other pages.

- The page should look like the one above, and have the following functionality:
  - A splitview containing a table and a chart with the row and column dimensions as above.
  - Three listbars; one for slicing the table, the other two for changing the row and column dimensions.
  - Hierarchic drill-down on the table and the chart.

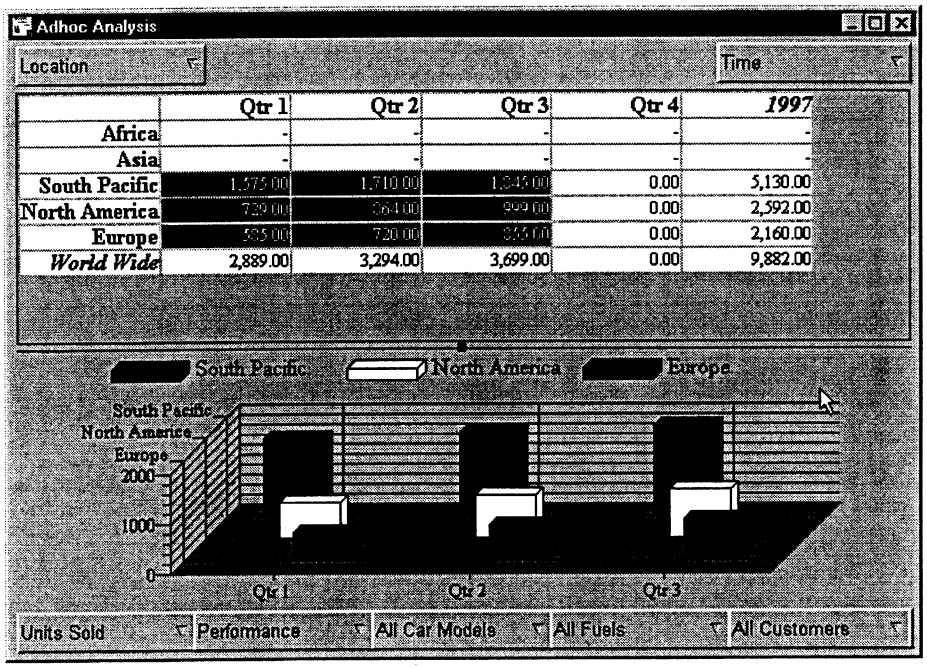
- If you want to put existing tables and charts on a page into a splitview, you will need to cut and paste the widgets into the split view, ensuring that the splitview highlighting is dark grey before pasting. Cutting will break the connections in the connections mapper, so you will need to re-connect the widgets to see the data. Use the widgets editor to cut and paste.

- You can copy a chart from the library, by using the *Load Pasteboard from Store* option in the widgets editor.

- Test the page fully.

Practical Exercise 8.2 - Adhoc Analysis Page

Objective: To enhance the adhoc analysis page so that the user can drive the chart by selecting a block of data from the table.



Guidelines:

- Introduce an actor, and connect it so that it collects data from the table. Set the following attributes:
  - Action row selection
  - Action column selection
  - Ignore columns for row
  - Ignore rows for column
- Introduce a filter and connect it between the hierarch and the chart. Ensure that the filter has all seven dimensions defined in it. There is no need to enter any co-ordinates (members), the filter will then not restrict any data.
- Connect the actor to the filter, and choose an appropriate modifier.
- Test the page fully.

Optional:

- Introduce functionality to allow the user to select non-contiguous blocks of data on the table, i.e. more than one block of data at a time.

9. Publishing the Application

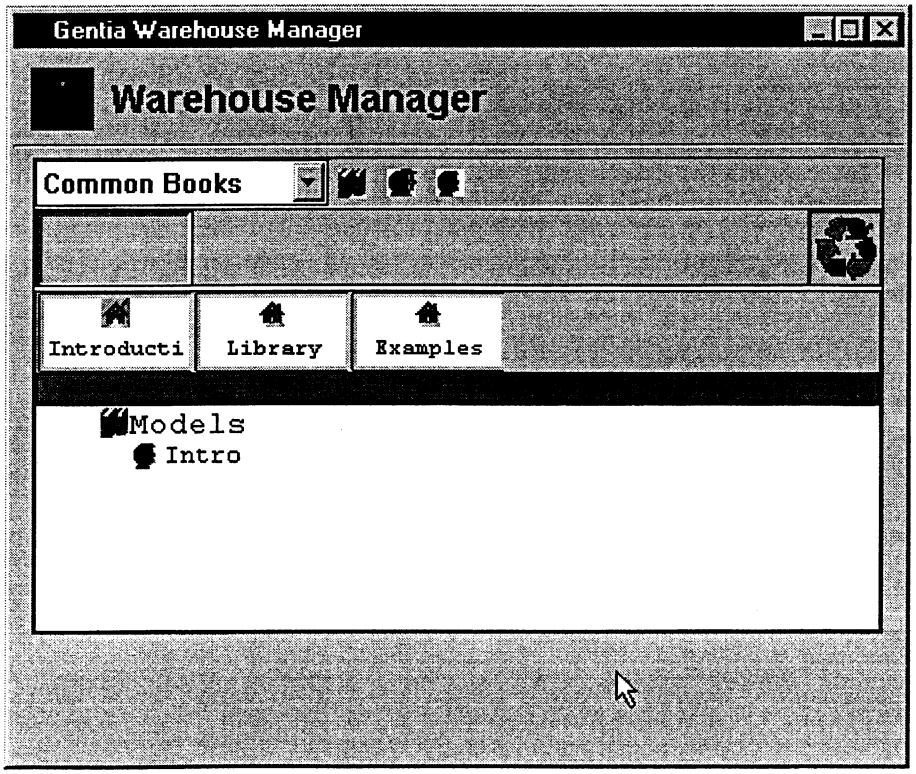
Having built a number of pages in your user work area, you are the only user that can access these pages. Publishing your pages will allow other users to access the application. There are a number of steps involved, as follows:

- Creating a book.
- Copying pages to the book.
- Creating new users.
- Giving the users access to the books, and therefore the pages within the books.

Performing these steps will then bring us onto the subject of **security**

The Warehouse Manager

The publishing process is predominantly carried out using the book manager, with which you should already be familiar by now, and the warehouse manager which is accessed from the builder keypad, by clicking on the tool, and selecting *Warehouse...* from the menu.



The warehouse manager allows you to manage the contents of the object stores, or warehouses, which are held in the .gos files. The object stores are named according to the alias name defined in the configuration file.

The warehouse manager is very similar to the book manager; clicking on each warehouse reveals the books held in each one, as well as the users who have access to the book.

The pick-list allows you to switch between common books, user names and groups of users, to create, rename, copy and delete books, users and user groups.

Book names must be unique within a warehouse and cannot have the same name as its warehouse. Section, or chapter names must be unique within a book.

9.1 Publishing

Creating a New Book

This is done in the warehouse manager, with *Common Books* selected in the pick-list. Drag a new book icon, into the appropriate warehouse (object store), and give it a suitable name, e.g. **Book1**. The book will now appear as an object within the warehouse, but it will be empty and the only user to access it will be you, as the person who created it.

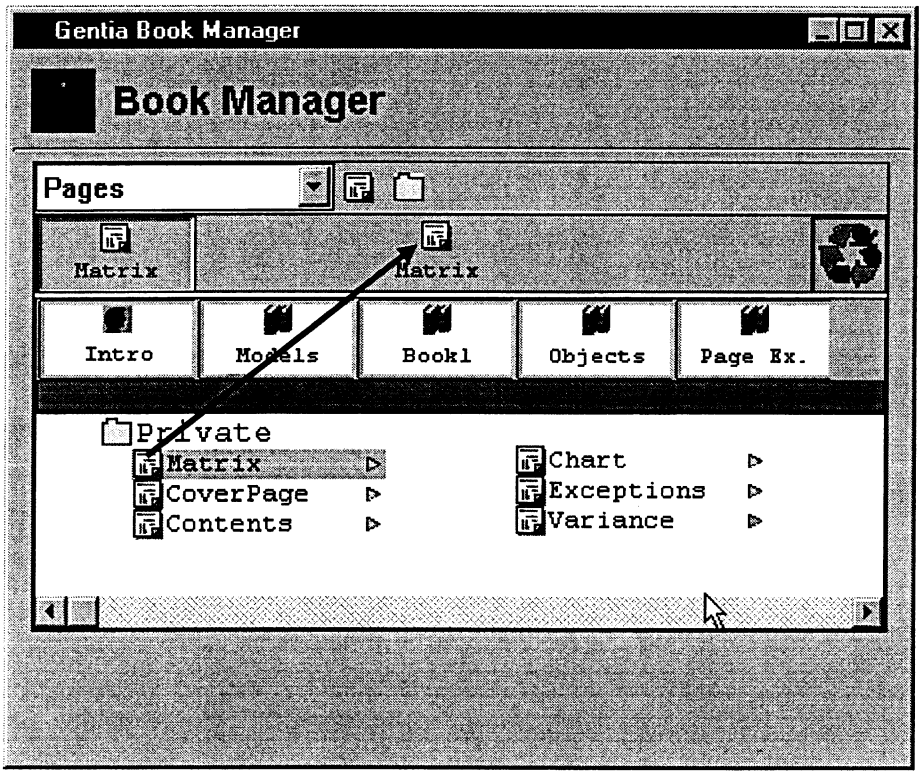
Copying Pages to the New Book

Open the book manager, and you will see your newly created book on the bookshelf. Copy pages by dragging them from your user workspace to the book. Chapters containing the pages will also get copied to the book, if they do not already exist.

If you want to **copy a page to a different chapter**, use the following steps:

1. Create the chapter in the new book.

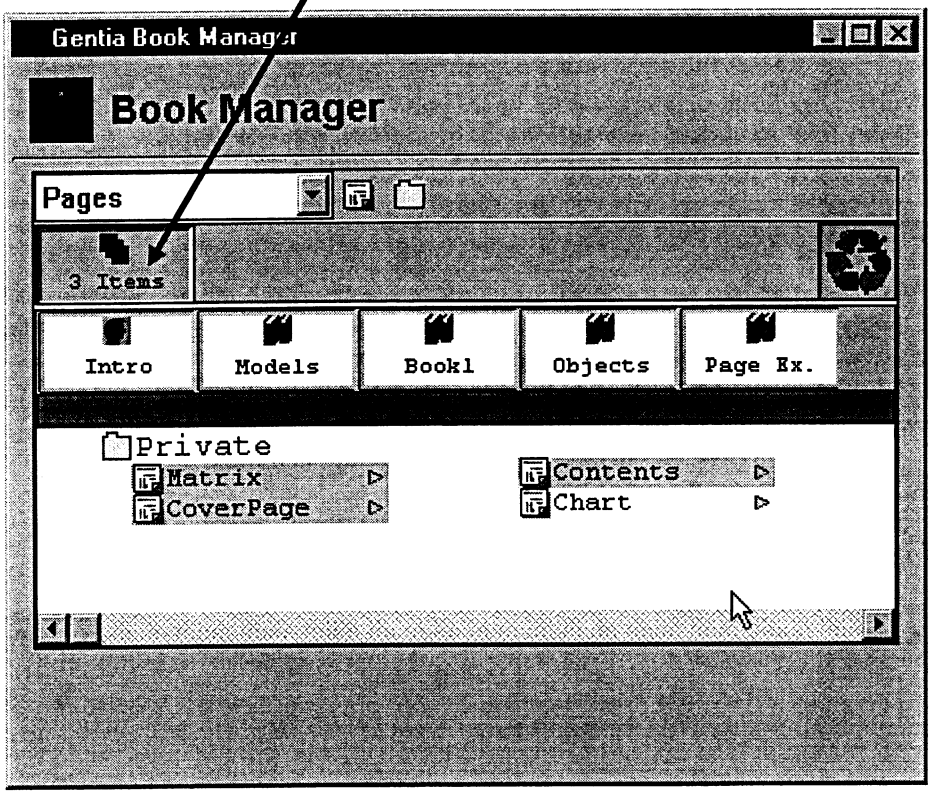
2. Move to your user workspace and drag the page into the accumulator as follows:



3. Move to the new book and drag the page from the accumulator into the chapter, releasing the mouse button only when the chapter name is highlighted.

To **copy more than one page:**

1. Use the SHIFT key to highlight a number of pages, which will all be represented in the accumulator, as a 'multi-page' icon:



2. Move to the new book, and drag the 'multi-page' icon into the book, either:

   - into the book itself in which case, any new chapters will be created as necessary, or,
   - into an existing chapter, only releasing the mouse button when the chapter name is highlighted.

N.B. As well as copy pages to the new books, you must also copy any other objects used by the application, e.g. GDL modules, model specs. If, for instance, you did not copy the model spec, the users would not be able to see any data on the pages.

Creating New Users

You will need to use the login tool, in the Gentia toolbar to login as the super-user, GENTIA. The password is dependent on your licence file.

Open the warehouse manager and select *User Names* from the pick-list.

Drag a user icon, into the first warehouse, and give it a suitable name. You will then be able to give this user access to any books in this warehouses and the other warehouses. However, if the first warehouse is not subsequently included in an application, the user would not be able to login, and therefore gain any access, since Gentia would not be able to recognise the user name. To avoid this, the following is strongly recommended:

Create an object store/warehouse (called e.g. users), and include it in the configuration file as the first object store. This will ensure that you do not encounter any problems with users logging in when different sets of users have access to different warehouses. In addition, this procedure will help you to maintain your application in terms of keeping all users in one place.

Giving Users Access to Books

In the warehouse manager, with *User Names* selected in the pick-list, drag the user to the accumulator.

Switch to *Common Books* in the pick-list, and drag the user onto the appropriate book, only releasing the mouse button when the book name becomes highlighted.

When in the warehouse manager, you can always see which users have access to which books, as the user name will appear under the book name.

Groups of Users

Users can be grouped, to allow quick and easy control of users' access rights to books. You can put a number of users into a group and by giving the group access to a book, each user within the group will have access to the book.

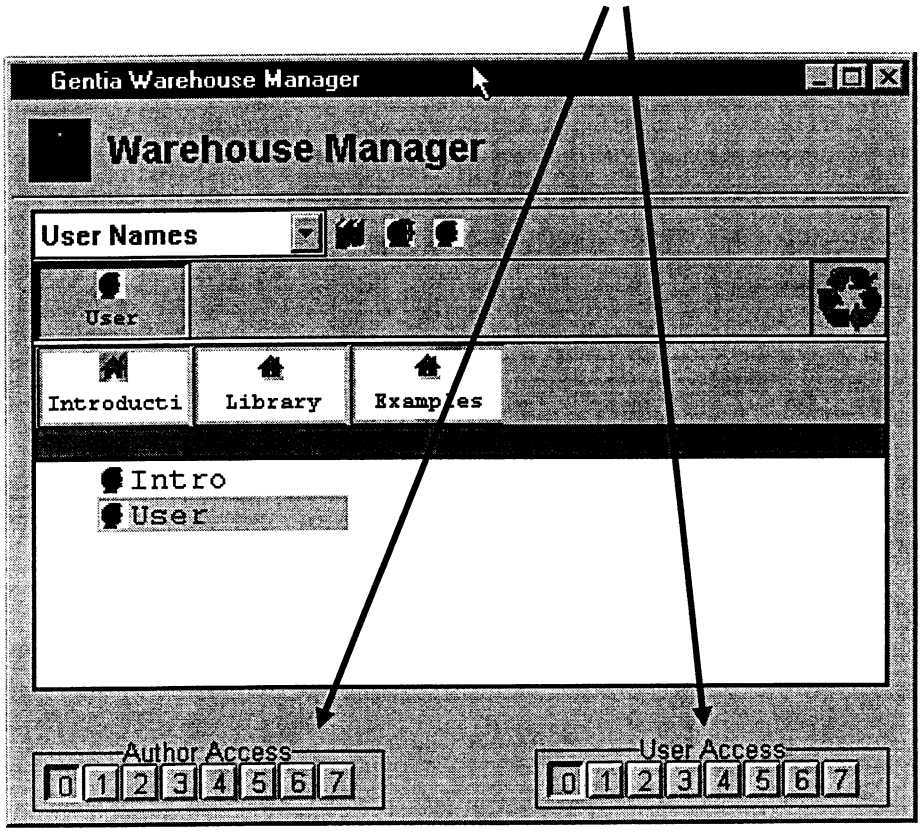
Groups are created in the warehouse manager, and users can be placed into the groups using similar techniques to those already covered. You can give a group access to a book in exactly the same way as giving a user access to the book.

N.B. When deleting a user, it will not automatically be deleted from the group.

9.2 Access Levels and Security

If you were to login as the newly created user, you would be able to see all the pages in the book to which you had access. However, you would not be able to switch to author mode, since all users by default, only have user-access.

By double clicking on the user icon in the warehouse manager with *User Names* selected, access levels will appear at the bottom of the window, as follows:



There are eight (0 to 7) levels for both author and user access. A user must have an author access level of at least 1 in order to be able to switch into author mode, and an author access level of 7 to see the warehouse manager.

Other than this, there are no specific definitions for each level, since they work on a relative basis, as explained in the example below.

Pages also have access levels and are defined in the book manager in the same way, by double clicking on the page icon.

Example

	Author Access	User Access
Page 1	0	0
Page 2	5	5
User 1	0	0
User 2	3	5

This means that User 1 can access Page 1 as a user, but not as an author, and cannot access Page 2 at all.

User 2 can access Page 1 as a user and an author, but Page 2 only as a user.

In fact, all Gentia objects, page widgets, books, and users have these 0 to 7 access levels for both author and user access. Page widget access levels are defined in the inspector, using the *Permissions* option.

This means that a very sophisticated security network could be created in Gentia, which, although very powerful, would be very complicated to maintain. However, it is unlikely that you will need to make use of all 16 levels (0 to 7 for both author and user mode) for every widget and object within Gentia, so it is recommended that you only use these levels if it is essential to do so.

The first 'level of security' should be in terms of the pages contained in the books, and the users having access (or not) to the books.

Creating an Administrator User

In theory, any user with author-mode access can create users; however, their users' access levels cannot exceed their access level. This is why the GENTIA super user was used to create new users. However the GENTIA user does not have any page-creating abilities. Therefore, the following is recommended:

Use the GENTIA super user to create an administrator user with access levels set to (7,7). Thereafter, always use the administrator user to create new users.

Practical Exercise 9 - Publishing

Objective: To publish your pages into a book, and give a new user access to the book.

- Use the warehouse manager to create a new book called **Book 1**, in the Introduction warehouse.
- Use the book manager to copy at least five pages to Book 1, including both the CoverPage and the Contents page. Experiment with chapters; refer back to the notes on this if necessary.
- Copy the model spec, Salemodel from the Models book to your new book. If you do not do this, your pages will not show any data.
- Login as GENTIA (super user), using the password (specific to your licence file) supplied by the Instructor. Open the warehouse manager and create a new user in the Introduction warehouse; give it your name.
- Still in the warehouse manager, give the new user access to the new book. You will need to use the pick-list to move between *User Names* and *Common Books.*
- To test your published application, login as the new user, and check that each page is as it should be. Try moving to author mode!
- Login as GENTIA to change the author access level of the new user to at least 1. Login again as the new user to check that you can switch into author mode.

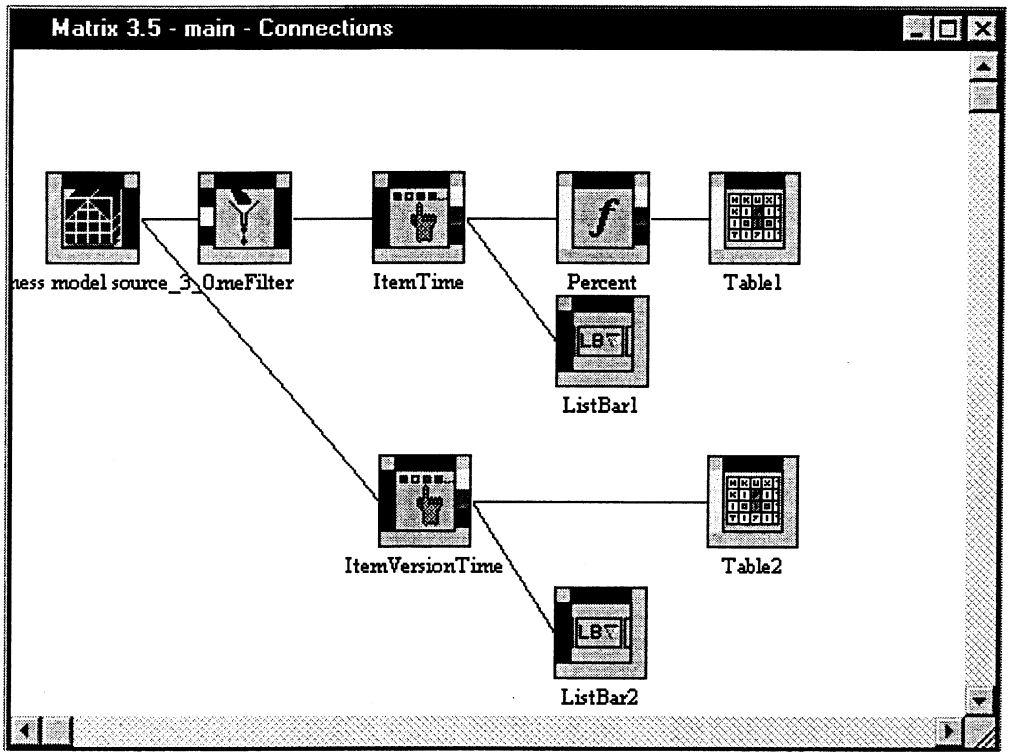
Optional

- Experiment with groups of users.
- Create an administrator user with access levels set to (7,7). Give the administrator access to all the books, and then use the administrator user to create new users.
- Experiment with security, by changing the access levels of some of the pages.
- Create a warehouse containing just users. You will need to edit the configuration file to introduce a new .gos file above the existing references to .gos files.
- Open your Contents page in author mode, and experiment with the following options:
    - *Contents Display: Long Version Required* and *Include*
    - *Contents Order*

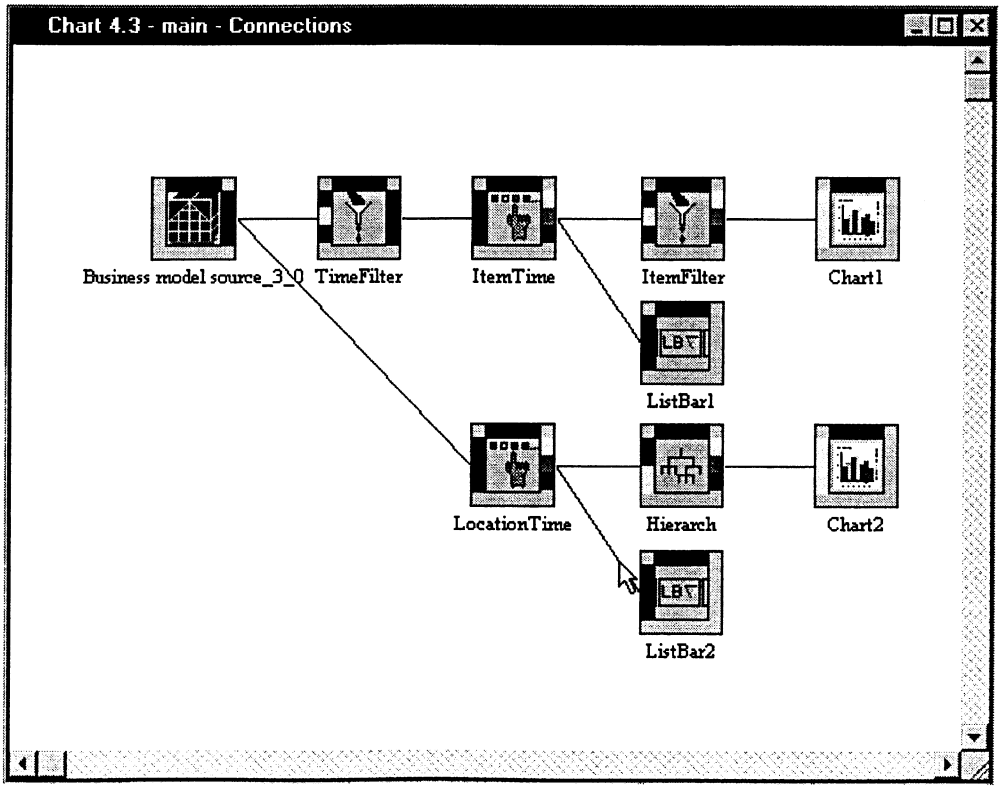
10. Appendix

This appendix contains the connections mappers for each of the practical exercises.

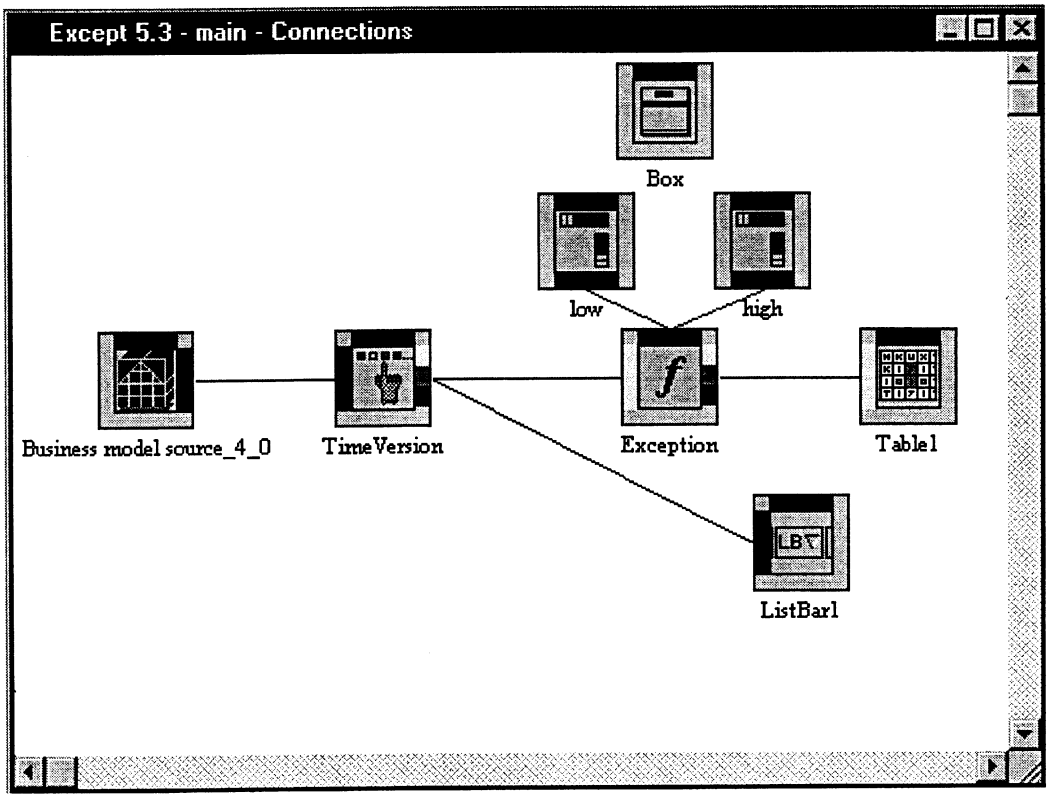
Practical Exercise 3



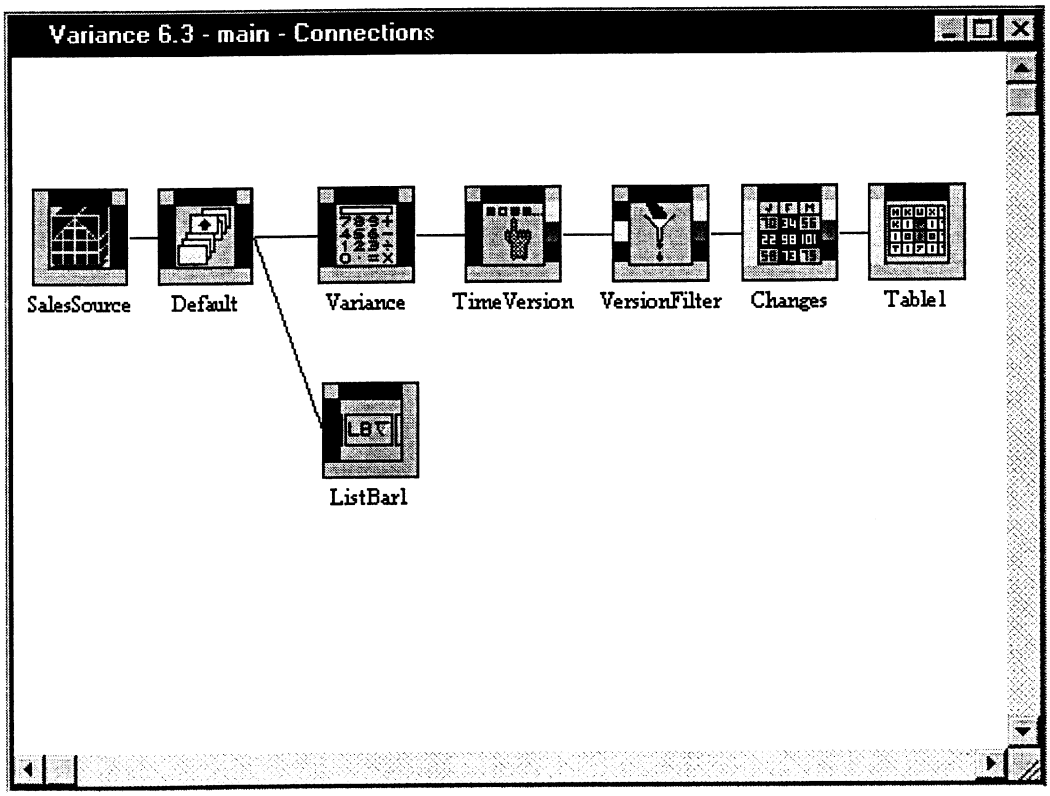
Practical Exercise 4



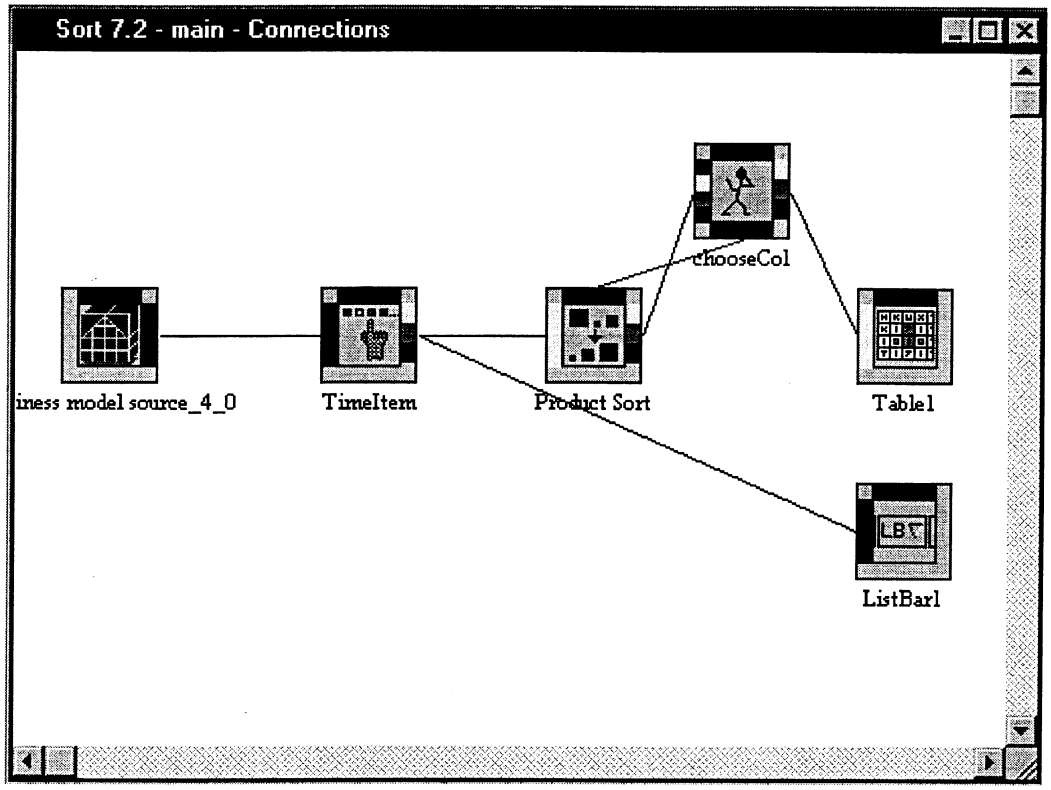
Practical Exercise 5



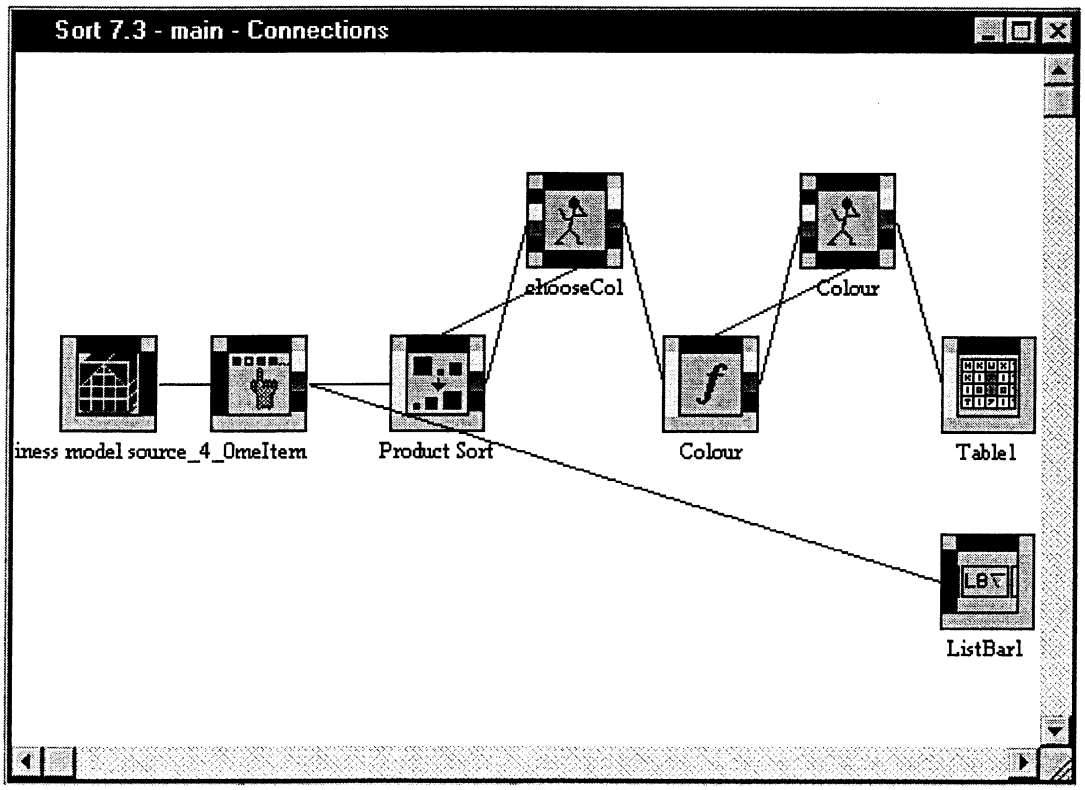
Practical Exercise 6



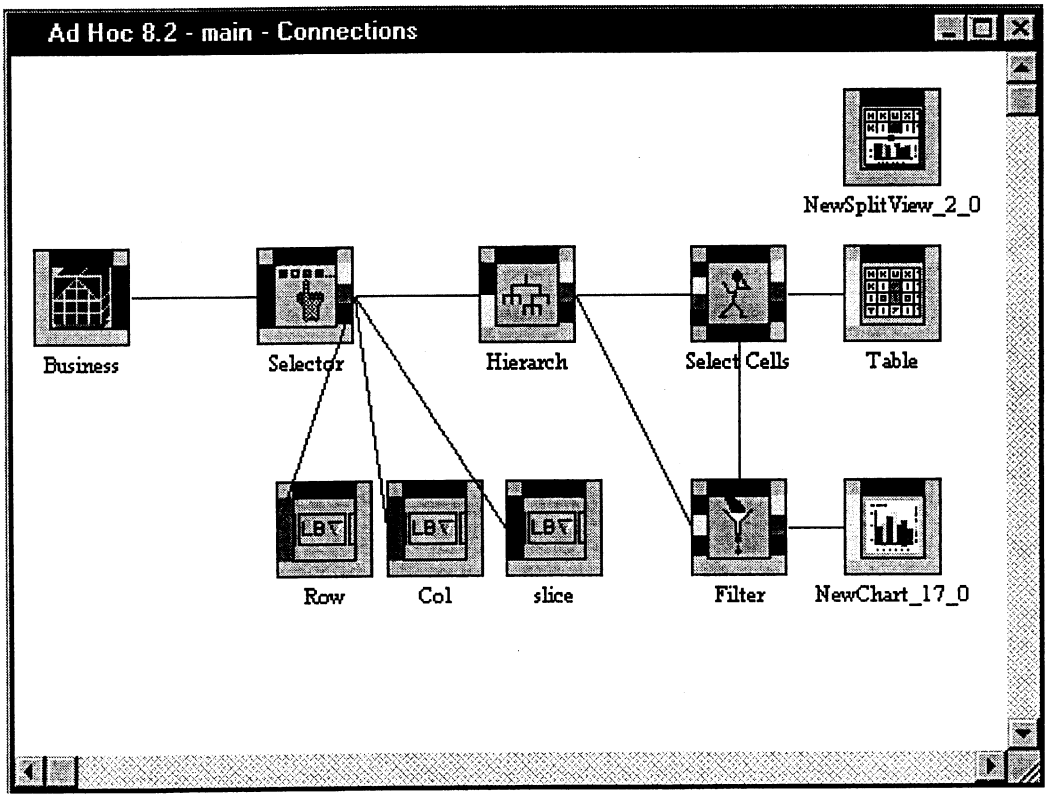
Practical Exercise 7



Practical Exercise 7.3 0ptional



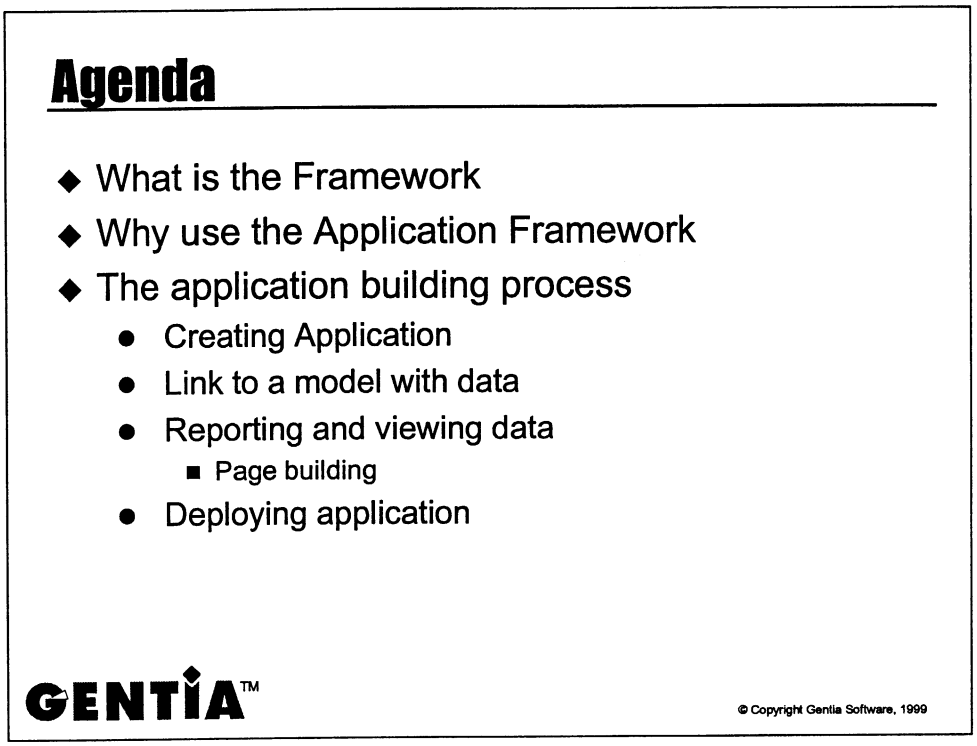
Practical Exercise 8



Chapter 11

Gentia's Application Framework

GENTIA™

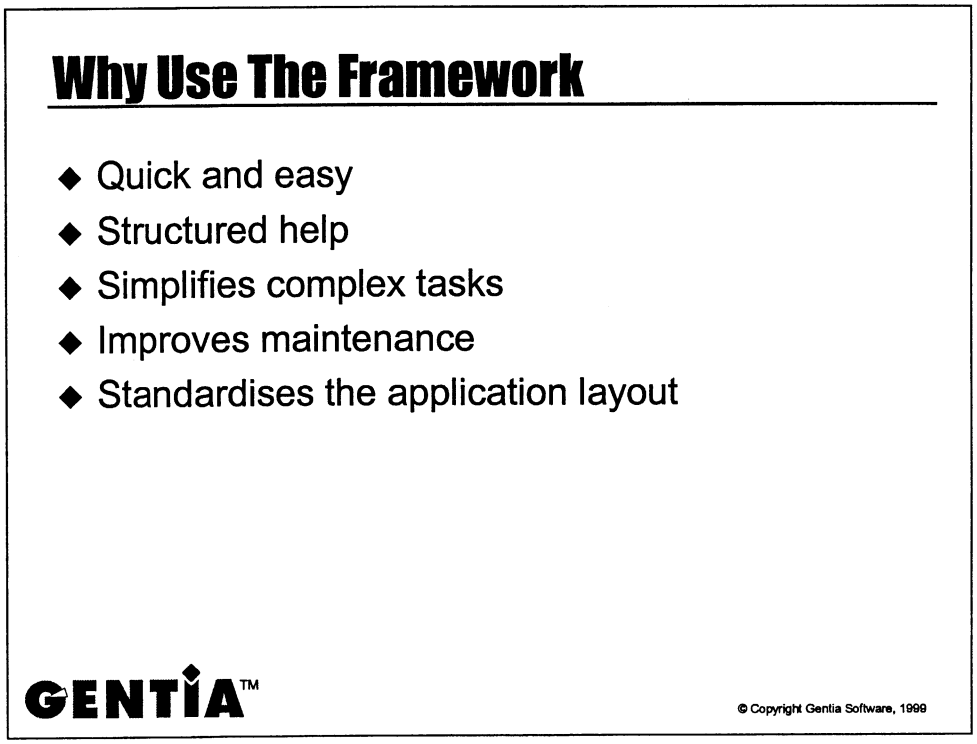


Gentia is primarily a powerful set of tools used to build an application. The Application Framework is a good starting point. It is an application itself, providing a step by step approach to the process of building an application.

Gentia's Application Framework

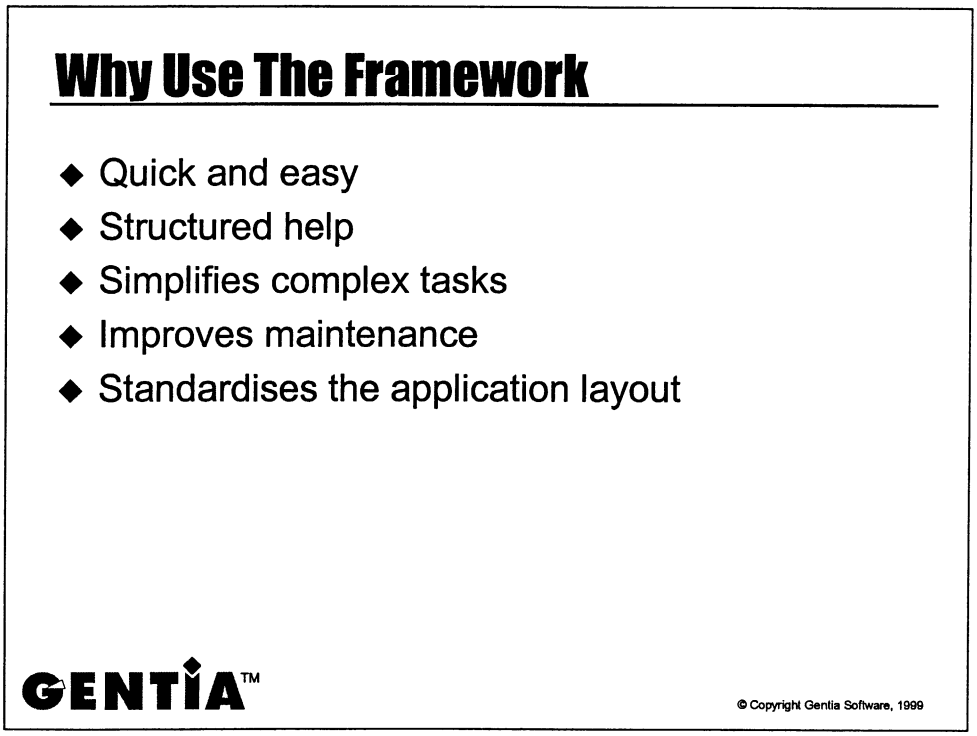
- Gentia Application
- Run in User mode
- Used to create a Gentia application
- Every application has a number of essential steps:
  - Navigation, menus
  - User creation, security
  - Deployment
- FWK makes these essential steps easier

GENTIA™



The framework is a Gentia application. It consists of a number of pages which allow a developer to build an application within a structured environment. The advantages are speed and ease of use.

There are a number of wizards to guide the developer through page building or data loading or model re-definition.

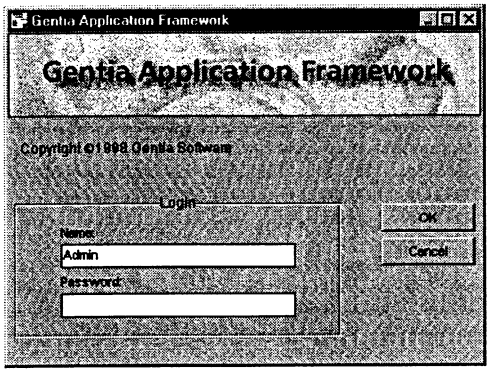


The framework is a Gentia application. It consists of a number of pages which allow a developer to build an application within a structured environment. The advatantages are speed and ease of use.

There are a number of wizards to guide the developer through page building or data loading or model re-definition.

Getting Started

- Select *Start⇒Programs ⇒Gentia Application Framework*
- Login to the application

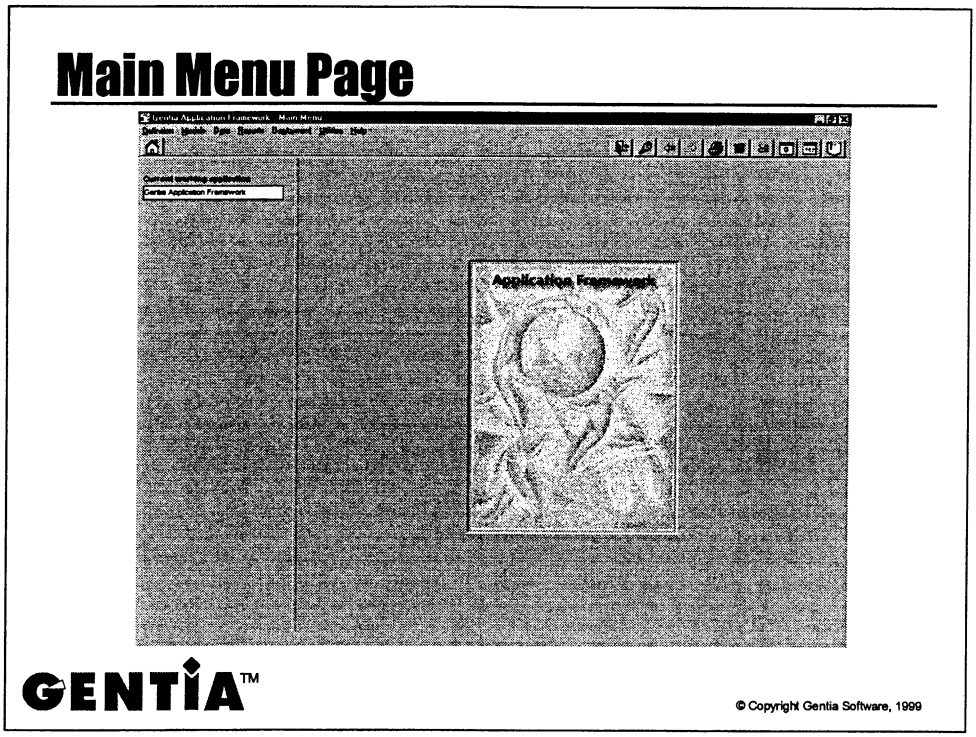


GENTIA™

To login into Gentia you must first ensure the server is running. This might already be done by a sytems administrator. For this course we will start the server from the *Start* button. Select *Start⇒Programs ⇒Gentia Application Framework ⇒Framework Server.*

Once the server is running follow the same procedure to start the Gentia Framework client, only the last option will be ⇒ *Framework Desktop.*

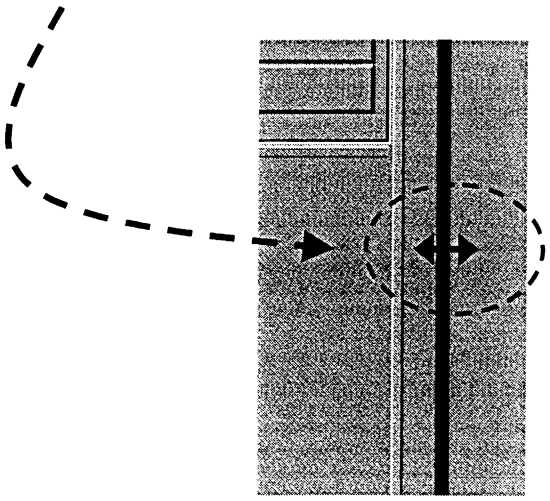
Login as **Name:** *Admin* with no **Password**.

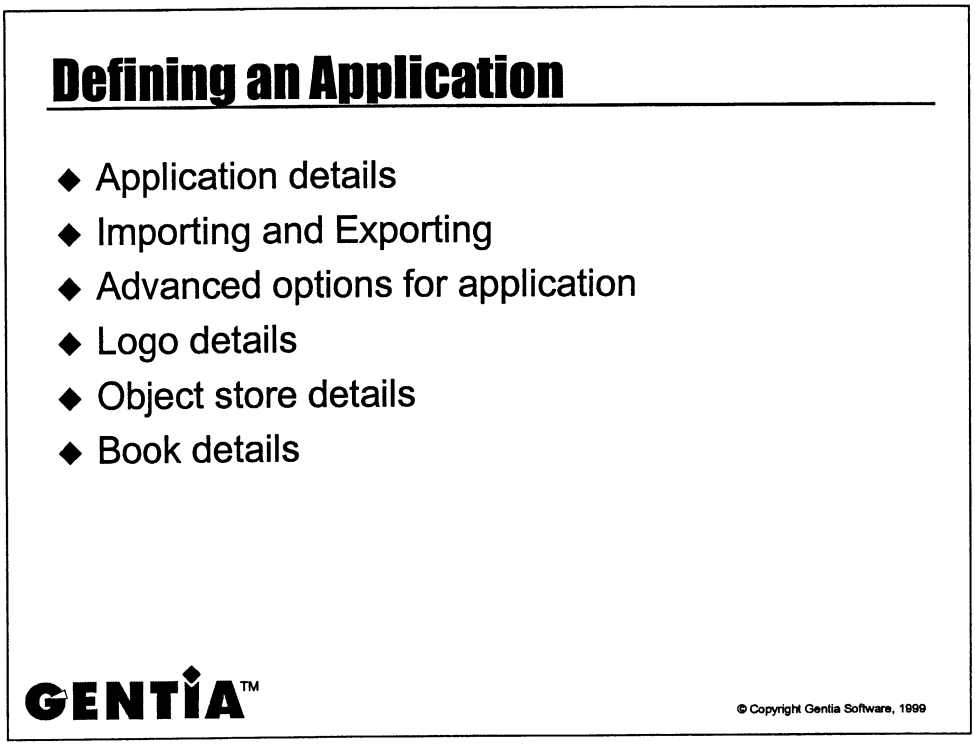


The Main Menu page is the starting point for building any application. The page is divided into two main areas. At the top of the page there is the toolbar. The main right side of the page shows a company logo (in this instance it is the Framework logo) but might have important data or pictures relevant to the application.

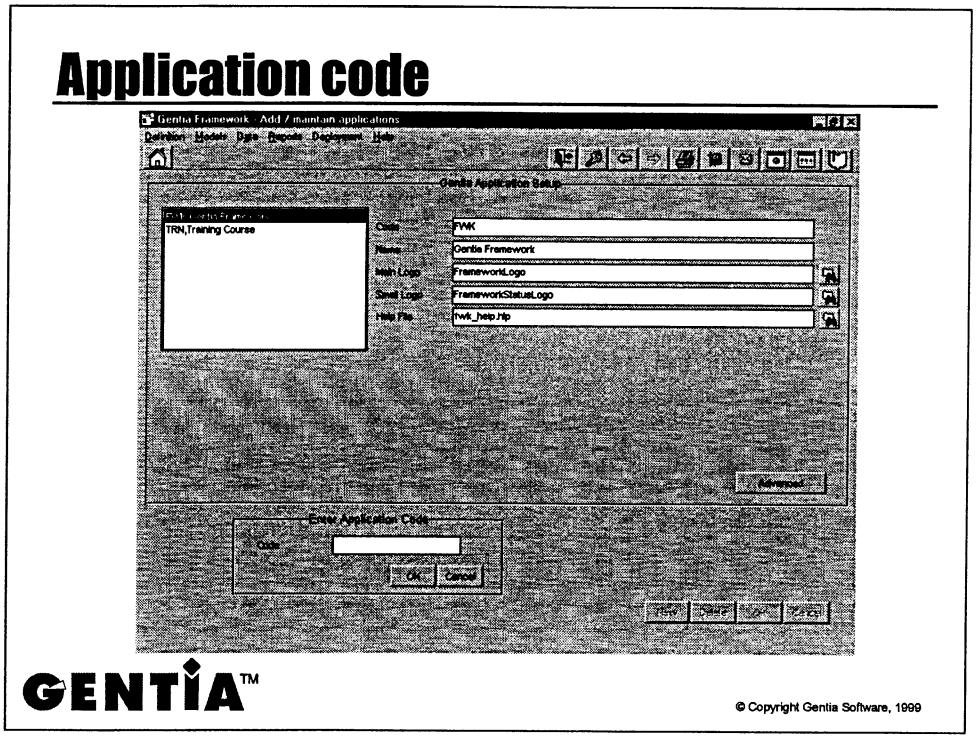
The left part of the screen will show reminders and information. Typically this would be text messages. At present it displays the *Current working application*.

The size of the two areas of the screen can be changed by dragging the *Split view bar* to a different position.





The first stage of the Framework process ensures that the application is created and that the relevant books, object stores and application details are correct. In addition, the developer can import an existing application (models and pages) or export an application to take away and use elsewhere. Select *Add/Maintain* applications and choose the *New* button.



The information shown when this option is first chosen, is for the Framework application itself and although it can be edited, the changes cannot be saved.

The white box on the left-hand side of the screen, will show all current applications that Admin has setup. Selecting an application will cause its details to appear on the right-hand side. Click on *New* to define a new application and enter the details as follows:

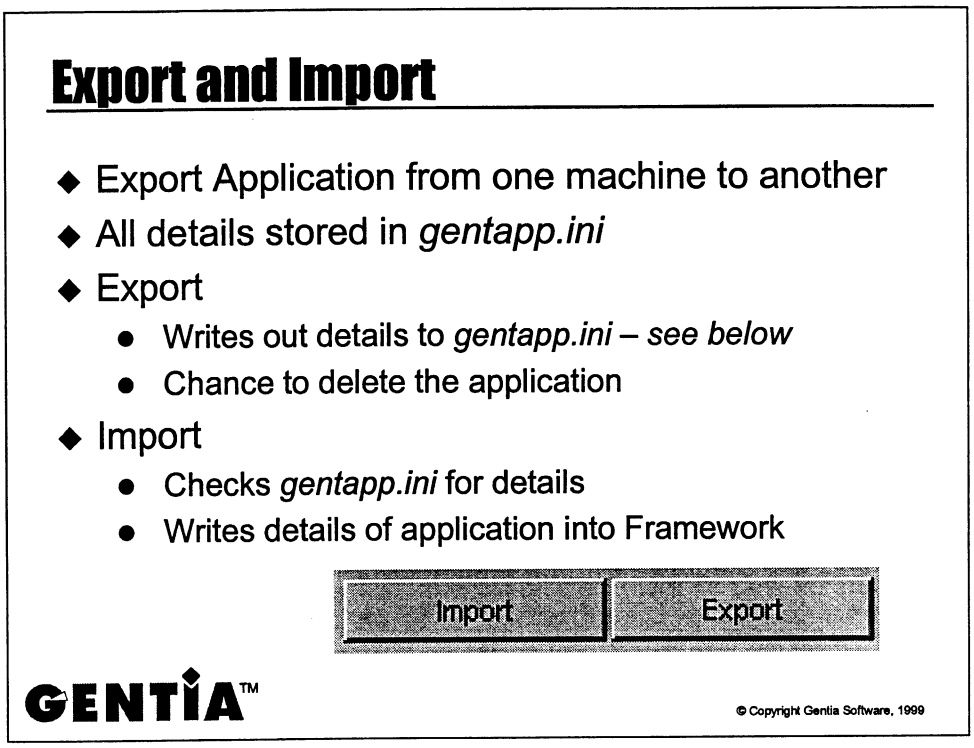
Code - the 3 letter application code. *FWK* and *BSC* are both protected codes and are used only for the Framework and balanced scorecard applications. *LIB* is another reserved code, used for Gentia's object library.

Name - a general name for the application that will appear on menus.

Main Logo - the bitmap or Gentia image object that is to appear on the main menu page (in the default area, on the right-hand side). If an alternative default page is specified, this logo will not be shown (more on this later).

Small Logo - the bitmap or Gentia image object that is to appear in the status box, at the extreme bottom right-hand corner of every page.

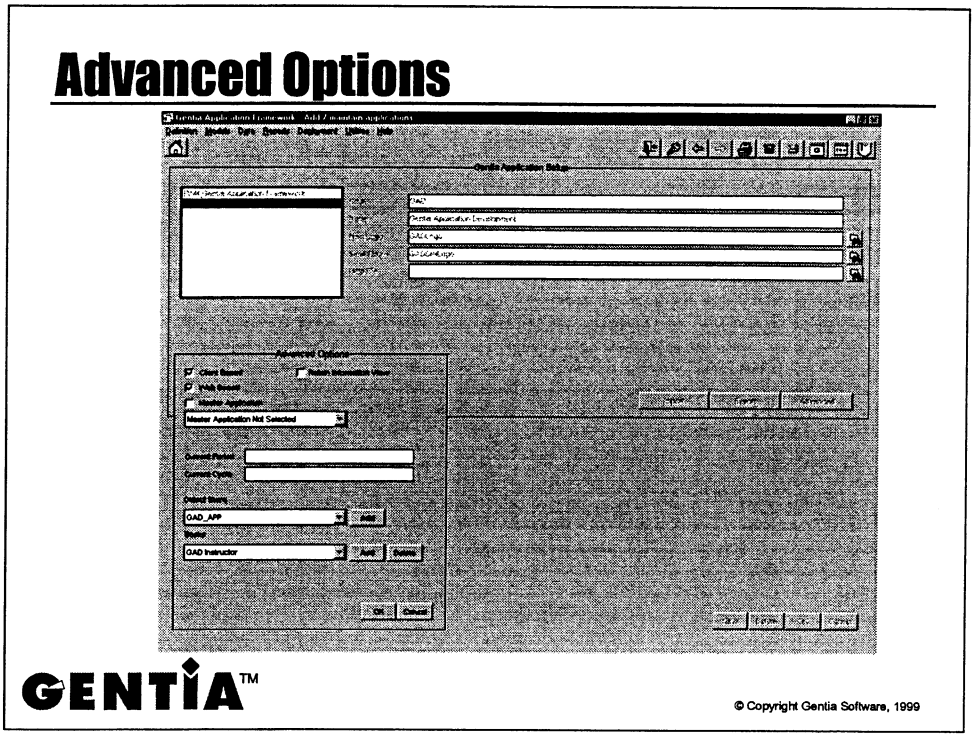
Help File - to include an application-specific help file.



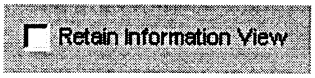
If an application has been created within the Application Framework, it can be exported to another machine. Using the Export option, the application details are written to the *gentapp.ini* file and the user has the option to delete the application from the current machine. Once the relevant *.gos* and *.bm* files are placed onto the new machine, the *server.cfg* file can be amended and the *gentapp.ini* file details can be put onto the new machine using the *Import* option.

Example:

```
[FWK]
client=YES
curr_cycle=
curr_period=
gos=FWK_ADMIN,FWK_APP,FWK_VIEWS,FWK_TEMP
help=fwk_help.hlp
main_logo=FrameworkLogo
master=NO
master_app=
name=Gentia Framework
retain_info=NO
small_logo=FrameworkStatusLogo
web=YES
```

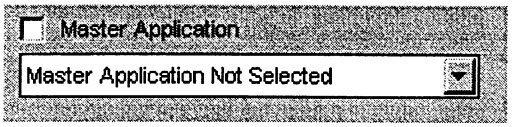


Retain Information View - allows the working application area (on the left side of the page) to be displayed on **every** page of the application. If left unchecked, the area appears only on the first page of the application.



Web Based / Client Based - to define whether the application can be accessed via a web browser and/or a Gentia client.

Master Application - specifies whether this application **is** a master application or (selected from the drop-down list) **requires** a master application.



Current Period / Current Cycle - this is optional information and is used by Gentia for reference purposes only.

Object Stores - initially contains what is in the *configuration file* but can be added to. In addition, existing stores can be deleted.

Books - shows the books listed in the current Object Store. This list can be added to or deleted from.

Summary

- Understanding the Application Framework
- Logging into the Framework
- The Application Build process
- Defining an application
- Importing a model

GENTIA™

Practical 11.1

GENTIA™

Aim: To define an application.

- Start up the Application Framework from the *Start* button and log in, using the *Name:* ***Admin*** with no password.
- Familiarise yourself with the screen layout and select the left dropdown option *Definition*.
- Select *Add/maintain applications* and add a new application with **XXX** as the three letter prefix.
- Define a name for the application (use your own name).
- Select *Advanced Options* and ensure the *Client* option is selected.
- Ensure that your *Object Store* and *Books* are set up correctly.
- Return to the main screen and make sure the new application is the current one, (by selecting *Definition⇒ Select current application* option).

Practical 11.2

GENTIA™

Aim: To link into the gos file that we created earlier in the course.

Link into the *.bm* files.

- Switch into *Author Mode*.
- Open the *Book Manager* and add a Model Spec into the XXX Admin book. (It must be in this book!).
- Set the *Business Model Service* to **BGP** and the *Model* to **SalesBase**.
- Switch back into *User Mode*.

Link into the *.gos* files.

- Ensure the gos file you created on the first day is in the correct directory (C:\Gentia50\Framework\gos).
- Select *Add/maintain applications* and select the new application.
- Select *Advanced Options* and select the *Add* button next to the *Object Store* dropdown menu.
- Give the store name **XXX_COURSE**.
- Enter the name of the gos file.
- Ensure the new *Object Store* is selected and click the *Add* button next to *Books*.
- Add a new book called **XXX Course**.
- Click *OK*.

Chapter 12

Application Deployment

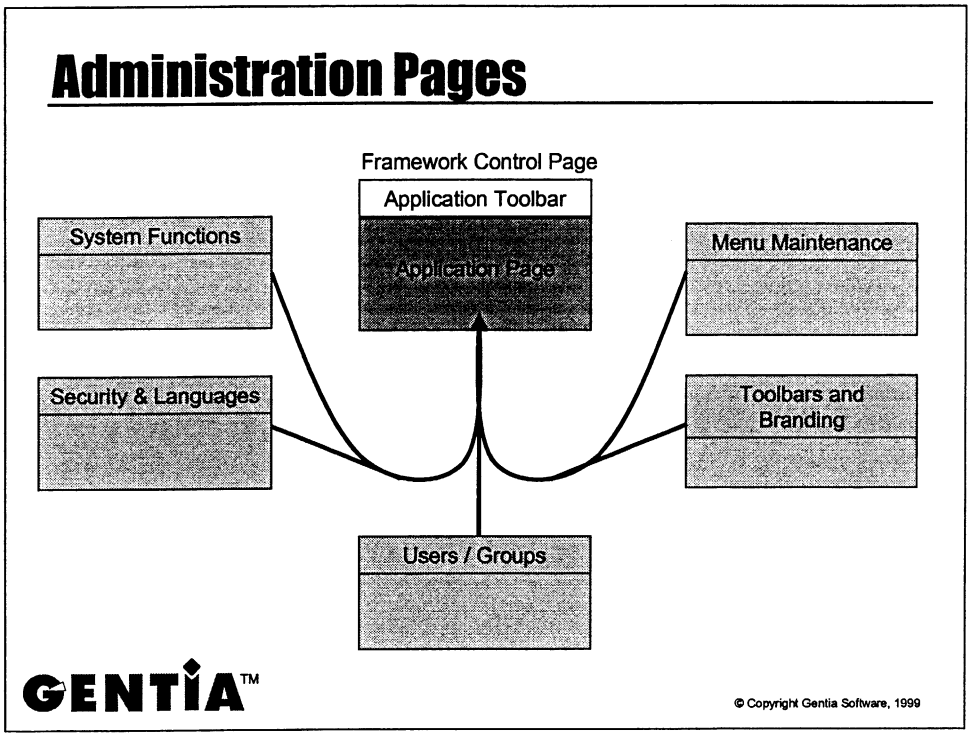
GENTIA™

What we will cover

- Set access levels & language
- Add/maintain users
- Add/maintain groups
- Add/maintain menus
- Configure Framework toolbar
- Configure application toolbar
- Configure system applications
- Maintain data level security
- Advanced application deployment

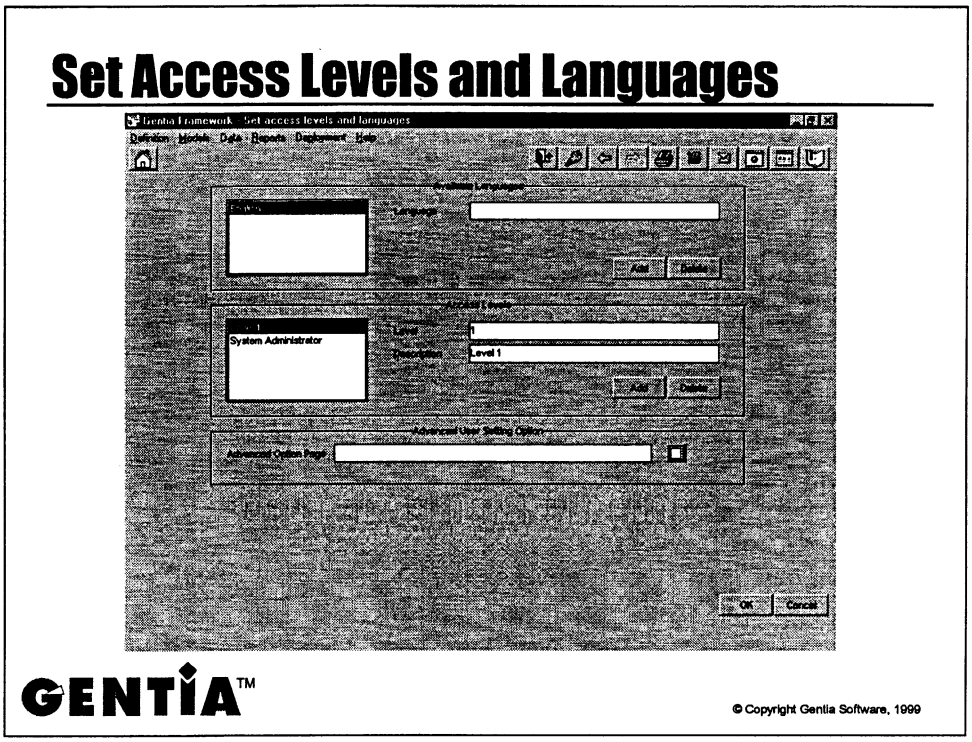
GENTIA™

When building new applications, it is recommended that the options are used in the above order.



The Framework contains a number of administration and deployment pages, which are designed to allow you to define users, groups, menu details, toolbars, etc.

Access to these pages is via the *Deployment* drop down option.



Languages

This allows you to make a number of languages available in your application, provided the appropriate **.mta** and **.mtg** files are present. Once a language has been added here, it can be selected for a user (see later).

Access Levels

This allows you to create access levels which can be assigned to users (see later). Two levels are initially provided:

Level 1 for regular users

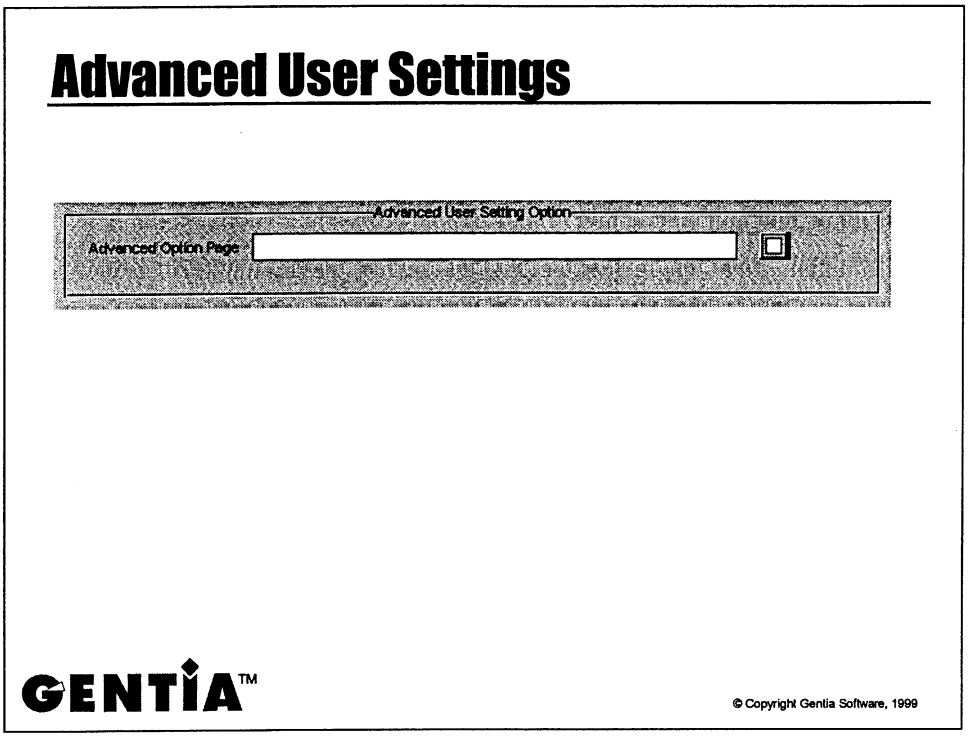
Level 100 for system administrators (Like *Admin*)

All other levels will have a numeric code from 2 - 99, and a description which must be unique.

These access levels are used to control user access to pages (via menu options) in applications built using the Framework.

Access level 100 cannot be deleted as it is the system administrator level.

N.B. These access levels do not correspond to the 0-7 Gentia author and user levels. Instead, these levels provide a more simple approach to accessing applications built using the Framework.



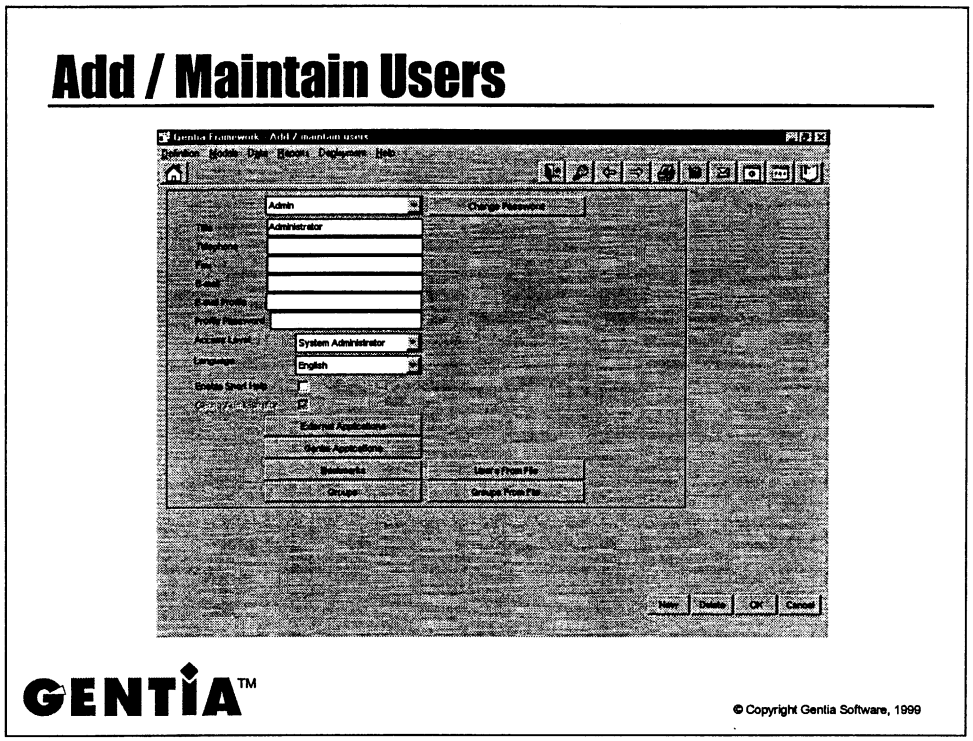
The *Advanced User Settings Option* allows you to create your own page geared towards user-specific security and administration options for the application. The page is only for the system administrator's use.

Enter the name of the page in the *Advanced Option Page* field, or use the browse button (to the right of the field) to select a page from the list.

Having specified a page here, when editing user details (*Add / maintain users* - see later), click on the *Advanced* button at the bottom of the page. This will take you to your specified administration page so that you can make your selections for that user.

For example, you might create a page to allow you to select particular data sources for each of your users.

If you do create a page to allow more advanced security, it **must** include a button to navigate back to the main menu page in the application.



Using this option, the system administrator can define users and give them access to applications.

Some of the fields are optional, as they are purely for reference. Some details must be entered:

Name	unique username
Access level	select from the previously defined levels
Language	select from the previously defined languages

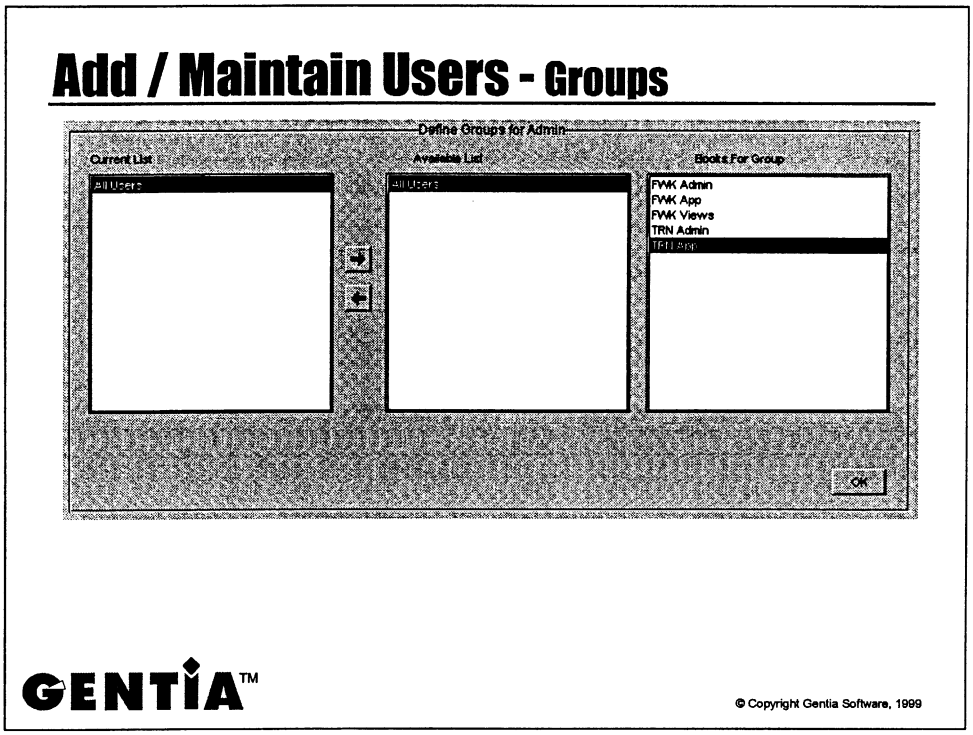
The *Gentia Administrator* option provides access to Gentia author mode and will assign the user with level (7,7). This is set when the user is created and once set, it cannot be amended.

The *Gentia Applications* button determines which Gentia applications the user will have access to - see later.

Other Applications defines non-Gentia applications, such as Microsoft's Word or Excel, which can be accessed by the user when clicking on the *Other Applications* button on the toolbar. This list may be modified by the user.

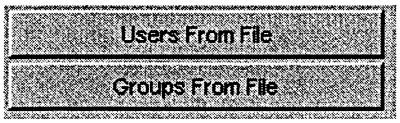
The *Bookmarks* button allows you to specify particular pages of interest which can be accessed by the user quickly.

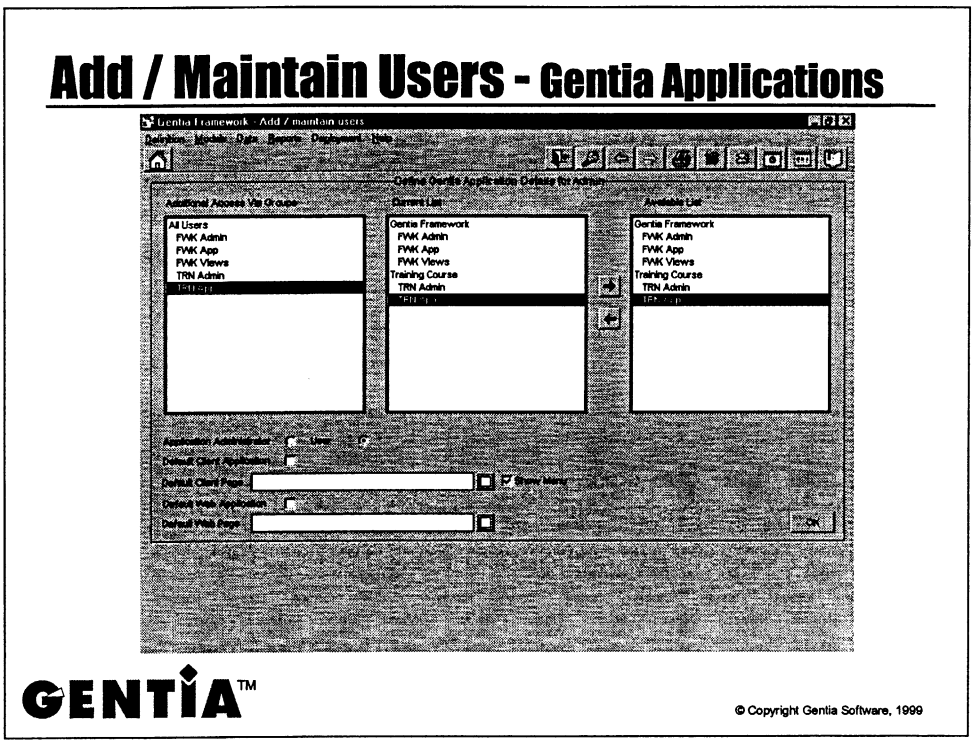
N.B. The user name, access level, Gentia administrator and Gentia applications options can only be maintained by the system administrator. The user can update and modify all other fields.



The *Groups* button allows you to add and delete the user to and from a group, assuming the group has already been created. The righthand column contains a list of the books to which the currently selected group has access.

Users From File and *Groups From File* allow you to enter User definitions or Group definitions from a file.





Selecting the *Gentia Applications* button on the *Add / maintain users* page, allows you to define the applications that a user will have access to.

The *Available List* on the right hand side lists all the applications. The *Current List* in the middle, lists the applications that the user can access. Use the arrow buttons to move applications from the *Available List* to the *Current List* or vice versa.

The Left hand column shows the applications to which the current user has access via the group(s) to which they belong.

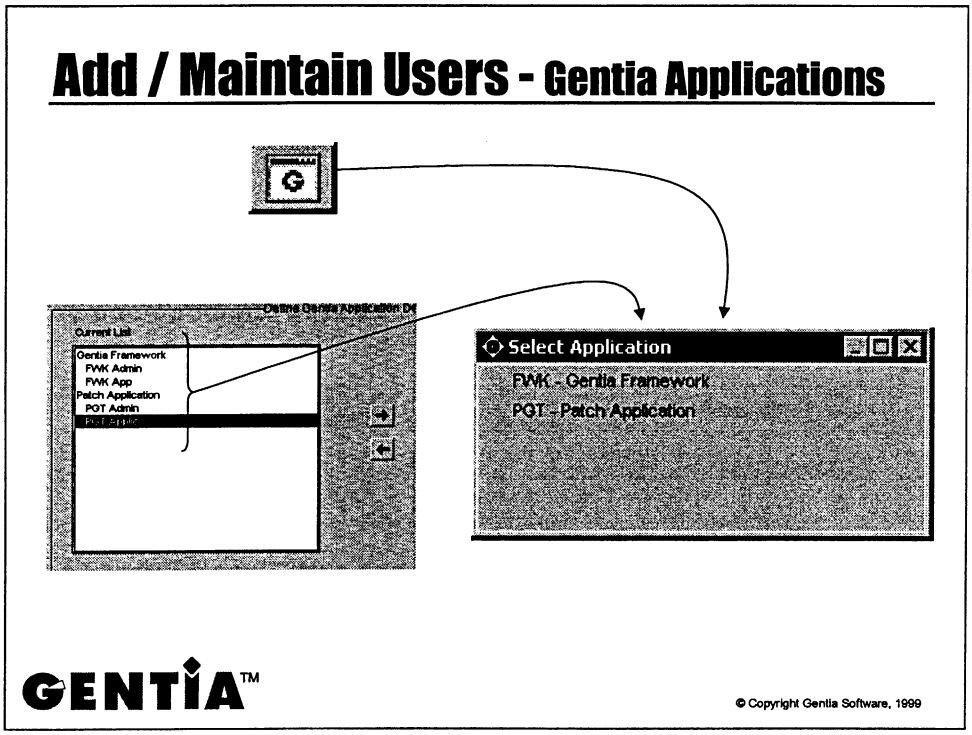
Application Administrator / User - a flag which serves as a reminder of the user's status within an application, and can be used by GDL to provide a user with slightly higher access rights.

Default Client/ Web Application - to specify one of the applications as the default application for the user, which will be the application that initially opens when Gentia is loaded.

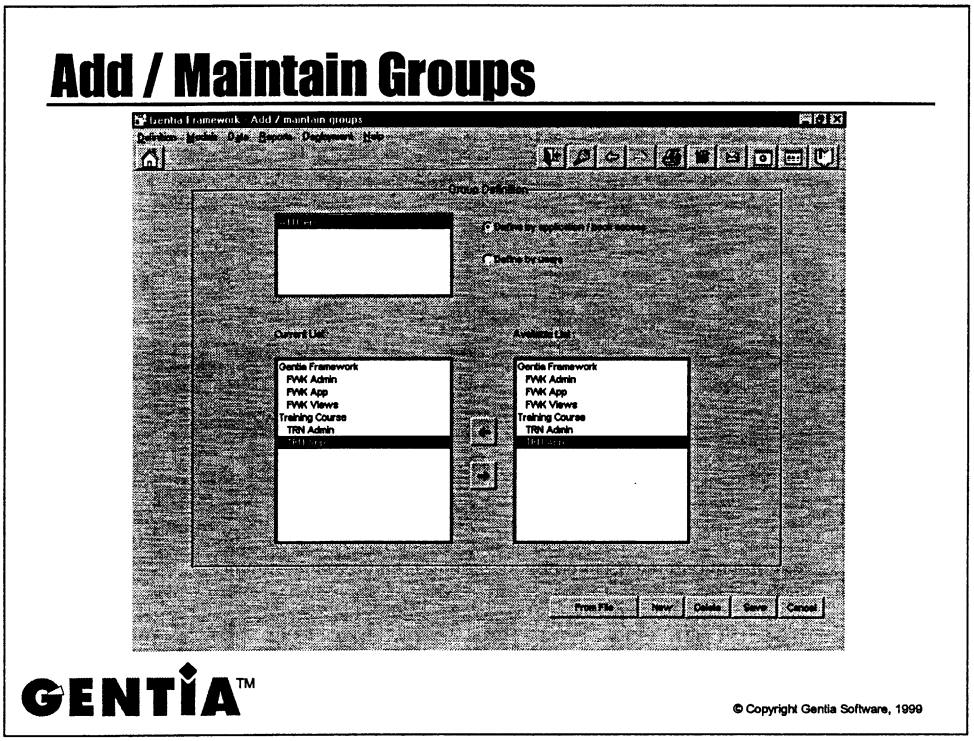
Within the default application, a *Default Client / Web Page* can be entered (or selected using the browse button if necessary). This page will be displayed on the main menu page, in the default area on the right-hand side.

If a default page is not specified, the main menu will display the *main logo* (inside a border) as specified on the *Add / maintain Gentia applications* page.

If neither are specified, the main menu page will display a blank area.

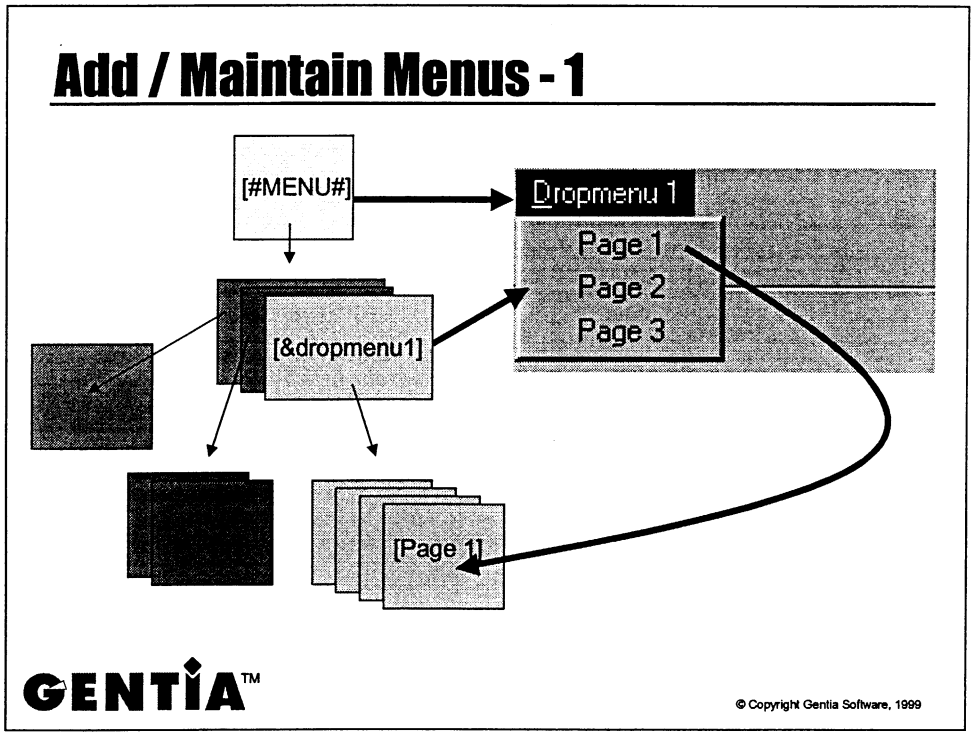


Having made applications available to a user, they can switch between applications using the *Gentia* button on the toolbar, which displays a list of the applications in the *Current List.*



Entering group details is very straightforward. Select the *New* button and enter the group name. It is also possible to delete a group from this page. If you want to name the particular users in a group, click in the *Define by users* radio button and select a group by clicking on its name. User the arrows (left and right) to add or remove a user from the group list.

Click on the *Define by application / book access* to define what the group has access to.

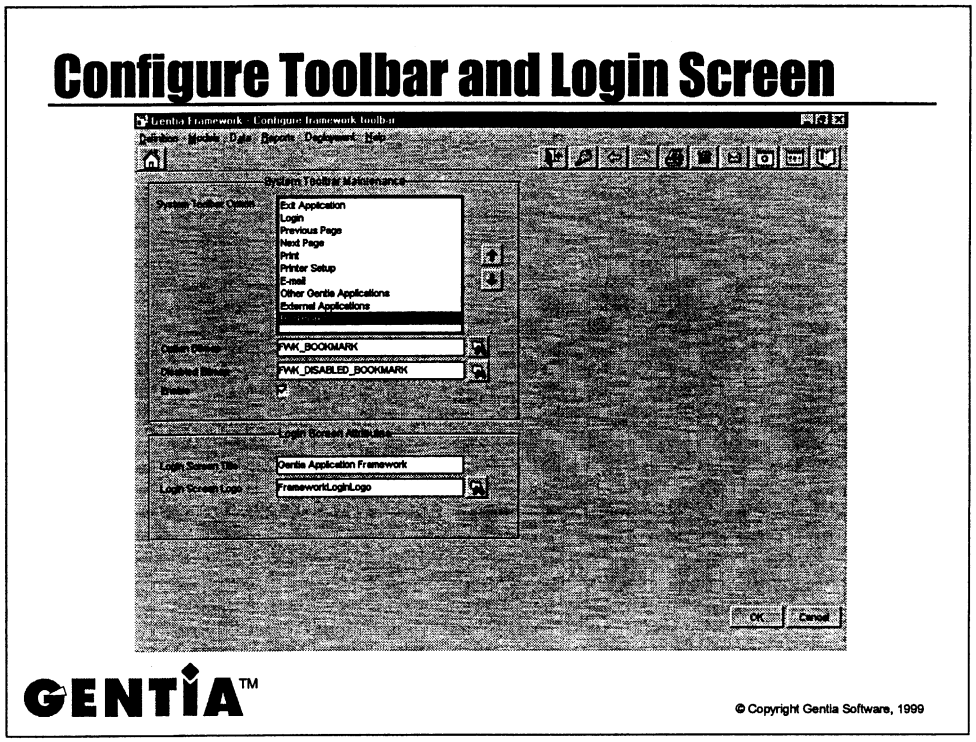


The Menus for each application are created by editing the menu *.ini* file. The explanation of how to use this option is shown when the option is selected. There are three main areas to edit. The [#MENU#] area which lists the drop down menus that are to be included. Further down the file is the details for each of the dropdown menus to be included. At the end of the file will be the page details. There will be one of these (page details) for each page listed in each dropdown menu. The letter following the apersand (&) will be underlined.

[#MENU#]
1=&DropMenu1
2=&DropMenu2
3=&DropMenu3
4=&DropMenu4
5=&Ad-Hoc
6=&Help
default=22/78
security=user
webMenu=framework

[&DropMenu1]
1=Page 1
2=Page 2
3=Page 3
accessControl=1
book@chapter=
dynamicUpdate=NO
enable=YES
itemType=
platformIndicator=2

[Page 1]
accelerator=
accessControl=1
actionName=**XXX** Admin
actionType=page
enable=YES
exeMode=
exeParameter=
platformIndicator=2
webPage=



Toolbar

The toolbar provides a number of buttons which execute standard Gentia functions across all Framework applications. The toolbar can be configured for specific requirements.

Use the arrow buttons  to re-order toolbar buttons.

A button can be removed from the toolbar, by unchecking the *Enabled* option.

The *Option Bitmap* field allows you to specify an alternative bitmap for the button.

When the Framework administrator functions are being used, the toolbar buttons will be disabled; otherwise, they will be functional on every application page.

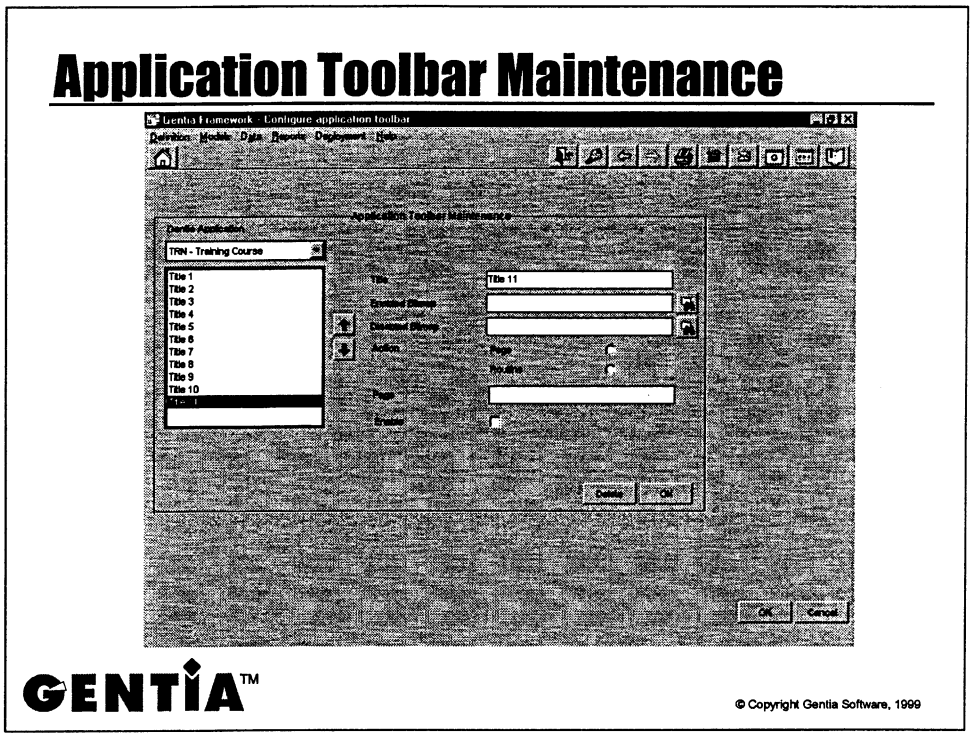
N.B. Beware of removing the *Other Gentia Applications* button. Without it, you will not be able to move to another application for testing.

Login Page

The login page, which is displayed to the user before the main menu can be customised in terms of :

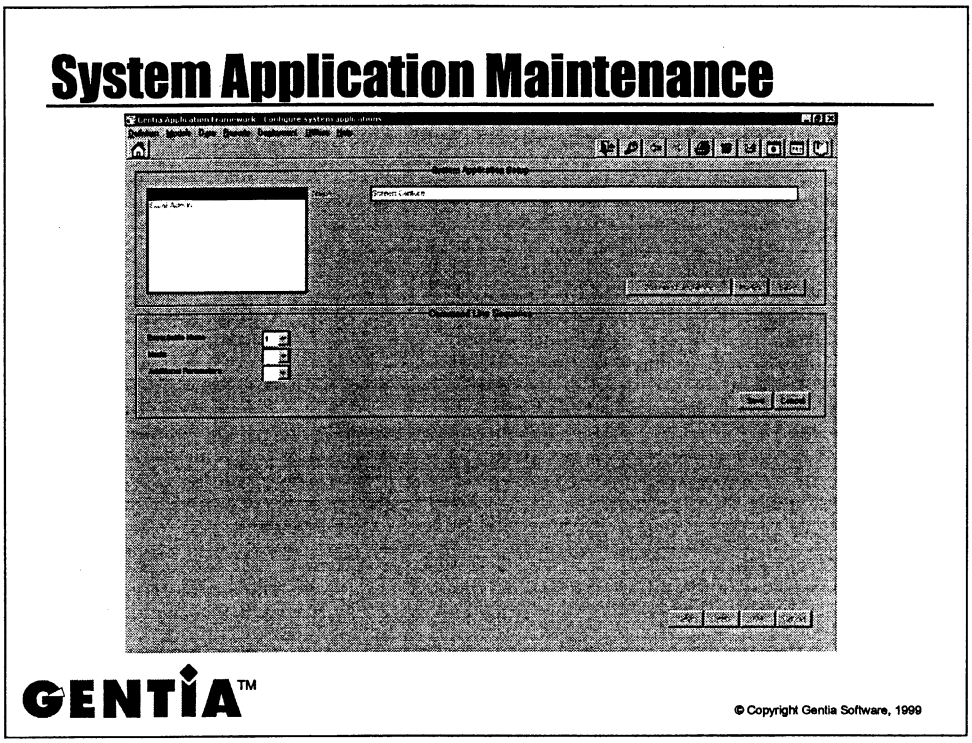
Login Screen Title - the text that appears on the login page.

Login Screen Logo - a Gentia image object or bitmap file of any size; the login page will resize to suit the logo.



This area deals with application-specific toolbars. These can be a maximum of 11 buttons which you can customize as follows:

- Title - the button name
- Enable bitmap - a bitmap or Gentia Image Object which shows the button is enabled
- Disabled bitmap - a bitmap or Gentia Image Object which shows the button is disabled
- Action - displays a page or calls a GDL (Gentia code) routine when the button is selected.
- Enable - activates the button so that it appears on the page. If left unchecked, the button details will be saved, but it will not appear.
- Delete - deletes the currently selected button completely.



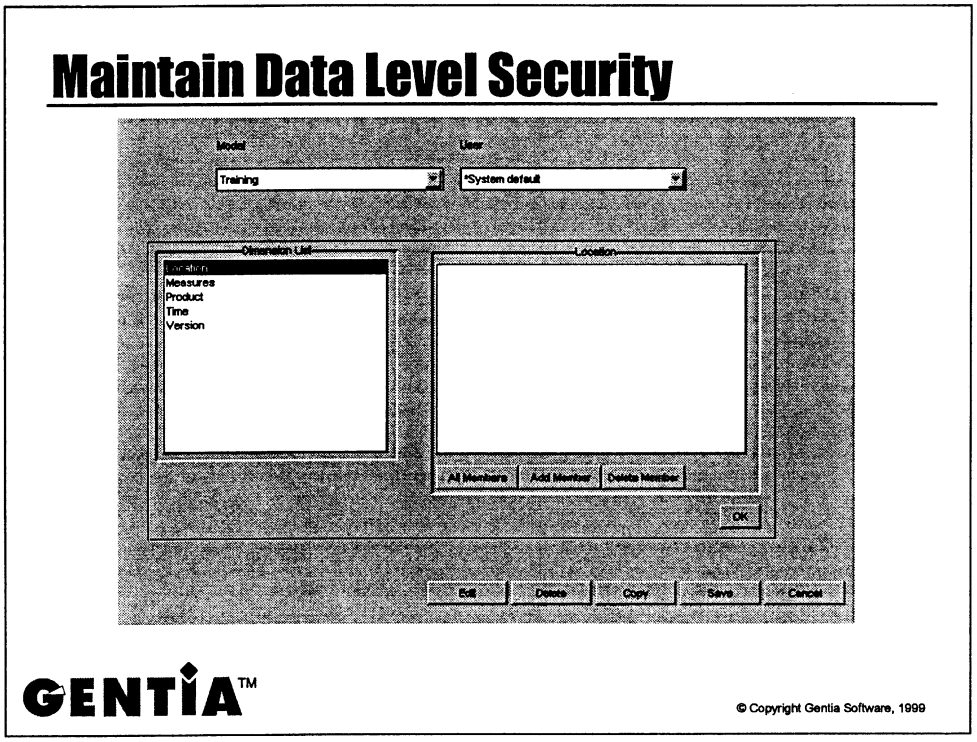
This section deals with the external applications which the Framework has access to and that can be called from the Framework menu. There are a number of pre-defined external applications (such as the Excel Addin). These are **SYSTEM** specific as opposed to user-specific external applications which are included in the *Add/maintain Users* dropdown menu.

All *System Application Maintenance* changes are recorded in the *App.ini* file and are available to all users.

Select *New* and add the name of the new external application (and enter it into the *App.ini*) file. Then set the command sequence. This is the sequence of events which happen when the user chooses the application. Probably the first thing will be the execution of the *.exe* file. Step 2 might be the execution of a mode (perhaps opening MS Word in *Normal View*). Step 3 could be additional parameters such as the name of the file to be opened.

The *Modes* are set using the *Mode* button.


GENTIA™
© Copyright Gentia Software, 1999



Data Level Security

This function enables the Framework administrator to specify which dimensions and dimension members each user is able to view in each application. You can also define system default security for each application. The data level security feature only applies to pages that were built with the User View Designer. It is not applicable to pages that were built in *Advanced mode* (author mode).

Summary - Administrator Functions

- Set access levels and languages
  - to define further levels 2-99
- Add / maintain users and Groups
  - specify access level (1-100)
  - Gentia Administrator (7,7)
  - specify access to Gentia applications
- Add / maintain menu options
  - and define split view divider ratios
- Configure framework toolbar and login page
- Configure application toolbar
- Configure system applications

GENTIA™

Practical 12.1

GENTIA™

Aim: To set up the application's users and access levels and menus.

Ensure that the new application is selected as the current application.

Setting Access Levels and Languages

- Select *Deployment⇒Setting Access Levels and Languages*
- Ensure that *English* is the selected language.
- Add two new access levels *5* and *20.*

Adding Other Users

- Click on the *Deployment* dropdown and select *Add / maintain users.*
- Click on *New* to clear the screen.
- Add a new user - (use your own name). Make this user an Administrator of the application rather than just a simple user by setting the access level to *System Administrator.*
- Select *Gentia Applications* and ensure that the new user has access to the new application.
- Choose a page which was created in the first part of the course as the *Default client page* and make the new application the *Default client application.*
- Select *OK* and return to the home page.
- Click on the button with the key symbol and log in as the new user.

continued overleaf...

- As the new user, switch into the framework and change the password to **gentia**. (**NB**. Only a user can change their own password).
- Log back in as **Admin**.

Configure Toolbar

- Select *Deployment⇒Configure framework toolbar.*
- Select which buttons you want on your toolbar and choose the order in which they will appear. Remember not to disable the *Other Gentia Applications* button.

Application Toolbar

- Select *Deployment⇒ Configure application toolbar.*
- Add a button to your application.
- The bitmap is in *C:\Gentia\Intro* directory. Link the button to any of your previously created pages with the **XXX** prefix.

Test the application

Create a Menu System to Navigate Between your Pages

- Create a new drop down menu called **Course**.
- Add three matrix pages (created in the first part of the course) to the option.

Test the application

Chapter 13

Model Maintenance & Data Loading

GENTIA™

What we will cover

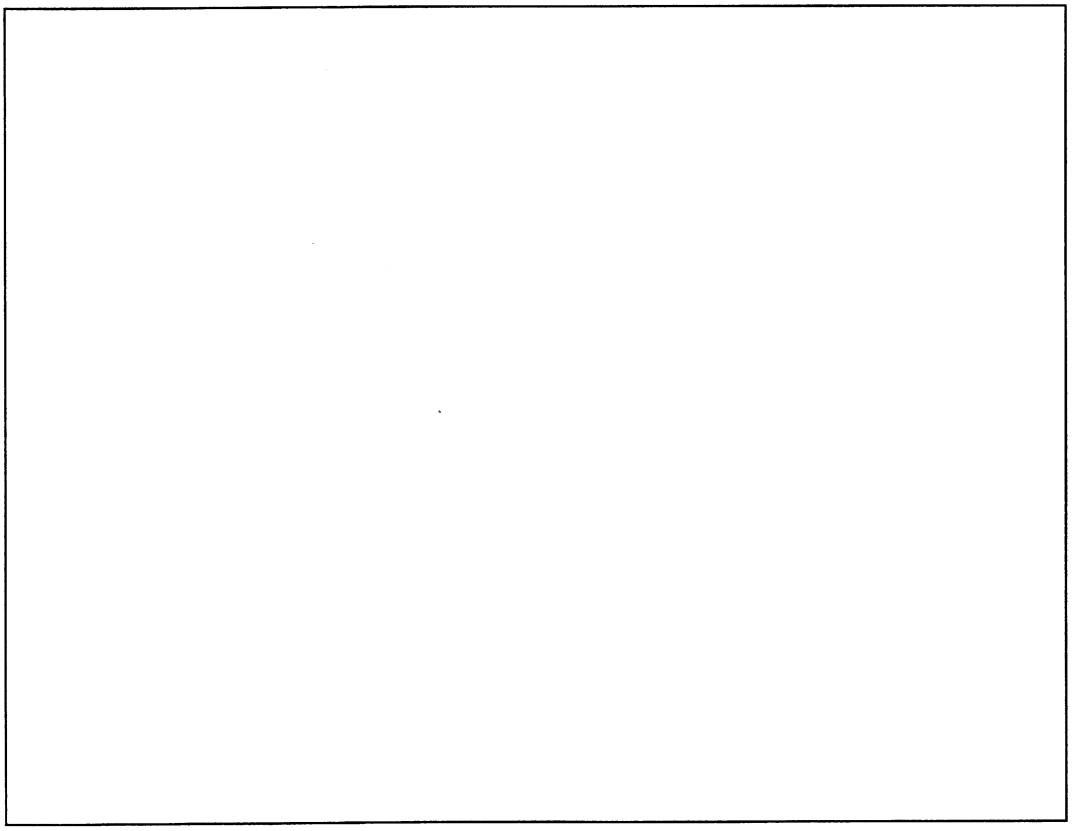
- A brief look at Data entry - using Gentia Excel Add-In
- Advanced data loading
  - Using the Advanced data load wizard

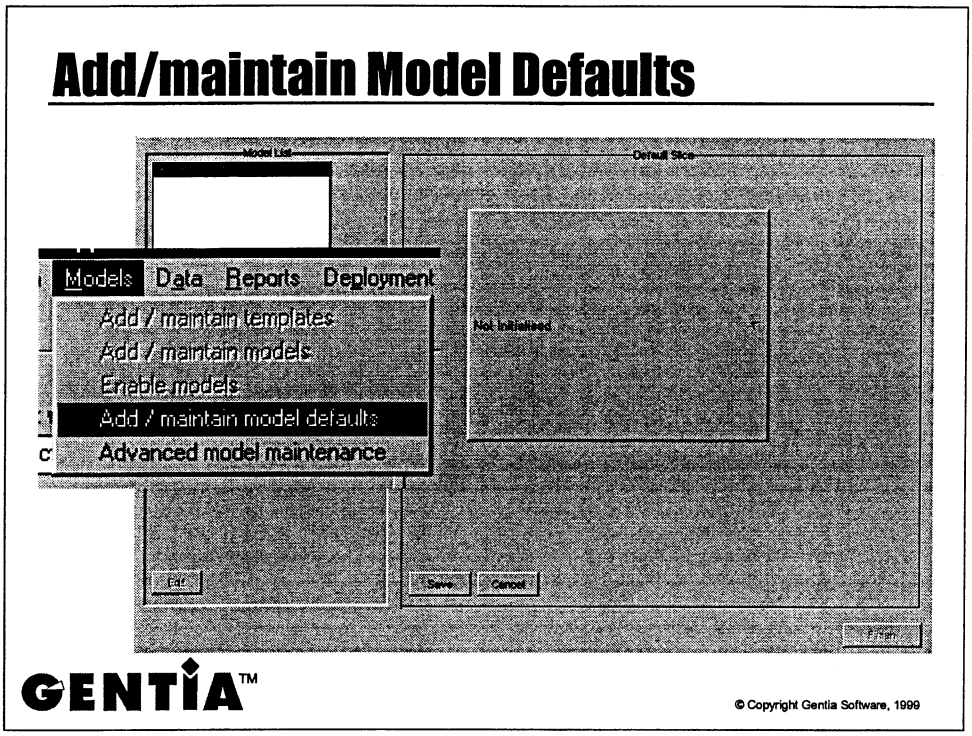
GENTIA™

Models Drop Down Menu

- Add / maintain model defaults
- Advanced model maintenance

GENTIA™





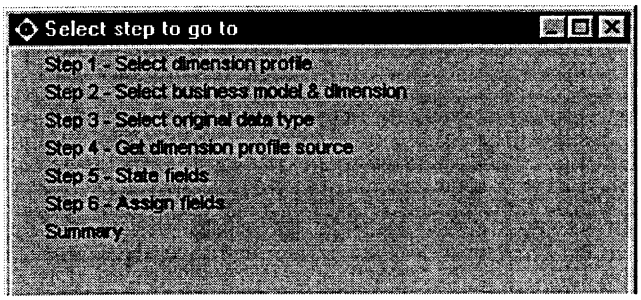
It is possible to define a default slice for each model, for use by the User View Designer (which is explained later).

Select Add / Maintain model defaults as above.

When you design a view or page, you can specify that the initial slice to be used at run-time is to be the current default slice for the model that is being viewed. This could be used, for example, to ensure that users always see the most recent data. Whenever data is loaded for a new time period, you would also update the model's default slice to use the latest period, so that all views using the model's default slice would then automatically display the new data.

Advanced Model Maintenance

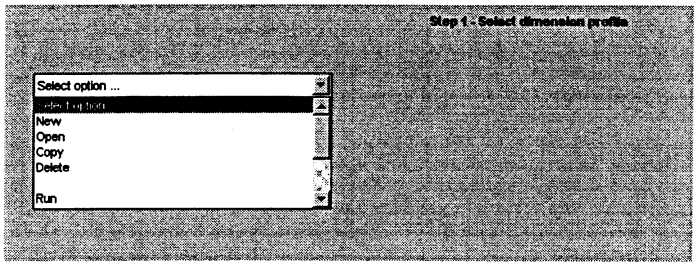
- Process of creating and running a "dimension profile"
- Each profile defines all the necessary parameters for a model update
- Easy to use wizard



GENTIA™

Creating a profile allows the user to update a model by following the steps defined in the wizard. A file holding the model data must already exist on the server.

Advanced Model Maintenance - 1



- Select an existing profile or create a new one
- Copy, delete or run a profile

GENTIA™

Select the required option:-

New - create a new dimension profile; enter a description and then click on Next.

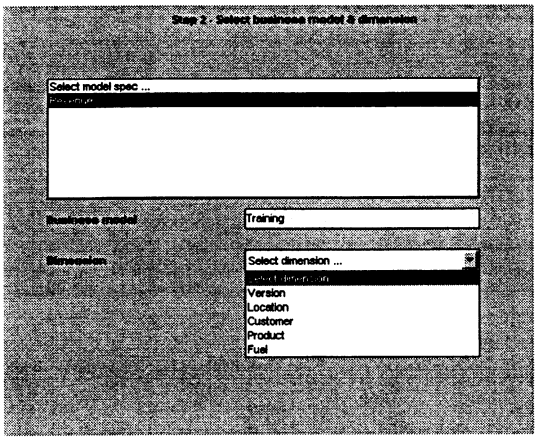
Open - open an existing dimension profile; select the required profile and then click on Next.

Copy - copy an existing dimension profile; select the required profile and then click on Next.

Delete - delete an existing dimension profile; select the required profile and then confirm that you want to delete it.

Run - run a dimension profile; select the required profile and then click on Next (you can only run profiles that have been finished).

Advanced Model Maintenance - 2

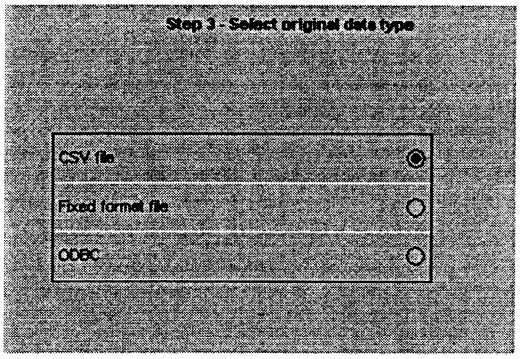


- Select model spec and dimension for update

GENTIA™

All of the available model specs MUST be in the application's Admin book, or they will not appear in the list.

Advanced Model Maintenance - 3

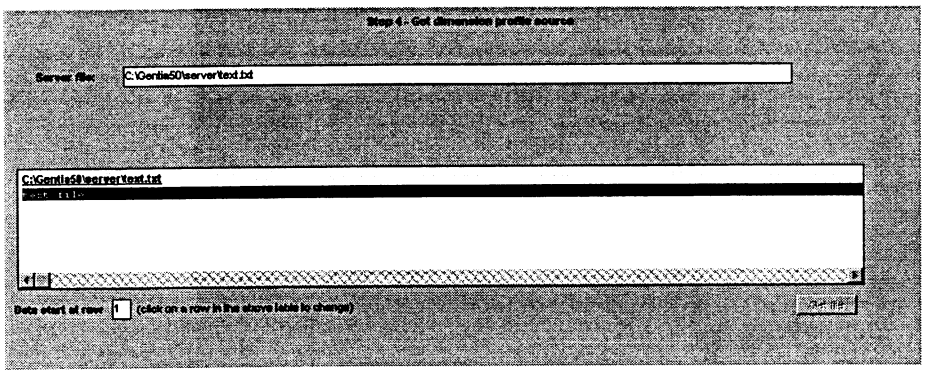


- Select the type of input data to be used

GENTIA™

CSV file: file containing records whose fields are separated by a delimiter, Fixed format file: file containing records whose fields are in fixed positions or ODBC: relational database.

Advanced Model Maintenance - 4

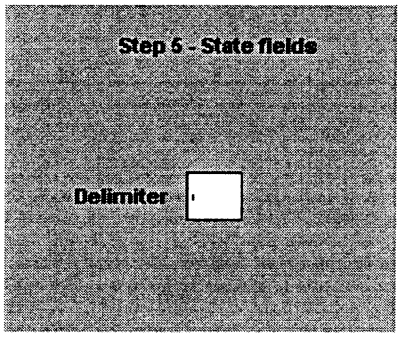


- Specify location of file on the server

GENTIA™

Enter the full path and name of the input file, as seen on the server, then click on the *Get file* button and a sample of the data will be displayed. You can specify the record at which the processing is to start (default = record one).

Advanced Model Maintenance - 5



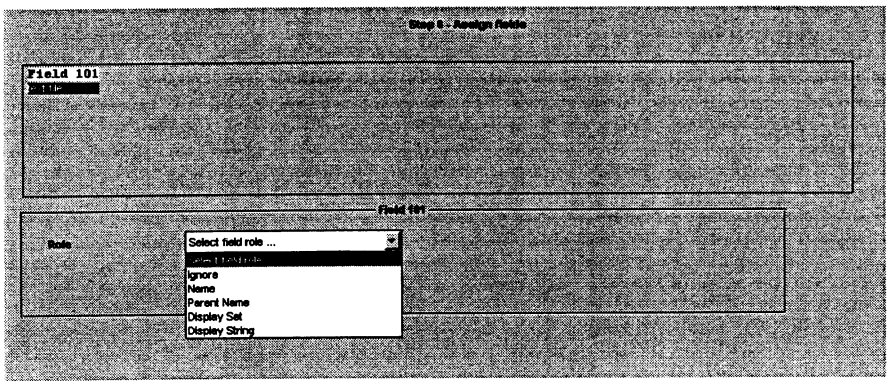
- Specify the input file details

GENTIA™

If the file is a CSV file, specify the delimiter that is used to separate the fields in the file. A space is not a valid delimiter character.

If the file is a fixed file, then an area with text will appear. By clicking at a certain point within the file, the fixed length will be set.

Advanced Model Maintenance - 6



- Match fields with their role

GENTIA™

By clicking on each column header in the table the field option appears. This allows the user to set the corresponding field type:

Ignore: ignore this field at run-time

Name: member name (mandatory); you can specify a prefix or suffix to be automatically appended to the name at run-time

Parent Name: name of parent member in hierarchy; you can specify a prefix or suffix to be automatically appended to the parent name at run-time

Display Set: name of display set

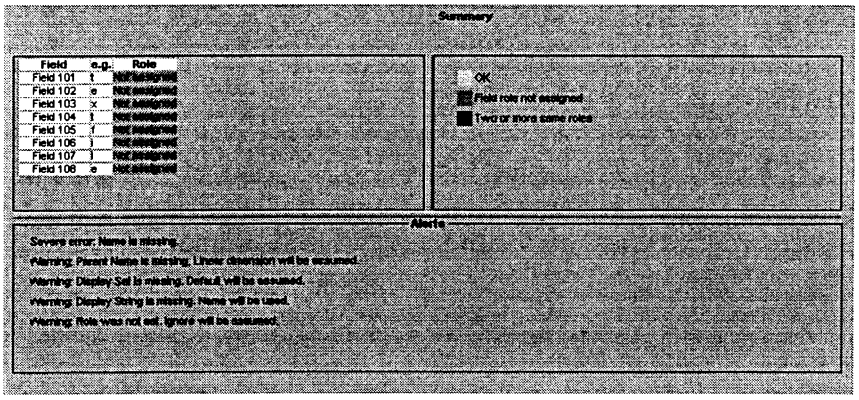
Display String: display name for this member; you must also specify the display set to which this display string applies:

Default

Specified: type in the required display set name

Field: select the field that contains the required display set name

Advanced Model Maintenance - summary

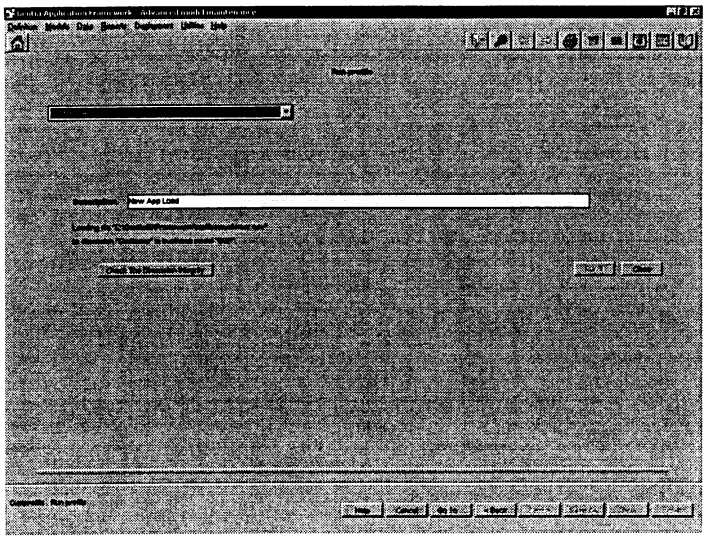


- Summarise the profile

GENTIA™

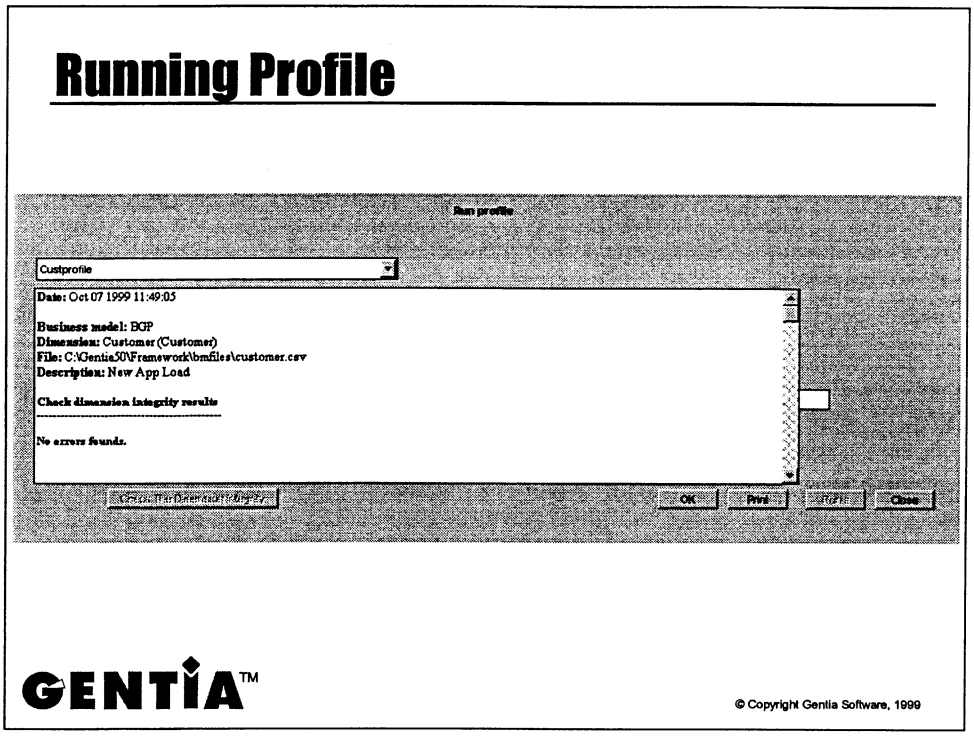
This step displays a summary of how the input data will be mapped to the dimension structure, together with any warning or error messages. If anything needs to be corrected or changed, you can use the Back or Go To button to return to an earlier step. If everything is correctly specified, you can use the Save, Save As or Finish button to save or finish the profile. You will not be able to run a profile unless you have finished it.

Running Profile

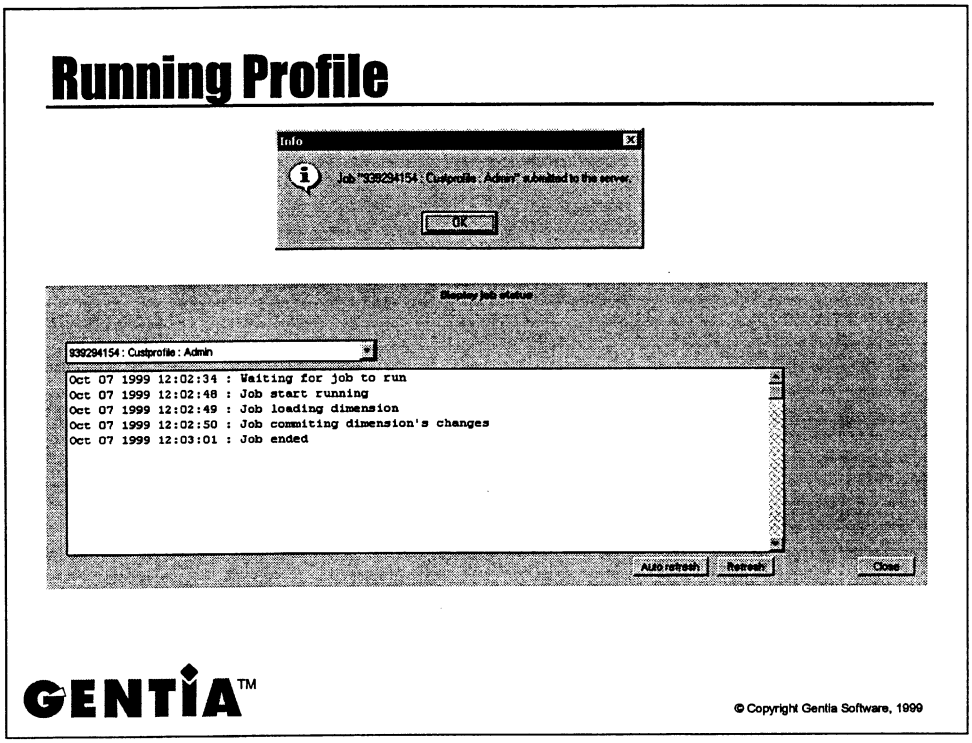


GENTIA™

Running the profile displays a screen which shows the details and allows the developer to check the integrity of the load.

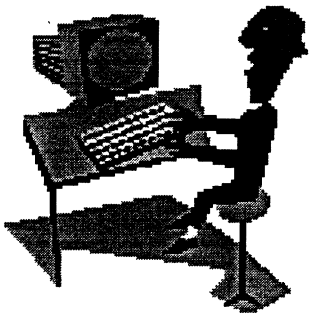


An integrity checjk is completed and the errors are reported. This report can be printed.



When the profile is actually run, the status of the job is reported.

Practical 13.1



GENTIA™

Aim: To change the default slice and use the Advanced Model Maintenance.

Changing default slice

- Select *Models⇒Add/maintain model defaults*.
- A list of available model specs(within the XXX Admin book) will appear.
- Select *Carsales* and choose *Edit*.
- Once the Framework has accessed the model, the slices will appear. Simply select the relevant slices.

Continued overleaf....

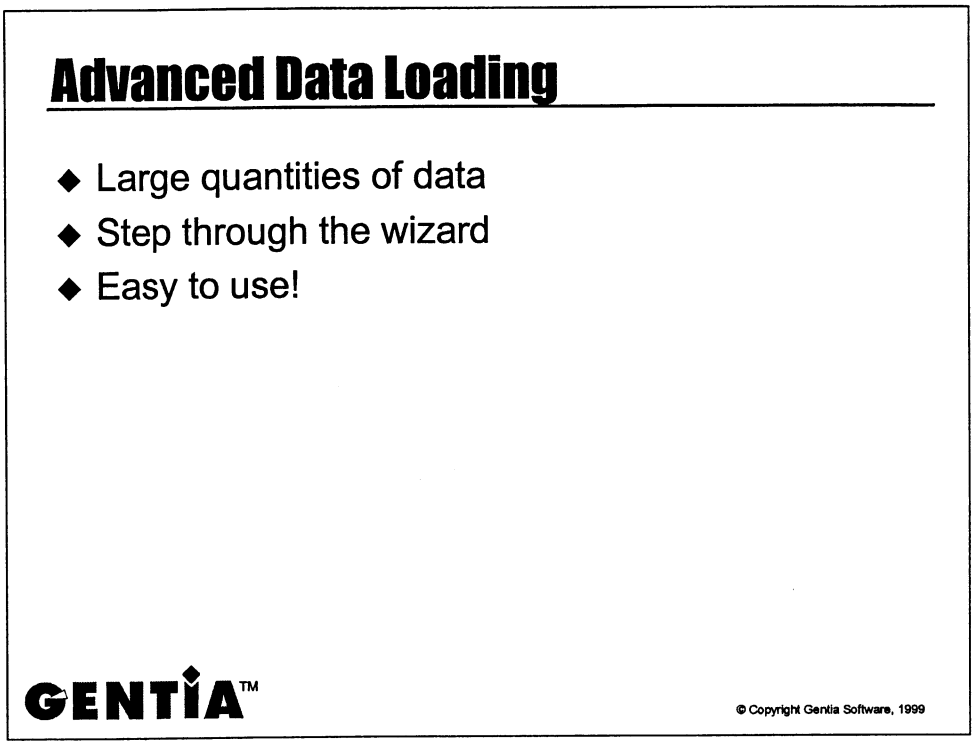
Using Advanced Model Maintenance

- Complete the stages of the *Advanced Model Maintenance* wizard.
- The information needed is as follows:
    - Call the *New* profile *CustomerProfile*
    - Select *Customer* as the dimension
    - Select CSV file
    - The file is *C:\Gentia50\Framework\bmfiles\customer.csv*
        - The data starts at row 2
    - The delimiter is a , (comma)
    - The fields:
        - Field 101 is the Parent Name
        - Field 102 is the Name
        - Field 103 is to be ignored
        - Field 104 is Display String
    - Check the summary and run the profile.
    - The profile can be checked later using the *Ad-hoc* page.

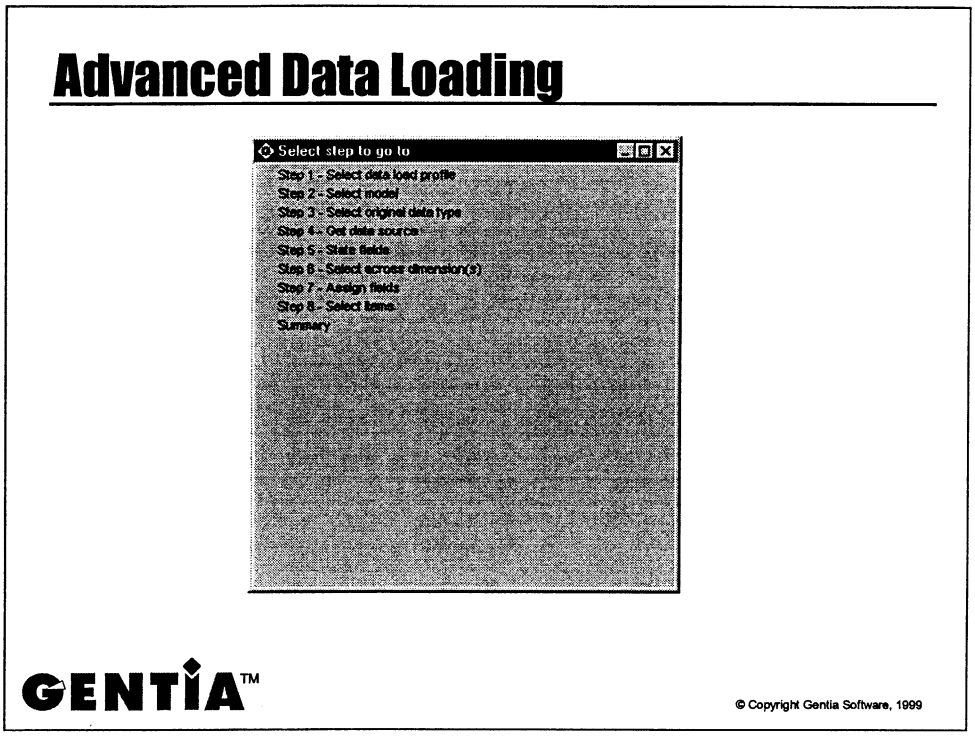
Data Entry

- Data Entry used to enter small amounts of data
- Uses the Excel Add-In
- Demonstration of Excel Add-In
- Excel Add-In - a one day course

GENTIA™

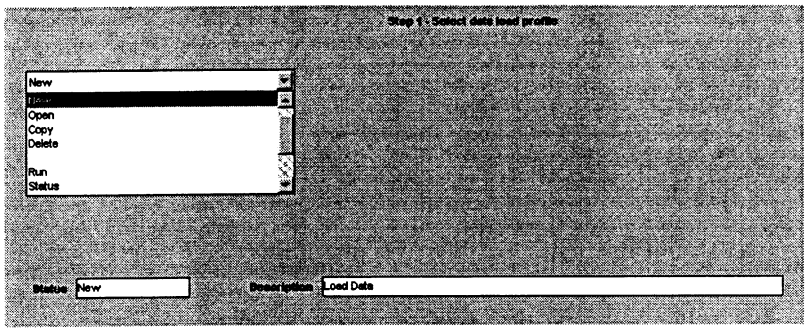


For larger quantities of data the *Advanced Data Loading* option is provided. It is a simple wizard that allows the user to input data from a file. Provided the file is in a specific format, it can be loaded directly into the model.



Advanced Data Loading is a wizard that guides you through the process of creating and running a "data load profile". Each profile defines all the necessary parameters for a data load. The profile details are used to generate BMScripts that create and run GentiaDB tasks and jobs.

Advanced Data Loading 1



GENTIA™

Select the required option:-

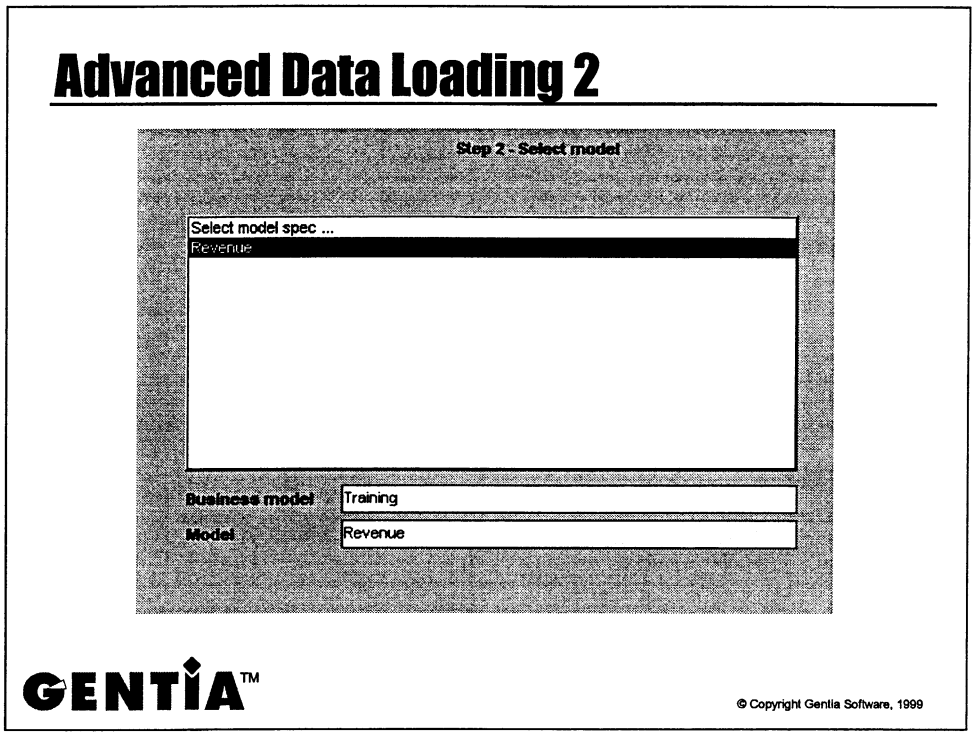
New - create a new data load profile; enter a description and then click on Next.

Open - open an existing data load profile; select the required profile and then click on Next.

Copy - copy an existing data load profile; select the required profile and then click on Next.

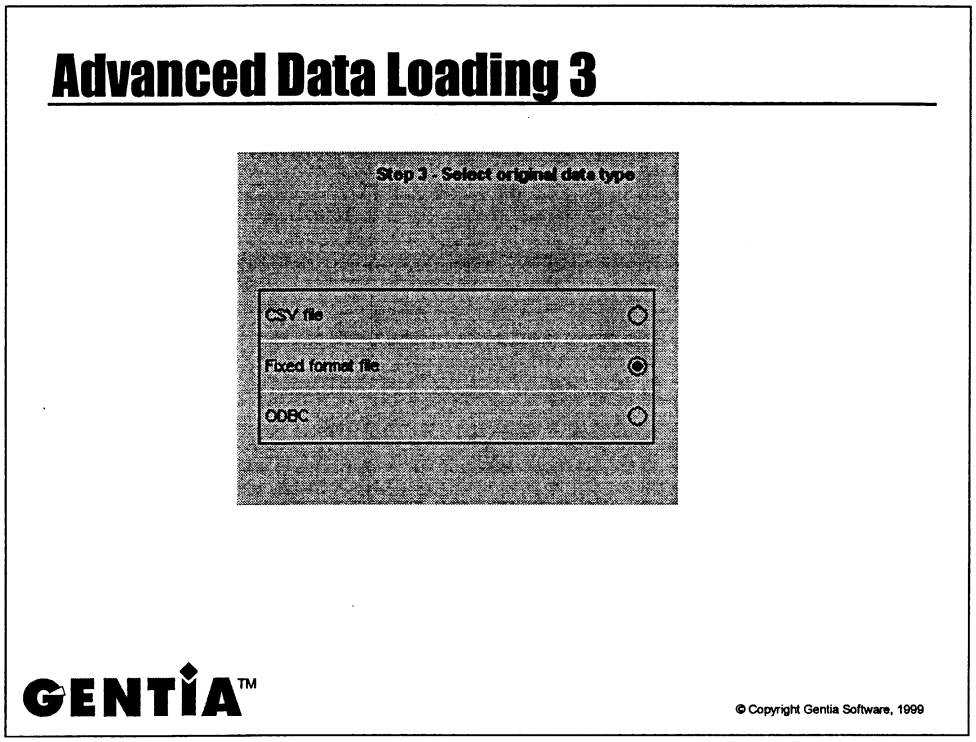
Delete - delete an existing data load profile; select the required profile and then confirm that you want to delete it.

Run - run a data load profile; select the required profile and then click on Next (you can only run a profile that has been finished).



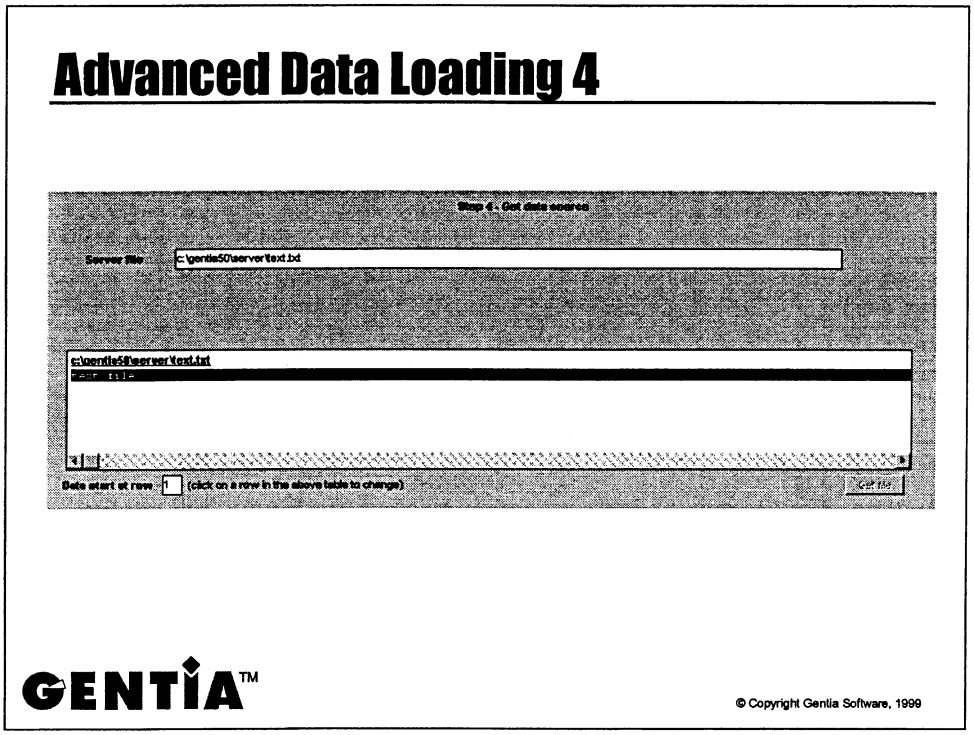
Having selected the model spec to be used for this data load profile, select a model spec for a Base Model because Advanced Data Loading cannot load data into Join Models.

If you want to load data into a Join Model you must use the Excel Add-In or the Data Loader.



Step 3 lists the different types of input data which can be used:

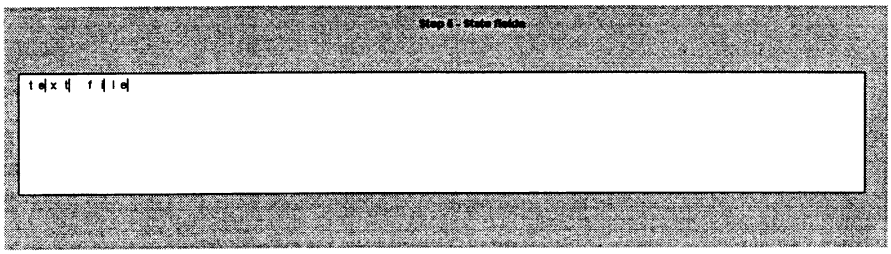
CSV file: file containing records whose fields are separated by a delimiter,
Fixed format file: file containing records whose fields are in fixed positions,
ODBC: relational database.



Enter the full path and name of the input file, as it is on the server. Clicking on the *Get file* button will display the sample data.

It is possible to specify the record at which the processing is to start.

Advanced Data Loading 5

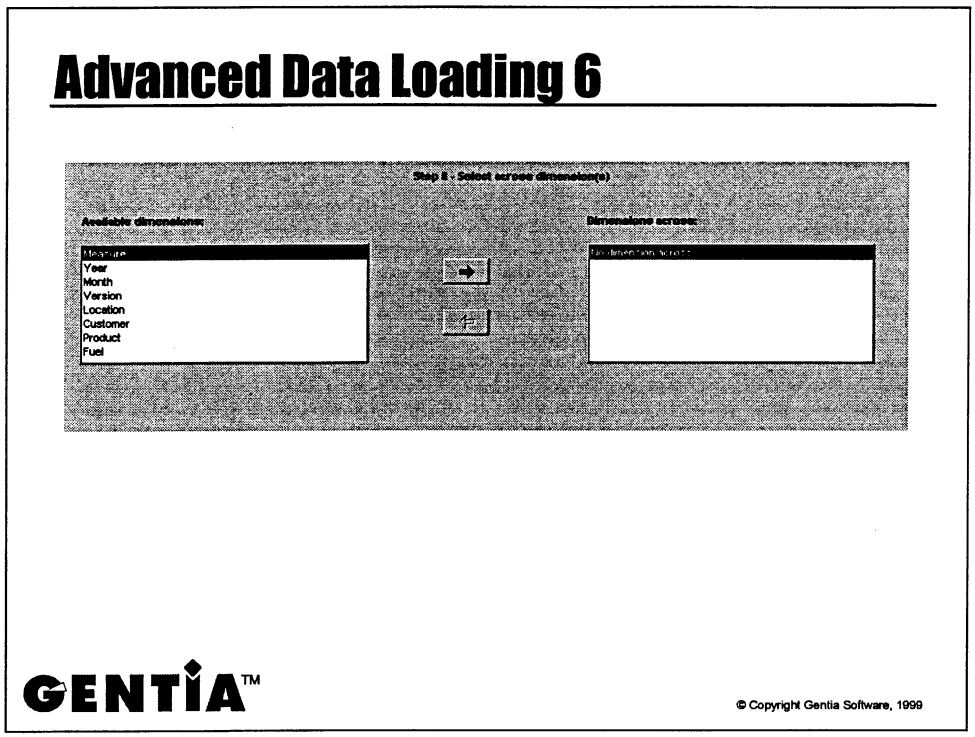


GENTIA™

With fixed files, it is possible to specify the field positions in the input file by clicking on the last character of each field.

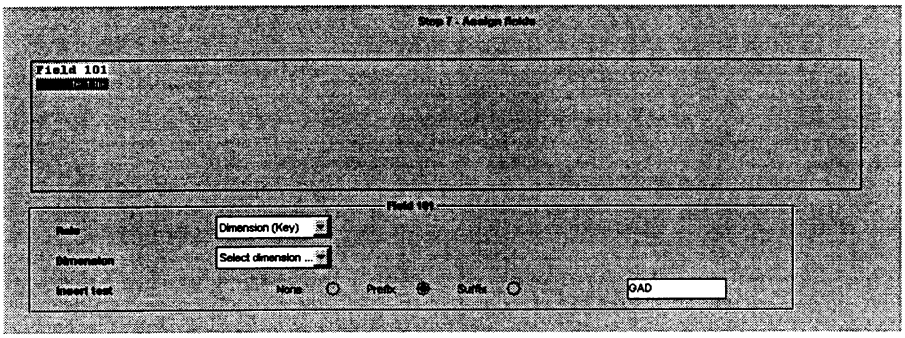
A vertical line will be drawn every time you click.

To remove a line (field break), <Shift>click on the last character of the field.



Specify the dimension(s) which will go 'across'. This will typically contain a value rather than a member name.

Advanced Data Loading 7



GENTIA™

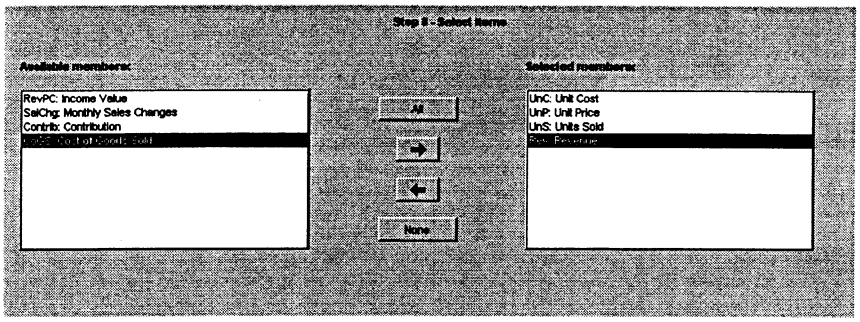
Click on each column header in the table in turn and specify the corresponding field type:

Ignore: ignore this field at run-time

Dimension (Key): this field contains a member name; select the dimension to which it belongs; you can specify a prefix or suffix to be automatically appended to the member name at run-time

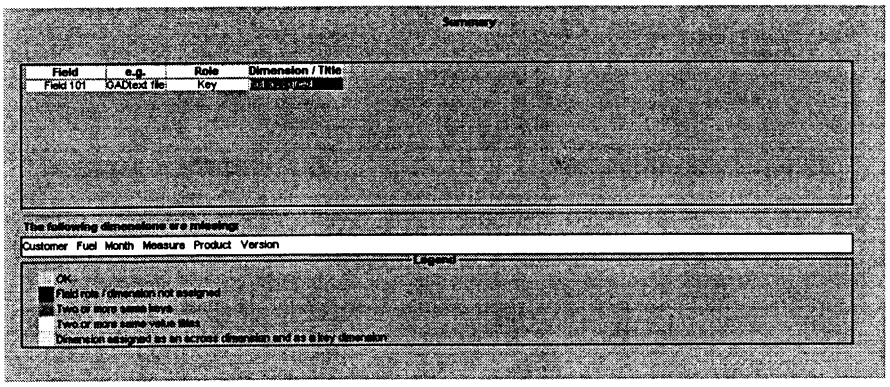
Value: this field contains a numeric value to be loaded; select the member name(s) from the "across" dimension(s) for this value.

Advanced Data Loading 8



GENTIA™

Advanced Data Loading - Summary



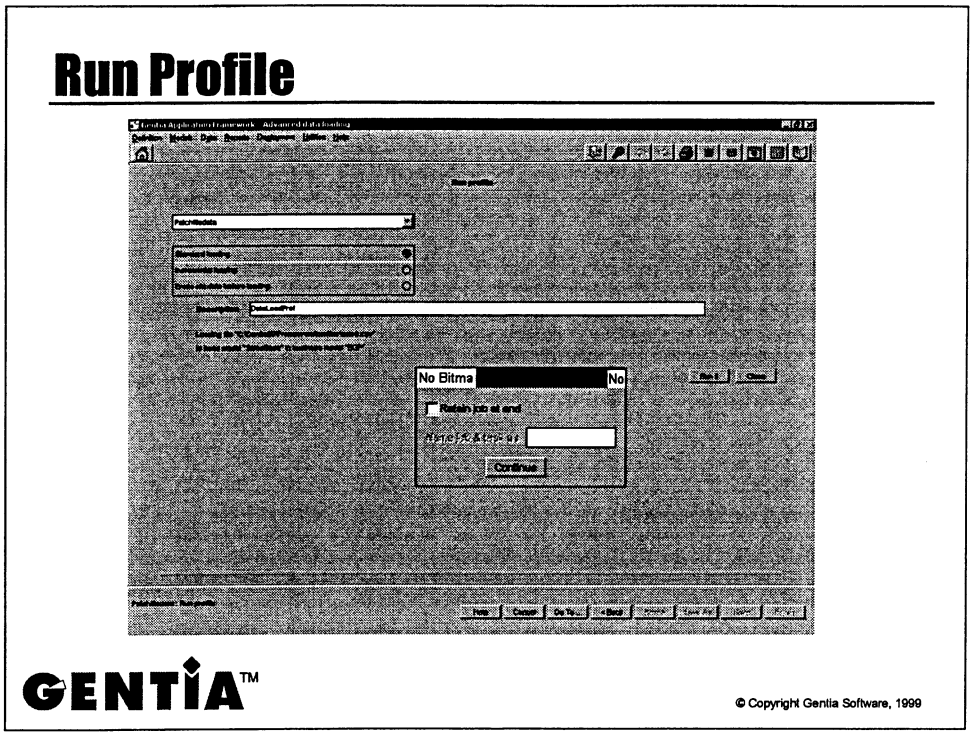
GENTIA™

This step displays a summary of how the input data will be mapped to the model, together with any warning or error messages.

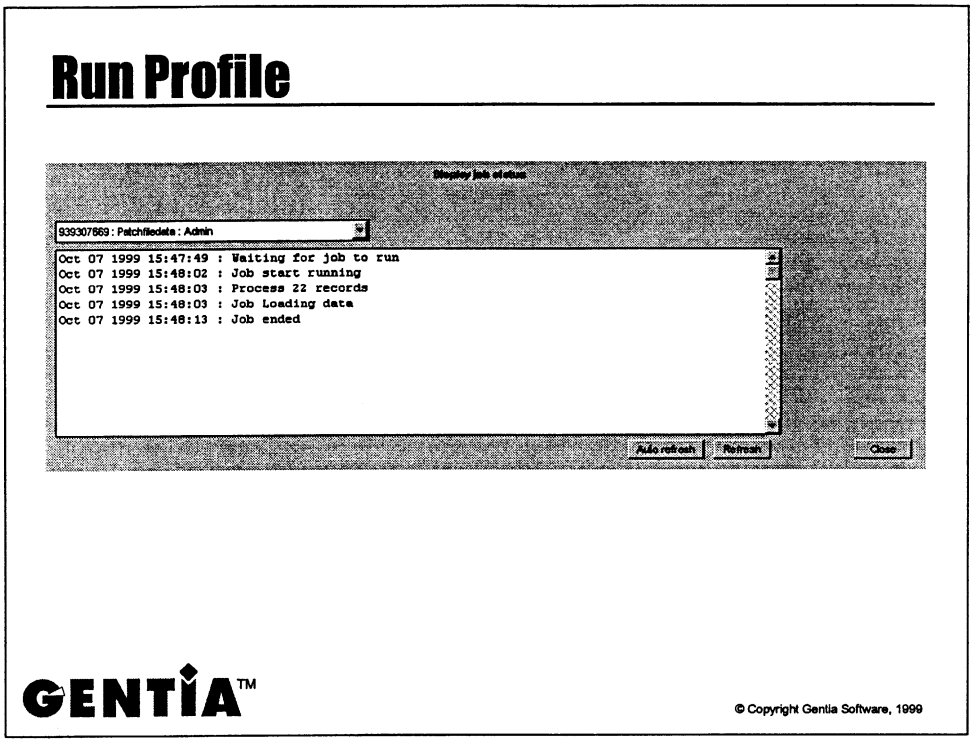
If anything needs to be corrected or changed, you can use the Back or Go To button to return to an earlier step.

If everything is correctly specified, you can use the Save, Save As or Finish button to save or finish the profile.

You will only be able to run profiles that have been finished.



The profile is run from the *Run Profile* screen. Ensure that the correct profile has been selected.



The job status will be displayed as the job is being run and can be updated automatically or manually. If the automatic option is chosen, the user can select the times for the refresh to happen. This is particularly useful for large data loads.

Practical 13.2

GENTIA™

Aims: To load data into the model becoming familiar with the *Advanced Data Loader* wizard. The data file contains data for the new member added into the customer dimension. The slice will be:

Version, Item (in rows and columns), ***New Customer***, petrol, executive cars, USA.

Step through the wizard, completing each step, as demonstrated earlier. The data file is called *C:\gentia50\framework\bmfiles**sales.csv***, and is a comma separated file.

- Step 2 - select your model spec
- Step 3 – select the original data type - CSV
- Step 4 – select data source – as shown above
- Step 5 – select delimiter field (comma)
- Step 6 – Select across dimensions – *Item*
- Step 7 – Assign the fields – as follows:

	A	B	C	D	E	F	G	H	I	J	K	L
1	Ignore	Customer	Fuel	Location	Product	Version	In-Cycle	Cycle	Units Sold	List Price	Sales Revenue	Transfer Cost
2		newone	Petrol	USA	exec	Target	jan	1997	19	22610	19896	138
3		newone	Petrol	USA	exec	Target	feb	1997	23	27370	24085	167
4		newone	Petrol	USA	exec	Target	mar	1997	25	29750	26180	182
5		newone	Petrol	USA	exec	Target	apr	1997	23	27370	24085	167

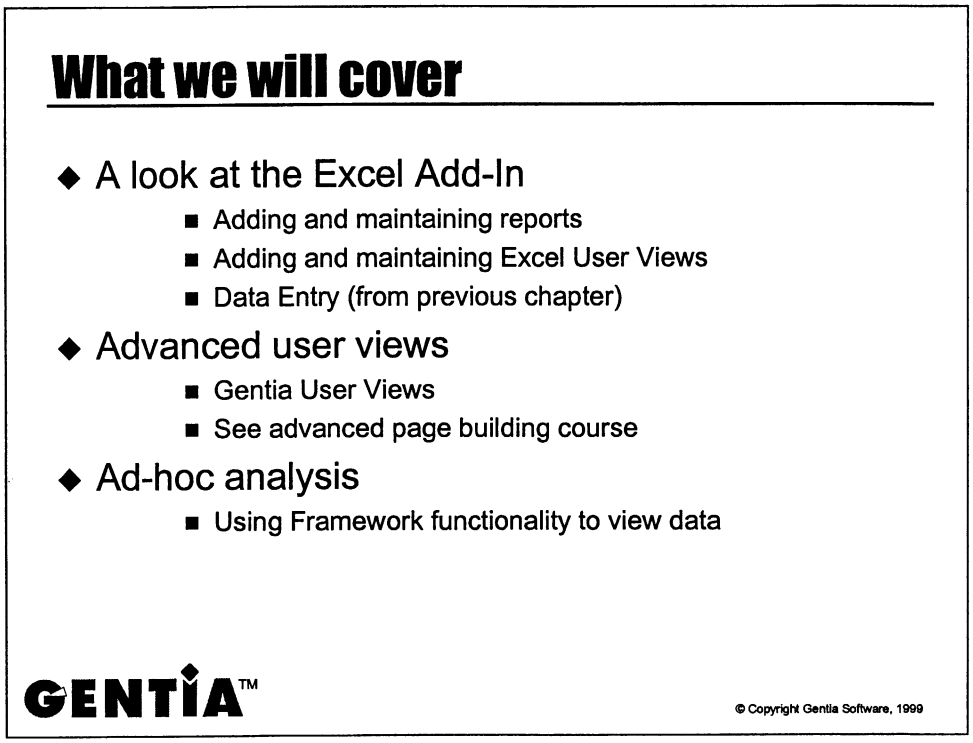
    - Step 8 – Select items
    - Step 9 – Check the summary
- Run the profile.

The results of the profile will be looked at through the *Ad-hoc Analysis* page in a later chapter.

Chapter 14

Reports and Views

GENTIA™



As mentioned in the last chapter, Excel is used as a means of accessing GentiaDB information. It is particularly useful for generating reports and charts and as a means of viewing the data simply and easily.

Gentia has its own powerful page building mechanism which has already been covered in the first part of this course.

Excel Addin Demonstration

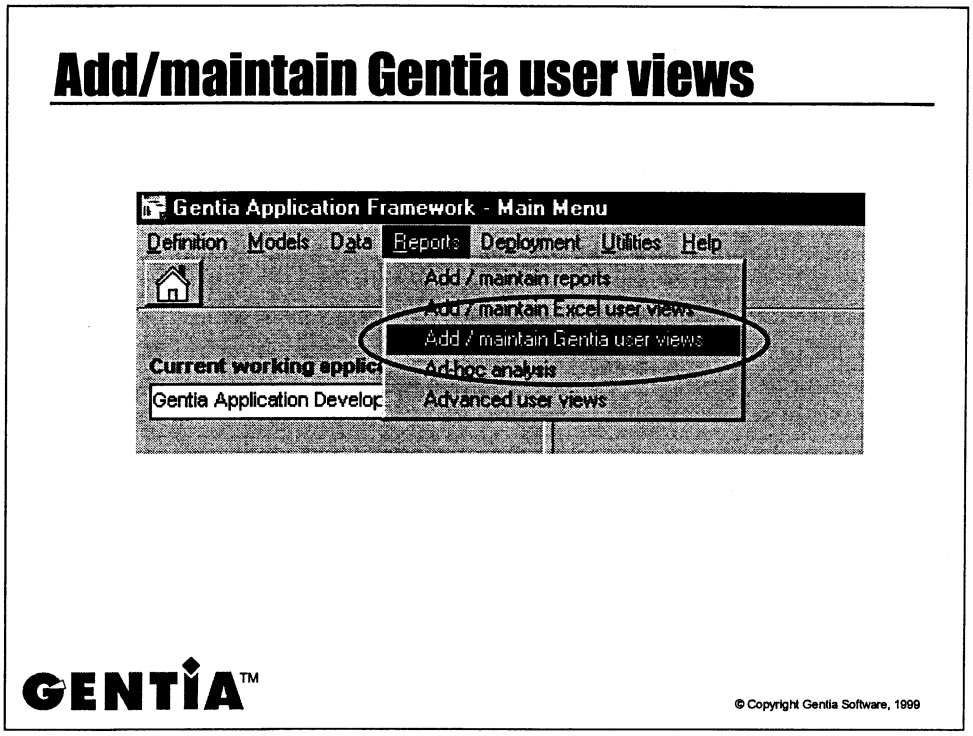
- Loggin in (3 Steps wizard)
- Toolbars (3 different ways to use Add-In)
- Changing a slice of data
- General Options
  - zero suppression
  - refresh (color change)
- Drill down
- Color coding
- Chart

GENTIA™

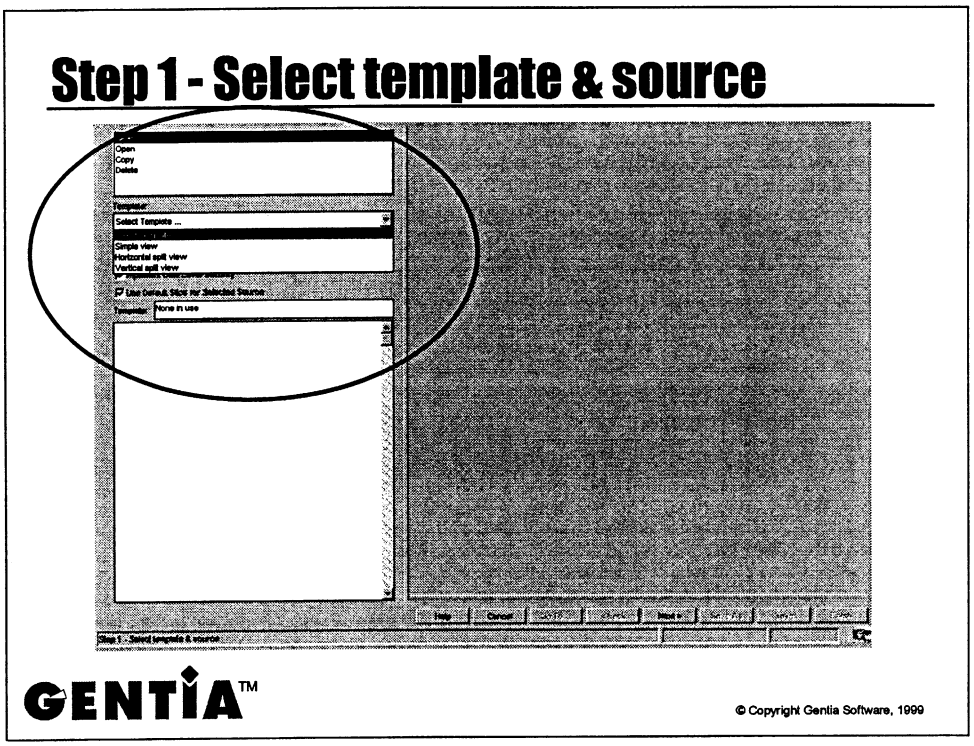
Excel Addin Demonstration

- Report mode
  - Tabular / Free format
  - How to **run** a report
- Data Entry mode
  - viewing
  - Committing
  - Consolidating

GENTIA™



Gentia user views aid the developer in creating pages. These pages can be used in conjunction with any other pages that have been developed.



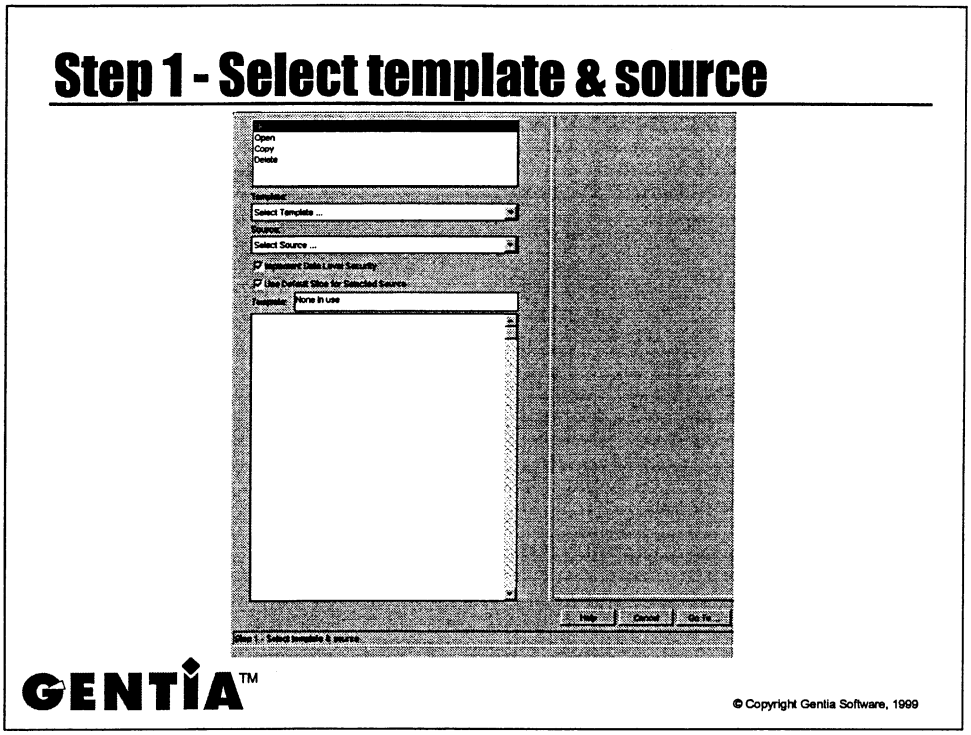
Step 1

The four top options within the User View Designer allow the user to create a *New* page (or view), *Open* an existing page to edit, *Copy* the main part of an existing page or *Delete* a page completely.

If the *New* option is selected, the user will be given an option of templates to choose from.

Simple View allows the user to select a table OR a chart to use as the main object on the page. The table or chart can be amended and formatted as necessary.

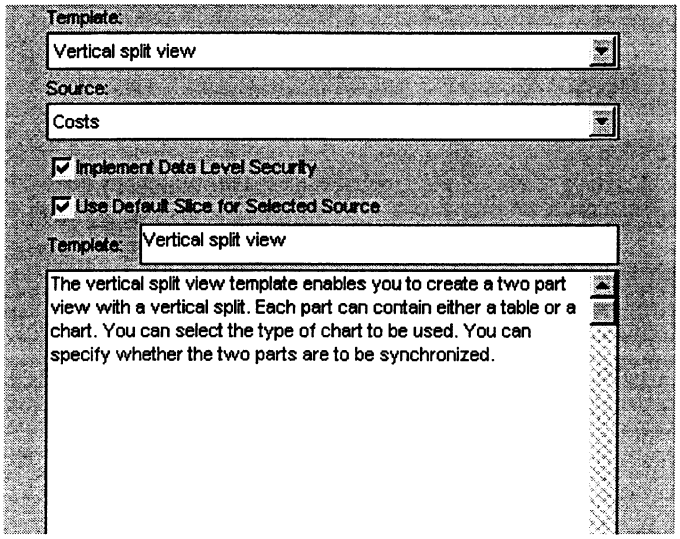
Horizontal / Vertical split view allow the user to have both a table AND chart on the page at the same time. The objects can be amended and formatted as necessary.

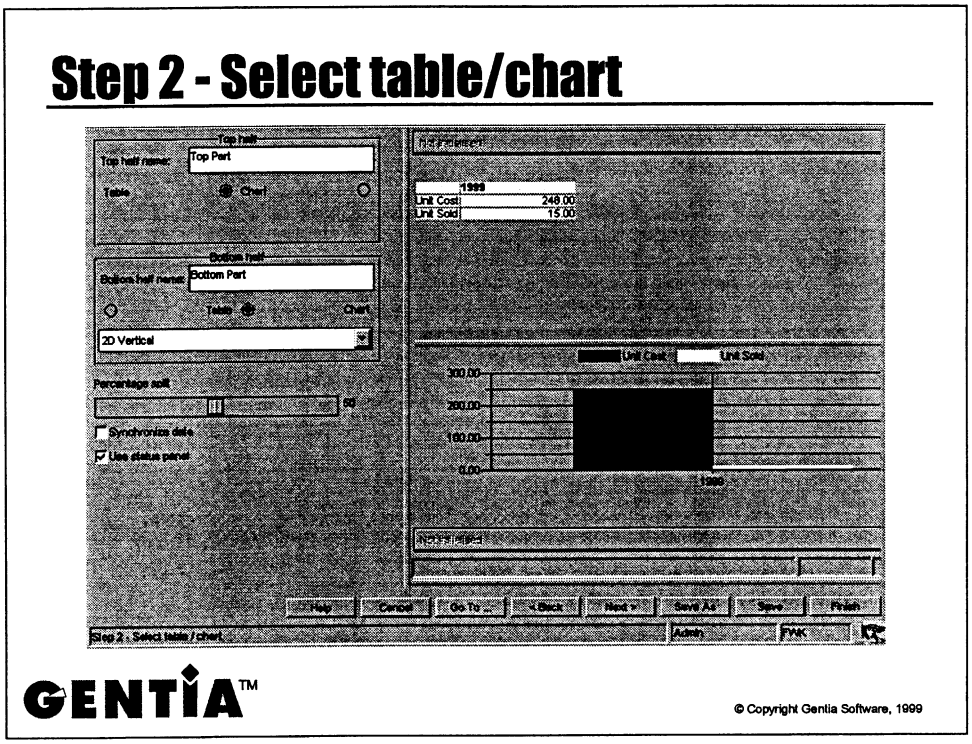


Step 1 also allows the user to select a model from which to build the table or chart.

The *Implement Data Level Security* option allows the user to specify whether the view is to use the Data Level Security facility. This facility can only be applied to views that are built with the User View Designer; it enables the Framework administrator to specify which dimensions and dimension members each user is able to view in each application model.

The Lower areas show what the developer has chosen.



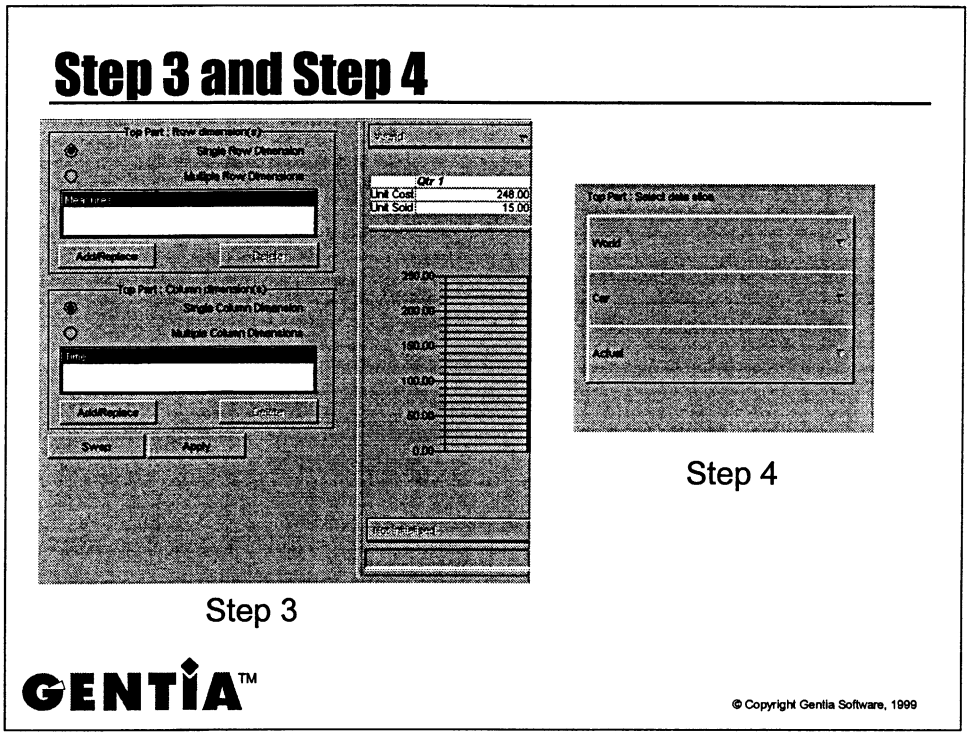


Step 2

This step allows the user to name the top and bottom portions of the screen and decide which of the two available objects they want to appear. For the chart option, they can also choose a chart type from the available list. The *Percentage split* allows them to set up the initial screen proportions.

In addition, the user can also specify whether they wish the status bar to be present on the page. The status bar contains information such as user id, application code, application logo and application message.

The *Synchronize data* option will ensure that both halves of the screen respond in the same way. If the user selects something from the top listbar, both halves of the screen will update.



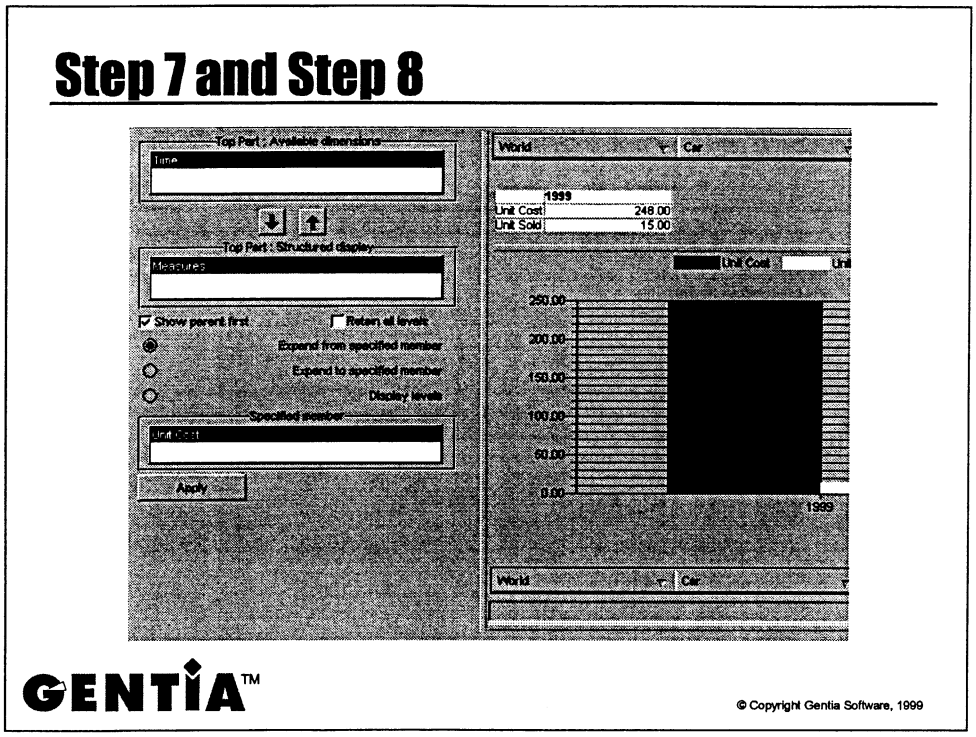
Step 3 and **Step 4**

These two steps allow the user to select the members for the row and column dimensions (single or multiple) and to select the default slice of data.

Add/maintain Gentia user views

- **Step 5** & **Step 6** are the same as **Step 3** & **Step 4** but apply to the bottom half of the screen

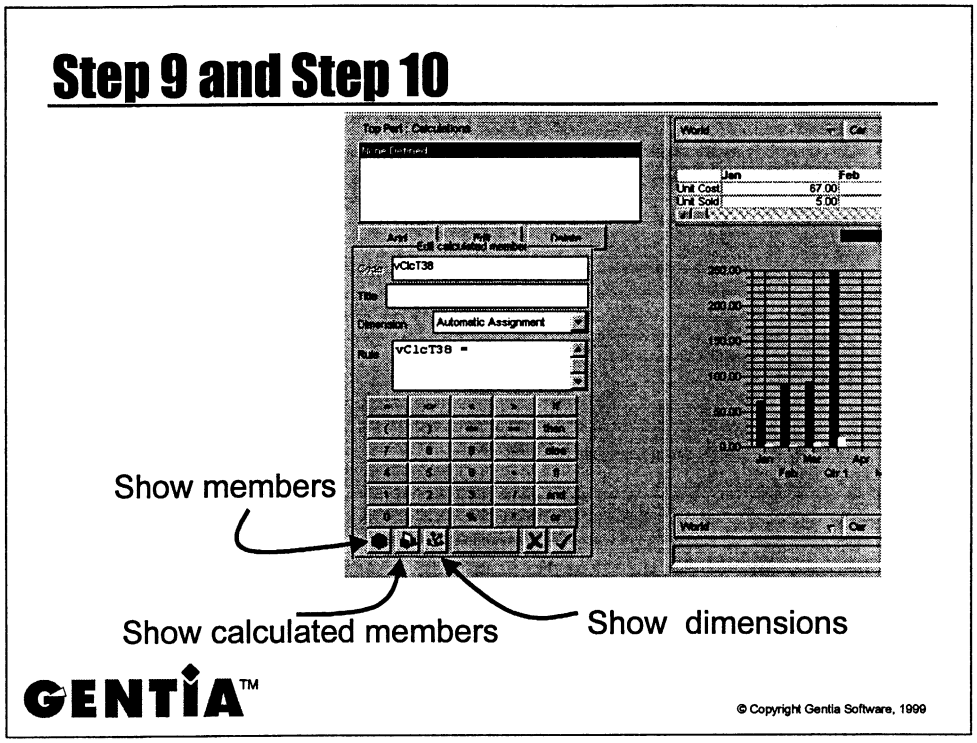
GENTIA™



Step 7

This step allows the user to select which part of the selected dimensions to show or hide. They could choose to show a certain dimension expanded to a certain level. For example, they might only show Qtr 1, Jan, Feb and Mar of the time dimension.

Step 8 is exactly the same except it applies to the bottom part of the split view.

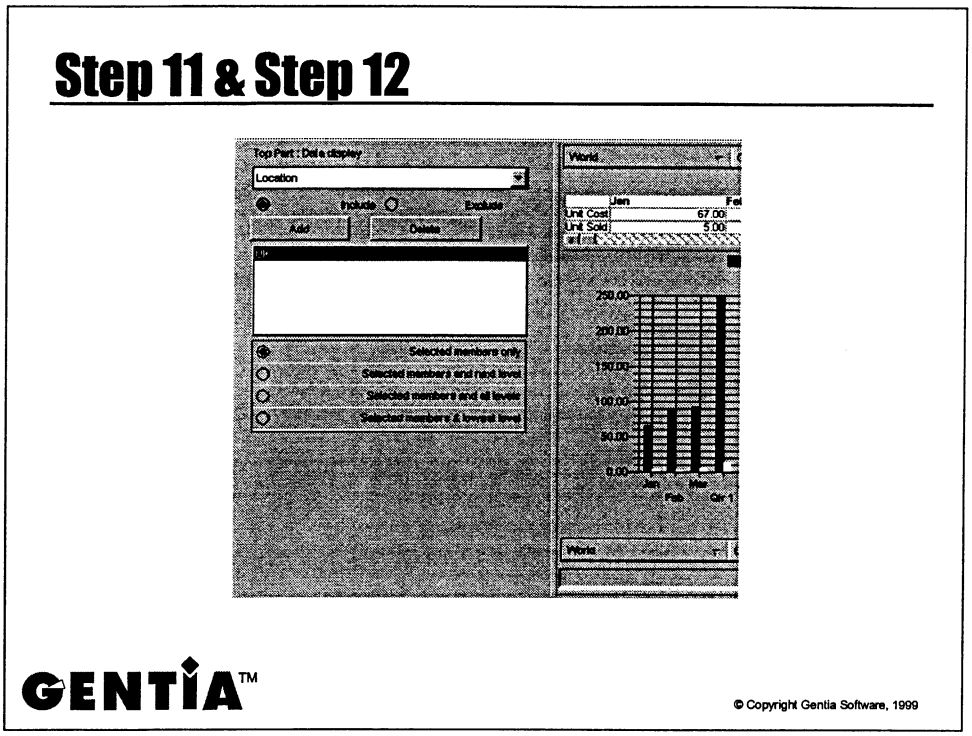


Step 9

This step allows the user to edit or add a calculated member. If the member appears in the list, the user can edit it. Otherwise simply select *Add* and create a new calculated member.

Step 10

Step 10 is the same as Step 9 except it applies to the bottom half of the screen.



Step 11

This step allows you to filter out any unwanted dimension members from your view. It is a good idea to use filtering to reduce the volume of data, particularly if your view includes calculations, because filtering will increase the processing speed.

To specify members to be included (or excluded), select a dimension, click on *Include* (or *Exclude*), click on *Add* and then select the members you require.

There are some additional filtering options:

Click on *Selected members only* if you want the display to contain only the members that you have specified.

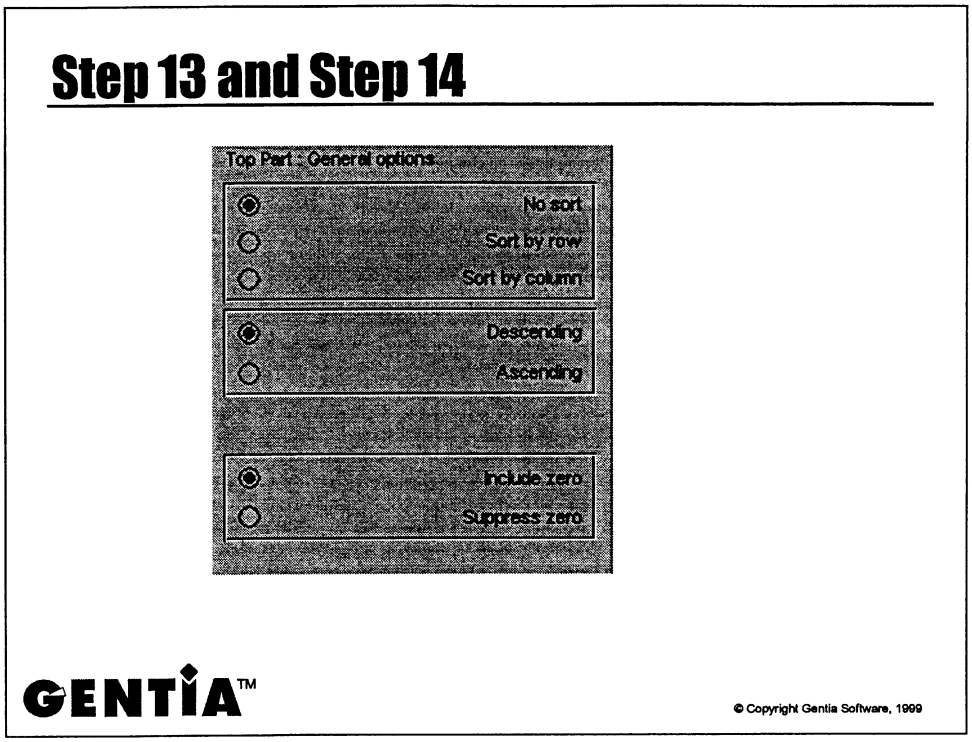
Click on *Selected members and next level* if you want the display to contain the members that you have specified, together with the members in the next level down in the hierarchy (applies to structured dimensions only).

Click on *Selected members and all levels* if you want the display to contain the members that you have specified, together with all of the levels beneath each one (applies to structured dimensions only).

Click on *Selected members and lowest level* if you want the display to contain the members that you have specified, together with the members in the lowest level beneath each one (applies to structured dimensions only).

Step 12

Step 12 is the same as Step11 except it applies to the bottom half of the screen.

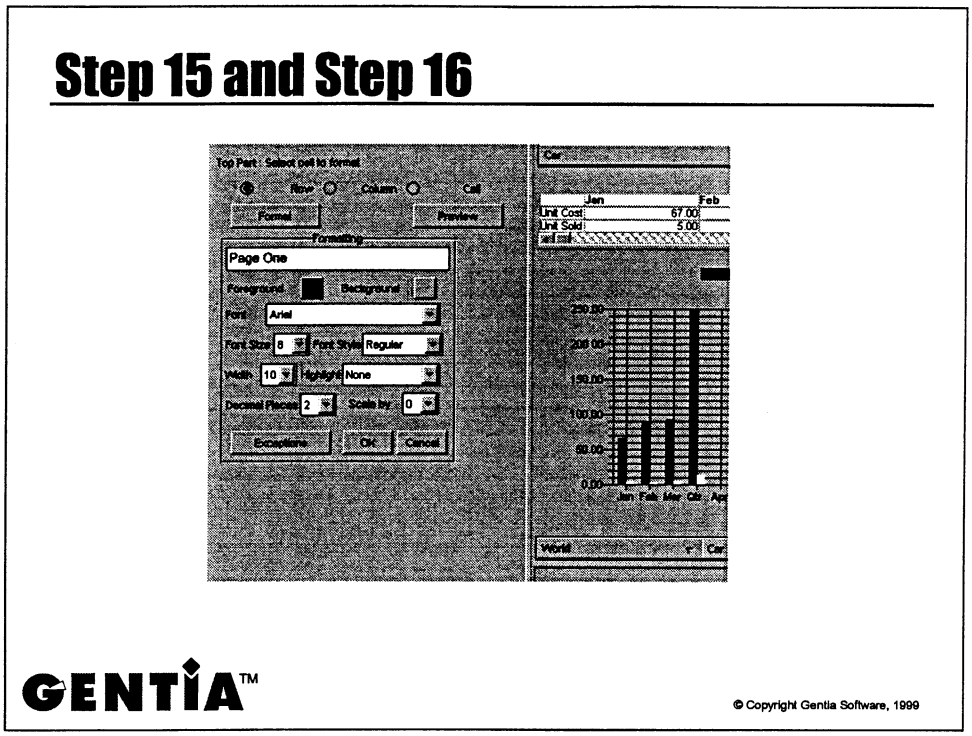


Step 13

This step contains specific options such as sorting details and zero suppression.

Step 14

Step 14 is the same as Step13 except it applies to the bottom half of the screen.

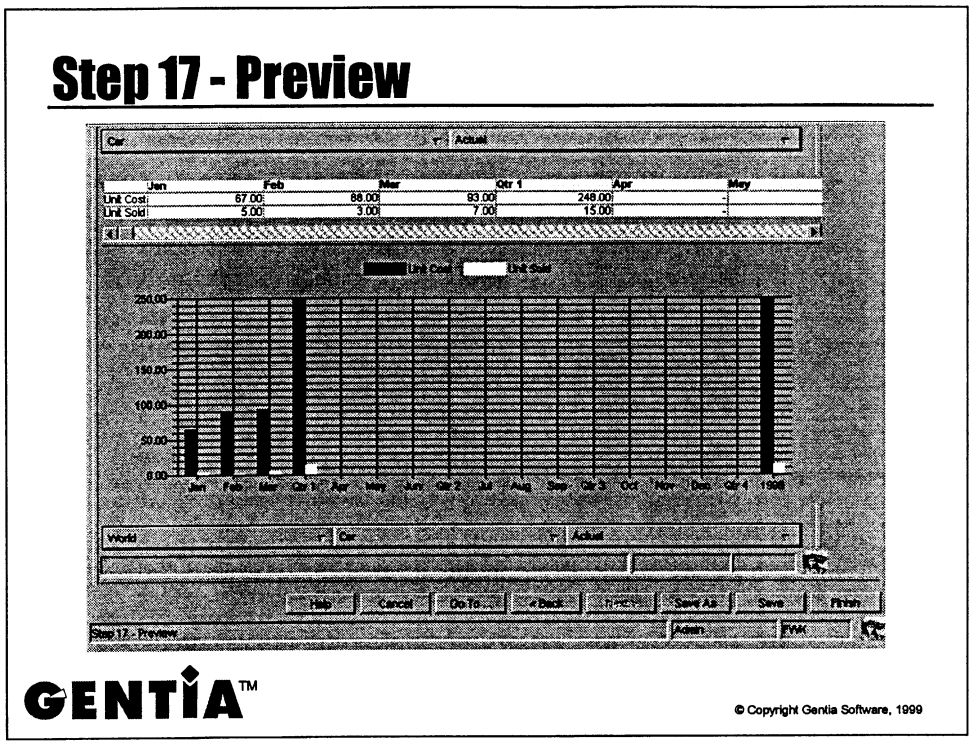


Step 15

This step allows the user to apply formatting to either row, column or cell within a table. If the object is a chart, then the background and foreground colours can be changed.

Step 16

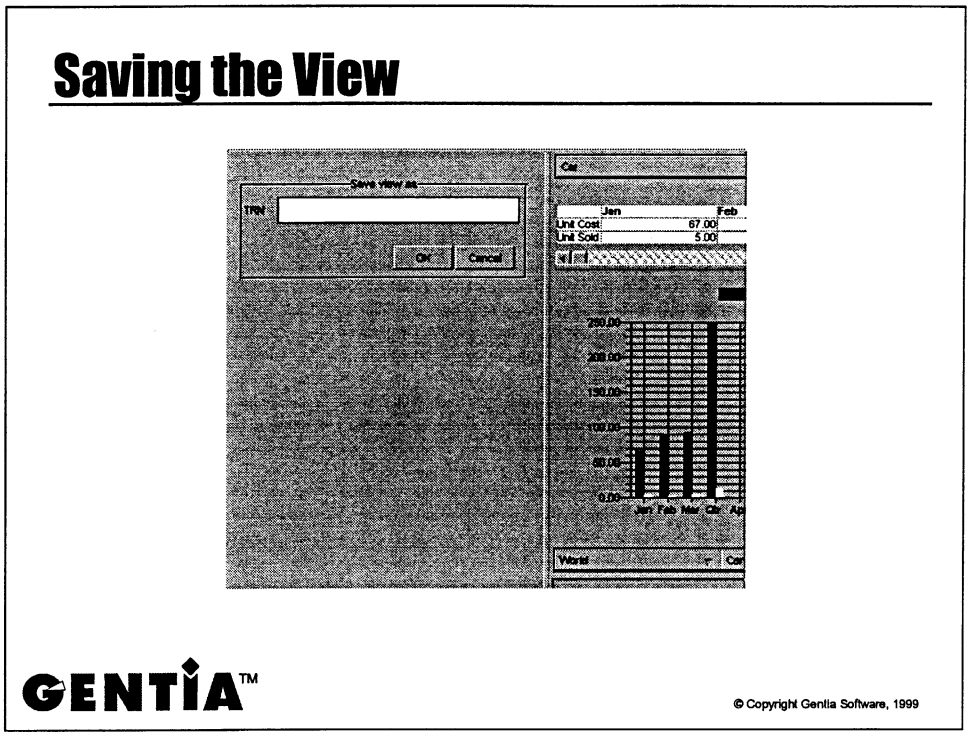
Step 16 is the same as Step 15 except it applies to the bottom half of the screen.



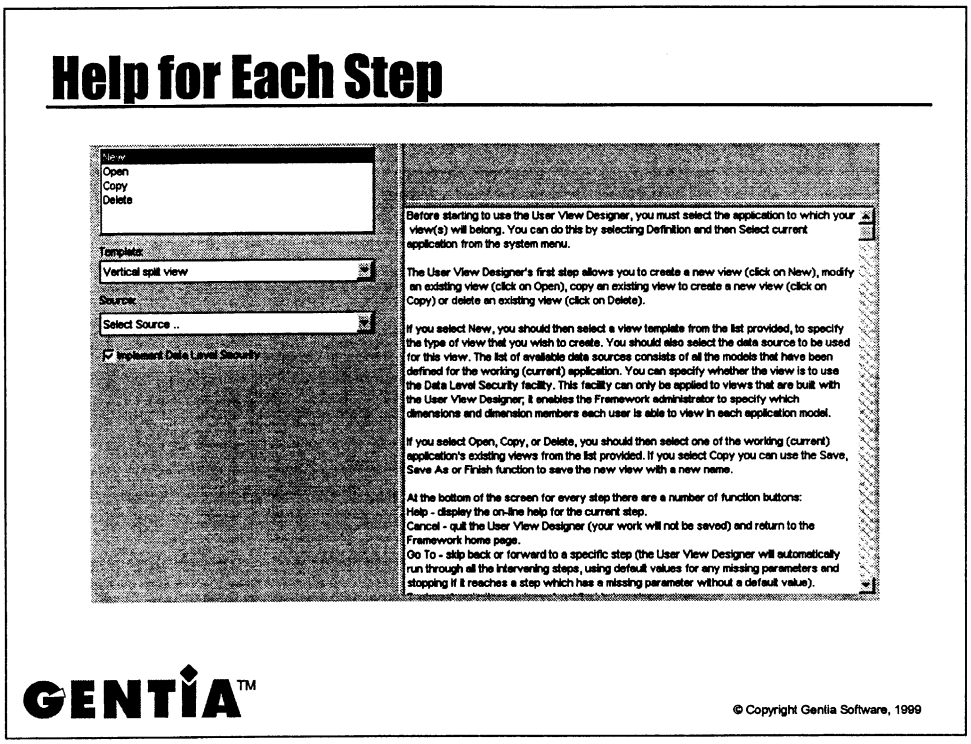
Step 17

This step allows the user to preview the page (view) prior to saving it. This is to ensure the correct layout, positioning, formatting and display of the page.

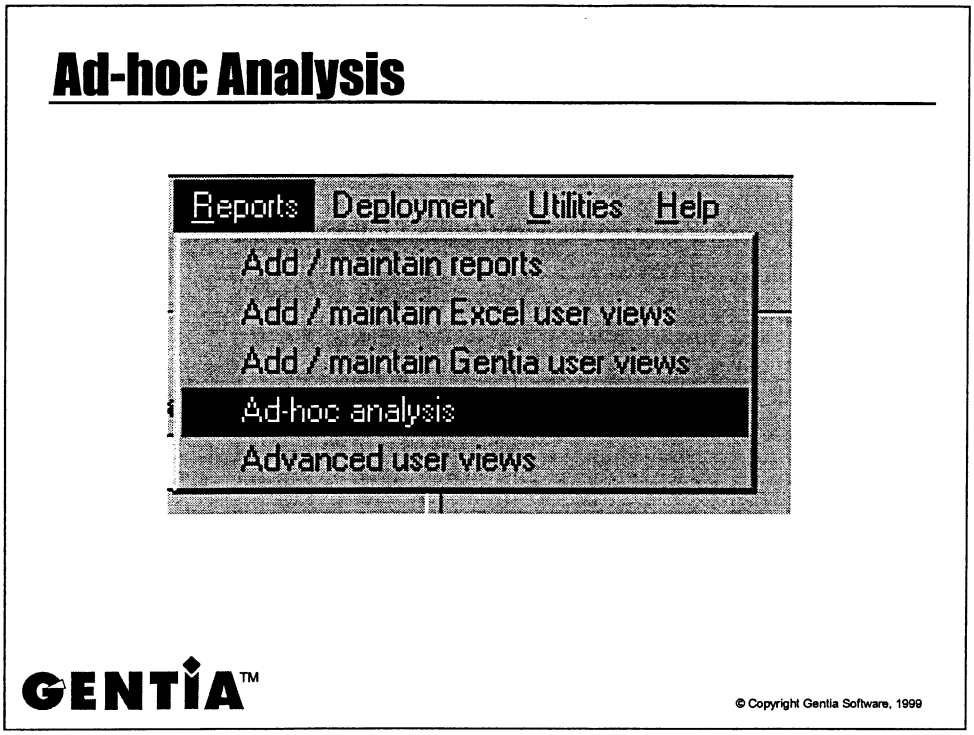
The *Finish* button will end the wizard and allow the user to save the page.



When the *Save view as* option appears the three letter prefix (of the current application) is automatically applied.

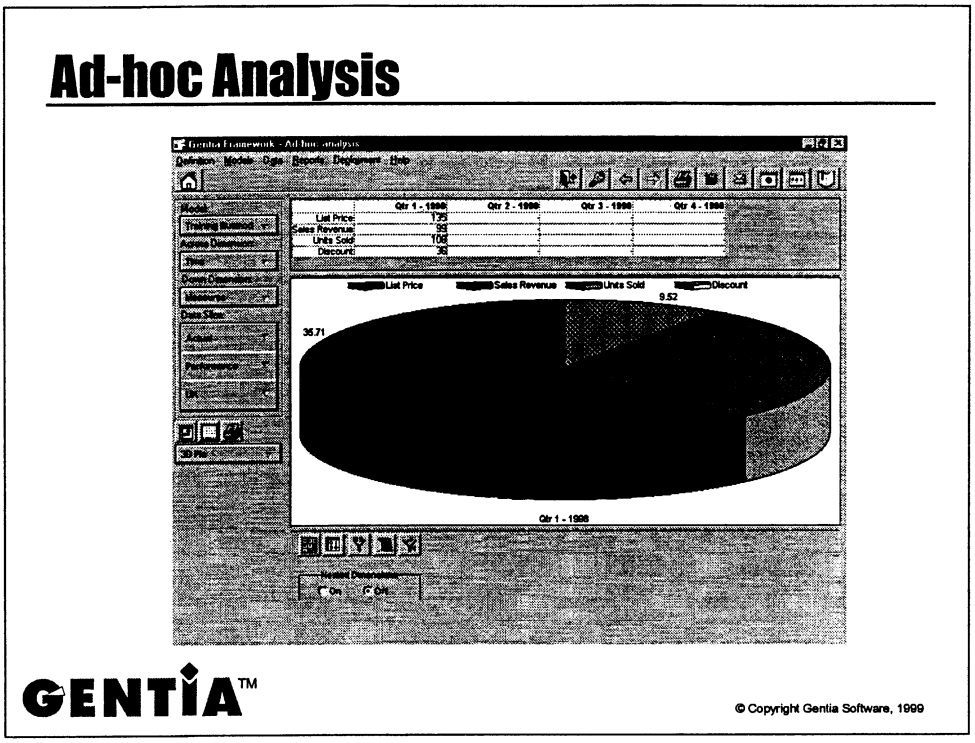


For each step of the wizard there is a help screen. This is a split view located underneath whatever is displayed on the right side of the screen. Simple locate the bottom split view bar and drag it upwards revealing the relevant information.



Ad-hoc Analysis provides a facility for you to view data in an application.

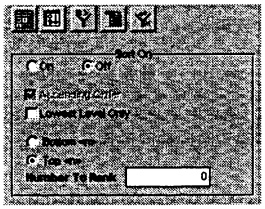
Simply select the option and a user will be presented with a number of ways of looking at the data, table or chart. The user can also print, add textual comments and re-order data by sorting, suppressing zeros and switching hierarchies on and off.



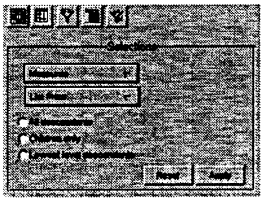
GDL has been used to assess which model specs or EIS models and scenarios the user has access to and it will create a list. Once this list has been compiled, the user can select any entry to be used as the data source (model).

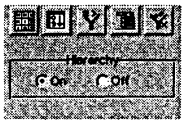
The page is divided into three (using a split view technique) which displays a chosen model as a table and a chart. Options are displayed at the botom of the page, allowing the user to modify their view. *Nested Dimensions* (above) will alter the display accordingly. In addition, there are the following:

Sorting, which allows the user to sort records according to certain criteria.



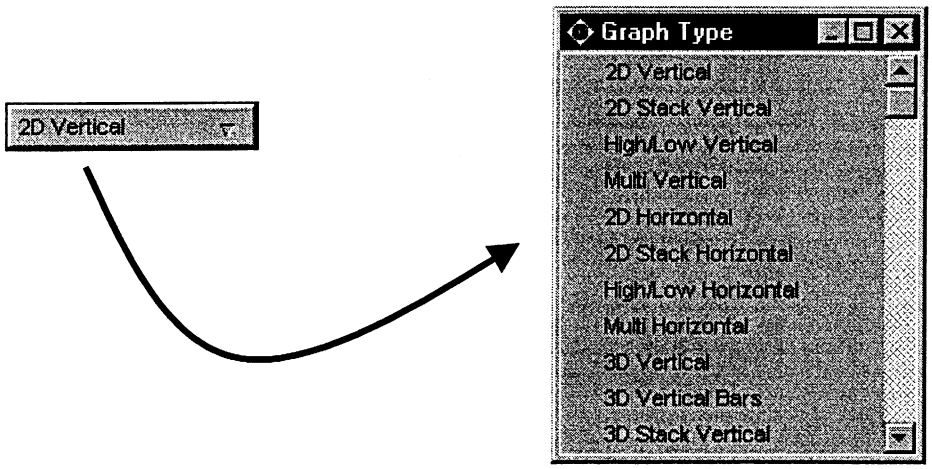
Selection of row/column dimension.

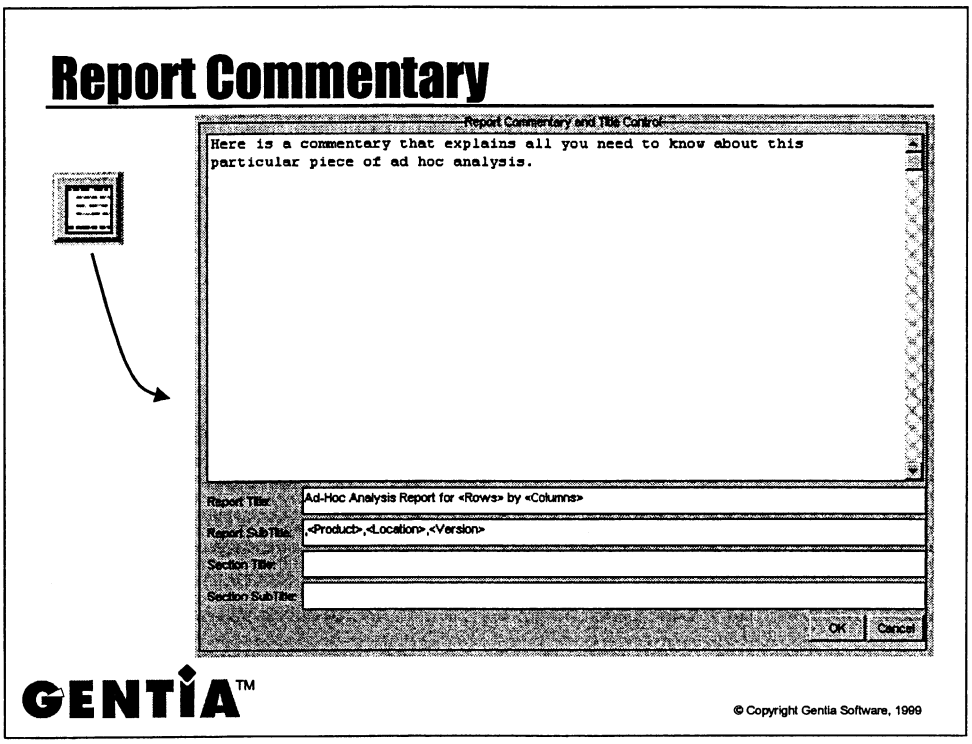


Hierarchy selection  and zero suppression. 

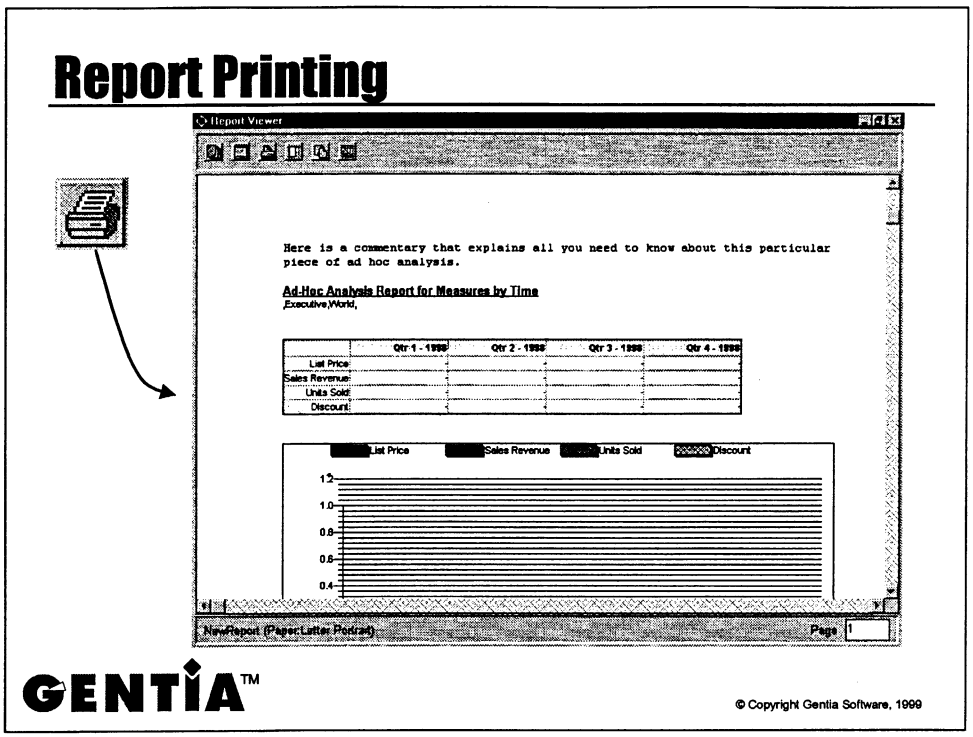
The left hand buttons allow the user to pivot the rows and columns, create text commentary for a printed report and print the report.

In addition, it is possible to change the appearance of the chart by simply selecting a new type.



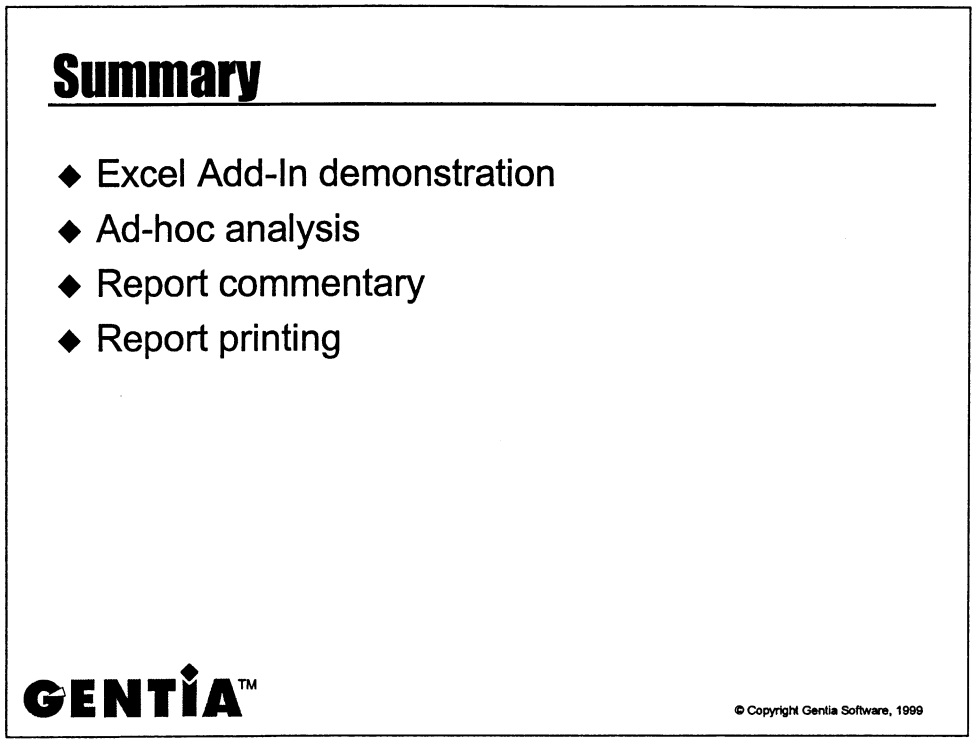


Add associated commentary about the report.



Selecting the *Print* button takes the user into the *Report Viewer.* This is Gentia's own report and printing package and is covered in detail in the *Report Builder* course. At its simplest, it lays the table and chart on a page with any commentary inserted at the top of the page. A header or footer can be added and the report can be saved to disk.

The user can then select the layout and size of the paper and print the report.



As mentioned in the last chapter, Excel is used as a means of accessing GentiaDB information. It is particularly useful for generating reports and charts and as a means of viewing the data simply and easily.

Practical 14.1

GENTIA™

Aims: To view the data contained within the model. To create reports and views based on the data, using the User View designer and the Adhoc page provided by Gentia.

- Select *Add / maintain Gentia user views* from the *Reports* dropdown menu within the Framework.
- Create a horizontal split view page, containing a chart in the top portion of the screen and a table in the bottom of the screen.
- Step throught the wizard ensuring the data is displayed as follows:
    - *Location* in the columns and *Product* in the rows.
    - Low level data in the slice.
    - No calculations.
    - *Options* and *Formatting* at your discretion.
- Preview the page. If it is correct, save the page as XXX ***View one***.

Practical 14.2

GENTIA™

Part Two - Ad-hoc Analysis

- Select *Ad-hoc analysis* from the *Reports* dropdown menu within the Framework.
- Choose the data for UK, Performance, Petrol, AllCustomers, Qtr 1 1999 and Actual in the top split, having ensured that the correct model has been selected.
- Once the data has been selected, move the screen divider up to reveal the chart.
- Select a new chart type
- Switch the *Hierarchy* function off and see how it affects the layout of the table.
- Add a piece of textual report commentary.
- Print the report in landscape view, using the *Report Viewer*.

Practical 14.3 - Optional

GENTIA™

Aim: To have a look at *Data Entry* using the Excel Add-In.

- Select the *Data* dropdown menu from within the Framework and choose *Data Entry.*
- Choose *New Data Entry View* which will launch Microsoft Excel.
- Select *Gentia™ ⇒Session ⇒New...*
- Your Instructor will tell you the server name, username, password and models to use in the *Session Wizard.*
- Once you have successfully logged in, try to display the following *slice* of data:
  UK, Performance, Petrol, AllCustomers, Qtr 1 1999, actual.
- Switch into Data Entry Mode.
- Drill down to the base level.
- Add new figures for Qtr 2.
- Consolidate and update the database.
- End the session and leave Excel.

Practical 14.4 - Optional

GENTIA™

Aims: To have a look at the Excel Add-In report and view facilities and to view and report on data.

- Select the *Add/maintain reports* option from the *Reports* dropdown menu within the Frame work. This will launch Microsoft Excel.
- Select *Gentia™ ⇒Session ⇒New...*
- Your Instructor will tell you the server name, username, password and models to use in the *Session Wizard*.
- Display the following *slice* of data:
  UK, Performance, Petrol, AllCustomers, Qtr 1 1999, actual.
- Switch into Report mode; Tabular mode.
- View the report and run it.
- Save the report.
- End the session and quit Excel.

Chapter 15

Additional Functionality and Utilities

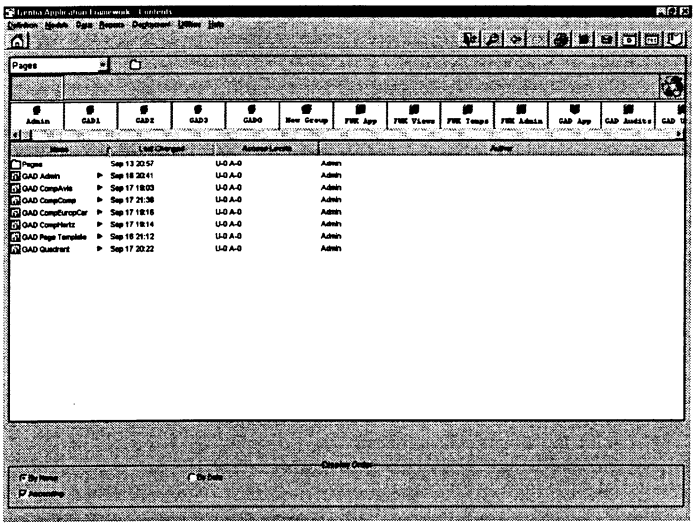
GENTIA™

Utilities

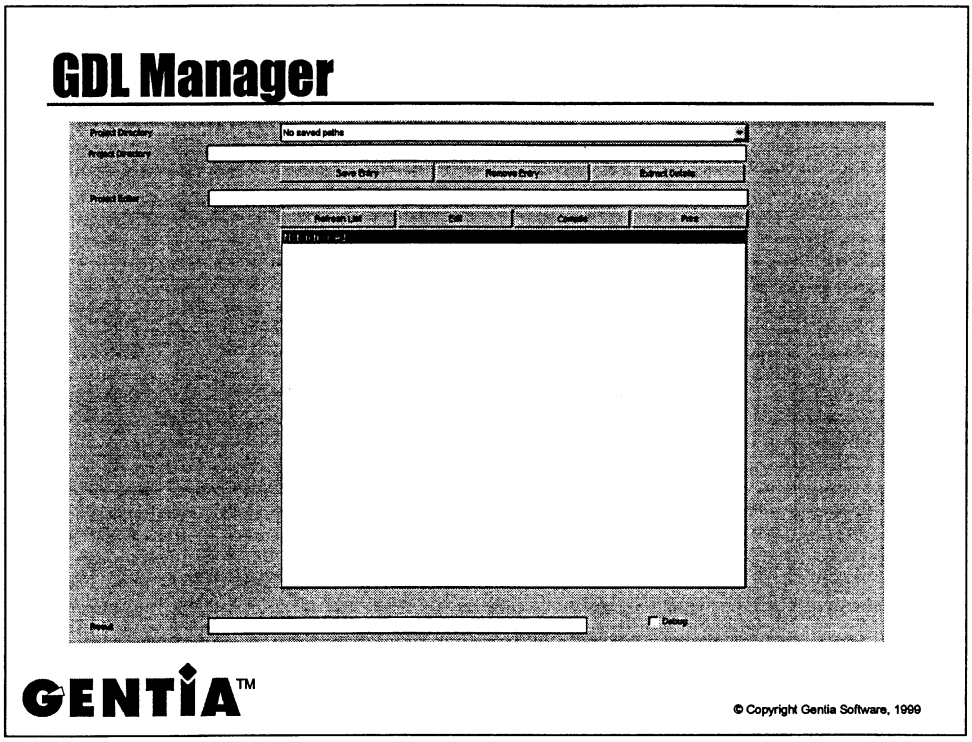
- Contents
- GDL Manager

GENTIA™

Contents



GENTIA™



The GDL Manager option allows the developer to edit and compile GDL modules without switching into author mode. For this to work, all GDL source code must be stored in external files.

Specify each GDL source code folder in the *Project Directory* field. In addition, the editor being used to edit the code should be typed into the *Project Editor* field. Clicking on *Remove Entry* removes folders from the Project Directory list.

To display a list of GDL modules, select a Project Directory, click on Extract Details, close the DOS window and then click on Refresh List.

To edit, compile or print a GDL module, select the required module from the list and then click on the Edit, Compile or Print button. The result of each compilation will be displayed in the Result field. Check the Debug box if the compilation window is to be displayed. This will show any warning or error messages.

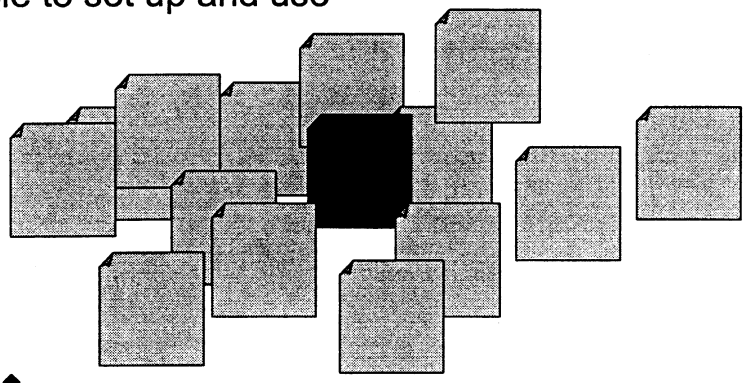
Framework Extras

- Bookmarks
- Email facility
- New Logon
- Upgrading the Framework

GENTIA™

Bookmarks

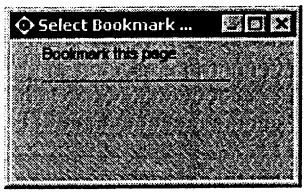
- Just like web browser *Favourites*
- Allows easy and quick access to a page
- Simple to set up and use



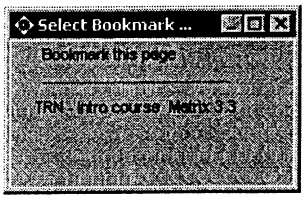
GENTIA™

Creating a Bookmark

Click on the bookmark button in the toolbar

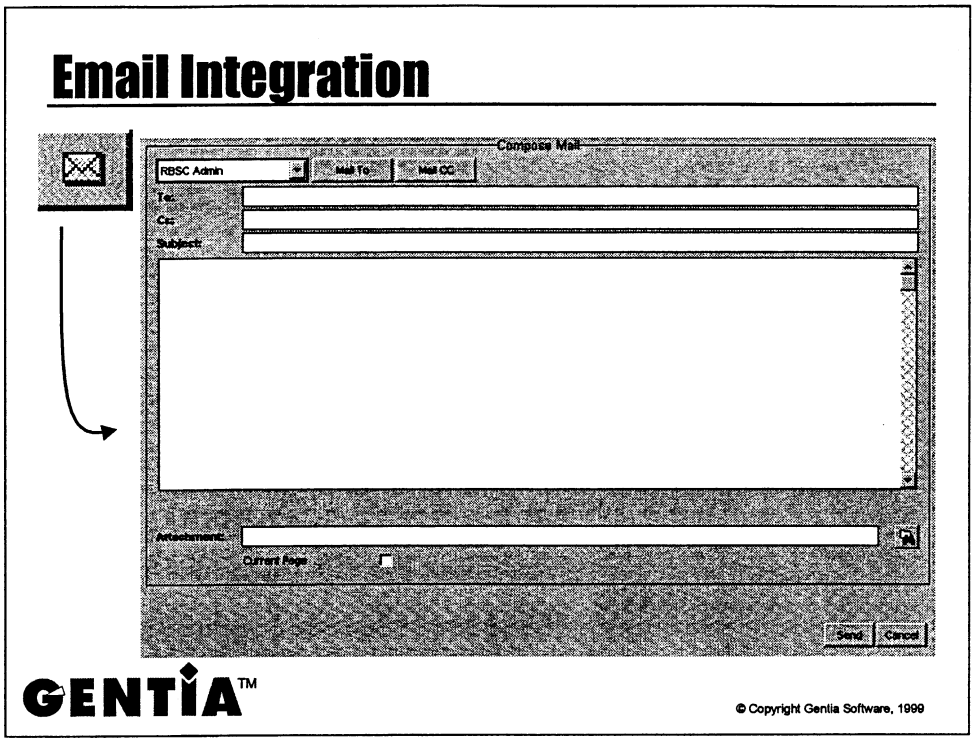


Select *Bookmark this page*



The current page is added to the bookmark list for easy selection - from **any** Gentia application

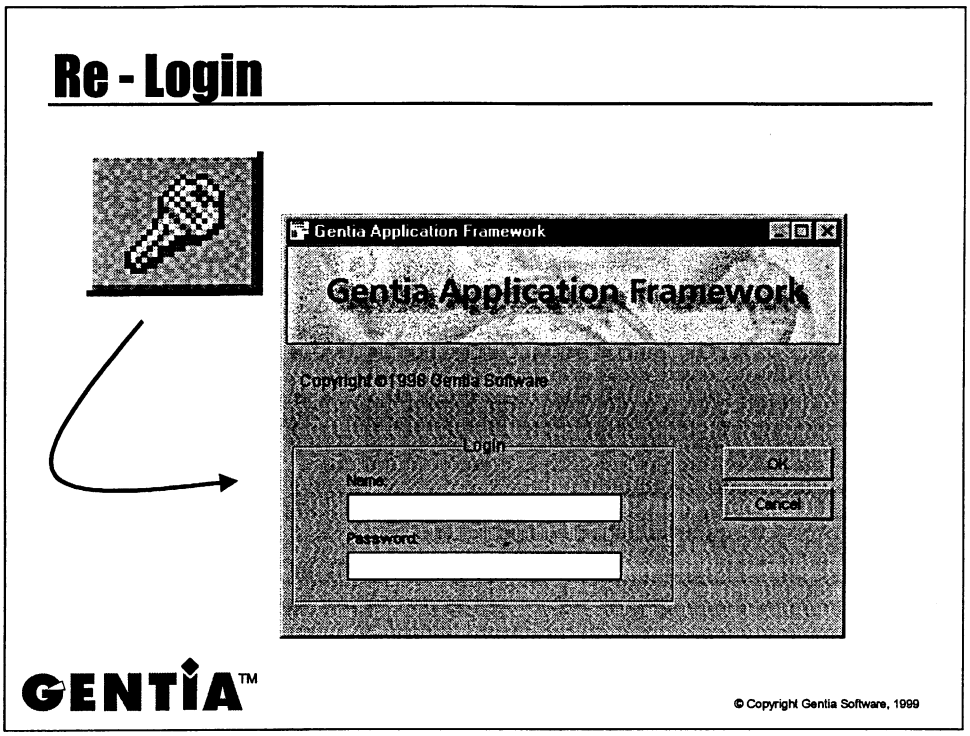
GENTIA™



It is possible to send emails from within a Gentia application. The envelope button will display the email dialogue box.

Email can be sent to any one user (not groups of users) who is a framework user or any other type of user. In addition, you can send a cc email to a single framework user or any other user. It is also possible to send the currently viewed page (or any other file) as an attachment with the email.

If using this functionality, it is necessary to specify your email profile and password.



The *key* button takes the user back to the login screen, allowing them to log in as a new user. This is particularly useful for a developer who might be creating new users and needs to switch between users frequently.

Summary

- Utilities
  - Contents and GDL Manager
- Framework Extras
  - Bookmarks
  - Email integration
  - Re-Login

GENTIA™