User's manual

HAT 4.1

1

Using the manual

Purpose and scope

This manual is first and foremost a *reference manual*, i.e. it deals mainly with how HAT works, not with what you can do with HAT.

Also, the main purpose is to describe the functions that are unique to HAT, not commands and techniques generally used in the operating system. It is assumed that you have already acquired this general knowledge, elsewhere.

HAT 4.1 works on different platforms (PC and Macintosh), and operating systems (Windows 3.1, Windows 95/98, Windows NT, MacOS 7, and MacOS 8). It looks very much alike on these platforms. Illustrations are basically from a Windows 95 system. They may look somewhat different from what you see on your own screen. But the deviances are very small, and should not cause any ambiguity. The few cases where the Macintosh version differs substantially, are marked as in the following remarks on few general differences that are only mentioned here:

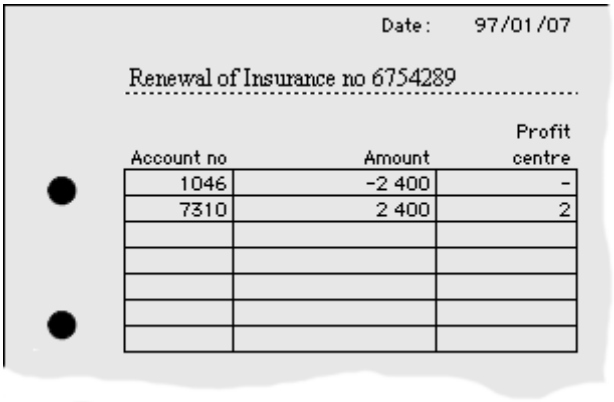
MacOS

- Use the Command-button on Macintosh, instead of the Ctrl-button in Windows
- Use the Alt-button on Macintosh to get the function that is provided by F1 or the right mouse-button in Windows
- Generally the Alt-button has the same function in both environments

The example file – Demo Inc

Many of the illustrations are based on the fictitious company *Demo Inc*, with a HAT-file based on its general ledger (accounting data). The data have this structure:

- The basic records are the accounting vouchers (called *Cards* in HAT), documenting business transactions in the way this is regularly done in any accounting system.


Date: 97/01/07

Renewal of Insurance no 6754289

Account no	Amount	Profit centre
1046	-2 400	-
7310	2 400	2

Each voucher has a date, some text describing the business transaction, and a number of accounting lines (two or more, as the values should add up to zero, balance, in an accounting system). The line entries are generically called *Lines* in HAT.

- Each transaction line in a voucher contains the fields:
  - amount, in dollars (positive for debit, and negative for credit entries)
  - the account

- the profit centre affected (in Demo Inc only for cost or revenue entries, not for entries affecting balance accounts)
- a field stating if it is an actual or a budget value

This description of the example file is not complete. It only serves as a general introduction, more details will follow later in this manual.

Navigating in the manual

The contents in the manual follows the logic of the HAT menus. You can keep it as a computer file and read it on the screen. But it is also designed to give a good printout, if you prefer. You may read the manual in different ways, depending on what you would like to achieve. If you are a new HAT user, you may initially want to read it as an ordinary textbook, from the first page to the last. Some prefer to print it on paper for this specific use. Later on you will use it as a reference document, i.e. to look up certain commands or features. Then the electronic version is much easier to work with. Use the free text search function (Find) in Acrobat Reader, or click in the contents catalog (to the left), to find the relevant section.

2

General about HAT

The rationale of HAT

The problem

Every organisation generates a lot of operational data as a result of its activities. These data constitute a source of potential information on the operations of the business. Information that is often badly needed, especially by managers at different levels. But the operational systems are not primarily designed with efficient analysis in mind. Usually they have some kind of report generator or executive information module that is built-in, or can be bought as an add-on software. Alas, they are – more often than not – rigid, difficult to work with, and slow. For example, in order to get reasonable response times, they often work with aggregated data, to reduce the volumes. Resulting in analytical features which are very shallow. With software built on a lot of compromises like this, you should not be surprised that the resulting solutions to ”the management information problem” can only, at best, be characterised as half measures.

The HAT solution

The guiding principles behind the construction of HAT has been:

- It should be possible to analyse all kinds of operational data . Also combined data, from different sources (e.g. sales, accounting, and manufacturing data).
- Very large volumes (”mainframe volumes”) should be available to the analyser, without aggregations and loss of details.
- The analysis should be very quick. It seems to be a common human trait, that a response time longer than a few seconds is frustrating, and reduces the motivation to do a proper analysis.
- The presentations should be easy to comprehend, flexible, and suited to the needs. Often a graphic overview is far better than a table of numbers. But you may also want to see the exact figures, in two decimal places. It all depends – and HAT should adapt to the instant need.
- HAT should support a natural chain of thoughts. A certain compilation may not give the final answer, but rather raise new questions. By intuitive point-and-clicking, you should be able to follow through, and get further information and/or more detailed explanations.

Fundamental concepts

The reality

Business transactions and documents

It is hard to even think of an organisation that does not generate a lot of data. Not even the small one-man consultancy firm manages without a simple accounting system. At the other extreme we find the large company where the systems for

manufacturing, delivery, payment, storage etc each generates large volumes of data. Or a bank which may process millions of transactions per day. All these systems have one common denominator – at the entry point of the data into the computer systems, the fundamental entity is some kind of input *document*. Often this document is physically manifest in the form of one or many paper documents, but to a gradually larger extent these ”documents” only exists electronically. In whatever form, each document describes some sort of business transaction, and all the data relevant to this transaction are entered on the document.

The contents of the documents

Depending on the type of operational system, the input documents have different contents, of course. But a clear majority of them share a few common features:

- They contain one or many numerical values, e.g. representing dollars, number of sold units, number of hours worked, number of units delivered to the storage, etc.
- A time stamp of the business transaction. Usually the date, sometimes also hour, minute, etc describing when the transaction occurred.
- A number of attributes of the numerical values. Which account is affected, which profit centre should get the credit, what product(s) were involved, who sold it, where was it sold, … etc.

Obviously all these data constitute a potential resource of information, in search of the right tool to extract it.

The structure of data in HAT

Every useful database represents something external to itself – ”the reality”. The HAT database is constructed to make it easy to map data from the operational systems, as we know them, to the data structures available in HAT.

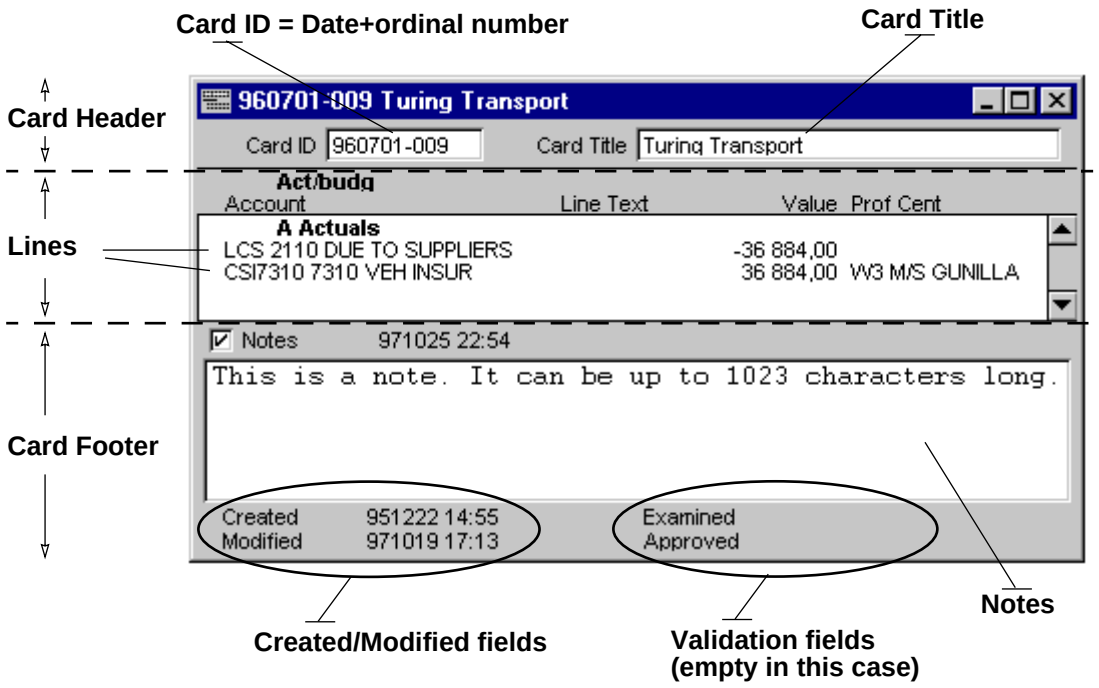
The two most important structural elements in a HAT database are:

- The Cards/Lines record structure
- The Dimensions

Cards and Lines

Card is the the generic name of the basic unit in a HAT database. It is intended to represent a business transaction document, as mentioned above. I.e. it usually has a physical counterpart in the form of a voucher, an invoice, an account statement, an order etc. But there are exceptions. In some cases we let HAT create ”synthetic” Cards, i.e. Cards that exist only in the HAT database, without any exact correspondance to documents outside this database. E.g. we may let HAT group a flat file of sales transactions into separate Cards.

Each Card has at least one *Line* – usually many. One Card can have two Lines and another two thousand Lines, it often varies a lot. The following example shows the general anatomy of a Card in HAT. In this case illustrated by an accounting voucher from the Demo Inc database:



An intermediate level – Groups. Looked upon as a hierarchical structure of record types, one subordinate to the other – Cards are at the highest level, and Lines at the lowest. These are the practically and conceptually most important ones. But there is also an intermediate hierarchichal level, the *Group*.

Card 1
  Group 1
    Line 1
    Line 2
  Group 2
    Line 3
    Line 4
    Line 5
Card 2
  Group 3
    Line 6 … etc

Although not as important as the record structures of Cards and Lines, the Group structure can be useful in some applications.

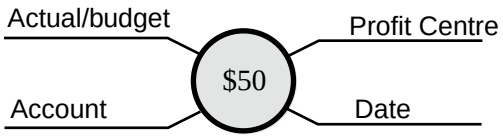
Example

For a company consisting of many independent business units in with a lot of business transactions between them (internal transactions), you may want to do the entries for all parties involved in the transaction on the same Card. By treating the business units as Groups in the HAT application, you gain both practical and conceptual simplicity.

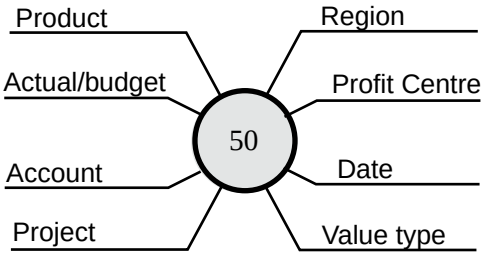
Dimensions

HAT is a multidimensional tool, with the option to use up to twelve user-defined dimensions. In addition, the time dimension is an intrinsic part of every HAT database.

In the same way as a point in physical space is defined by its position in three dimensions, a business transaction is characterised by its ”coordinates” in a number of HAT dimensions. Each Line in a HAT database has exactly one numerical value. Depending on what type of data has been entered into HAT, each number gets different attributes. E.g. in the example file used in this manual, Demo Inc, each numerical value represents a dollar value. This dollar value has a date, affects an account, refers to a certain profit centre, and is either an actual outcome or a budget value. The following picture illustrates this particular case:



But it may look very different in another company, or for an another type of data. As in this case, where a lot more ”attributes” are registered for each value:



In the same way as we need a ”reference system” to define a point in the physical space, we work with *Dimension charts*, in a HAT application. For each type of attribute we use one HAT dimension. The dimension chart describes the internal structure of the dimension. The basic elements in a dimension chart are its *components*. In the Accounts dimension, individual accounts are examples of such components. The components are usually structured hierarchically within the dimension chart. E.g. the Accounts dimension chart for Demo Inc has the following structure (in outline only):

Account name	Account number
Assets	
Cash and Bank	
Cash	
Bank	
Postal Giro	1020
PK-Bank	1046
PK-Bank S-Account	1048
Other Current Assets	
Fixed Assets	
Liabilities and Equity	
Revenues	
Costs	

Most of the components in this overview, represents groups of subordinate components. The components that have account numbers specified, are displayed at the lowest possible level. All other components have subcomponents, possibly thousands. The construction and use of dimension charts are explained further later in this manual. Dimension charts and their components are fundamental to the use of HAT.

Types of dimensions. All the twelve available dimensions, but one, are fully equivalent from all aspects. The exception is that a component you assign to the *first* dimension will always be treated as a *Group*. In many cases this special status of the first dimension does not matter practically, and you may not even notice its special status. The example above, with internal transactions, is a case where it can be very useful.

HAT-data in the computer

The HAT database and the HAT-file

When you work with HAT, you are working with the database residing in RAM. This is what we call the *HAT database*. When this HAT database, or part of it, is stored on a permanent secondary medium, we call it a *HAT-file*.

Structure of a HAT database

The HAT database consists of three major logical parts:

1. the *Cards database*, i.e. the representation of all the raw data entered into HAT
2. the *Dimension structures*, i.e. the set of dimension charts with their internal hierarchical structures
3. the *Parameters parts*, i.e. collectively all the other data that is not included in the Cards database or Dimension structures. In this we find passwords, file dates, installed templates, etc.

These are the logical parts of the HAT database, which we will refer to in this manual.

Structure of a HAT-file

A HAT-file that corresponds to a fully developed HAT database, consists of a large number of different *file sections*. You may occasionally want to save only a part of a HAT database to a HAT-file, e.g. only the section containing the dimension charts.

Three file formats

When a HAT database (or a section of it) is saved to a HAT-file, it is usually saved in the specific HAT-format called *HAT-Normal* (or just *Normal*, for short). As such it is encrypted (if a password has been defined) and compressed.

The other two formats are *HAT-Text* and *HAT-Browser* . When you choose to save the HAT Database in HAT-Text format, it will be an ordinary text file, which can be opened and examined by any text editor (e.g. Microsoft Word).

The option to save the HAT Database in HAT-Browser format is only available if you have an HAT Server-processor installed on the computer. A HAT-file in HAT-Browser format can be opened and used by a HAT Browser-program.

When working in any flavour of Windows, these different types will get the extensions .HAT and .HAX, respectively. It is usually best not to change these extensions. You can associate all files with the .HAT and .HAX extension to the HAT application. The files will then show up with the HAT icon, and you can open them by double-clicking on their icon(s).

MacOS
Any HAT-file will automatically show up with the correct icon and will be opened by double-clicking the icon, regardless of its name.

Relation between a HAT database and its HAT-file

The relation between the logical parts of a HAT database, and the file sections in its HAT-file is illustrated in this table:

Logical part in the HAT database	Sections in its HAT-file
Cards database	Cards section (preceded by ##Cards)
Dimension structures	All dimension sections (preceded by ##Dimension 1, ##Dimension 2, etc)
Parameters parts	All other sections

If you save a HAT-file in HAT-Text format, you can easily see these sections by opening it in a text editor (a section always starts with the characters ## followed by a name, e.g. the Cards section starts with ##Cards).

Operating systems and hardware

Computer platforms

HAT 4.1 supports a number of different operating systems:

In the Microsoft Windows family	Windows 95 (32 bit) Windows 98 (32 bit) Windows NT 3.5 (32 bit) Windows NT 4.0 (32 bit)
In the Macintosh family	MacOS 7.0 or later, including MacOS 8 and PowerPC processors

The different versions of HAT 4.0 works with the older Windows 3.1 (which is based on 16 bit technology). If needed, use e.g. HAT 4.0.4 on such systems.

The HAT-files are *file compatible* between these platforms, i.e. a file saved in one of these systems can be directly opened in the other, provided the same version of HAT is used on both platforms. As usual with all software, you cannot always expect to be able to open newly produced files, with older versions of the software. HAT 4.0 vs HAT 4.1 is such a case – you can open an old HAT 4.0.x file with HAT 4.1 and later versions, but not the opposite way around (i.e. it is *backward compatible*).

Depending on operating system, you need different versions of the HAT program. Consult the current product presentation (e.g. via Internet), to get latest information on this matter.

HAT-processors

The regular HAT-program can only operate if a special PC Card, called *HAT-processor*, is attached to the computer.Depending on type of HAT-processor different functionality is available:

HAT-processor	General funcionality	Special features supports the operations	
Analyser	All types of analysis.	–	–
Operator	All types of analysis.	Import text files, and create HAT Normal-files	–
Server	All types of analysis	Import text files, and create HAT Normal-files	Create HAT-Browser files

Note that the same HAT-program is used, only the available type of HAT-processor determines what you can do with the program.

To create HAT-Browser files you have to use a Server-processor. The distinguishing feature of a HAT-Browser file is, that it can be opened (and used) with a special type of HAT program, the HAT Browser program, which does not require any HAT-processor. It has limited functionality, giving the user a kind of “interactive reports”, but no support for making fundamentally new types of analyses.

Multiple users

If a HAT file is located on a host server, several users can open the file simultaneously. If one user changes the database during a multiple user session, HAT will issue a warning to the other users.

3

The File Menu

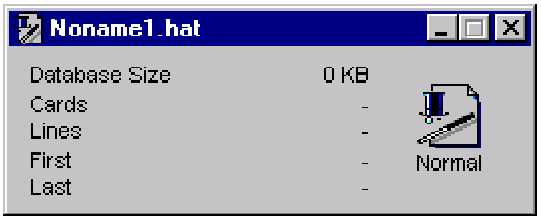
Introduction

Many of the File menu commands in HAT are standard operating system commands. It is assumed that you are familiar with these. The commands that are specific to HAT will be explained in this chapter. If the command is disabled, it has no function in the current setting. Some commands also have a short cut as defined in the menu – e.g. Ctrl+S means that keeping the Control-key pressed, and simultaneously pressing the S-key will save the current HAT database to disk.

Commands in the File Menu

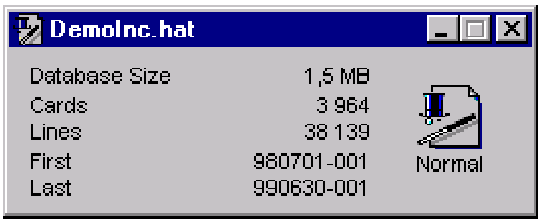
New

Will create a new empty HAT database.



Open…

Will open an existing HAT database.



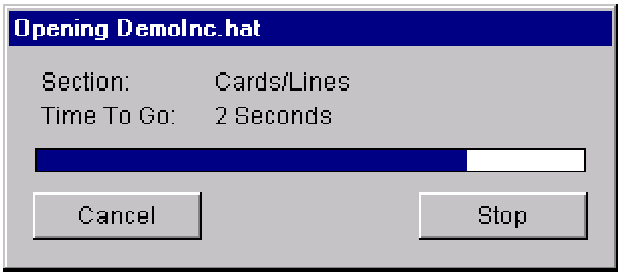
You can open several HAT-files simultaneously in HAT. The number of open files is limited only by the size of the files and the available internal memory.

You can also open up to three different HAT program files, of which each, in turn, can hold numerous different HAT databases. But you pay a price in terms of internal memory required. Each additional open HAT program file needs another 0,5 MB RAM.

If a HAT-file is located on a host server, several users can open the file simultaneously.

If the file previously has been saved with a password, you will be asked to enter the password. Type it and click OK. The password is not case-sensitive.

The process of opening the database is displayed graphically. An estimate of the remaining time to open the file is shown.



Stop halts the loading of the file, and keeps the data that is already loaded. I.e.the database will be truncated.

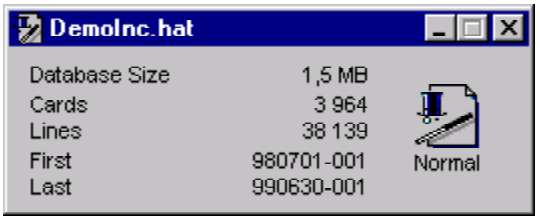
Cancel cancels the process altogether, and deletes the data already loaded, from the internal memory.

You can switch control to another application and let HAT open the file in the background.

If you try to open the same HAT file more than once, a warning message is displayed.

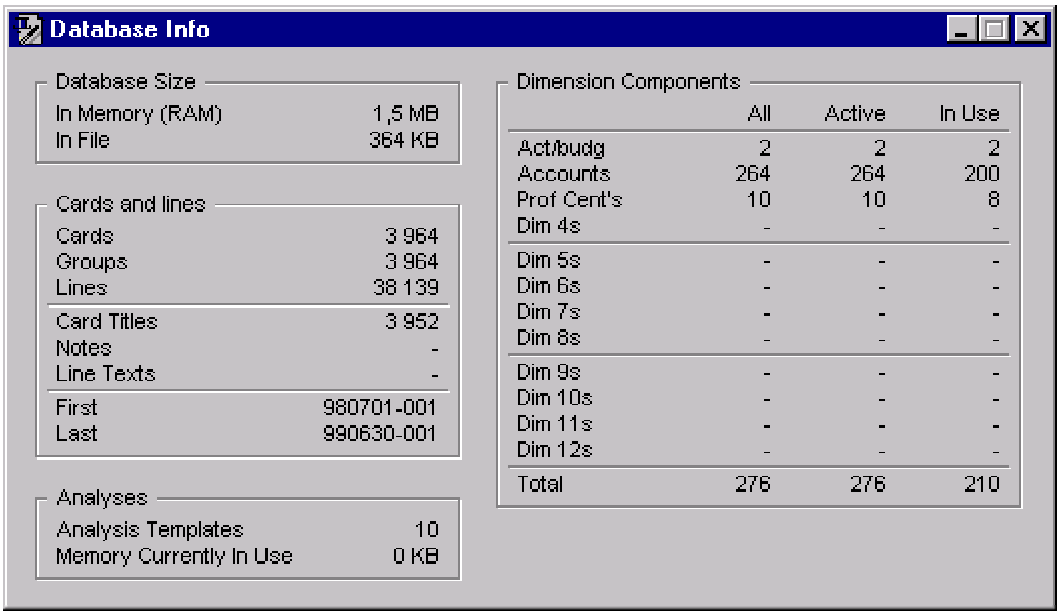
Information in the database window

The database window contains some basic information about the database:



If you click on the icon to the right, you will see a more elaborate description, with a number of statistics on the current database. Clicking on the icon is a

shortcut for activating the menu element Database Info, in the menu Database. Regardless of how it has been acitivated, it looks like this:



This Database Info window tells you

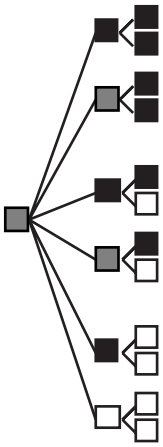
- that the HAT-file (i.e. on disk) has the size of 364K bytes, and that it occupies 1.5 MB of RAM when it has been read into the internal memory
- the number of Cards, Groups, and Lines
- how many text strings (Card Titles, Notes, and Line texts) that are included
- that there are 10 Analysis Templates installed; as no template is active, they currently use no internal memory

The meanings of All, Active and In Use are as follows:

All. All components in a dimension chart, e.g. 264 accounts in the chart of accounts.

Active. All components affected by Lines read, either by direct component coding or by accumulation to higher level components.

In Use. All components which are directly coded.



E.g. for a chart of accounts:

■ Account in use (i.e. it is also active).

■ Account not in use by direct item coding, but active by accumulation to higher level items.

□ Account neither in use nor active.

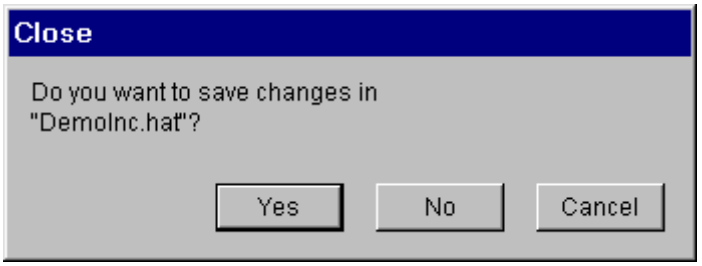
In this example, the number of accounts in each category is:

All	Active	In Use
19	12	9

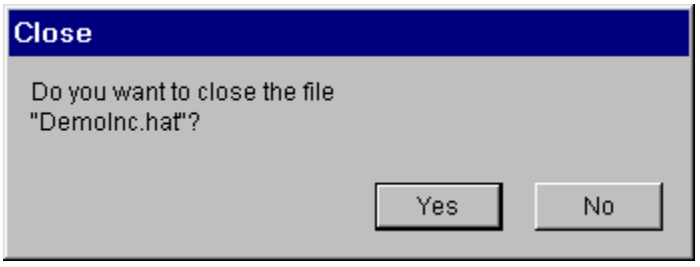
The information in the Database Info window is updated continuously when it is open, which means that it consumes some processing power. So, if you do not need the information it is an advantage to close it.

Close

Will close an open HAT database. If you have made changes to your database, a Save dialog will be displayed:



If you have not made any changes, a confirmation dialog will be displayed:



This is to prevent you from accidentally closing a database, that may take some time to reopen.

MacOS
The Yes/No buttons have the names Save and Don´t Save.

Save

Will save the active HAT database to a file, without changing the name. If the HAT database is not changed, the command is dimmed.

Save As…

Will save the open HAT database to the place you choose, with the option to set a different name.

Save Special

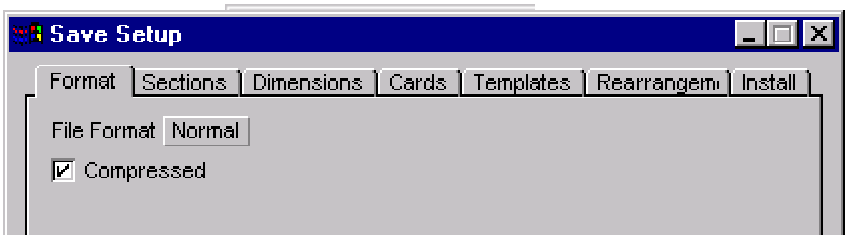
Gives a multitude of options for what will be saved, and in what format. The settings can be installed[1] as a Save Setup, for further use at a later stage. As it is defined, or as a base template which you modify. You have to give it a name in order to be able to install it.

In general you use Save Special to save the currently active HAT database, when you want to

- change the file format, and if it will be compressed or not
- save a selection of file sections and/or subset of Cards or Lines
- determine which dimension components are saved, and what dimension codes to use
- save a subset of the installed templates
- rearrange the order in which the dimensions appear

Save Special with the option New Save Setup will open a dialog window, with a number of tabs – every tab with its own settings.

Formats

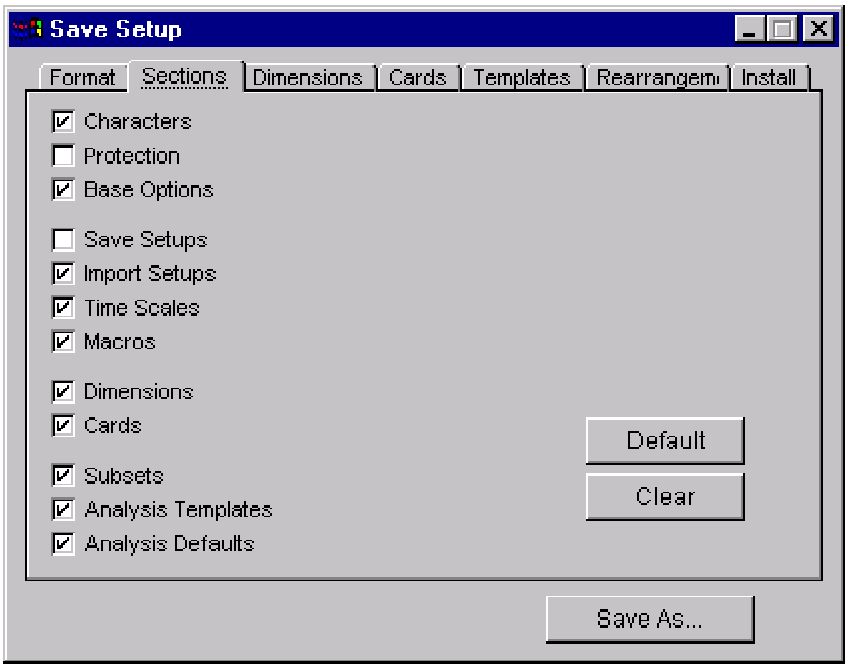


File Format. Choose between Normal, Browser, and Text. The Browser format is available only if you run the HAT program with a Server-processor (see section “HAT-processors” on page 12).

Compressed. If the file is uncompressed, it will become larger but take a shorter time to save and open. The difference is more significant for the saving operation.

1. Note that the operations Save and Install are not the same. When you save a HAT Database it is saved to a file, usually on a hard disk. When you install something (e.g. a Save Setup) it is inserted into the HAT Database, which resides in the internal memory. Not until you save the HAT Database, will it be saved to the hard disk, together with the other data in the database.

Sections



- Default will mark all sections in the HAT database that are currently used.
- Clear will unmark all sections.

Characters. Should normally be included. HAT-Text files may include this section to ensure that international and special characters are correctly handled. Text files always use the native character set from the operating system, but when moving a text file over an operating system boundary, character conversion may or may not occur. If the Characters section is included in a text file, it will be converted in the same way as the rest of the file, ensuring a correct interpretion. If you are working in one operating system only, you can safely ignore this section.

Protection. If a password is stated and this section is not included, the remaining HAT-file will not be protected. Note also that a HAT-file saved in HAT-Text format will expose the password. It is therefore a good idea to exclude this section, when you save a HAT-file as text.

Base Options. Will save your settings in Database Settings… See section “Database Settings...” on page 67.

Save Setups. Will save user defined Save Setups.

Import Setups. Will save user defined Import Setups.

Time Scales. Will save user defined Time Scales.

Dimensions. Will save all dimension charts. This setting can be further specified on another definition page – Dimensions.

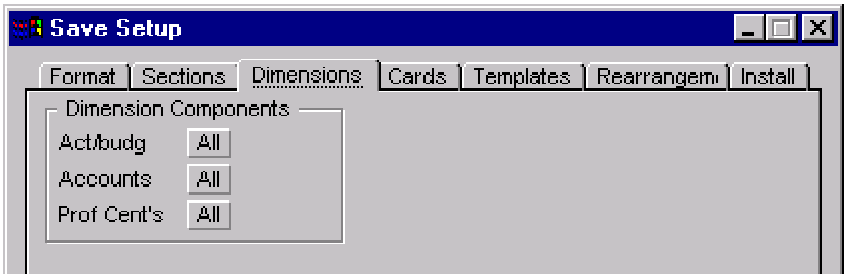
Cards. Will save all Cards or Lines, as specified on the Cards definition page.

Subsets. Will save all subsets.

Analysis Templates. Will, if marked, save user defined analysis templates. Depending on the settings on definition page Templates, all templates, a ”filtered” subset, or only the currently open ones, will be saved. See section “Templates” on page 22.

Analysis Defaults. Will save all Set Defaults for each type of analysis.

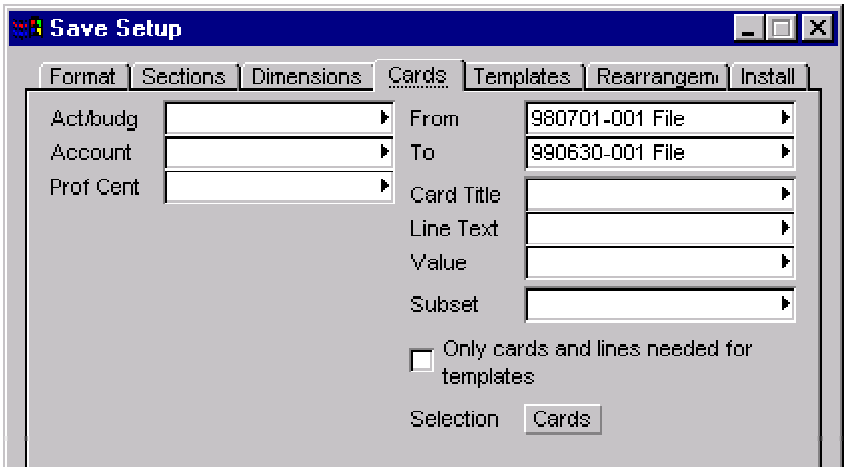
Dimensions



When you save a HAT database or a part of the database as selected in Cards, you can decide to include All components, only Active components or only components In Use, in a dimension. None will completely exclude the dimension. For an explanation of All, Active, and In Use, see section “Information in the database window” on page 16.

Cards

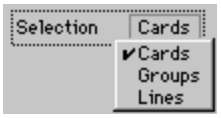
On this definition page you enter a selection in the same way as in an Analysis Template:



E.g. to produce a HAT-file containing only data for one single profit centre – enter its component in the Prof Cent box.

Only cards and lines needed for templates. If you want to reduce the database size to the bare minimum, without jeopardizing the data required to correctly show the installed templates, you can select this option. It is typically relevant when saving Browser-files. If a recipient of a a Browser-file uses a HAT Browser-program to open it, there is no point in providing data “outside” that defined by the set of templates, because they are invisible to the user. Occasio-

nally the file size can be reduced substantially, which is often desirable if you enclose it in E-mails.

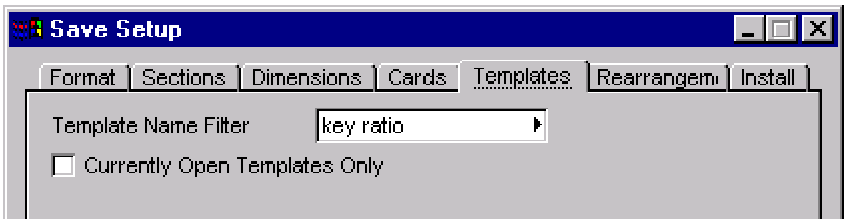


Selection gives you the opportunity to save different parts of the Cards:

Cards	If at least one Line in a Card is included, the whole Card will be saved in the file.
Groups	If at least one Line in a Group is included, all the Lines in the Group will be saved.
Lines	The Cards will be stripped from Lines not included in the selected subset (but all Card level data will be included).

Templates

Specifies which templates are saved with the file.



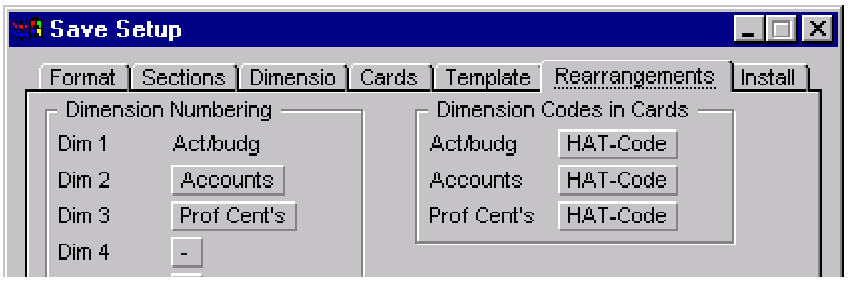
Template Name Filter. The Template Name Filter acts as a selection criterion on the name of the templates. The selection will be performed according to the rules of simple search texts. See section “Selection Boxes – Text” on page 81, for more detailed information.

Example The filter ”key ratio” will save all templates which contain ”key ratio” in their names.

Currently Open Templates Only. You can also define what templates to save, by first opening them, and then tick this box.
This selection can be combined with the Template Name Filter.

Rearrangements

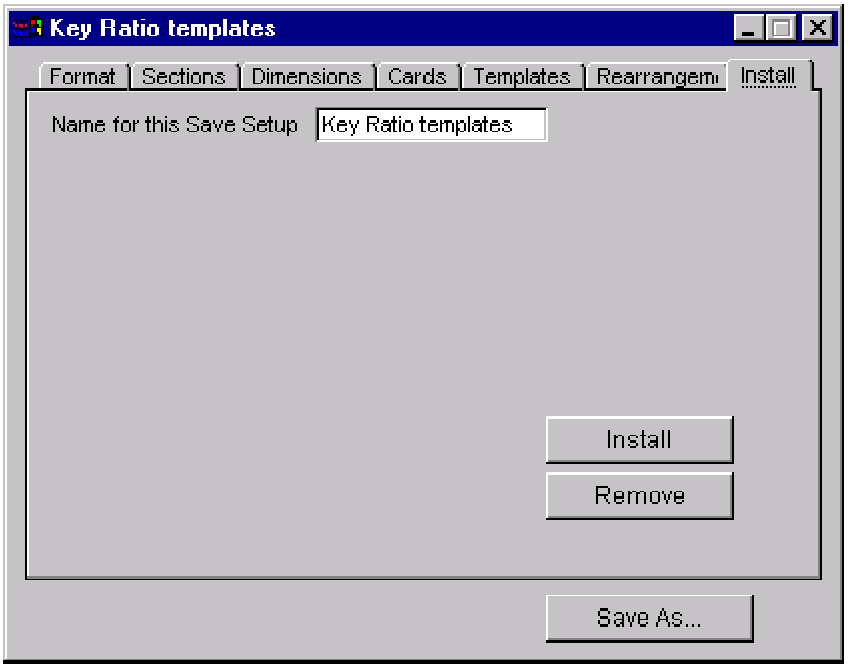
You may not be happy with the order between the dimensions in your HAT database. With the exception of the first dimension (depending on its special status as Group), you can create a new HAT-file with the dimensions in another order.



Dimension Numbering. You specify the new order under this heading. It is also possible to delete a dimension altogether.

Dimension Codes in Cards. You can choose to save the HAT-Code, Host Code or Text.

Install



Name for this Save Setup. When you open a new Save Setup, this box is empty. Not until you enter a name in this box, you will be able to install it in the HAT Database (i.e. in the internal memory). You install it by pressing the Install button. The installed Setups are then available in a submenu to the Save Special menu element.

If you make changes in an active Save Setup that is already installed, and close the setup window, you will be asked if you would like to change it, or add it to the list of already installed setups. If you try to add another Save Setup with the same name as one that already exists, HAT will change its name by appending the first unused integer at the end of the name.

To delete a setup, you first have to make it active. Either use the Delete Save Setup command in the menu (which will then be active) or press the Remove button on the Install tab.

Save As ...

Press this button to initiate that the actual HAT Database is saved to a file, according to your settings.

Protection

You can specify a password that is required to view the data in a HAT Database. Often this password is enough. But you also have the option to increase security by demanding the use of a specific HAT-processor. More than one HAT-processor authorization can be specified.

If you try to change the password, you have to enter the old one first.

A password can be up to 1023 characters long (letters, digits, or other characters). The password is not case-sensitive, i.e. the password

wordPASS

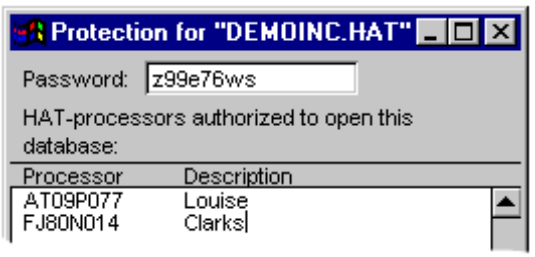
is equivalent to the password

WORdPass.

Warning!!

The password only works as intended if the HAT database is saved in the Normal or Browser file formats. But if File Format is set to HT-Text, you should be careful, not to expose the password in the HAT-Text file by mistake. It will turn up in the text file (easily read by using any common text editor) if the option Protection is marked. Therefore, as a rule, never save a HAT database in text format, without making sure that the entry Protection is unmarked. Unless you really want to show it, of course. If you anyhow try to save to a HAT-Text file with a password in it, the following dialog window will give you a last chance to change your mind:

Define password. Enter a password, and – if you want the additional security – the serial numbers of the authorized HAT-processors



Processor-IDs are not easy to remember. You may want to add a more descriptive text of your own choice, e.g. ”Clarks” in this case.

The file can now only be opened by a user who has any of the listed HAT-processors installed, *and* enters the correct password.

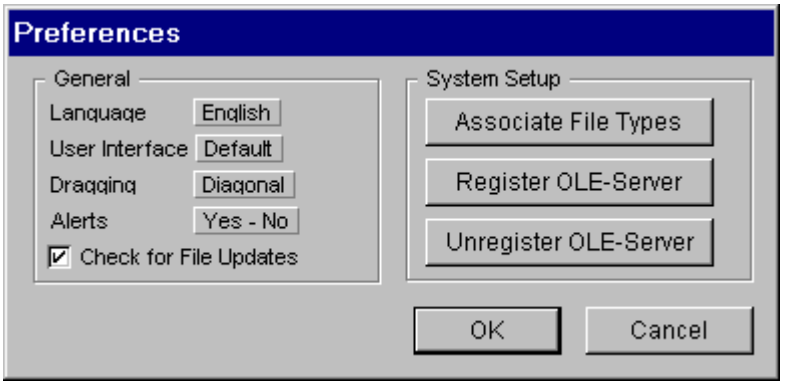
Change/Remove password

You can change the password for a file that is already protected. First you will be asked to enter the current password.

If you leave the password field empty, the file will be saved without a password. However, you can still restrict the use of a file to a specific HAT-processor.

Preferences...

A few basic elements can be set in Preferences…. These settings define how the HAT application works for all your databases, collectively. The settings are stored in the user-specific part of the system registry:



Note the difference compared to Database Settings… in the Database menu, where the settings which will follow the specific *HAT database/HAT-file*.

General

Language

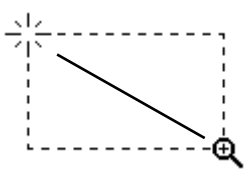
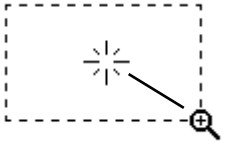
Will change the language in all parts of the HAT program, as soon as you close the Preferences window.

User Interface

You can choose between the looks of Windows 3.1, Windows 95, MacOS 7, or Mac OS 8. Note that the change does not take effect immediately. You have to exit the HAT program, and start it again, to see the difference.

Dragging

Specifies how the drag operation works, e.g. when zooming in:

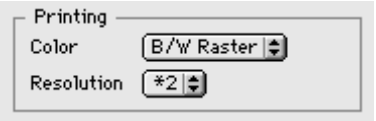
Diagonal	Center
	

Alerts

Choose between Yes-No or Do-Don´t, as displayed alternatives in dialog boxes.

MacOS

For Macintosh you have the additional option of setting two Printing options, but there is no need to establish file associations (the MacOS maintains the corresponding functionality without involving the user):



Color. Allows you to force the printer to print in black and white, or use color/grayscale.

Resolution. Set the printing resolution to 1, 2, 3, or 4 times the screen resolution. Most printers produce the best result when ”*2” is selected. Some high resolution printers may produce better pictures if a higher resolution is used.

Check for File Updates

When more than one user operate on the same HAT database, HAT will issue a warning if the database has been changed by another user. If you uncheck this box, the warnings will be surpressed.

System Setup

Associate File Types

HAT has a built-in functionality for making a quick and safe update of the Registry, via this button. If you press the button, the current version of HAT will be opened when you double-click on a file icon of a file with one of the extensions .hat or .hax. These files will also appear with correct file symbols:

Extension	Symbol	File name example
.hat		DemoInc.hat
.hax		DemoInc.hax

For further details on the file formats in HAT, see section “Three file formats” on page 10

Register/Unregister OLE-Server

Use these buttons if you want to start/stop using some of the OLE-services built into HAT. Usually there is no reason unregister the OLE-Server.

Print...

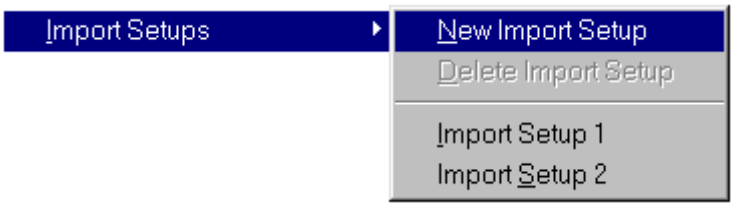
Standard Windows command.

Printer Setup...

Standard Windows command.

MacOS
The command is called Page Setup…

Import Setups



Import Setups lets you specify how a text file should be interpretated when it is imported to HAT. Note that you need a HAT-processor of the Operator or Server types, to be able to import text files.

In the sub-menu of Import Setups, you have the options to create a new setup, delete an existing one, or activate one of the setups already installed (from the list below the commands).

New Import Setup

Release the mouse button on this entry, and an empty setup will be created. If you make any change to this setup, and then close it, you will be asked if you want to add it to the list of setups. It will either get the name you have entered (see below) or HAT will automatically give it the name Import Setup 1 for the first setup, or append the first higher running number that is not already occupied.

Delete Import Setup

This command is only available for an active Import Setup, so in order to delete a setup, first activate it from the installed list.

Definition pages in Import Setup

General

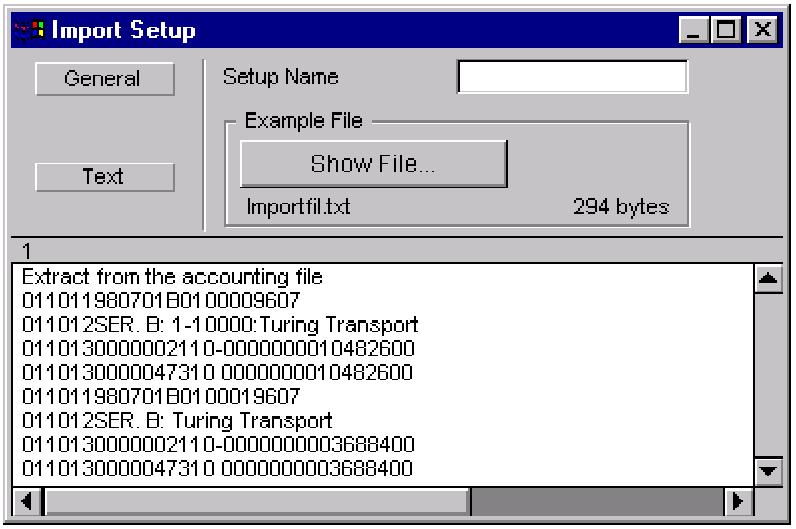
Import Setup Name

In this field you can give the Import Setup a name.

Show File

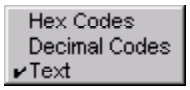
By clicking the Show File... button you will be able to select an example file. The file you choose should have the same format as the file you intend to import,

or simply be this very file. This is not a necessary step in order to define the setup, but it often is of great help, when filling in the rest of the setup.



Example files can be shown in three formats (it is set to Text in the Import Setup above):

Hex Codes	Characters are displayed as hexadecimal codes
Decimal Codes	Characters displayed with decimal codes
Text	Text characters are displayed as usual

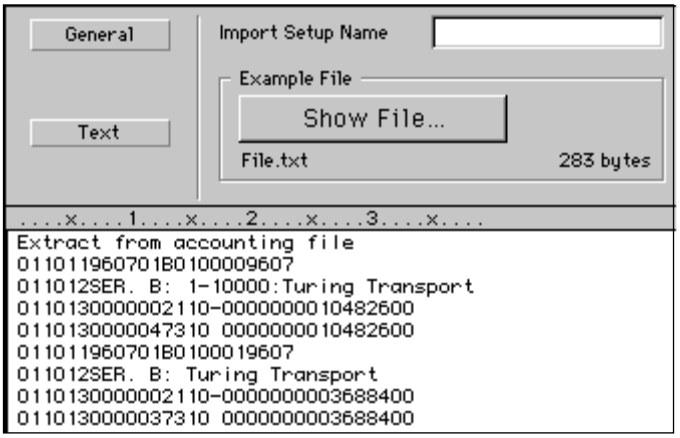


You choose the preferred format with the pop-up menu in the left margin.

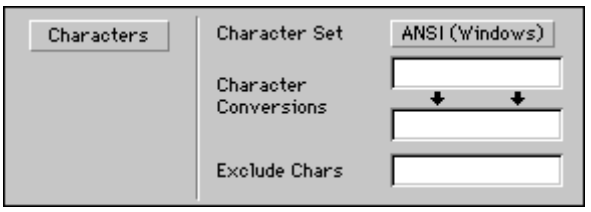
Some displayed characters may look the same, but have different codes. Use the Hex Codes or Decimal Codes formats to see their exact definitions.

Example

An example file could look like this, with the setting Text:



Characters



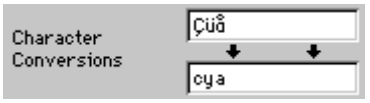
Character Set

The imported file should always be a text file. Depending on what computer produced the file, different code tables are used. Choose the character code table used in the imported file.

If you are not certain which code table to use, it is easy to try different settings, provided you have already opened an text file, with Show File. The effect of a changed setting will show up instantly.

Character Conversions

These two edit-boxes define straightforward character conversions. A character in the upper box will be replaced by the character at the same position, in the lower box. E.g. with the entries



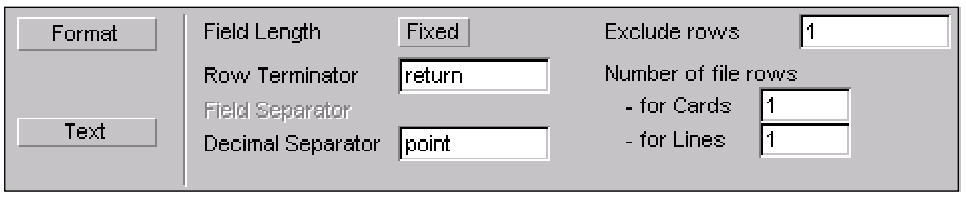
every occurrence of the letter”Ç” will be replaced by the letter ”c”, ”ü” by ”y”, and ”å” by ”a”. The effect of a changed setting will show up instantly.

Exclude Chars

Specify all characters that you want to exclude completely, in this field. The exclusion affects all fields.

Note: Excluded characters are still regarded as positions for fields.

Format



Field Length

Choose between fixed or variable field lengths.

- Fixed fields are used if no character is used as a field separator, i.e. fields are defined solely by their start and end positions, counted from the start of a file row.

- Variable fields are used if a field separator is present. In this case fields are defined by their field number. Occasionally only a part of such a field is relevant. This part can be further specified by assigning start and end positions within the field, when its field number has been defined (see below).

Row Terminator

Usually the characters ”Return” or ”Linefeed” are used to define the end of a file row, but any character can be entered here.

You can use the #-character to specify a decimal character code. E. g. #13 represents the same character as ”Return”.

Field Separator

If variable field lengths are used, you have to enter the character that defines the border between consecutive fields. Very often ”Tab” is used as the field separator.

Decimal Separator

Defines the character separating the integer and decimal parts in value fields.

Exclude Rows

Text files often start with page headers, column titles, etc. I.e. file rows which are not relevant. The number in this box defines, how many leading file rows will be skipped at importation. The example file has one leading file row that is irrelevant:

```
....x....1....x....2....x....3....x....4
Extract from the accounting file
.011011980701B0100009607
.011012SER. B: 1-10000:Turing Transport
.0110130000002110-0000000010482600
.0110130000047310 0000000010482600
.011011980701B0100019607
.011012SER. B: Turing Transport
.0110130000002110-0000000003688400
.0110130000047310 0000000003688400
```

Enter ’1’ in the Exclude rows box, and you will get:

```
....x....1....x....2....x....3....x....4
Extract from the accounting file
.011011980701B0100009607
.011012SER. B: 1-10000:Turing Transport
.0110130000002110-0000000010482600
.0110130000047310 0000000010482600
.011011980701B0100019607
.011012SER. B: Turing Transport
.0110130000002110-0000000003688400
.0110130000047310 0000000003688400
```

The shaded area indicates that the first file row will be discarded, when importing the file.

Number of file rows for Cards

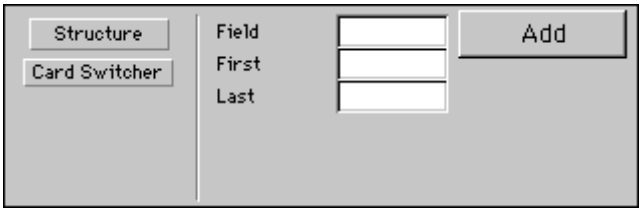
Defines the number of rows the Card information occupy. Multiple file rows are mapped as if they were a concatenated single line. E.g. if Date and Card Title occur in two consecutive but separate file rows, specifying 2 here, makes them accessible as if they were in one single file row.

Number of file rows for Lines

Same as above, but refers to Lines instead of Cards.

Structure

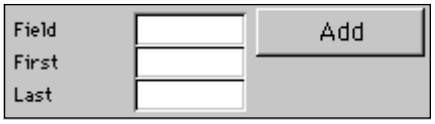
On this definition page you describe how to divide file rows into Cards and Lines.



Card Switcher

This field definition can be used to group consecutive Lines, to form Cards. If a number of consecutive file rows have the same contents in the Card Switcher field, they will all be grouped in the same Card. When the contents changes, a new Card is generated. An empty field is regarded as unchanged.

Field definitions. The way in which fields are defined, is the same throughout the import format. In this particular case the definition page looks as follows (if Field Length is set to Variable, otherwise the field box is dimmed):



You enter a field number in the Field box and, if applicable, First and Last positions within this field.

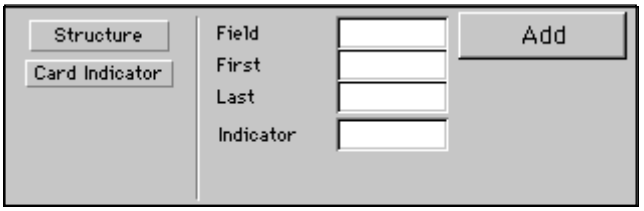
By pressing the Add button, you create another set of entry boxes:

together with an Add and a Remove button. The effect of filling in both sets of entry boxes, will be that the two fields that are defined are concatenated, and conceived as one combined field. This concatenation can be extended to any number of fields. Thus, if date is to be used as a Card switcher, and day, month, and year occurs in different parts of the file rows, you can ”pick” the date parts from their locations, and combine them here, to one single date.

If you press the Remove button, the last column will disappear.

Card Indicator

A file row for which the contents of this field exactly matches the char-

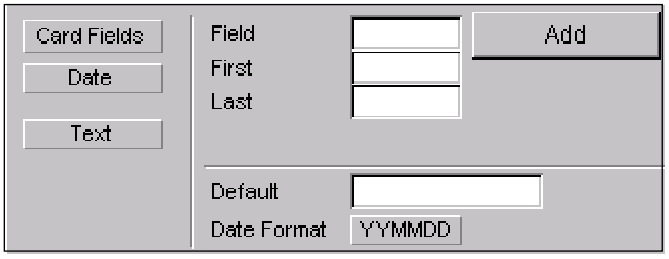


acters in the Indicator box, is considered as a row with Card data.

Line Indicator

Corresponds to the Card Indicator, but defines a file row with Line data.

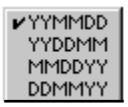
Card Fields



Date

On this definition page you enter the positions for the Card date. You can also enter a Default value, e.g. a common date for all transactions imported in the same run. The default value will be entered into the HAT database if, and only if, there is no date value in the designated entry field.

Date Format. HAT can import a wide variety of different date formats, if only they are expressed numerically (i.e. '8' is accepted as a month, but 'August' is not). Generally Y stands for year, M for month, and D for day. They can be expressed and ordered in different ways. Any characters, but for numbers, acts as separators between the date parts.



Each date part has two digits, in the indicated order. Years are stated with two digits. If the host file has 4-digit years, deselect the leftmost two positions to exclude the century part.

The date parts occur in the indicated order. Years can be two or four digits. The parts are separated by any non-numerical character.

Date in HAT and the "millenium problem". Many host systems store the year with two digits only, which makes a date such as 02/11/25 (in the format YY/MM/DD) ambiguous. Should it be interpreted as 1902/11/25 or 2002/11/25? HAT allows data to remain in this potentially ambiguous format, and solves the problem in a simple way:

- All short format dates in the interval 28/01/01 - 99/12/31 are mapped on the dates 1928/01/01 - 1999/12/31
- All other dates, i.e. 00/01/01 - 27/12/31 are mapped on the dates 2000/01/01 - 2027/12/31

Practically this means that the host system does not have to provide a four digit year value – HAT will work correctly anyhow.

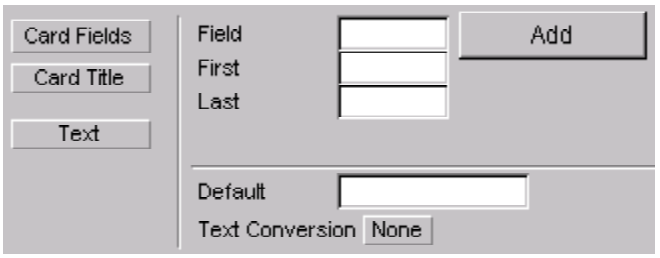
New Components in Hierarchy

Imported data may contain host codes that are unknown to the HAT-application. HAT then creates a new component in the relevant dimension chart.

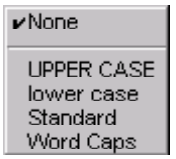
Normally new components are added at the end of the dimension chart.

By ticking this option, you can instruct HAT to place new components in their natural hierarchical position, by using the host code as indicator of the HAT-code. This requires that host codes and HAT-codes are almost identical.

Card Title and Notes



You have the option to convert the texts in these fields during importation, by choosing from the following list of alternatives:



The conversion will be performed exactly as indicated by the spelling in the pop up-menu, i.e.

Imported string	UPPER CASE	lower case	Standard	Word Caps
This is a STRING	THIS IS A STRING	this is a string	This is a string	This Is A String

Other Card Fields

Created, Modified, Examined, and Approved are all treated in the same way as Card Title/Notes, with the minor difference that the Text Conversion operation is not available for these fields.

Line Fields

Introduction – Single versus Multiple Line Fields

The transaction values can occur in the imported file, in two different ways:

1. Transaction values are placed in one single position in the file rows (i.e. corresponding to one column).
   Example:

…	100	NO	Number of units	…
…	35	DS	Dollar Sales Value	…
…	25	DC	Dollar Cost	…
…	250	NO	…etc	…
…	38	DS	…	…
…	21	DC	…	…
…	430	NO	…	…

   This *single value column structure* only needs one Line Fields entry.

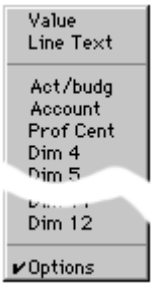
2. Each file row has many value fields. E.g. a matrix with three value columns: number of units, sales (in $), and product costs (in $).

…	NO	DS	DC	…
…	100	35	25	…
…	250	38	21	…
…	430	…	…	…
…	…	…	…	…

   This *multiple value columns structure* requires three Line Fields entries, simply because the values are found in three different positions in the file row. Note that these fields/columns do not necessarily have to be adjacent to each other, as they are in this example.

The case of single value column is described first, followed by a generalization to multiple value columns.

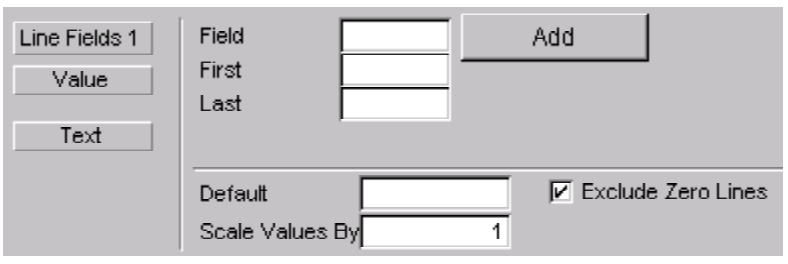
Specifying the Line Fields



In the case of Demo Inc, the following fields have to be specified: Value, Line Text, and each of the dimensions: Act/Budg, Account, and Prof Centr.

The settings generally are very similar to the corresponding Cards Fields settings. Only the ones that differ, will be commented here.

Value



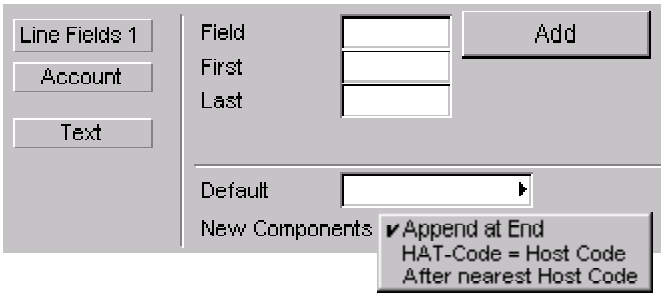
Scale Values By. Some accounting software express all values in cents (i.e. skips the decimal point). HAT will multiply all imported transaction values with the factor in the Scale Value By box.
I.e. if you want to convert cents to dollars, insert the value ’0.01’, to get the desired result.

Another use of this feature, is to make currency conversions already at the importation stage.

Exclude Zero Lines. Fill this in, and the corresponding Lines will not be entered into the HAT database.

Dimension components

The field positions of e.g. the Account host codes have to be defined:

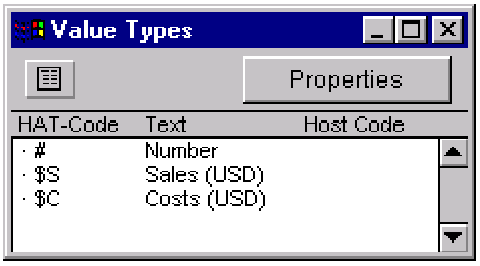


New Components. Determines what happens when HAT encounters a host code that is not included in the dimension chart.

Append at End	Unknown components will be placed at the end of the chart, with HAT-Codes #00001, #00002 etc. The group will have the character # as HAT-Code, and New components as text.
HAT-Code=Host Code	A new component will be appended to the existing ones, and its HAT-Code will be identical to the Host Code.
After nearest Host Code	The component will be positioned as the last element, in the group that has the closest Host Code of a higher rank.

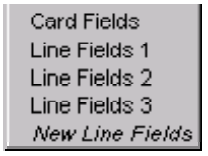
Multiple value columns structure

When you have many columns with different types of transaction values, you typically use one dimension as a *Value Type* dimension. E.g. for the case mentioned above, with sales (in $), number of units, and costs (in $), the dimension chart may look like this:



Each component corresponds to one value column (cf. the columns NO, DS, and DC, in the above matrix).
When HAT imports a file row with three different transaction values, it works as if it read the same file row three times over – one time for each value type. I.e

you have to define three different Line Fields: Line Fields 1, Line Fields 2, and Line Fields 3, one for each value type. The first is always present, so you have to create the two last ones with the command *New Line Fields*, to get the following set of fields:



Only two entries differ in the three Line Fields – the positions of the fields containing the transaction values, and its default component value. All the other entries have to be entered three times over.

To simplify this unnecessary tedious task, use the Duplicate Line Fields command. When the first Line Fields 1 entry has been completed, focus the Line Fields 1 menu, and choose Duplicate Line Fields 1 from the Edit menu, or simply press Ctrl+D. Then change the file row positions of the second value type, and also its default component. Repeat this procedure for Line Fields 3, and you will not only save time, but also minimize the risk of making mistakes.

Import...

Will import either of

- a text file with transactions data; in this case an import setup window has to be active
- a complete HAT-file or sections of a HAT-file (e.g. the section containing only the analysis templates)
- a dimension chart or a time scale stored as a text file.

Note that in order to import a dimension chart or a time scale, a window of any of these types has to be active. See page 49ff for Dimension Charts , and page 64ff for Time Scales

Export...

You can export an analysis result (table or chart) as a file. This menu command is functionally less versatile than the the corresponding function on the Export definition page, in each analysis template. See “Export” on page 88.

You can also export the contents of an open and active dimension chart or time scales window.

Exit

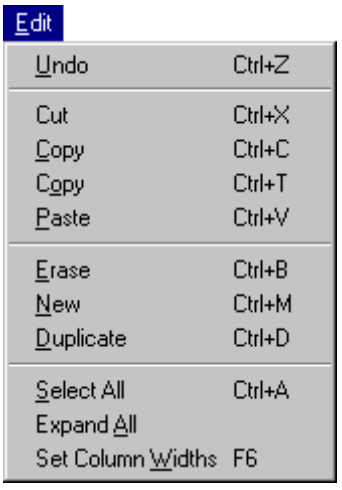
Will terminate the active HAT program. If the HAT database has been changed during the analysis session, you will get a warning message.

MacOS

The corresponding command is Quit

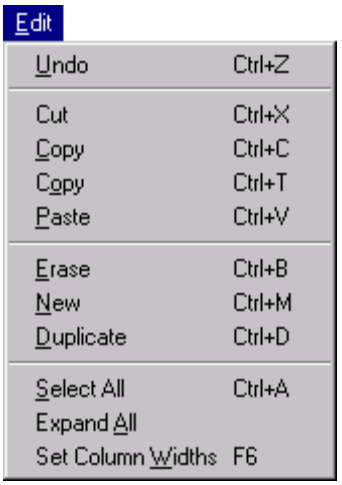
4

The Edit Menu



Introduction

Many of the Edit menu elements in HAT are standard operating systems commands. You are supposed to be familiar with them, and they will



not be explained further here. Some of the commands are specific for HAT and their names and functions will vary depending on the current state of HAT.

If a command is disabled, it of course has no function.

Commands in the Edit Menu

The commands look somewhat different depending on what element is focused. If a part of a text string is marked, the Cut command is changed to Cut Text, but if a selection is in focus, it is instead displayed as Cut Selection. In an analysis template you can see what element is in focus, either as highlighted text or as an element with a dotted border:

Note that you have to focus a field, to get access to the corresponding edit command.

Cut

Cut is equivalent to Copy followed by Erase. In Component Functions and Time Functions this command changes to Cut Selection or Cut Formula, when a selection or a formula is focused. If a local subset is in focus, the Cut command accordingly changes to Cut Subset. It is not possible to cut a variable in Component Functions or Time Functions, if the variable is used in a formula. Neither is it possible to cut the last selection from a template, as each template by default always has at least one selection.

Copy

Copy will change to Copy Text, Copy Selection, Copy Formula or Copy Subset with the same functionality as Cut, but it will not remove the original contents.

If the Variables pop-up is in focus in a Time Functions or Component Functions template, it changes to Copy Variables. You can then, collectively, paste all variables into a another multi-variable template. All the variable attributes are transferred to the new template – e.g. if one of the variables was not shown when it was copied, it will not be shown in the new context either.

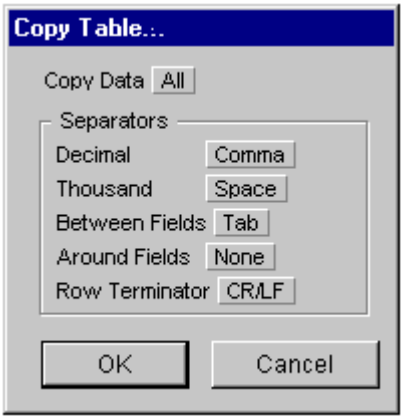
Note that local subset names are not copied, only global subset names. This is a natural consequence of the fact, that local subsets can only be referred to within the template for which it is defined. Global subsets, in contrast, are valid for all templates, i.e. they can also be copied and pasted between templates.

Copy Table.../Copy Chart...

Will copy a table (a list of results in an analysis) or a chart, depending on the presentation mode in the current analysis window. Copy Table/Chart is useful when you want to enter results from HAT into another application, e.g. Excel. It is often a convenient alternative to the Export option. Copy Table... can also be used to copy the contents in a dimension chart, or a user defined time scale.

Copy Table...

Every time you use the Copy Table... command you will get a dialog window:

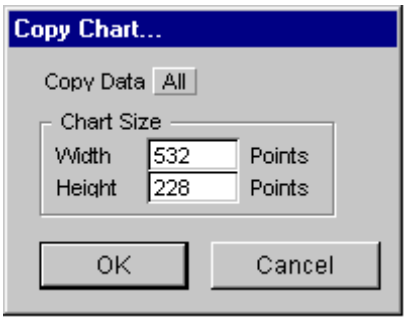


Copy Data. Allows you to specify what, and how much of the data you would like to copy.

Separators. You can determine how the copied fields are stored on the clipboard. E.g. when you try to copy large numbers which have a separator to indicate thousand positions, HAT uses the separator used by the Windows system, which is ”hard space”; but if these numbers are pasted into Excel, the hard space will make Excel interpret the whole number as a text string. By setting Thousand to None, you avoid this potential problem.

Copy Chart...

When you copy a chart from any type of analysis you will get a dialog window:



Copy Data. Select the part of the chart to be copied – All or Visible.

Chart Size. The picture of the chart will by default get the same size (in pixels) as the actual chart. You can reduce/enlarge the size of the copy by entering new values for Width and Height. But for the characters, the copy of the chart will change in proportion to the new values, unless the width or height values are to small to resolve the chart.

Paste

In a text entry box this command appear as Paste. You can also paste a selection, a formula or a subset with the commands Paste Selection, Paste Formula, or Paste Subset, depending on where the focus is. Paste Variables works in Time Functions and Component Functions, where it pastes a whole set of variables (selections and formulas) in one step.

Erase

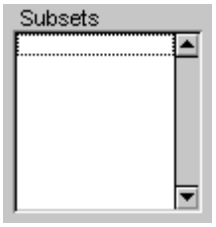
When you mark a set of characters anywhere in a text entry box, this command will change to Erase Text. You can also erase a selection, a formula, a local subset, or a component with the commands Erase Selection, Erase Formula, Erase Subset, or Erase Component, respectively.

New

The functionality of this command also depends on the current context. New Selection and New Formula creates a new selection or formula in Time Functions or Component Functions. New Component produces a new (empty) component in a dimension chart.

With New Subset a subset is added to the (possibly empty) list of local subsets (i.e. subsets defined ”within” an analysis template). Note that you have to focus

the entire frame around the list of local subsets, for this command to be available in the menu. A click anywhere in the list will achieve this:



But you can of course always click the button New Selection, to get the same effect in a simpler way.

Duplicate

Works with selections, formulas, line fields, and subsets. Duplicate Selection copies the selection which is in focus, and adds it to the list of selections. It will get the same contents as the one duplicated. Duplicate Formula and Duplicate Subset works in the same way

Select All

Works with fields containing texts. Highlights all the text in which the cursor is positioned.

Expand All

Expands all components in a dimension structure – in a dimension chart or an analysis template of types Components or Component Functions.

Set Column Widths

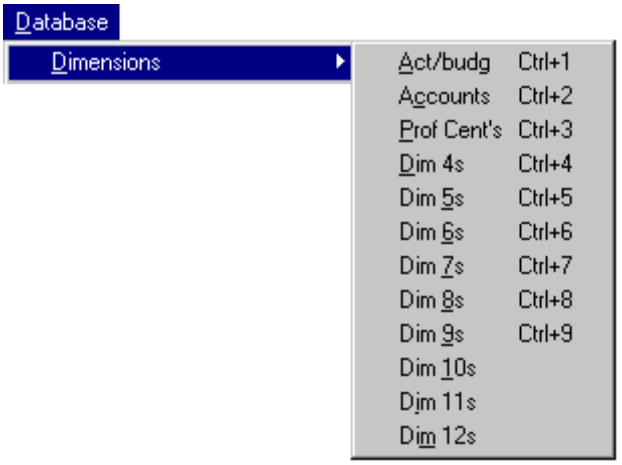
You can set column widths individually, either by dragging with the mouse or by double clicking with the column tool (⇹) active, see section “Value fit and column width adjustment” on page 85.

If there are many columns to adjust, it is much easier to use this command, which give all columns in the current template, dimension chart, or other relevant window, an optimized length. You can also use F6, as a shortcut.

5

The Database Menu

Dimensions



Introduction

The dimension concept is explained on an introductory level in Chapter 2: General about HAT. See “Dimensions” on page 8.

In this chapter you will find more details on exactly how a dimension is organized, how you can update it, make changes to it, etc.

Basic Concepts

Components in a Dimension Chart

We use a chart of accounts to illustrate these concepts.

A chart of accounts usually has at least two types of elements

- *account numbers*,
- *account names*, which describes what the account number is all about.

The accounts are often, but not always, ordered hierarchically in the host system. E.g. as in this example:

Name	Code
Labour costs	50
Payroll	501
Wages	5011
Monthly wages	50111
Piece-work rate	50112
Salaries	5102
Social security	502
…etc…	…

Labour costs consist of Payroll and Social security costs. Payroll costs, in turn, are split into Wages and Salaries; and Wages are split into Monthly wages and Piece-work rate, etc.

In HAT these accounts typically constitute a *Dimension chart*, probably called ”Accounts”. But there are many other examples of structures in different host systems that benefit from being represented as dimensions in HAT. E. g. products, customers, suppliers, projects, company units, employees, geographic areas – a list of such examples could be made very long. Each entry in a Dimension chart is generically called a *component* or *dimension component*, in HAT.

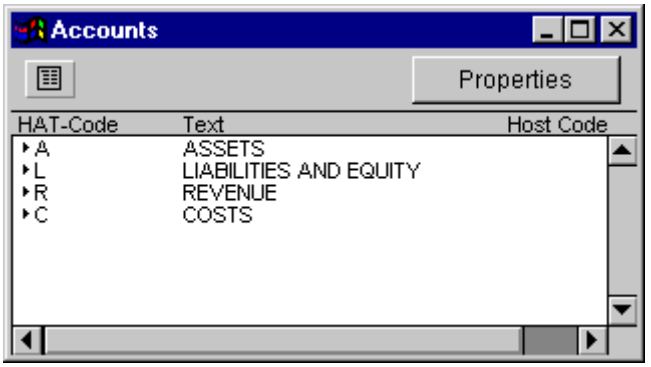
HAT-Code,Text and Host Code

In a HAT dimension chart, the account name is found in the column Text, and the account code in the column Host Code. In addition to these, a HAT dimension component always has a HAT-Code:

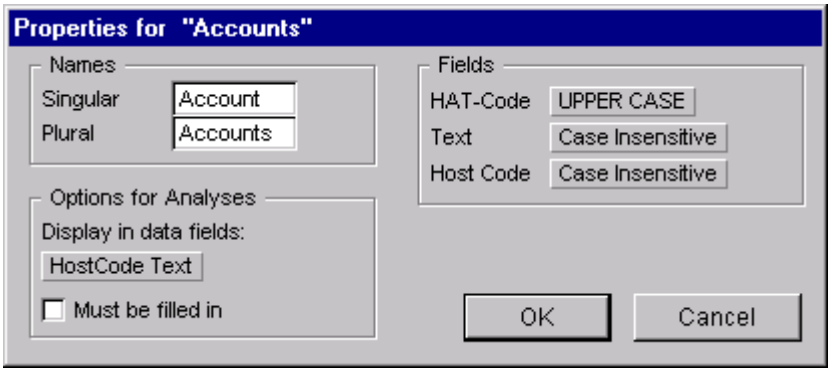
HAT-Code	Text	Host Code
▾ A	Labour costs	50
▾ AA	Payroll	501
▾ AAA	Wages	5011
· AAAA	Monthly wages	50111
· AAAB	Piece-work rate	50112
· AAB	Salaries	5102
· AB	Social security	502

The HAT-Code gives the user full flexibility to change the hierarchical structure of a dimension chart at any time. The HAT-Code is the only entry in a dimension chart that is mandatory – Text and Host Code are both optional.

Properties



Click the Properties button to set the dimension names, how dimension components are displayed, and how the fields are formatted when data are entered.



Names

The name of the dimension, in singular and plural forms.

The singular form will appear in all analyses, and the plural form in all other contexts.

Options for Analyses

Display in data fields. Dimension names are “labels” for the dimensions. They do not affect the data, but are displayed in menus, window name lists, analysis templates, Import Setups, etc.

Display in analyses data fields, lets you decide which codes and/or text that should be displayed for each component in the analyses.

Example These examples span the whole range of possibilities to display a component with HAT-Code CVF, text FUELS, and host code 4010:

Selection in pop-up menu	Presentation in analyses
HAT-Code	CVF
HostCode	4010
Text	FUELS
HAT-Code Text	CVF FUELS
HostCode Text	4010 FUELS
HAT-Code Host-Code	CVF 4010
HAT-Code Host-Code Text	CVF 4010 FUELS

Must be filled in. Tick this entry if you want to enforce that at least one component has to be entered in this dimension. If not, the template will not be calculated.

Example Use it when one dimension is Value Type, which has number of units and dollar values in it. If calculated without an entry in the corresponding dimension box, you would get the sums of number of units and dollar values. This is obviously meaningless, and can potentially give misleading results.

Fields

Converts case settings in the database. When a HAT-Code, Text, or a Host Code is imported or entered, it will be converted as specified. You can also specify whether search in HAT-Codes will be case sensitive or not.

HAT-Code.

UPPER CASE	All characters will be uppercase
lower case	All characters will be lowercase
Case Sensitive	Search in HAT-Codes will be case sensitive
Case Insensitive	Search in HAT-Codes will be case insensitive

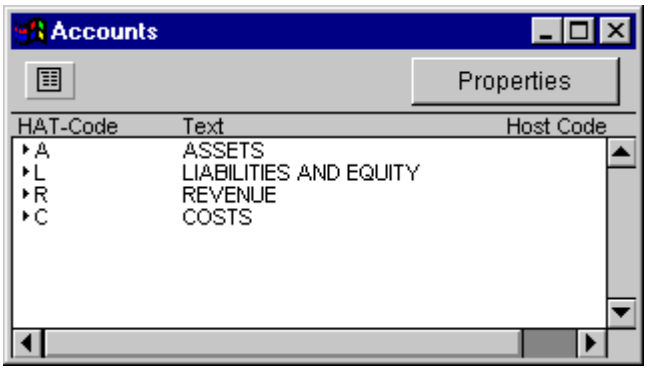
Text and Host Code.

Standard	The first character will be uppercase
Word Caps	The first character of each word will be uppercase
Case Insensitive	No conversion will take place

The alternatives Standard and Word Caps are not valid for HAT-Codes. Space characters are not allowed in a HAT-Code.

Viewing a dimension chart

The Accounts dimension in Demo Inc serves as an example:



A dimension chart can be inspected by expanding any component into its subcomponents. The reverse operation is collapsing the subcomponents. To understand the status of each component you are guided by the hierarchy symbols. Here illustrated by the small pop-up arrows to the left of the HAT-Code. You can choose between three different sets of symbols by setting the menu element :

Hierarchies without indentation

Arrow presentation

Explorer presentation

Hierarchy symbols

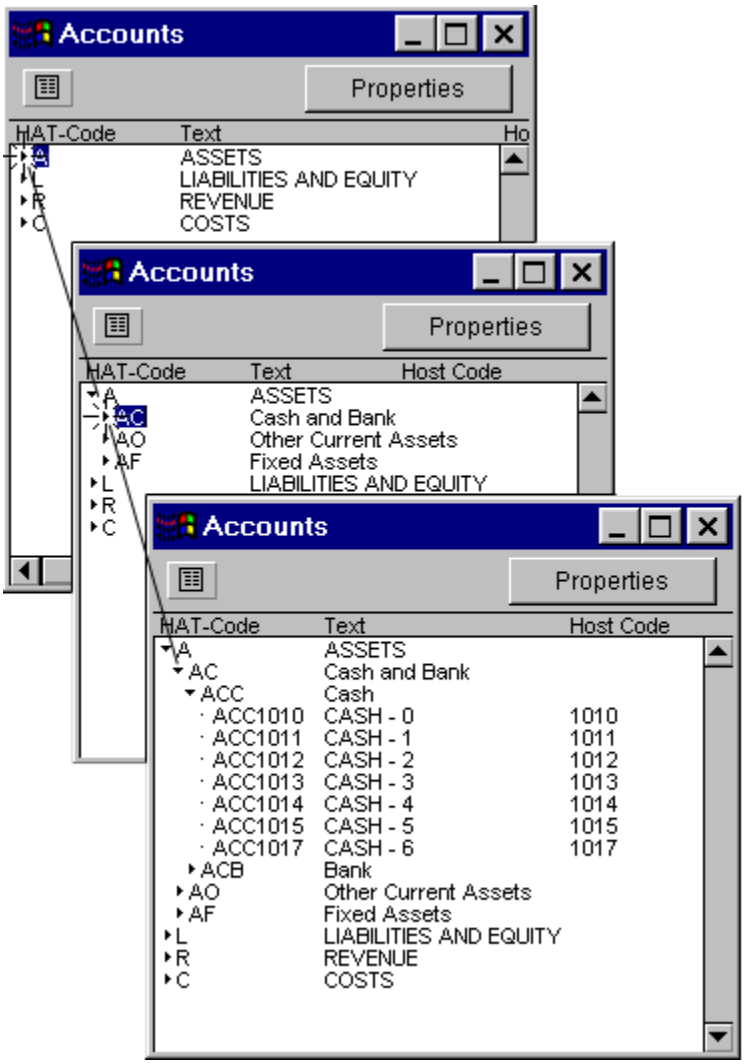
If the setting is without indentation, the hierarchy symbols are +, >, and space:

The arrow and explorer presentations are analogous:

Presentation			
Without indentation	**Arrows**	**Explorer**	**Explanation**
+CL	▸CL	⊞ CL	The component has subcomponents and can be expanded
>CLW	▾CLW	⊟ CLW	The component has been expanded
CLW5007	· CLW5007	- CLW5007	This component is at the bottom of the hierarchy. It has no subcomponents and cannot be expanded

Expanding a component with the mouse

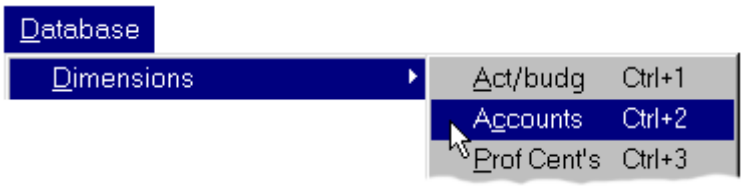
A single click on the hierarchy symbol (▸) expands the component to the next level:



Another click on the symbol for expanded hierarchy (▾), collapses it again (▸).

Expand the entire dimension chart

Hold down the Ctrl key and select the dimension (e.g. Accounts) in the Dimensions menu.



The command opens the dimension chart window (if it is not already open) and expands all components in the hierarchy.
Ctrl+2 (2 for the second dimension chart) achieves the same result.

Expand all subcomponents

Double click on a component to expand all subcomponents. Other components are not affected.

Expanding/collapsing with the keyboard

Alt Enter	The key equivalent of a single click is the Enter key. If the insertion point is located in a collapsed component, the Enter key will expand the component. If the insertion point is located in an expanded component, the Enter key will collapse the component. Alt+Enter will expand all components.

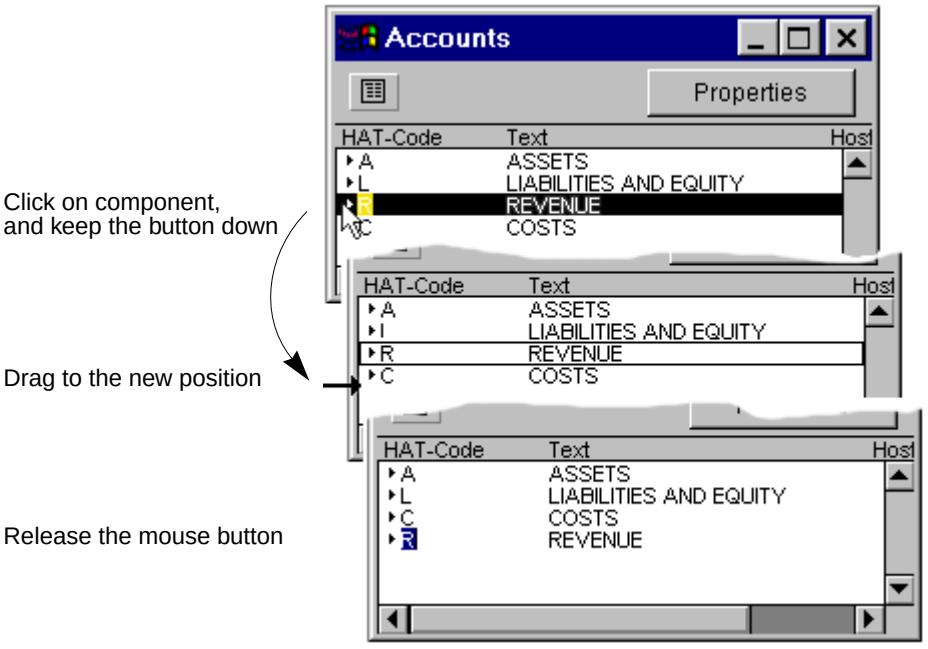
Changing structures

An existing dimension chart can be modified in many ways, one of which is moving components from one position in the hierarchical structure to another.

Any subcomponents arranged under a component are moved along with this component.

Moving components with the mouse

You move a component simply by dragging it to a new position in the dimension chart. The following sequence shows how to drag a component to a parallel position



Note that the HAT-Code for the component is changed automatically.

You can also move a component ”horizontally”, to another hierarchical level. If you move the component slightly to the right, the horizontal arrow will be tilted (↘). This is to show, that it will now be entered as a subcomponent.

The HAT-Code will be adjusted accordingly.

Moving components with the keyboard

Ctrl+ Arrow up
Ctrl+ Arrow down

Moves a selected component up or down in the expanded region of the dimension chart.

Ctrl + Arrow left
Ctrl + Arrow right

Moves a selected component, to make it a subcomponent/parallel component to the one on the line above.

Adding components

Sometimes, you may want to define a new component, e.g. to define a new group of subcomponents.

There are several ways to add components:

1. Adding components by editing.
   The New component command in the Edit menu inserts an empty line in the dimension chart. HAT will suggest a code. Duplicate codes are not permitted.
   The keyboard equivalent for New Component is the Return key.
2. Adding components by importation.
   If you want to add many components, it is often more convenient to use the Import command. The imported table may be created in a word processor, spreadsheet application, or produced directly from your host system.
3. Coding of new components.
   Often, a hierarchical structure of a dimension will be provided by the host system. You can restructure the dimension chart in HAT and create new “branches”. The HAT code you enter for new components should be as short and simple as possible. When you subsequently move the component to its place in the hierarchy, HAT will suggest a longer code which reflects its position in the hierarchical structure.

Example

The new account, Travel grants, is given the preliminary code T. When it is moved to CLO Other empl expenses, it will be given the new code CLOT Travel grants.

Deleting components

You can delete a component from the dimension chart only if it is not currently active, i.e. if there are no Lines in the database which use the component or any of its subcomponents.

When a component is deleted, all of its subcomponents will be deleted as well.

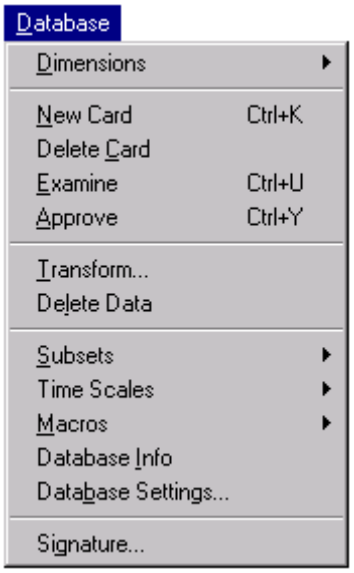
There are two ways to delete components:

1. The Clear Component command in the Edit menu deletes the component at the insertion point. The corresponding keyboard command is Ctrl+B.
2. You can delete all components which are not currently active, used, or all of them, by saving the HAT database to a file with the Save Special command. With the options Active, Used, or None selected.

6

The Database Menu

Other Commands

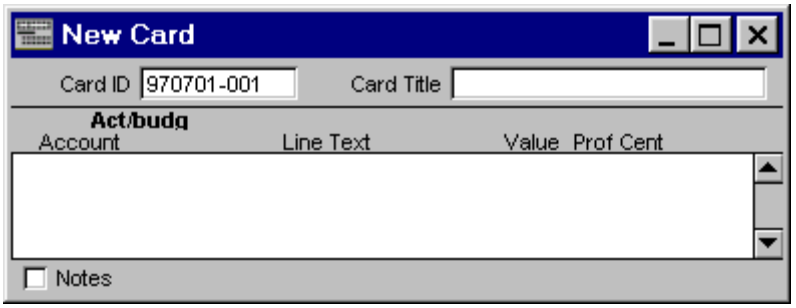


Introduction

This chapter describes how you can make changes to a HAT database. We add Cards, delete them, or transform them. Note that we always, conceptually, make a clear distinction between the *HAT database* (which reside in the internal memory, the RAM), and the corresponding *HAT-file* (which is stored on a secondary medium, usually a hard disk). All the changes described here only affects the HAT database. Not until the HAT database is saved, the changes updates the more permanent HAT-file.

New Card

The New Card command opens a window for creating a new Card. Use it when you want to add data to your HAT database.



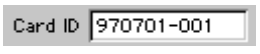
See page 7, for a picture of the ”anatomy” of a Card.
The rules for editing in a new Card also apply to existing Cards.

You can edit a new Card by using the techniques listed below. The Created and Modified fields are filled in automatically when you close the Card window.

Editing a Card

Header and footer edit boxes

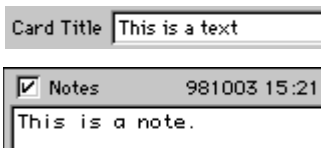
Card ID



The default Card ID of a new Card, is today's date plus an ordinal number.

If you change the date, a correct ordinal number will be provided automatically. The new Card ID will be shown in the title bar of the Card window the next time you open it.

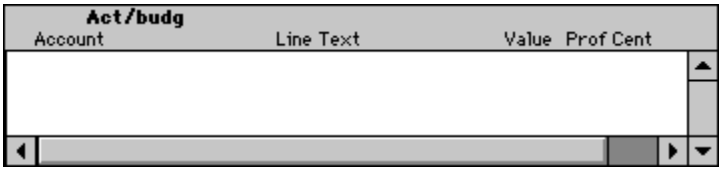
Card Title and Notes



Contains any text, up to 1023 characters long. You edit it in the same way as any other textstring.

Fields in the Card body

The borders of the data fields in the Card body are not explicitely displayed on the screen, but the fields have their defined positions (according to the column headers) and are editable.



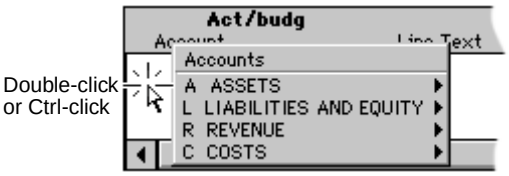
You can move the insertion point between the data fields in a Card with the Tab key. Use Shift+Tab to go backwards.

Create a new Line by pressing the Enter or Return keys.

If you want to enter a component from Dimension 1 (e.g. A Actuals for Demo Inc), you can indent the Line with Shift+Tab, or by clicking with the mouse in the appropriate position.

Dimension components. To enter a dimension component, you can use the keyboard to enter its HAT-Code, Text-part, or Host Code.

You can also get access to the whole dimension chart, by using double-click or Ctrl-click in the dimension field.



Release the Ctrl-key before you release the mouse button, to actually enter the highlighted component.

Choose between mouse control and keyboard control exactly as in dimension boxes in analyses. See section “Selection Boxes - Dimensions” on page 75.

It is easy to change the order of the Lines in a Card. Simply drag the selected Line to the desired position by point-and-hold down-click in the left margin of the Line.

You can also move Lines and Groups with Ctrl-Up Arrow or Ctrl-Down Arrow.

Value field entries

Several arithmetic functions can be used in the value field of a Card, to simplify the entry of values:

Function	Symbols	Example		Spelled out
		Entered in field	Result when you leave the field	
Copy from previous	prev or "	10 000 "	10 000 10 000	Enter same value as above
Total	sum	10 000 15 000 sum	10 000 15 000 25 000	Sum of all preceding fields in the same Group
Balance	bal or =	- 10 000 25 000 =	- 10 000 25 000 15 000	Balanced sum, i.e. sum of all Lines in the Group with reversed sign
Calculate	+, -, etc	120*0,2	24	Result of the expression

An arithmetic expression can also include one of the special operators.

MacOS
Instead of sum, the symbol ∑ can be used.

Delete Card

The command Delete Card only works if there is a Card window currently active.

When you select the command, the entire Card is deleted from the HAT database. The deletion is not made permanent in a HAT-file until you Save the database.

Examine, Approve

The data in the Examined and Approved fields are often imported into the database together with the rest of the data on the Card.

By using the commands Examine and Approve in the menu, you can enter data in these fields from HAT. This can be useful in various situations, such as auditing.

Both commands work in the same way. When you select the command, the date, time, and current signature are registered in the Examined or Approved field on the currently open Card.

Signature. If you have not defined a signature using the Signature command, HAT will ask you to do so the first time you use Examine or Approve.

HAT requires a signature, and enters it in the appropriate Card(s), when you select any of the following commands:

New Card
Examine
Approve
Transform…

This is also the case when you close a Card which you have changed.

You define a signature by entering 1-3 characters (letters and/or digits) in the dialog box. You can use uppercase and lowercase letters to distinguish signatures, i.e. BEM is not the same signature as Bem.

The entered signature is in effect as long as the database remains open. It is not saved with the HAT file (except in the signed Cards).

Do not confuse the signature with the password, which is required for access to a protected database.

Transform…

Introduction

The Transform command lets you to change a part of, or all, data in a HAT database.

A similar command is Add which adds new, transformed, data to the original database.

These commands are useful in e.g.

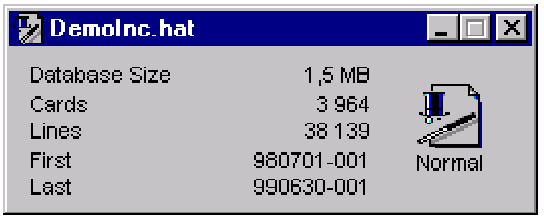
- Prognoses based on actual outcomes
- Budgeting
- Simulation
- Project planning and follow-up
- Index adjustments
- Exchange rate adjustments
- Consolidation
- etc

Data affected by transform

To transform a set of data, you first make a selection in one of the templates. We call this the *active selection*. Then, when you press the Transform button, all the data in the active selection will be affected.

I.e. the Transform command transformes the following data:

- All the Lines defined by the selection in a Lines template.
- All Lines similarly defined in a Cards template. Note that only some parts of the Card data may be affected, depending on the selections made in the Groups and Lines pop-up menus in the Cards template.
- If the database window is active, it represents the whole database, i.e. all the Cards and all the Lines.

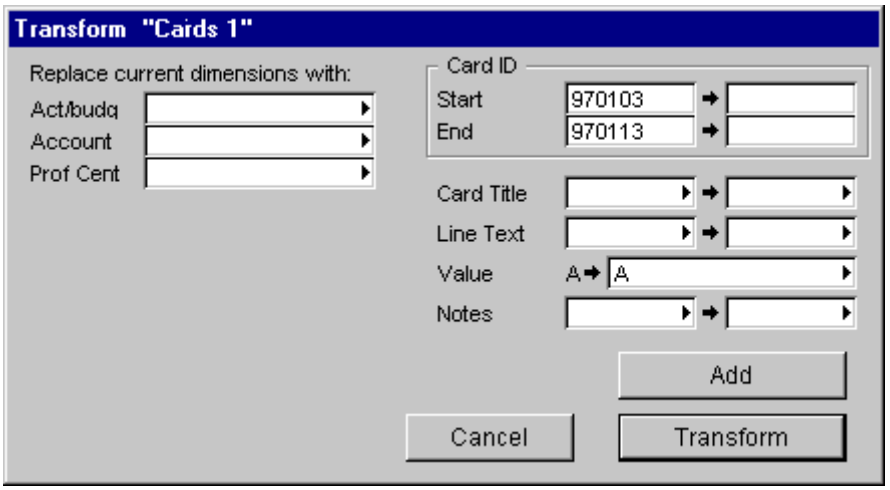


  E.g. a transformation will affect all the data. Use with care!
- An individual Card in active, editible, mode.

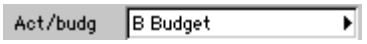
Add generates new data. With the command Transform, the existing data are changed. In all cases but one, you have an alternative option – Add. It generates new data from the current ones, and adds them to the HAT database. The exception is the single, editible, Card, which can only be transformed. To add a new Card, based on an old one, make the Card active. Enter the desired changes by normal editing operations, and close the Card window. You will then get a dialog window, with the option to Add it, as a new Card, to the database.

Transform operations

The transform window has a number of entries allowing you to change all or part of the fields in the active selection:



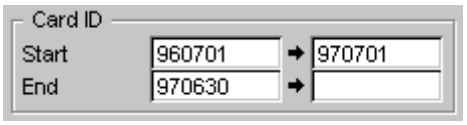
Replace current dimensions with. Actually this is a short form of the sentence ”Replace current *dimension component* with”. If you specify a component in a dimension box,



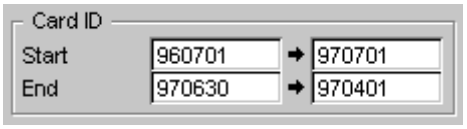
the new component will be assigned to all Lines in the active selection.

Example You want to simulate the result for next year on the basis of the current year's actual figures. You keep all actuals exactly as they are, but tag the transformed numbers as budget figures for the next year.

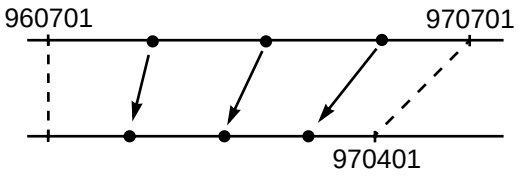
Card ID. Replace the current Start Card ID with a new starting point:



960701 will be replaced by 970701 in the new Lines set. All other Lines in the active selection will also be offset exactly one year forward. This is so, because the right End box was *left empty*. In this case the new End value is implicitely assumed to be moved exactly parallel in time, with the Start value. Had we instead entered a value, say 970401, in the last End box



all the Lines in the left Start-End interval would be proportionally spread over the new (in this case smaller) time interval:



Card Title, Line Text, Notes. Transformation of text in these fields works in a similar way. Basically the function is the same as Search and Replace in a word processor.

Example With the following entries

all empty Line Text fields will get the text ’check!’ in them.

Every occurrence of the text string you enter in the left box will be replaced with the text you enter in the right box. The search text is not case sensitive, but the

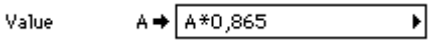
replace text will be entered exactly as it is entered in the replace box. The following operators are available in the search box:

Operator	Meaning
< Before	The new text will be appended before the current text
> After	The new text will be appended after the current text
\ Empty	All empty text strings will be replaced by the new text
¬\ Non-empty	Any text string will be replaced by the new text

Value. You can enter a formula in the value box to define new values in the Lines. The current values are represented by "A" in the formula (default entry in the box). The formula can contain any arithmetic function allowed in HAT.

Enter arithmetic operators either from the keyboard or by clicking on the pop-up arrow in the Value box.

Example You want all values in the selection to be reduced by 13.5%.



This can be used e.g. to simulate a cost reduction in a forecast.

Signature. When you select the Transform or Add command, HAT requests a signature which will be used for the new Cards. Any signatures in the Examined and Approved fields are removed, and the Modified field is filled with the date and the signature for the transformation.

Splitting Cards during transformation

If the information on the Card level (Card ID, Card Title, or Notes) is unchanged by a transformation, all Lines are retained within the same Card.

But if a transformation affects only some of the Lines on the Card, the transformation generates two Cards. One contains the transformed Lines with new Card information, while the other retains the "original" Card information and the Lines that were not transformed. The date in the Created field is set to the date of the transformation.

Some potential effects of a transformation.

If you transform accounting vouchers, some Lines may be transformed, but not others. This can result in vouchers that no longer balance.

Transformations that lead to displacement in time can also result in Lines being spread over several Cards, although they originally were on the same Card.

Delete Data

The Delete Data command deletes data from the database. The data to be deleted are determined in the same way as for the Transform command.

Subsets

Usually you will use the entry fields on a Selection definition page of a template, to define a selection.

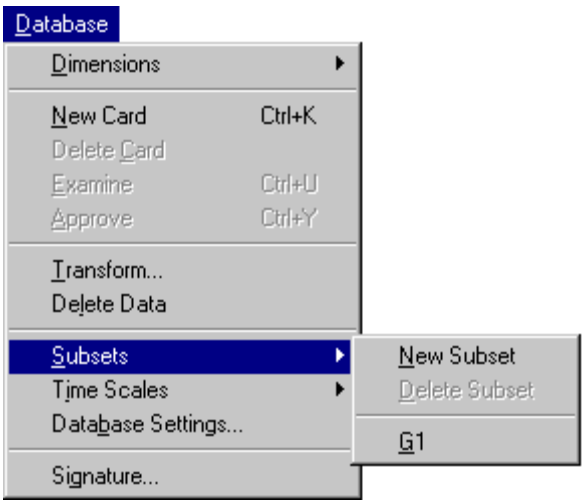
But occasionally you want to achieve what you aim for in a somewhat simpler and more straightforward way. E.g. if you use a certain selection over and over again, you would probably prefer to be able to define it once and for all.

Or you want more advanced selections than allowed on a Selection definition page. E.g. combine a number of different selections to define one combined subset.

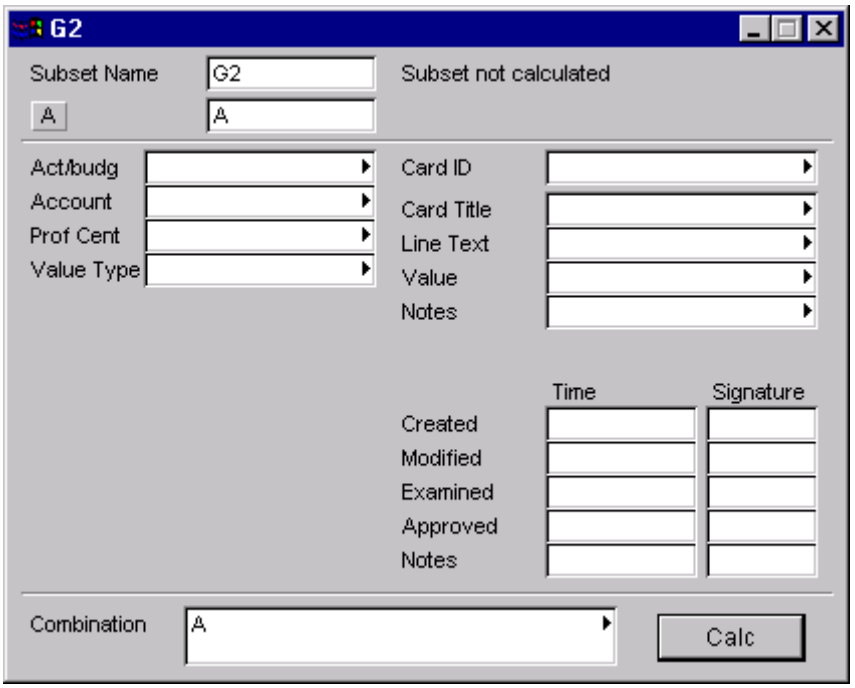
For these purposes you have two types of subsets available:

- *Global Subsets*, i.e. subsets that are ”globally” available, to be used in various templates, and other contexts.
- *Local Subsets*, which are defined for a certain template, only.

From all other aspects, the two types are equivalent. In this section we will only cover the generally available Global Subsets. With the command New Subset



you will get an empty selection to fill in:



Ordinary selections vs Subsets

Compared to what is available in the selection entries of an analysis template, you can:

Combine many selections. You can define a number of independent selections, not just one. By clicking on the A menu button (in the case above) you will be able to enter another selection (*New Selection*) which will get the default name B. By repeating this operation a number of times, you get selections A, B,

C, D, ... Their individual names can be changed to more descriptive ones, if desired. Do this by entering a new name in the text field to the right of the menu button.

You can then combine these independent selections to make more complex ones, by writing a logical expression using the individual selections already defined, e.g

A & B | C

which means the set of Lines in both selections A and B, combined with the Lines in selection C.

Use more fields in the selection criteria. Each definition page has more fields available for defining selections, e.g. the fields Time and Signature.

Cards and Groups operators

In the box Combination you can enter any logical expression, as mentioned above. But two new operators are specific for subsets:

- Cards, and
- Groups

If you have made a selection A by entering a number of criteria, this in effect selects the *Lines* that meet these criteria. But you may want to select all Lines in a *Card*, which contains at least one Line that meets the criteria. By entering

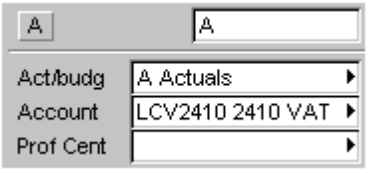
cards A

in the Combination box, you will get exactly this.

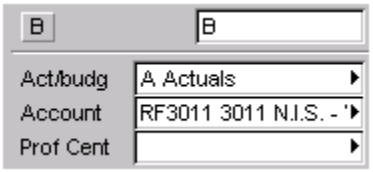
The groups operators is analogous, with the obvious difference that you instead get all Lines of the selected Group.

Example

In the Demo Inc database there are Cards with different kinds of VAT entries, in the Account dimension. These entries typically go in pairs; it should not be only one VAT entry in a Card. To check this, we define a subset with two variables, A and B:

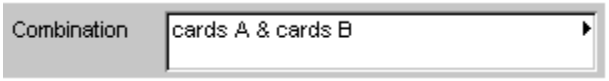


and



HAT enters the default combined expression A|B, which you easily can change.

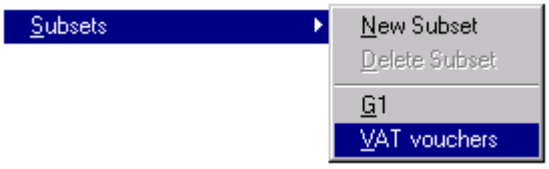
We change the expression to



and press the Calc button. We change the default name G2 of the new subset, to the name

VAT vouchers

which will turn up in the menu

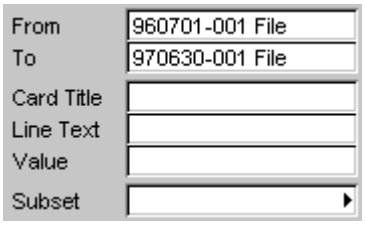


In this case the operator cards was entered from the keyboard. Often it is simpler to enter it from the operator menu. You activate this menu by clicking at the pop-up arrow in the box Combination. Click with the F1-key pressed or right-click with the mouse, and you will get the list:

The corresponding keyboard command is Ctrl-F1-Arrow.

MacOS
Use the Alt-button to activate this menu with the mouse.
The keyboard command is Command-Alt-Arrow.

As soon as the first subset window has been activated, every analysis template will get another entry box, Subset, added after the Value box:



In this box you can enter the name of the subset by typing its name from the keyboard, or by using the pop-up arrow

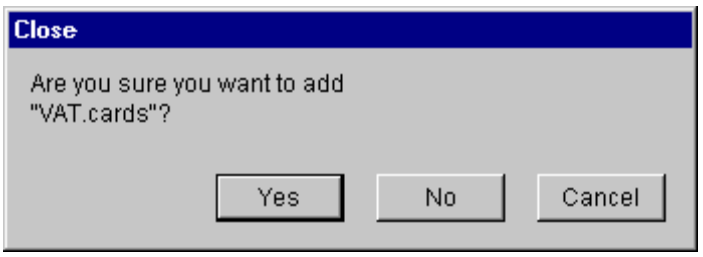
Note that it is not possible to make the same selection, without using a subset, in e.g. a Cards analysis template. It is possible to select all Cards that has at least one of the account entries ’2410 VAT ’ or ’3011 N.I.S. - VAT 100%’, by entering the expression LCV2410 | RF3011 in the Account dimension box. But if you would try with the expression

LCV2410 & RF3011

no Cards (or Lines) would be selected at all. The reason is that you always specify *Line* attributes in the analysis templates selection boxes, and a Line cannot have two different codes from the same dimension, of course.

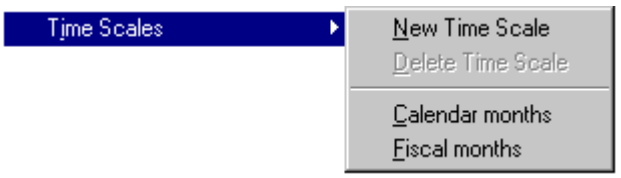
You can enter and delete subsets with the commands in the submenues:

You install a new template, or change an already installed template, by closing its window. Then make your choice in the dialog window:

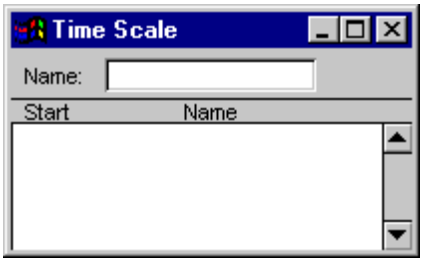


Time Scales

HAT has a number of built-in time scales, which are used in the Time Functions templates. But you also have the option to create you own customized time scales. This is very useful when the usual calendar time scale does not fill your needs. E.g. if you are working with financial periods specific for your company. Similarly, semesters could be more relevant for schools and universities, than the usual calendar time.



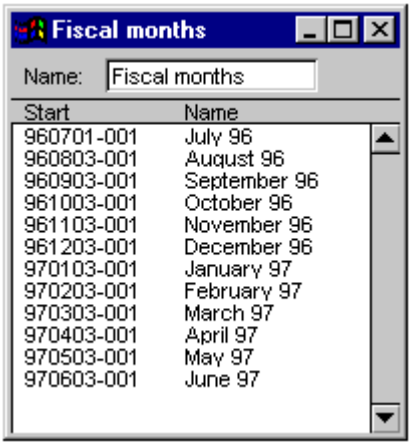
New Time Scale. Will produce an empty window



- Enter the name of the time scale.
- Enter the *start* of each period in the scale.
  YY (97 will return 970101-001)
  YYMM (9702 will return 970201-001)
  YYMMDD (970205 will return 970205-001)
- Enter the name of the period.

The end of a period is defined automatically as the last Card before the start of the next period.

- Enter the start of next period, and so on.…



If you want the period to end before the last Card, you can define a dummy buffer period to force a period to end in the right place.

The time scale is entered into the HAT database, when you close the window.

Importation to a Time Scales window. Instead of entering the time scale elements via the keyboard, you can import a *textfile* with two columns (i.e. the fields are separated by Tab) to an active Time Scales window. This can be done in either of two ways:

- Using the Import command in the File menu. A Time Scales window has to be open and active. The Import command then changes to Import Time Scales…, and you get the usual dialog window for opening the textfile.
- Drag-and-drop. Drag the textfile icon into the Time Scales window, and the textfile will be imported

Macros

With HAT Macros you can instruct HAT to do a series of operations automatically. At its current stage the set of instructions is designed with an emphasis on simplifying the operations to produce HAT-applications from ground up, often in large numbers to be distributed to other users. I.e. the typical tasks of someone who has an Operator- or Server-processor attached to the computer. If you do a long sequence of operations over and over again, e.g. produce 50 different HAT-files for different users, you may benefit a lot from writing HAT Macros to perform these operations automatically. Together with the OLE support built into HAT, you can build astonishingly simple, fast, and fully automatic solutions, that produces large number of HAT-files and distributes them to the users.
Also, if you are preparing an HAT application for use by someone who is a novice at HAT, you can install HAT Macros that do the complicated operations, Thus requiring a minimum of knowledge on how to operate HAT.

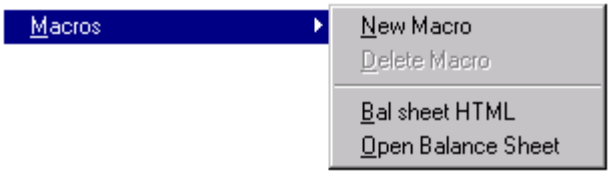
You can also perform the equivalent of a series of macro instructions by importing a special segment of a HAT-Text file. This segment is called *Com-*

mands section. See the document *HAT-TEXT File format 4.1*, for a technical description of the HAT-Text file format in general, and the Commands section in particular.

Because it is primarily intended to be used by skilled “technical people” this material is of a rather technical nature. If you just use HAT for regular analyses, you can safely skip these parts of the manual. Almost everything you can do with macros, you can also do by interacting with your HAT application in the usual way. And in a much easier way – this is the very purpose of the HAT user interface.

The following description gives you a brief overview of Macros and the Commands section. To get the details, consult the special documents on these matters.

Creating macros



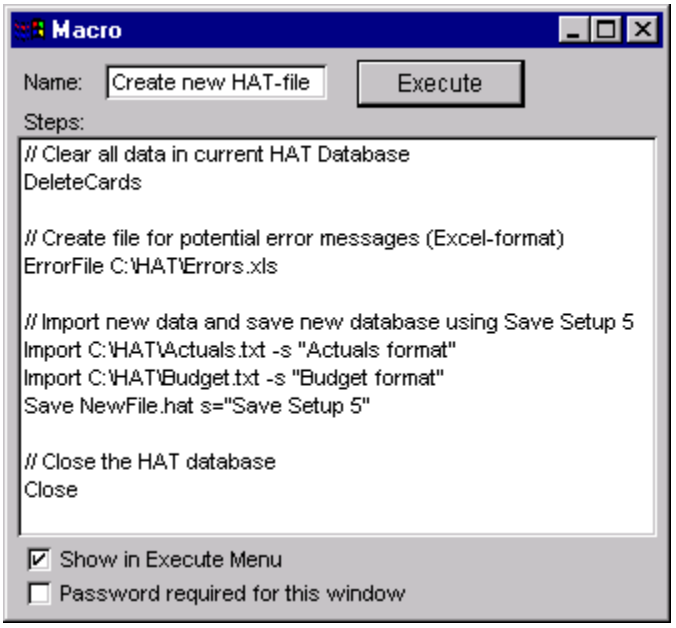
With the command New Macro, you get an empty window:

Name. If you want to install a macro in the HAT database, you have to give it a name.

Steps. A HAT Macro script consists of a number of steps, one step on each line. A step corresponds to one general command, usually with information on what object this command should operate on, and sometimes with some further specifications on what to do.

Example

A typical case is when we want to update an existing HAT Database with new data. With a suitable macro, all the working steps can will be done quickly and with a minimum risk of mistakes:



A few comments to the script:

- Double slashes (//) are used to indicate that the text that follows, on the same line, is a comment, which plays no active part in the execution of the macro. It is "dead text" with the only purpose to clarify what the macro does. It is a good practice to use a lot of comments in macros.
- DeleteCards is a macro command, which deletes all Cards in the current database. This command also has the option to delete only a part of the database.
- the ErrorFile-command is further specified by telling that a text-file with the name Errors.xls will be created. It is wise to always include this command when macros are used to import files. Potential error-messages will be stored without interupting the importation process; otherwise error messages will show on the screen, requiring user interaction to be able to continue.
- Two files are imported, each one using its own import format, which is indicated with the last words e.g. *-s "Actuals format"*. The -s part tells HAT to use a Save Setup, and the "Actuals format" tells HAT which format to use. We have to place double quotes around the text *Actuals format* because it has a space character in it. The space character is used as a word and command separator in a HAT Macro script, but with the quotes, the text *Actual format* will be interpreted as one entity.
- After the HAT-file has been saved, using the setup *Save Setup 5*, the HAT Database is closed.

Show in Execute Menu. If a macro is the first one for which you choose this option, a new menu element, Execute, will be created (positioned between the Analysis and Window menu elements), with this macro in it. If the menu already exists, it will simply be added to the list.

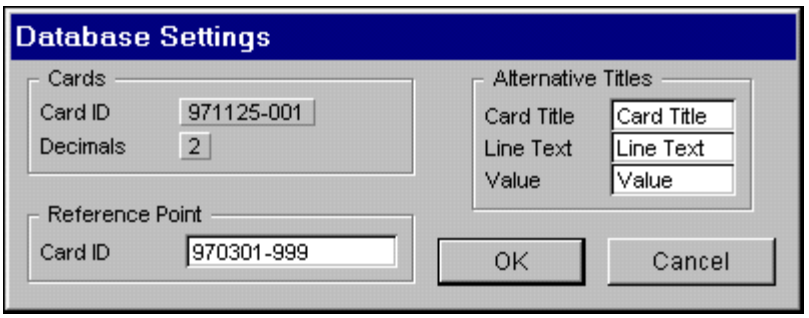
Password required for this window. A macro may contain information you want to keep from general display. Especially if the macro itself contains passwords to other files. By ticking this option, you cannot open the macro script without providing the same password you need to open the file itself.

Database Info

To get a more detailed picture of different aspects of the database and its contents, use the command Database Info. You get exactly the same information if you click on the HAT file symbol in the database window. For a full explanation of the contents see “Information in the database window” on page 16.

Database Settings...

These settings can be customised for each database and is saved with the HAT-file.



Cards

Card ID. Defines the number of digits in the Card ordinal number that follows the date number.

This setting is automatically adjusted by HAT to comply with the contents of the database, but in some cases you may want to show more digits than necessary.

Decimals. Defines the default number of decimals displayed in Cards

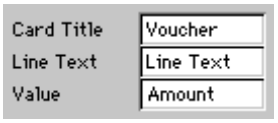
Reference point

Gives the position for a vertical Line (which is red, on a color display – otherwise black) in templates that show data by time, in graphic mode. The Line can e.g. mark a date of special interest.

It also acts as a common reference point in time. You can refer to it e.g. in templates you have installed – to be used as a ”global” variable. It is named Reference. By changing the value of the reference Card ID, the contents of all these templates will change accordingly.

Alternative Titles

You can change some of the field names used in the HAT templates.



In this case the default text Card Title is changed to Voucher, and Value to Amount.

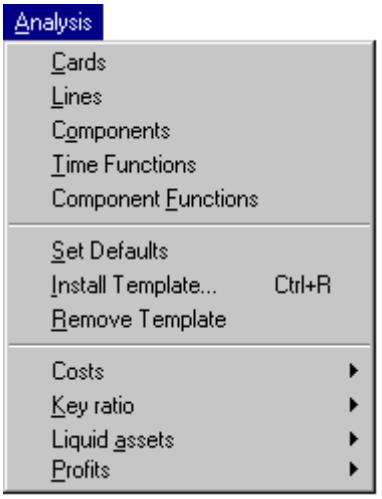
Signature…

You can change the signature which is entered automatically by HAT with this command. Signatures has already been described earlier in this chapter. See section “Signature” on page 55.

7

The Analysis Menu

Overview



Introduction

The Analysis templates are at the very heart of HAT. You use them to get a maximum of information from your HAT database.

This chapter gives a very brief overview of the different analysis template types. A full description of the other elements in the Analysis menu, follow in separate chapters.

Cards

The Cards template is primarily used for inspection of chronological lists of the Cards in the database, either the complete contents or selected parts of the contents.

Lines

In the Lines template you select certain Lines from the database. The selected values are listed by transaction in chronological order. The separate transaction values and/or the accumulated values are displayed. It can also be presented graphically. A number of summary values for the whole set of values can be calculated, based on the selection: number of Lines, maximum and minimum values, turnover time, accrued interest at different rates, etc

Components

Components calculates and presents a subset of data as a function of a dimension. You can easily change between many views/dimensions. The result can be displayed as a numerical table, or as a pie charts.

Time Functions

Time functions calculates and presents data as functions of time. In a way it is a much more advanced version of the Lines template. You typically add values by period, e.g. costs per month. Or accumulate these values over time, e.g. costs accumulated over time. You are free to set the level of aggregation, by using different time resolutions – from the very detailed view of showing each single transaction (equivalent to Lines, above) to showing aggregates by day, by week etc, up to yearly figures. You can also define your own time scales.

But the most significant aspect is that you can define any number of variables and formulas in Time Functions. E.g. to calculate deviations from budget, key ratios, and a lot more. The results can be presented graphically or numerically.

Component Functions

If Time Functions is the more advanced version of Lines, the Component Functions template is the advanced analogy of Components. You work with selection variables and formulas, to calculate budget deviances, ratios, and many other measures of you own choice. Instead of presenting the results by time, you get them by component. The results can be listed or displayed graphically.

Set Defaults

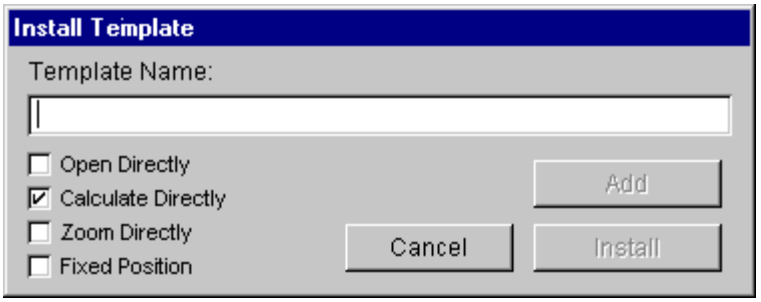
When you open any of the five different templates, you get some default settings. The very first time, these are set by the system. But you can change them at any time, to suit your needs better.

If you have a template in an active window with certain settings, and activate the Set Defaults command, all these settings will appear the next time you open a new template of this kind. Window size, entries in the dimension boxes, etc – they all turn up in the new template.

Install Template

If you have defined an analysis template, you may want to store it as a ”standard report”, to be available at any time in the future. Install Template allows you to do that.

If you have a template in an active window, and activate this command, you get the following dialog window:



Template Name. The template can be given any name, consisting of alfanumerical characters. Often you prefer to put them in logical groups, e. g. all financial reports under the heading ”Financials”. You achieve this by using the colon character (:) between the intended group levels. E.g.

will create the group Financials, which has the the subtemplate Liquid assets in it. If we later install a template with the name Financials: Loans, it will turn up in the same group.

Open Directly. The template will be automatically displayed when you open the HAT database. Use it for templates you should never forget to look at, templates used as reminders of ”things to do”, or to convey a message to a collegue who will work with the HAT-file, etc.

Calculate Directly. If this box is not marked, you will have to press the Calc button, to get the final report. This is usually ticked, but it may happen that the selection in the template will always be somewhat changed before it is calculated. If the database is very large, you may prefer to postpone a time consuming calculation until the result is relevant.

Zoom Directly. The template will be zoomed directly when activated.

Fixed Position. The template will, when opened, be positioned on the screen exactly as when it was installed.

Add. If you make any changes to an already installed template, and click on the Install button, the template will be changed. If you want to install the new version, and keep the old one as before, you should change the name of the template, and click the Add button.

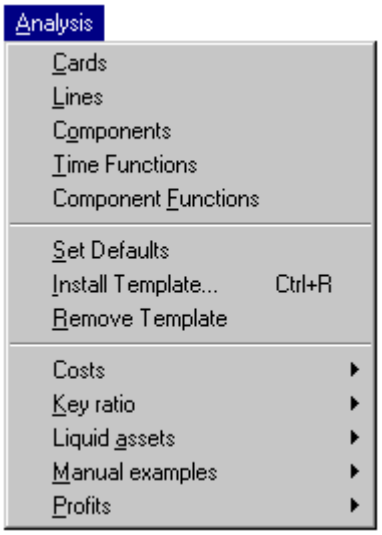
Remove Template

Remove Template lets you delete an *active* installed template. A dialog window will be displayed, giving you a last chance to change your mind.

8

Analysis Templates

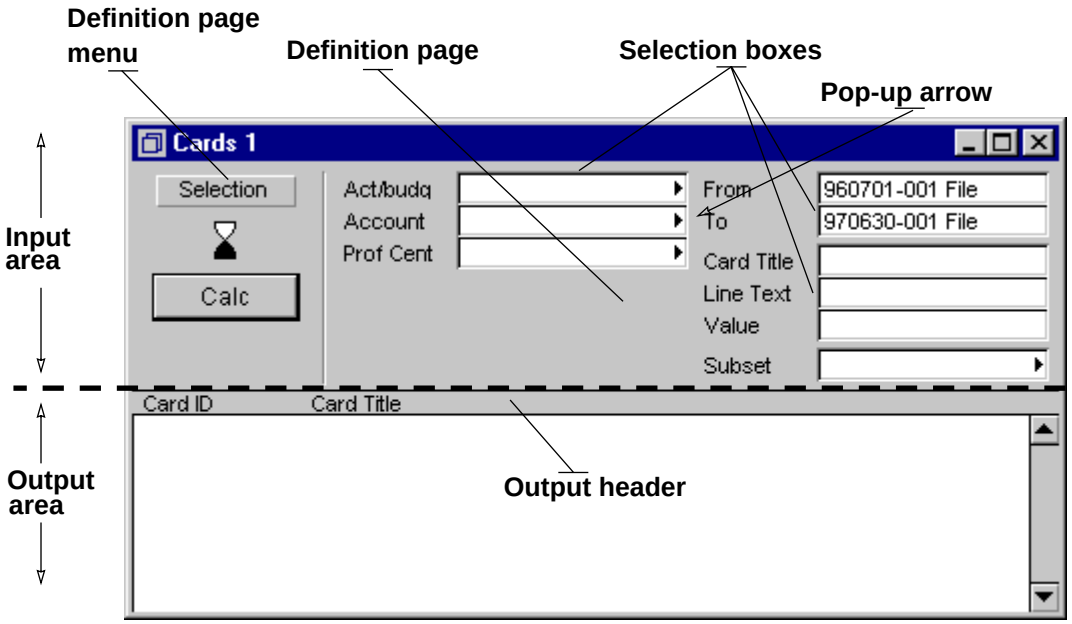
Common features



Introduction

The Analysis template

The five template types differ in their layout, but some parts are almost identical. The following picture shows how it typically looks, with the most prominent definition page (Selection) active:



Definition page menu

Each type of analysis template has a number of different definition pages, where you can define what data you would like to see, and how they are presented. Use this menu to switch between different definition pages.

The Calc button

When the button is highlighted you have to press it in order to get the correct output, i.e. corresponds to the entries you have done on the definition pages.

Selections

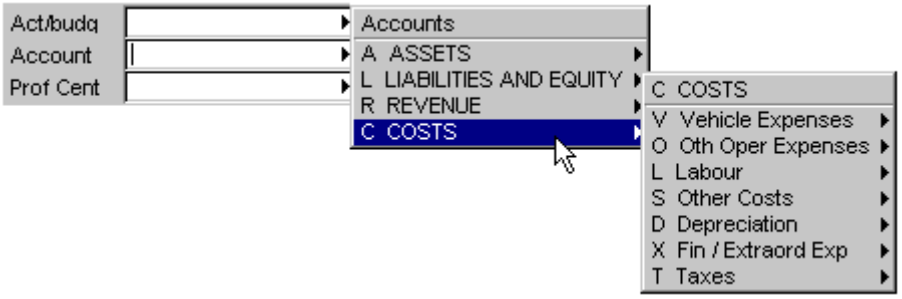
Selection Boxes - Dimensions

Entering single components

There are several tools available for defining selection criteria in a dimension box, e.g. Account. You can use:

- Arrow pop-up menus with mouse control
- Arrow pop-up menus with keyboard control
- Text entry from the keyboard

Selecting with mouse control. By pressing the mouse button on the small arrow to the right in the dimension box, e. g. Accounts, the highest level of account groups will pop up. When you move the cursor to a lower level in the account structure, it will successively unfold. The hierarchical menu has the same structure as the dimension chart:



When you release the button, the highlighted component will be inserted in the box. At first, only the HAT-Code of the component will be displayed, but as soon as you move the curser elsewhere, also the component text will show up. If you enter an expression with more than one element, e.g. COSTS *or* REVENUES, only the HAT-Codes will be displayed, to save space.

Selecting with keyboard control. You can use the keyboard to unfold the dimension chart and get the same result:

1. Place the cursor in the dimension box.
2. Press the Ctrl-key and one of the up or down arrow keys.
   The first level of the hierarchical menu will show up.
3. By pressing the arrow keys you can ”wander around” in the tree.
4. When the appropriate component is highlighted, press Enter, and the HAT-Code of this component will be filled in.

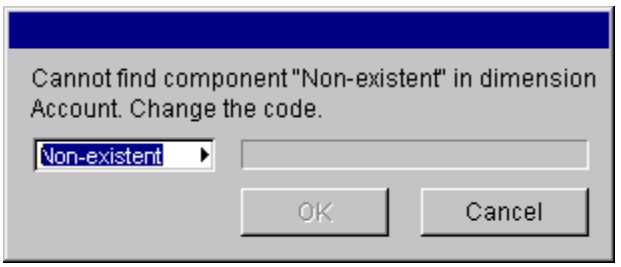
Text entry from the keyboard. If you enter a character string in a dimension box, HAT will search for a matching string in the corresponding dimension chart, in the following order:

1. Search in HAT-Code.
   The search is performed using only the characters before the first space in the entered string. Matching is sensitive to the character case when the field pro-

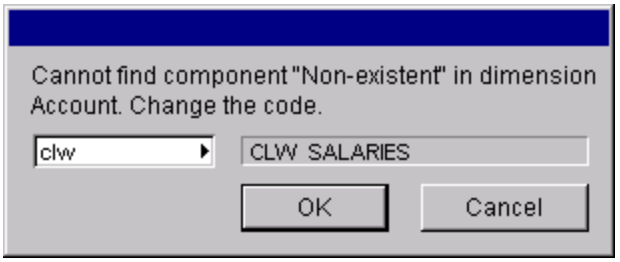
perty is set to Case Sensitive, in the Properties setting of the dimension chart. This search returns the component giving an exact match of the HAT-Code. If no such match exists, the search continues among the Host Codes.

2. Search in Host Code. The search uses all the characters, including spaces, of the entered string. Matching is sensitive to the character case when the field property is set to Case Sensitive, in the Properties setting of the dimension chart This search returns the component which matches the entered characters at the beginning of the Host Code. If there are several alternatives, the one with the closest match is returned.
3. Search in the Text field, finally, is done in two phases:
   First, the search is performed using the characters following the first space in the entered string.
   Second, if phase 1 fails, the search is repeated using all characters in the entered string.
   The matching is always Case Insensitive.

Node Finder. If all these types of search fail, a dialog box (the *Node Finder*), will appear:



You can then enter a code, either by using the arrow pop-op menu, or by entering a text in the field. You see exactly how HAT interprets the text you enter, immediately to the right in the dimension box:

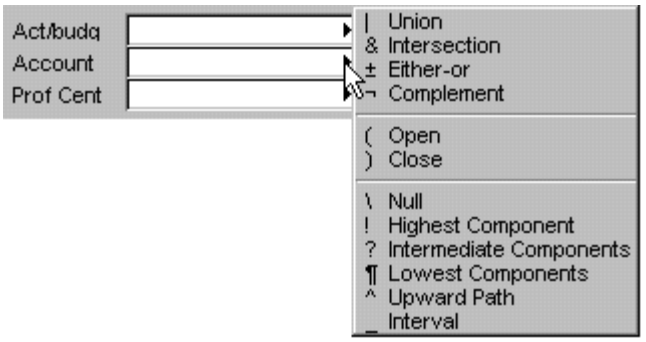


Click the OK button when the intended component shows up.

Entering component expressions, using operators

With operators you can form expessions that combine or exclude components in a dimension box. The operators are available in an arrow pop-up menu, or can be entered directly from the keyboard.

To expose the operator menu, place the cursor on the pop-up arrow and press the right mouse button, or press the F1 key while simultaneously pressing the left mouse button:



Release the button on the element you want to enter.

MacOS

To get the corresponding function on Macintosh, press the Alt-key while clicking on the pop-up arrow.

The component operators

Symbol	Name	Other names	Example	Explanation
|	Union	or	C|R	All Lines in the two sets, C and R, together
&	Intersection	and	C&R	All Lines common to the sets C and R
±	Either-or	exclusive or	C±R	All Lines in either of the two sets, but not in both
¬	Complement	not	¬C	All Lines not in the set C
(	Open			Left parenthesis
)	Close			Right parenthesis
\	Null	empty, void	\	All Lines that have no entry at all (in this field)
!	Highest Component		C!	All Lines coded with exactly C, i.e. excluding subcomponents
?	Intermediate Components		C?	All Lines coded with subcomponents to C, but not C itself or subcomponents at the lowest level
¶	Lowest Components		C¶	All Lines coded with lowest level subcomponents to C
^	Upward Path		C^	All Lines coded with C, or components above C
_	Interval		CLW_CD	All Lines coded with CLW or CD, or components between these in the dimension chart

Combining component sets with operators

You can combine several operators and sets. Use parentheses to ensure the correct priority in evaluating a combination. As usual, the expressions within parentheses are evaluated first.

Example: C¬(CL|CD) selects accounts belonging to C COSTS, but not CL LABOR COSTS or CD DEPRECIATION

Feed back

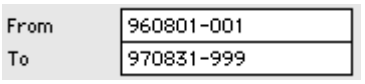
Every expression you try to enter in a selection box will be interpreted by HAT. The interpretation will be explicated in the box as soon as you

- Leave the box

- Press the Enter button
- Press the Calc button

Selection Boxes - Time

The time span for the the selected Cards or Lines is set in the boxes:



Default time limits. Default time limits are the first and last Cards in the file, unless otherwise specified with the Set defaults command.

Editing time limits

You can change the time limits by editing the Card IDs in the boxes. You do not always have to enter all digits. HAT completes partial entries in accordance with the examples below:

From box. HAT completes partial entries by inserting the *earliest* possible value:

Example: 94 is completed as 940101-001.

9401 is completed as 940101-001.

940101 is completed as 940101-001.

To box. HAT completes partial entries by inserting the *latest* possible value:

Example: 96 is completed as 961231-999.

9606 is completed as 960630-999.

960630 is completed as 960630-999.

The time operators

By intelligent use of time operators to define period limits, you can gain some advantages:

- Easier to enter dates which you may not know in advance.
- Allow “dynamic definitions” of analysis templates.

HAT is rather forgiving when interpreting what you enter in a time box. E.g. if you enter f, fi, or files in a time box, HAT interprets them all as File.

The examples in this table assumes that ”today” is July 1st 1997:

		Enter the short name, and HAT will enter		
Short name	**Full name**	**in From box**	**in To box**	**Explanation**
f	File	970101-001 File	970101-999 File	Beginning and End of file
r	Reference	970401-001 Reference	970401-001 Reference	As set in Database Settings

Short name	Full name	Enter the short name, and HAT will enter in From box	in To box	Explanation
y	Year	970101-001 Year	970101-999 Year	Current year
m	Month	970701-001 Month	970701-999 Month	Current month
w	Week	970630-001 Week	970706-999 Week	Current week
d	Day	970701-001 Day	970701-999 Day	Current day

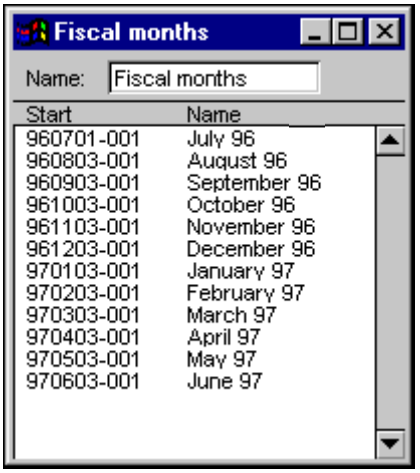
Time offsets

For the operators *refering to the current time period* (day, week, etc), you also have the option to set the time back or forth, by entering a signed numeral in addition to the operator. E.g. if the current date is July 1st 1998, you will get the following effects:

Expression	HAT Interpretation	Entered in From box	Entered in In To box
d-1	Yesterday	980630-001 Day-1	980630-999 Day-1
w+1	Next week	980701-001 Week+1	980713-999 Week+1
m-1	Last month	980601-001 Month-1	980630-999 Month-1
y-1	Last year	970101-001 Year-1	971231-999 Year-1

Using your own Time Scales

If you have defined a Time Scale (in the Database menu), you can use its constituent time periods in a similar way as the time operators. If the time scale is Financial Months (see below),



you can refer to these period names.
E.g. if you enter 'sept' in the From time box, you get

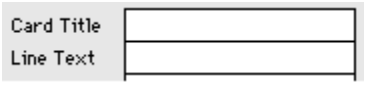
960903-001 September

See section "Time Scales" on page 63, for more details on how to create your own Time Scales.

Selection Boxes – Text

Text search in HAT is very fast and flexible. It allows you to search for a specific Card or ”filter out” e.g. all Card texts that has a certain supplier name or number in it. In this way it, in a sense, works in the same way as a ”search” for a component in a dimension chart. The option to define very complex searches also has a certain price, in terms of making it somewhat more difficult to use. In order to make life as easy as possible, without sacrificing the sophisticated functionality in cases where it is needed, text search in HAT is split in two levels - simple text search and advanced text search.

Both kinds of text search applies to the Card Title and Line Text boxes.



If you simply enter any string of text, it will by default be conceived as part of a simple text search. This is probably by far the most frequent way of using text search. When simple text search does not do the job, you invoke advanced text search by starting the search string with the \-character.

Simple search texts

If you enter a string of characters in a text box (Card Title or Line Text), and press the Calc button, HAT will select all entries that contain the entered text-string anywhere in the target text. The search is not case-sensitive, i.e. the search strings ’shop’, ’SHOP’, or ’shOP’ will all define the same selection. Each will, by itself, find the strings ’Barber Shop’ and ’bishop’. All characters are allowed in a simple search text, with a few exceptions – the logical operators |, ±, &, ¬, and the parentheses ( ) have a special status, for the very reason that they are logical operators and parantheses. Also, the backslash character (\) is reserved to indicate advanced text search, so it should not be used as a leading character, either.
By combining simple search texts with logical operators, you get logical expressions that implement somewhat more advanced forms of simple text searches.

Example

If you enter the string

(bar&ho)|bi

in a text selection box, the strings ’Barber Shop’ and ’Bishop’ will both be found.

The logical operators basically have the same meaning, as in other parts of HAT.

Advanced search texts

Sometimes more complex searches are required. E.g. you want a selection based on exactly the string ”Ltd”, in order to select all companies of this type. To get maximum precision you want the first letter to be a capital L. But in simple search texts, the difference between capital and small letters is not significant. You have to use advanced search texts.

In this example the search text would look like this:

\^Ltd

The ^-character just before the L, means that exactly this letter (not the others) has to be a *capital* letter.

The \-character acts as flag, telling HAT that the characters that follow should be regarded as an advanced search string. The following characters will, when occurring after the back-slash sign, get a special meaning:

Symbol	Meaning	Example	Will find ...	Will not find ...
*	any textstring	*age	storage, CAGE	ageing, cages
?	any (single) character	\?wan	swan, Ewan	Taiwan, wanted
^	case (capital/small letter) is significant	^Ltd	Ltd, LTD	ltd, lTD
{ }	groups many characters	^{Ltd}	Ltd	LTD, ltd, lTD
;	separates strings, of which at least one must match	\lon*;*ful	lonely, joyful	alone, fullfilment
:	after characters that occur consecutively, zero or many times	\a:bc	BC, abc, aaabc	abb, abcc
+	after characters that occur consecutively, one or many times	\a+bc	abc, aabc, AaABc	BC
_	interval	\a{b_f}c	aCc, AfC	akc, ABF
' '	enclosed characters are pure text	\'a{b}'	a{b}, A{b}	ab, AB
" "	enclosed characters are pure text	\"a'b'c"	a'b'c, a'B'C	abc, a´bc

Observe that in advanced search texts:

- capital and small letters are equivalent, if not explicitely stated otherwise (using the ^-character), just as in simple search texts
- HAT searches for exactly the string stated (but for being case insensitive). E.g. \Ab will find AB, and aB, but not ABC.
  The simple search text

  ab

  and the advanced search text

  ab

  are equivalent, i.e. they will both find ab, aB, Ab, or AB anywhere in the text.

Logical operators

Search texts can be combined by logical operators to form more complex search expressions. The operators

|, &, ±, and¬

all have their usual meaning.

Example The search expression

bus | nav

will find text strings with any of the two strings 'Business' and 'Navigator' in them.

A search text that is preceded by backslash (\), is interpreted as an advanced search text, up to the first logical operator. Thus, it is possible to mix simple and advanced search texts, to a full search expression.

Example

The expression

*^{Ltd}&hop

will find Shoplifters Ltd or CHOP CHING Ltd, but not Grasshopper LTD.

Selection Box – Value

You can select Lines to be analysed based on numerical values, by entering search criteria in the Value box

Example

If you enter 768, the Lines with the exact value 768 will be selected.

You can use the usual logical operators to form a search expression. The logical operators need no further explanation – they work as you expect from their other uses in HAT (see the description of Component operators). Also the interval- and the parantheses-symbols can be used. The relational symbols (<, >, =) can be used as single symbols, or in combination.

As always, HAT exposes its interpretation of what you enter, e.g. if you enter the string '> < 56', HAT responds by changing it to '<>56', as soon as you leave the value box, or press the Calc button.

Example

566 | 568	will find all Lines with the exact value 566 or 568
566 & 568	cannot possibly find anything, since one Line only holds one single value
(20_30)¬25	will find all Lines with values in the interval 20…30, except 25
>=50	will find all Lines with values equal to or larger than 50

Table and Chart views

The basic purpose with HAT is to allow the HAT user to exploit the potential information content in a database, easily and efficiently. This also requires that it should be easy to present the results in an optimal way. In one case you want details, e.g. check that the accounts balance, not just roughly, but to the last cent. In other cases you are best served by a broad overview, e.g. yearly sales by product, rounded to nearest thousand, and presented graphically.

Among the different ways to present data in a meaningful way, the most basic distinction is between

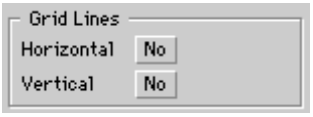
- Table view, i.e. presenting the results in tables, or lists of values
- Chart view, using graphics instead

You can switch between presentation forms in a menu,

which differs somewhat between the template types. All templates but the Cards template have at least one chart view.

Grid lines

On the Options definition page, in all analysis templates but Cards, you have the option to improve the readability of data presented in table view:



You can enter gridlines horizontally between Every Line, Every Other, etc line in the output area. Vertically the alternatives are: No (vertical lines at all) or Every Column.

Decimals

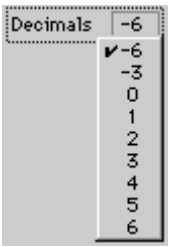
You find it on the Options definition page in Cards, Lines, and Components. In Time Functions and Component Functions, it is available on each variable and formula page.

Example

If you have a number

123456789.123456789

in your HAT database, it will be displayed rounded to the closest number according to the usual rules (i.e. 1-4 are rounded downwards, 5-9 upwards):



If setting is …	it is displayed as…
6	123 456 789.123 457
3	123 456 789.123
1	123 456 789.1
0	123 456 789
-3	123 457’
-6	123’’

Note that the Decimals setting is only a matter of how the number is *displayed*. Its value in the database is not affected.

Bastard zeros. In spite of showing a number with maximum precision, i.e. with six decimals, it may may look like a zero value, without actually being exactly zero (but very small), because of the rounding.

Rounding when exporting and copying tables

Rounded values will be exported and copied in their displayed format, if they are rounded to zero or more decimals. If rounded to -3 or -6 decimals, they are exported as if they were rounded to zero decimals.

Value fit and column width adjustment

~~95 654,88~~

Value misfit warning. Digits displayed with a double strikeout represent a value that does not fit in the column.

Adjusting column width. You can see the column borders by clicking on the column header while holding down the Ctrl key.

The arrow cursor ( ) changes to a column cursor ( ) at all column borders of the header. Drag the column pointer sideways to change the column width. The widths of adjacent columns will not be affected.

If you double-click with the column curser, the column width will automatically be adjusted.

To adjust all columns simultaneously, use the command Set Column Widths, in the Edit menu.

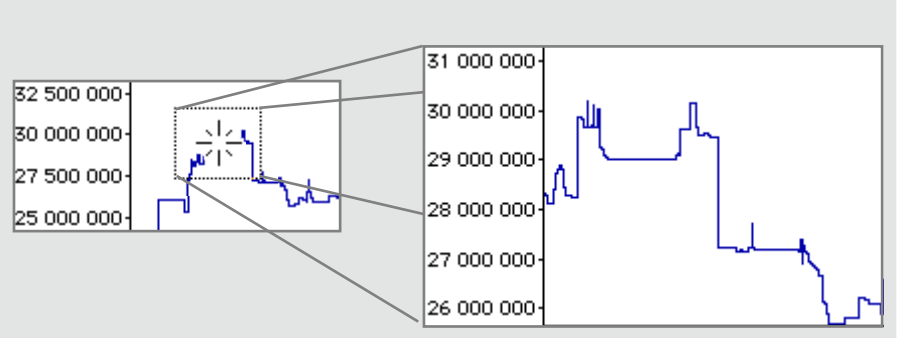
Changing Column order

If the column order is not satisfactory, you can drag columns into new positions. Click (and hold down the mouse button) in the header field you want to move. A dotted border, around this field, will be displayed. Drag the column horizontally to its new place. Its new position is indicated by a vertical bar (▌).

Zooming in charts

Enlarging by clicking

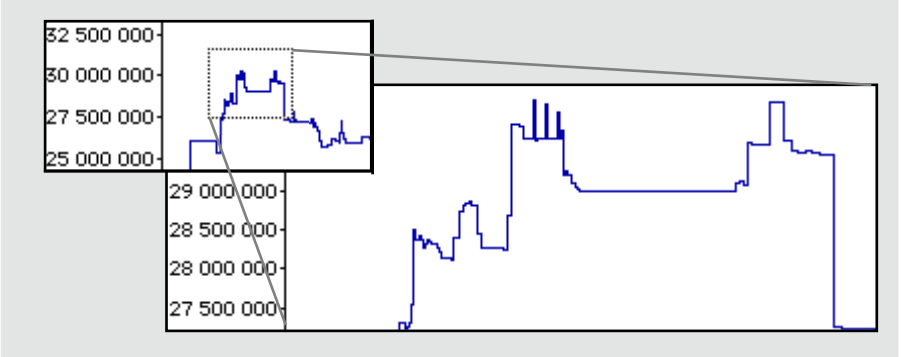
When you place the cursor on a chart area, it will show a magnifying glass. A simple click on a spot will give a new enlarged view (300%)



of the neighbourhood area.

Enlarging by dragging

When you drag to mark an area with the magnifier, the area is enlarged to the new view.



Reducing Charts

By pressing the Alt-key, the cursor changes appearance from a magnifying glass to a ”reduction glass”. You can thus reverse the magnification. Note that you can also reduce by dragging. Try it, and you will quickly find out how it works.

Special case

In Component Functions, enlarging and reducing only works in one direction, along the value axis.

Common definition pages

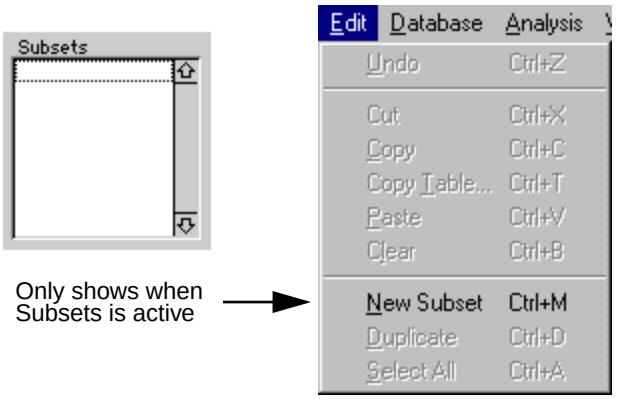
Each analysis template has a large number of features. They are organized in between six and nine definition pages, depending on type of template. Some definition pages are specific for one type of template, but others are very similar.

The definition pages Subsets, Printing, Export, and Notes basically look the same. The small differences that exist in a few cases, are further commented in the following sections.

Subsets

This topic has essentially been covered in the section “Subsets” on page 59. The two types of subsets – Global Subsets and Local Subsets, were introduced in that section. They are both called Subsets, and you work in exactly the same way with both of them. Only their scope differ. A local subset is entered on a definition page, and is only valid within the template for which it is defined; hence we call it a *Local Subset*. On the Subsets definition page you can install a list of subsets. To enter a new subset, press the button New Subset. Note that you can also use the New command in the Edit menu. In order to enter a new subset this

way, you have to focus the Subsets list, by clicking anywhere in the list area, which will be highlighted. Then the command New Subset will show up:



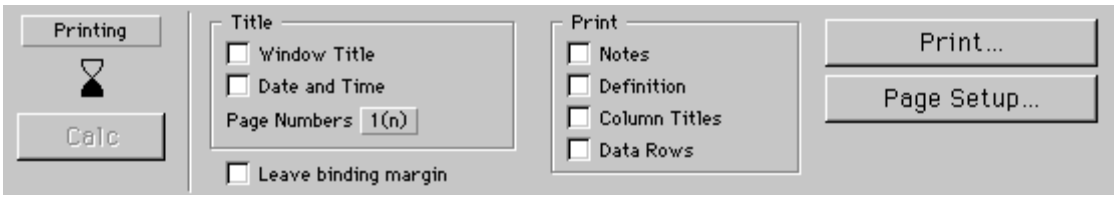
With New Subset you get a regular subset window (i.e. the same as a subset in the Database menu). The subset is installed automatically when you close the subset window. You can install any number of subsets, and they all turn up in the Subsets list:

Mark an entry in the list, and the Edit menu will display the options to cut, copy, erase, and duplicate the highlighted subset. These operations can be performed also on any subcollection of subsets:

Select All	Highlights all the subsets
Shift-click	Selects a closed interval of subsets
Ctrl-click	Selects two or more non-consecutive subsets

Printing

With one small exception, the Printing definition page always has the following contents:



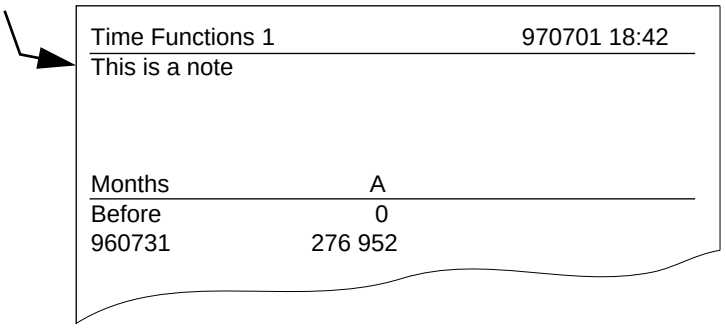
Window Title. The name of the analysis template, as it appears in the window name, will be printed in the upper left corner of the printout.

Date and Time. Will print a date/time stamp in the upper right corner.

Page Numbers. You can choose between how to display the pagenumbers, if at all. The page numbers will appear in the upper right corner of the document. Regardless of this setting, the pagenumber will not be printed at all, if the there is not more than one page in the printout.

Leave binding margin. HAT will add another centimeter of space in the left margin.

Notes. The text in Notes will be printed below the window title, i.e. use it for written comments to the output.



Definition. Often you would like to see the exact definitions of the selections and formulas, that the printout is based upon.

Column Titles and Data Rows. Are also optional.

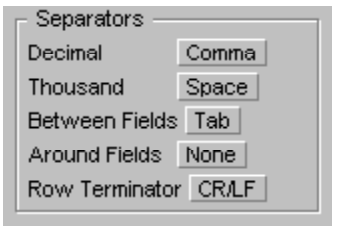
Header Rows. Are only relevant in some templates, e.g. the Lines template when the display mode is Table view.

Export

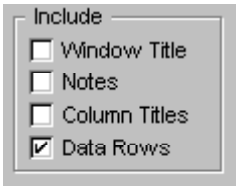
The Export commands are equivalent to the Copy Table and Copy Chart commands. By exporting from an analysis template, you get a separate file.

You have a high degree of control of the format of the exported file.

First the separators that are included (see section “Copy Table.../Copy Chart...” on page 39 for further details):



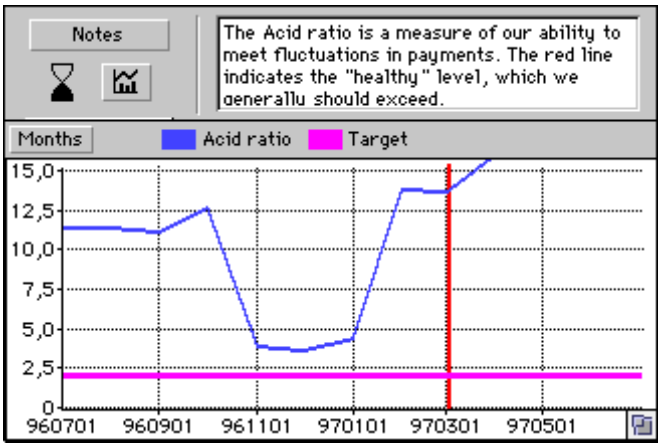
Then, the data that are included:



Export… You can start the exportation in two ways. Either by pressing the Export… button on the definition page, or by choosing Export… from the File menu.

Notes

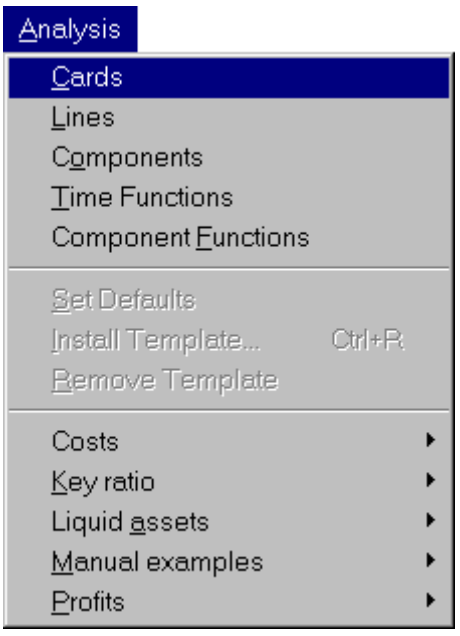
For all types of analysis you can make a note about the contents of the analysis. The notes will be saved when the template is installed. It is sometimes a good idea to install the template with the Notes definition page displayed first:



9

Analysis Templates

Cards



Introduction

The Cards template is the least ”analytical” of the available templates. Still it is often very useful. Exactly how useful depends to a large extent it on what type of data the HAT-file represents. The Cards template is often used to examine the fundamental data in its pure form. The powerful search function in HAT is often used to find individual Cards containing certain texts in the Card Title or Line Text field. Or to find a a Card with a certain entry in the Value field.

Definition pages

Selection

See section “Selections” on page 75.

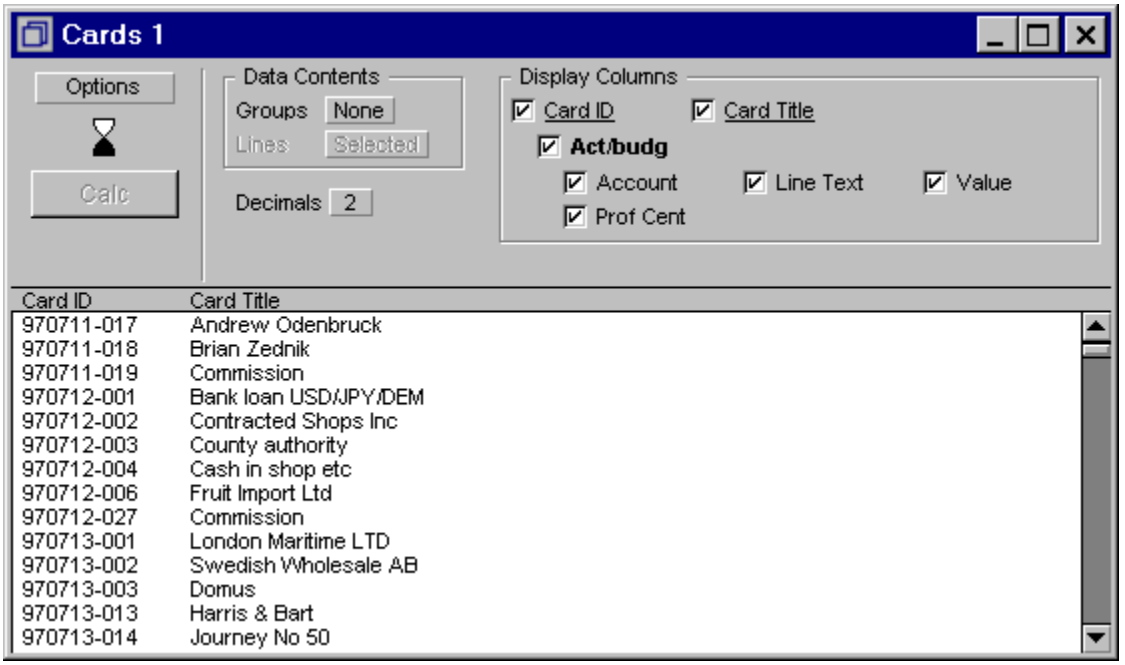
Subsets

See section “Subsets” on page 86.

Options

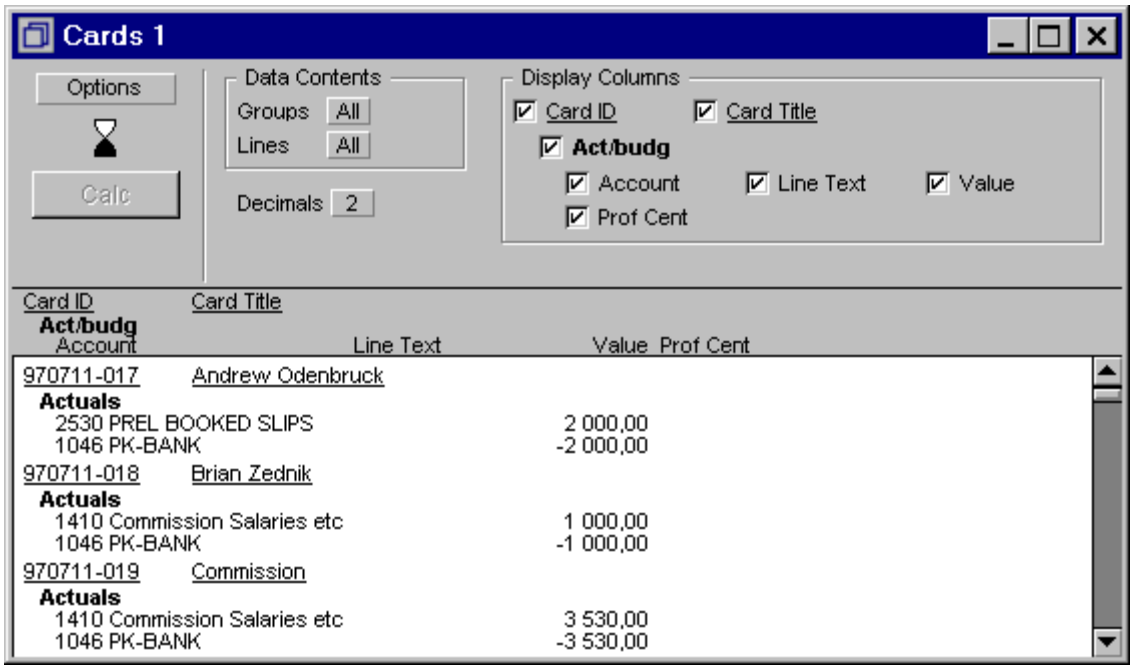
Data Contents

Groups = None. No Groups are listed (and therefore no Lines). The list only contains the Card IDs and Card Titles:

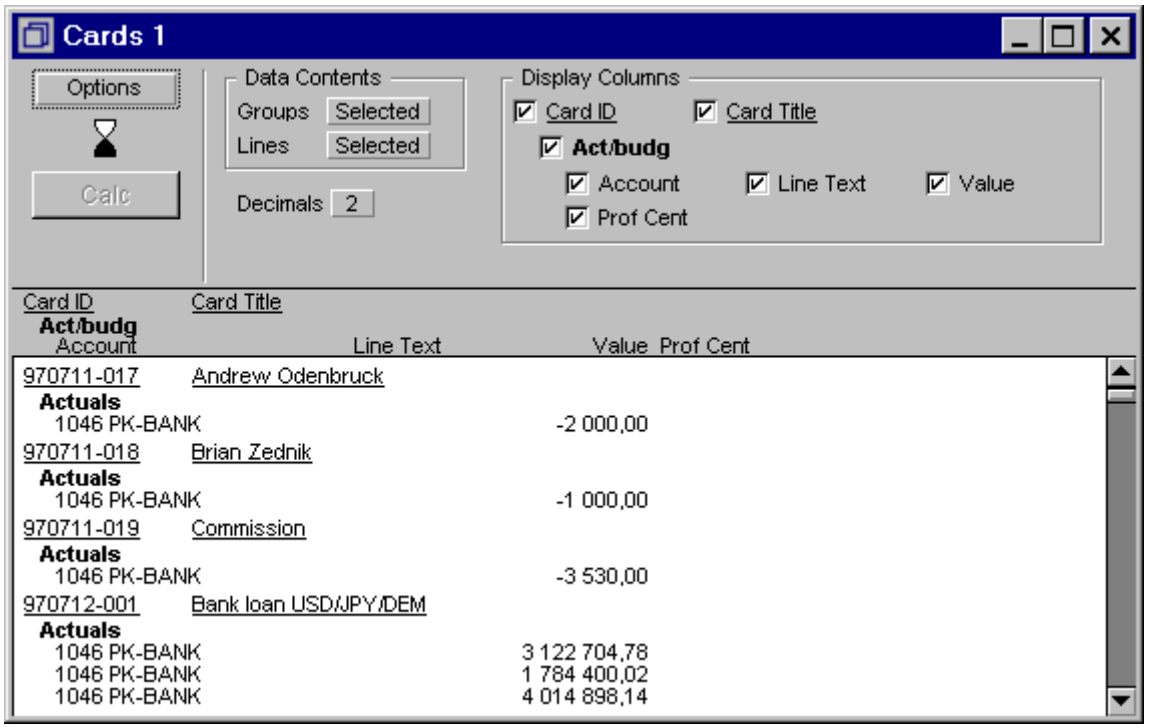


Gives a good overview for inspection of individual Cards.

Groups = All, Lines = All. All information on each Card, but for the Notes area, will be displayed:



One middle road: Groups = Selected, and Lines = Selected.



Exactly the Lines which are included in the selection are displayed, no more and no less.

In all there are nine different combinations of settings available.

Decimals

See section “Decimals” on page 84.

Display Columns

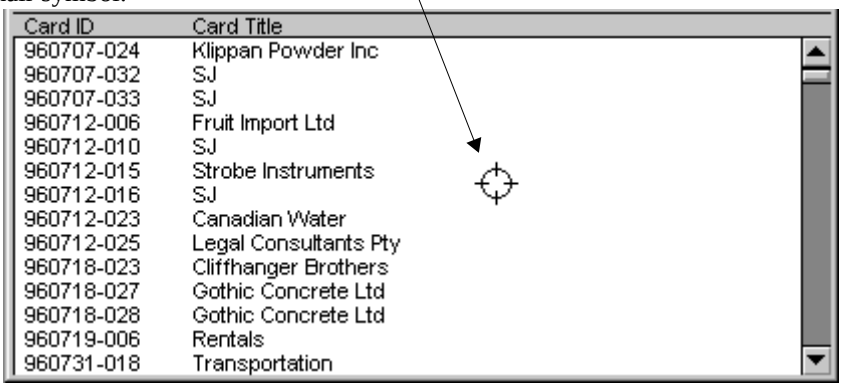
Only the Card elements that are marked will show up.

Printing, Export, and Notes

See section “Printing” on page 87.

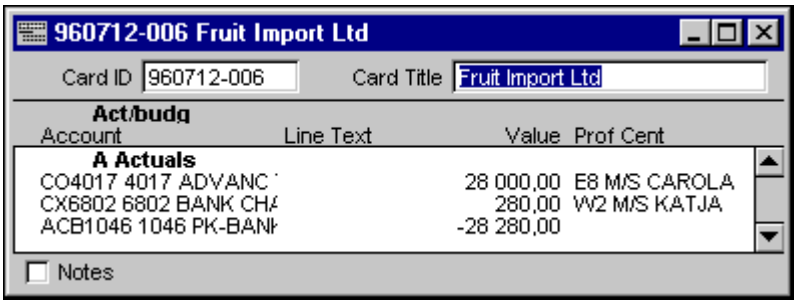
Working interactively in the output area

When you move the cursor over the output area, the arrow will turn into a cross-hair symbol:



Click on a row in the output area, and the corresponding Card will be displayed, in edit mode.

The individual element you clicked on will be highlighted, i.e. if you click on Fruit Import Ltd, you get:

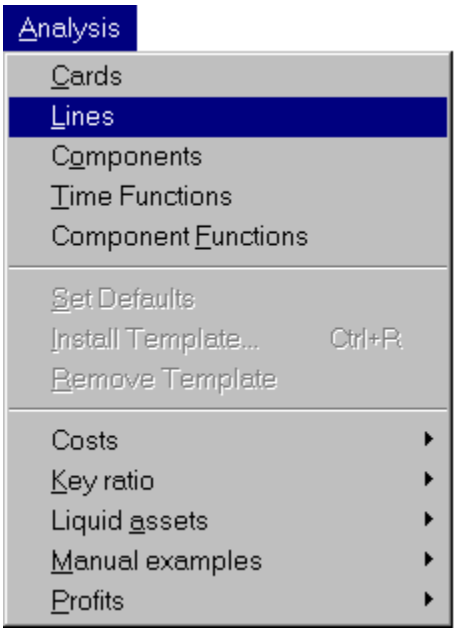


If the Notes area contains text, it will automatically be opened.

10

Analysis Templates

Lines



Introduction

The general idea with the Lines template, is to select individual Lines from their Cards, and present them in chronological order, in their detailed and ”raw” format. In addition to showing the individual values in lists or graphs, you can also get the accumulated figures. For all its simplicity, it is often very useful. The pop-up menu in the template common area allows you to display three different views:

Table view, where you can see the individual values, and their accumulated values in two parallell columns

First chart view, showing the individual values in a bar chart.

Second chart view, which shows a line graph of the accumulated values

Definition pages

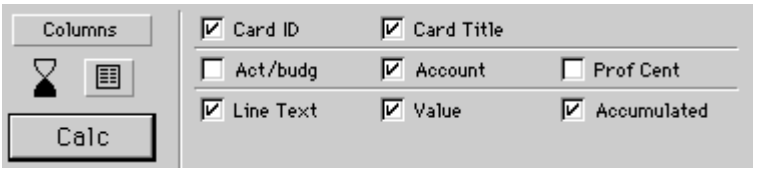
Selection

See section “Selections” on page 75.

Subsets

See section “Subsets” on page 86.

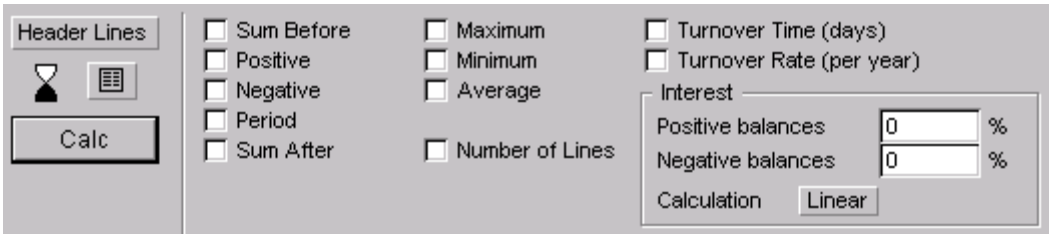
Columns



Choose which Columns you want displayed.

Header lines

In Header Lines you can include general measures based on the contents of all the Lines in the list. The values will show up in a number of header lines in the



first part of the output area. If all the entries are ticked it may look like this:

Card ID	Card Title	Account	Line Text	Value	Accumulated
	Sum Before:			393 221,34	
	Positive:			593 397,00	
	Negative:			0	
	Period:			593 397,00	986 618,34
	Sum After:			5 460,00	992 078,34
	Maximum:			576 000,00	986 618,34
	Minimum:			845,00	393 221,34
	Average:			59 339,70	508 159,79
	Number of Lines:			10	
	Turnover Time (days):			18,84	
	Turnover Rate (per year):			19,37	
	Interest (+):		5,00 %	765,72	
	Interest (-):		8,00 %	0	
960712-010	Fruit Import Ltd	4012 PARKING		3 166,00	396 387,34
960712-016	SJ	4012 PARKING		3 166,00	399 553,34
960712-023	Canadian Water	4012 PARKING		1 845,00	401 398,34
960712-025	Legal Consultants Pty	4012 PARKING		1 845,00	403 243,34
960718-023	Cliffhanger Brothers	4012 PARKING		845,00	404 088,34
960718-023	Cliffhanger Brothers	4012 PARKING		1 749,00	405 837,34
960718-023	Cliffhanger Brothers	4012 PARKING		1 590,00	407 427,34
960718-027	Gothic Concrete Ltd	4012 PARKING		1 346,00	408 773,34
960718-028	Gothic Concrete Ltd	4012 PARKING		1 845,00	410 618,34
960719-006	Rentals	4015 RENTING		576 000,00	986 618,34

Sum Before. Net opening balance, i.e. the sum of all Line values which match the selection, and occur before the specified time period.

Positive. Sum of all positive values in the period.

Negative. Sum of all negative values in the period.

Period.

First column: Net sum of all values in the period.
Second column: Includes the value of the entry balance, also.

Sum After.
First column: The sum of all Line values that occur after the end of the specified time period.

Second column: The first column plus the Sum After-value, i.e. it amounts to the sum of all Line values, from the first to the last in the file (which satisfy all other selection criteria, but for the time period).

Maximum. Returns values in two columns. The first number is the maximum value of all single values. The second number is the maximum value of all accumulated values.

Minimum. Analogous to Maximum.

Average. Returns values in two columns.

The first column value is the average value of all single values.

The second column value needs some further explanation. Mathematically it is the weighted average value of the accumulated values, where the weight for each value is its time span.

Example

If you have $20 in cash during the first week, and $10 during the following four week period, on average you had a balance of $12; calculated as (20x1+10x4)/5.

Number of Lines. Returns the number of Lines in the list.

Turnover Time (days). The average lifetime in days of a value unit during the period.

Example

Assume we have an average inventory level of 100 units during a period. During the same period we have on average filled up and delivered 5 units a day. The average time each unit stays in the inventory has been 100/5=20 days.

The mathematical definition is:

$$\text{Turnover Time} = \frac{\left|\int s(t)dt\right|}{\left(\sum\left|x_i\right|\right)/2}$$

where

$s(t)$ = accumulated values as a function of time

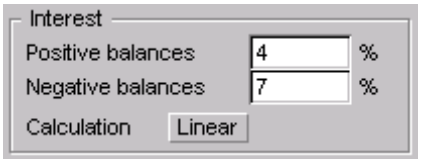
and

x_i = values

Turnover Rate (per year). The average number of times the mean value turns over per year. The relation to Turnover Time is this:

$$\text{Turnover Rate} = \frac{365}{\text{Turnover Time}}$$

Interest. The interest rates entered in the boxes Positive balances and Negative balances are applied to the accumulated values. For every timespan with unchanged accumulated value, the first interest is applied if the balance is positive, and the second is applied if it is negative..

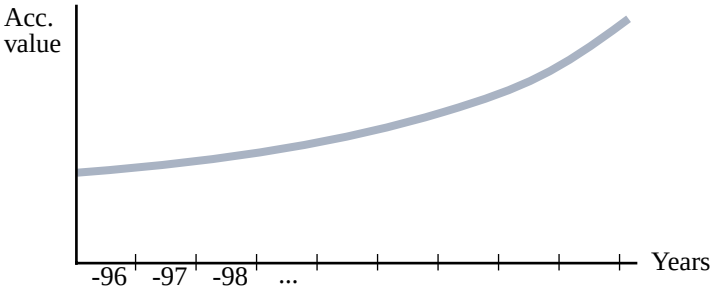


Example

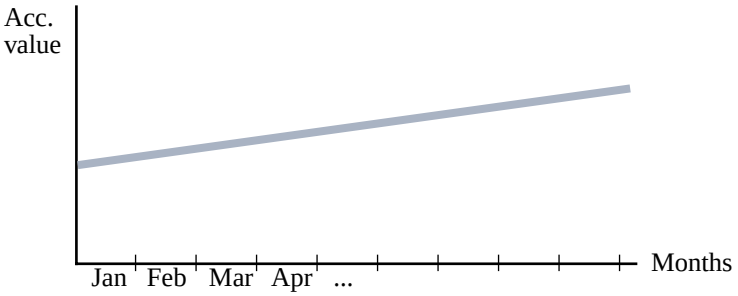
If you have a cheque account with a credit option, you normally get a lower interest on positive balances, and pay a larger interest on negative ones. If the Lines template includes the entry balance and the transactions, you will get the total interest value, split into positive and negative balances.

Linear or Exponential calculation. Depending on the terms of a loan or a bank account, interest is calculated in different ways. Usually the accumulated interest is added to the balance each year, with the effect that the entry balance for the next year changes accordingly. This, in turn, increases or decreases the total interest during the next year (the effect of “interest-on-interest”). Assume that an account starts with a fixed amount, and remains on the account for a number years without any transactions, but for the addition of the interest accumulated during each year. The accumulated values (with the “interest-on-interest” effect) will then develop exponentially. E.g if the initial amount is $100 and the

yearly interest rate is 12%, the accumulated value would be $112 after the first year, $125.44 (=112+12%x112) after the second year, etc:



For periods within the same year, the interest is usually (but not always) strictly proportionate to the elapsed time. E.g. if the initial amount is $100 and the yearly interest rate is 12%, the accrued interest after three months is $3, after six months $6 etc:

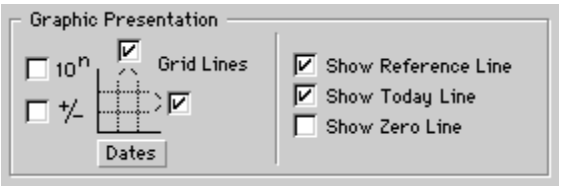


To be able to cover these two cases, HAT offers two methods of calculating the interest:

1. Exponential, which corresponds to the first graph. Use this method if you want to calculate the interest over a number of years (when you want to include the “interest -on-interest” effect). It also gives the correct result for shorter periods if interest is accumulated continuously (which is seldom the case for common bank accounts, but more common in other cases).
2. Linear, as in the second graph. This model is often appropriate if the period is shorter than a year, or if you separately add one transaction at the end of each year, to account for the accumulated interest during the year.

Graphics

On this definition page you can set a number of options affecting how the graphical charts are presented, and to some extent what is presented:



The common purpose is to make the charts more readable.

10^n. Especially for large numbers it is useful to present numbers in exponential format.

+/-. The value axis direction is reversed. Normally the positive axis points upwards. By clicking this checkbox the positive axis points downwards. The graphs will be presented, as if all values had the opposite signs. Useful when a lot of negative values are presented.

Grid Lines. Use this option to increase readability of diagrams.

Dates. You can change the time scale to any of the customized ones, provided you have at least one such time scale installed. If no such alternative exists, only the option Date (i.e. HATs own time scale) will be available.

Show Reference Line. A red vertical line will be displayed in the chart at the Reference Point (which you set in Database Settings…)

Show Today Line. A green vertical line is displayed, representing the current date.

Show Zero Line. A dotted horizontal line representing zero, will be displayed. It also ensures that the zero line is always shown in the graph.

Options

Apart from the button Relative Distribution, the settings on this definition page, influence how the Lines template looks in table view.

Decimals. Number of decimals displayed.

Card Info. This pop-up has two alternatives:

1. Every Line

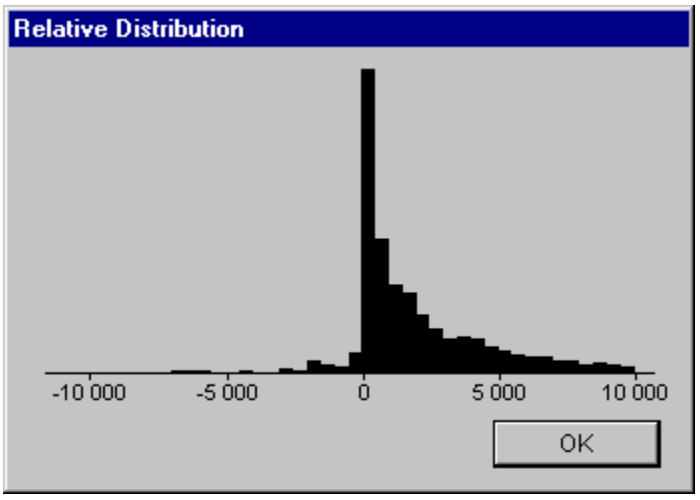
Card ID	Card Title	Value	Accumulated
960712-023	Canadian Water	-1 845,00	-1 845,00
960712-023	Canadian Water	1 845,00	0
960712-025	Legal Consultants Pty	-1 845,00	-1 845,00
960712-025	Legal Consultants Pty	1 845,00	0
960718-023	Cliffhanger Brothers	-4 184,00	-4 184,00
960718-023	Cliffhanger Brothers	845,00	-3 339,00
960718-023	Cliffhanger Brothers	1 749,00	-1 590,00
960718-023	Cliffhanger Brothers	1 590,00	0
960718-027	Gothic Concrete Ltd	-1 346,00	-1 346,00
960718-027	Gothic Concrete Ltd	1 346,00	0
960718-028	Gothic Concrete Ltd	-1 845,00	-1 845,00
960718-028	Gothic Concrete Ltd	1 845,00	0
960719-006	Rentals	-576 000,00	-576 000,00
960719-006	Rentals	576 000,00	0
960731-018	Transportation	-1 495,00	-1 495,00
960731-018	Transportation	1 495,00	0
960731-024	Yaster Transp.	-3 965,00	-3 965,00
960731-024	Yaster Transp.	3 965,00	0

The Card Info (i.e. Card ID and Card Title) is repeated for every Line item.

2. First Line shows the Card Info only for the first line item, from the same Card:

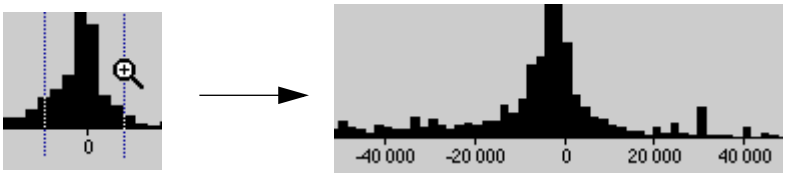
Card ID	Card Title	Value	Accumulated
960712-023	Canadian Water	-1 845,00	-1 845,00
		1 845,00	0
960712-025	Legal Consultants Pty	-1 845,00	-1 845,00
		1 845,00	0
960718-023	Cliffhanger Brothers	-4 184,00	-4 184,00
		845,00	-3 339,00
		1 749,00	-1 590,00
		1 590,00	0
960718-027	Gothic Concrete Ltd	-1 346,00	-1 346,00
		1 346,00	0
960718-028	Gothic Concrete Ltd	-1 845,00	-1 845,00
		1 845,00	0
960719-006	Rentals	-576 000,00	-576 000,00
		576 000,00	0
960731-018	Transportation	-1 495,00	-1 495,00
		1 495,00	0
960731-024	Yaster Transp.	-3 965,00	-3 965,00
		3 965,00	0

Relative Distribution. When you push this button a frequency diagram will be displayed in a separate window



It shows how frequent different values are in the selection. You can enlarge the diagram in two ways:

1. By clicking in the graph, with the magnifier
2. By pointing and dragging, over the area of further interest.



3. With the Alt-key you modify the magnifying glass to – i.e. the reversed function.

Printing, Export, and Notes

See section “Printing” on page 87.

Working interactively in the output area

You expose further details by clicking or dragging in the output area.
The point-and-click operation can be used in all display modes – table view and the two variants of chart view.
In chart view you can use the drag operation to define a list of cards, by marking a part of the output area.

To signal that these operations will take place if you click or drag, the curser turns into a crosshair-symbol. When data are displayed in table view, this happens already when you move the cursor over the output area, as this is the only possible meaningful operation. When the data are presented in any of the chart modes, the default operation when you click or drag is the zoom operation. You then have to press the Ctrl-button to modify the cursor to a crosshair-symbol, and get access to the ”drill down” functionality.

Table view

Click on any item

Card Title	Account	Value	Accumulated
Sum Before:		0	
Klippan Powder Inc	2110 DUE TO SUPPLIERS	-11 168,00	-11 168,00
Klippan Powder Inc	2390 OTH INTERIM AMOUNTS DUE	7 148,00	-4 020,00
Klippan Powder Inc	4012 PARKING	1 689,00	-2 331,00
Klippan Powder Inc	4012 PARKING	2 331,00	0
SJ	2110 DUE TO SUPPLIERS	-2 006,00	-2 006,00
SJ	4012 PARKING	1 625,00	-381,00
SJ	1470 VAT BROUGHT FORW	381,00	0
SJ	2110 DUE TO SUPPLIERS	-2 006,00	-2 006,00
SJ	4012 PARKING	1 625,00	-381,00
SJ	1470 VAT BROUGHT FORW	381,00	0
Fruit Import Ltd	2110 DUE TO SUPPLIERS	-3 166,00	-3 166,00
Fruit Import Ltd	4012 PARKING	3 166,00	0

and you will get the corresponding Card displayed, with a highlight of the field you pointed at:

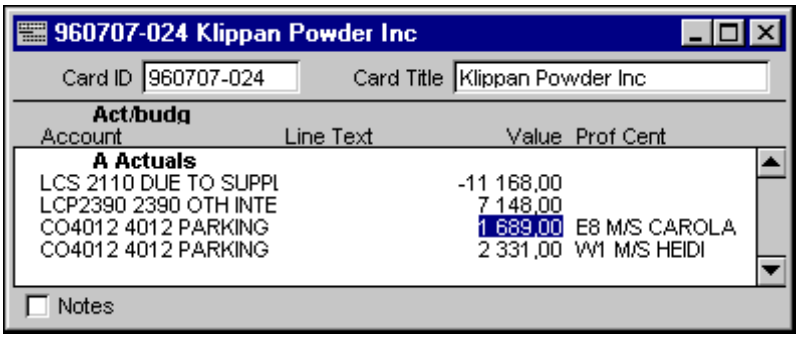
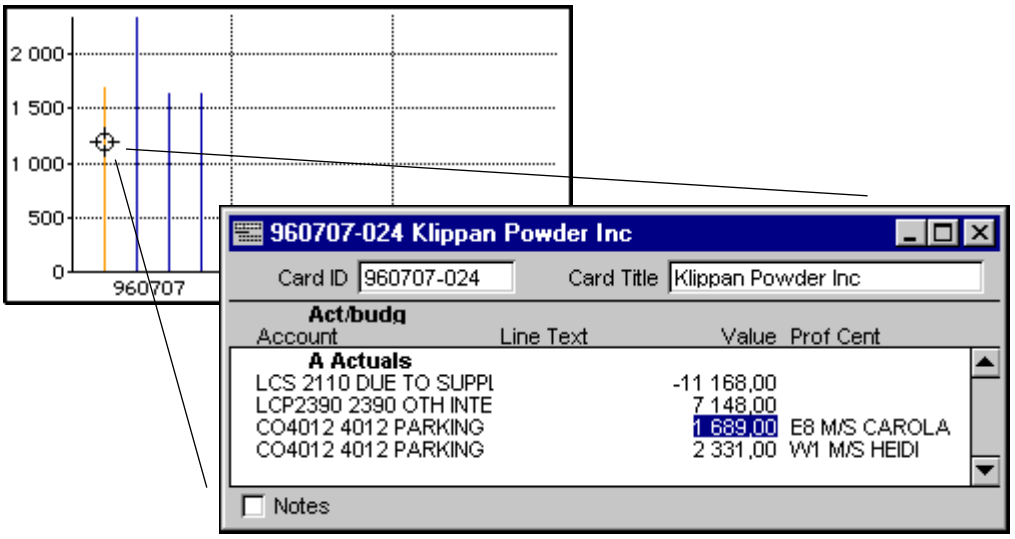


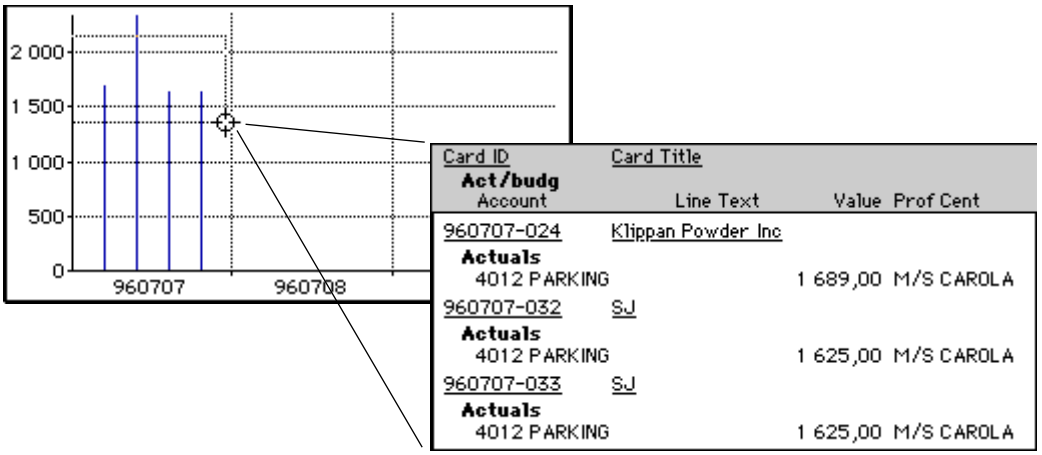
Chart view – Bar chart

Point-and-click operation. The mechanism is almost the same as in table



view. With the difference that you have to press the Ctrl-key to change the arrow cursor to the crosshair. If you click on a bar, it will correspond to clicking on the Line value in table view.

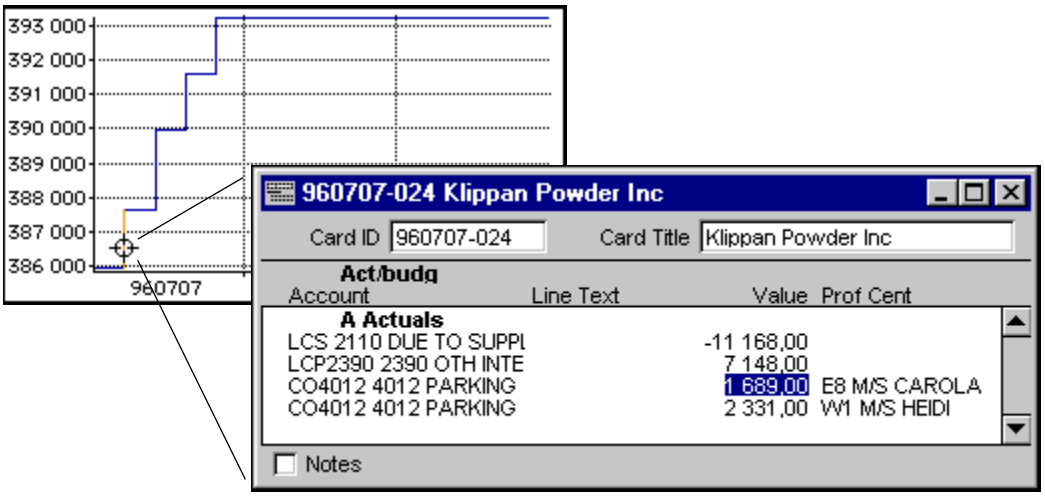
Drag operation. In chart view you can drag over a number of transactions and get a list of them:



The transactions/bars which have their top ends in the marked area, are selected and displayed in a Cards template, with exactly these transactions selected.

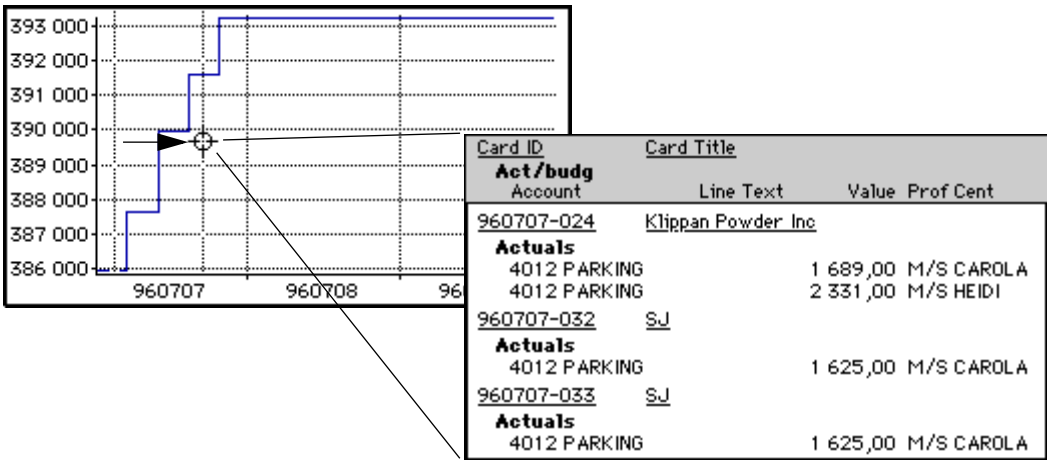
Chart view – Line chart

Point-and-click operation. Basically works in the same way, as for the bar chart (above):



You can only click on a vertical line segment, which represents a transaction value.

Drag operation. In this case you can only drag horisontally (i.e. along the time axis):

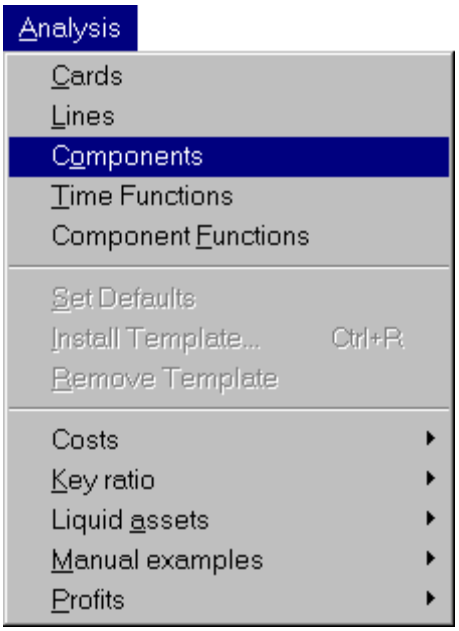


You get the selected transactions dated during the marked time period.

11

Analysis Templates

Components



Introduction

In the Cards and Lines templates you work on a very detailed level, with individual values. In Components the focus is on aggregated values. E.g. if you want to see the costs by account, by profit centre, by project, by product, or any other dimension included in your HAT-application, you often use a Components template. In the example file, Demo Inc, we are limited to two dimensions by the available data – Account and Prof Cent.

The table and chart views

Data in a Components template can be presented as tables or as pie charts (which also hold some tabular data):

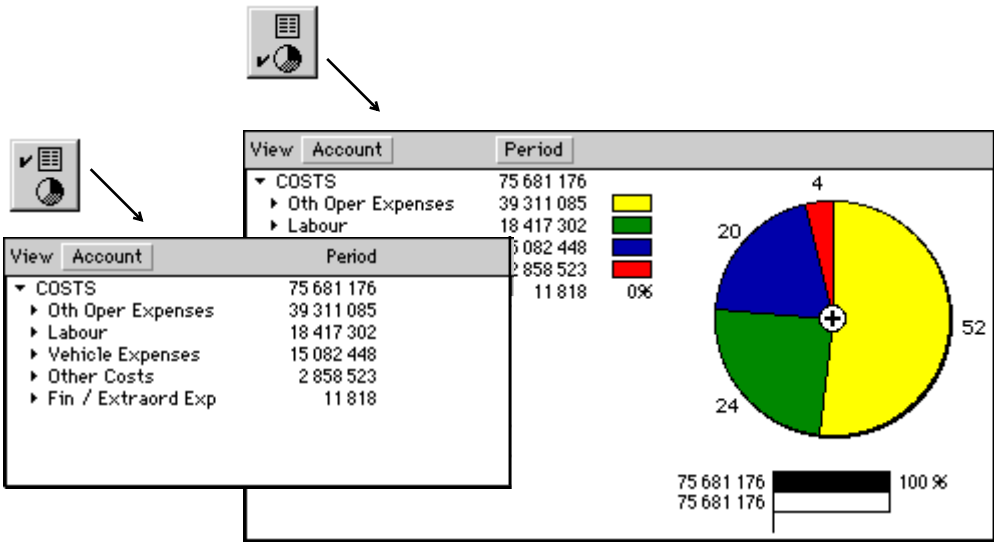


Table view

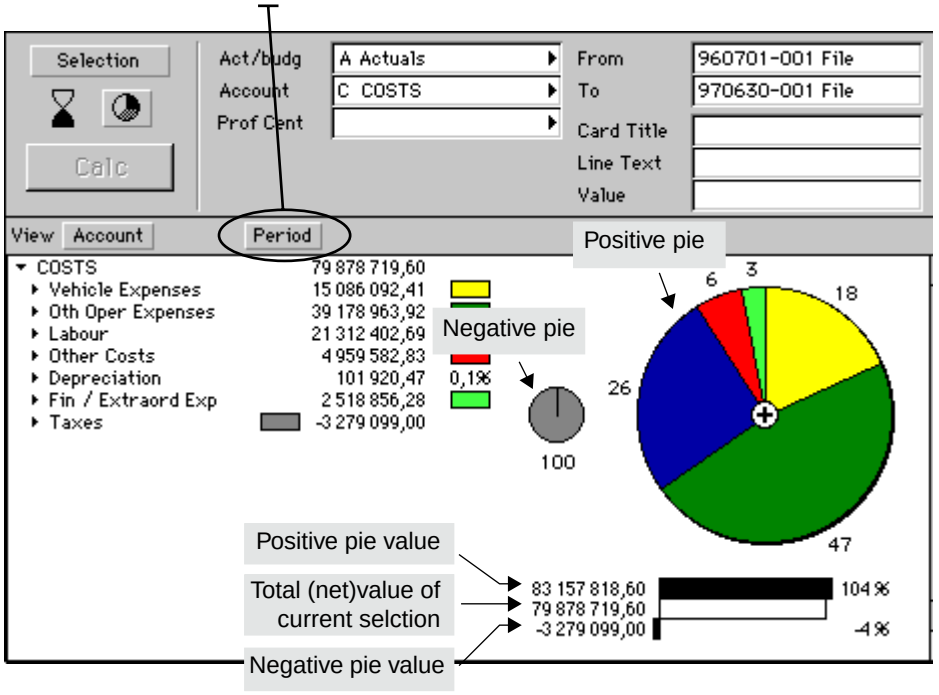
Use this view to see the exact aggregates by component. There are a number of different measures you can display, and you can show all of them, any subset, or just one. This is an an example where all available measures are used (each column gives one measure, see “Columns” on page 107.):

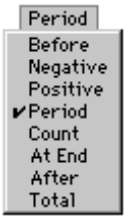
View Account	Before	Negative	Positive	**Period**	Count	At End	After	Total
COSTS	0			**0**		0	0	0
Vehicle Expenses	0	-801 039	15 883 487	**15 082 448**	1089	15 082 448	0	15 082 448
Oth Oper Expenses	0	-7 433 526	46 744 611	**39 311 085**	1645	39 311 085	0	39 311 085
Labour	0	-4 250 000	22 667 302	**18 417 302**	577	18 417 302	0	18 417 302
Other Costs	0	-828 567	3 687 090	**2 858 523**	406	2 858 523	0	2 858 523
Fin / Extraord Exp	0		11 818	**11 818**	36	11 818	0	11 818
Taxes	0	-3 601 977	203 794	**-3 398 183**	57	-3 398 183	0	-3 398 183

Usually only a few of these columns/measures are used in the practical case at hand. The table can be used for analysis by itself, or as a basis for copy-and-paste or export, e.g. to an Excel spreadsheet, or any other application where tabular data are useful.

Chart view

In the chart view, you can display one of the columns in table view, together with the corresponding pie chart. You choose which column, in the pop-up menu, situated in the output area heading.

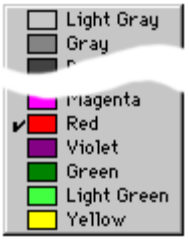




Pie sectors. Each pie sector shows the value of a component as a fraction of the total for the Period. You can change to any other measure, corresponding to the measures on the definition page Columns.

Positive and negative component values in different pies. It is meaningless to show positive and negative values in the same pie. Hence they are shown in separate circles, with areas proportional to their total values.

Related pie sector and component value. By clicking on either a row in the table or a sector in the chart, you can see the correspondence between the two. Move the cursor away from the pie sector before releasing the mouse button if you do not want to expand the sector.



Changing colors. The table legend consists of colored labels (if you have a black and white display, the colors will be patterns instead). You can change the color/pattern of a label, by clicking on it.

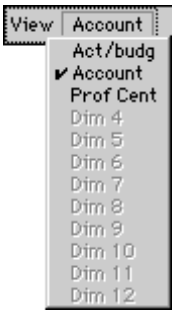
Left and right labels. The labels are arranged in separate columns for positive (to the right) and negative values (to the left). They are also a indented according to their position in the dimension chart hierarchy.

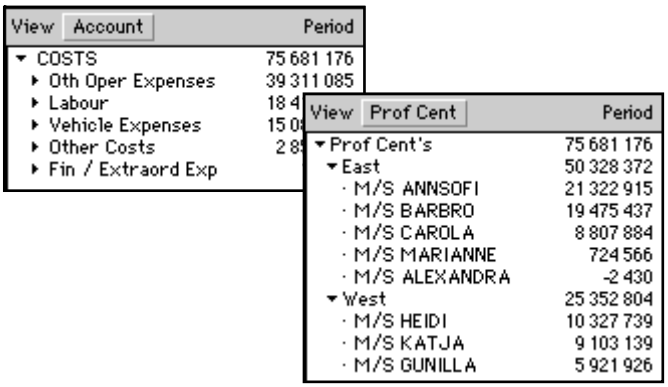
Percentages. Are displayed according to settings on the Options definition page.

Black and white horizontal bars. The white bar shows the sum of all Line values. The two black bars show the sum of positive and negative values, as currently shown in the pie chart.

View

The View menu allows you to instantly change the dimension, along which the selected data are aggregated:





This flexible way to get aggregates by dimension components is a distinctive feature of the Components template (and in the Component Functions template, Chapter 13).

Definition pages

Selection

See section “Selections” on page 75.

Subsets

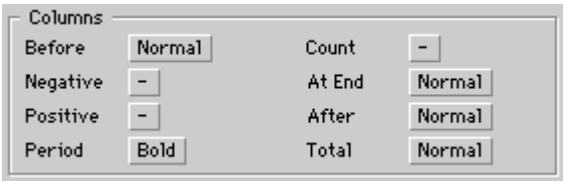
See section “Subsets” on page 86.

Columns

Determines which data are displayed in table view.

Example

If you set Columns to:

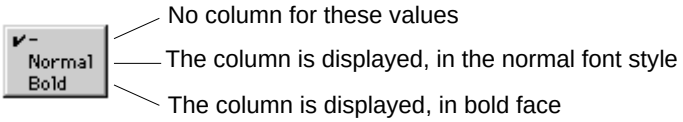


you get the following columns:

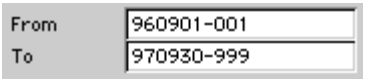
View Account	Before	**Period**	At End	After	Total
COSTS	19 740 086	**10 853 694**	30 593 779	45 087 396	75 681 176
Oth Oper Expenses	10 294 450	**5 402 297**	15 696 748	23 614 337	39 311 085
Labour	4 712 212	**2 655 257**	7 367 470	11 049 833	18 417 302
Vehicle Expenses	3 788 762	**2 077 836**	5 866 598	9 215 849	15 082 448
Other Costs	941 306	**716 523**	1 657 828	1 200 695	2 858 523
Fin / Extraord Exp	3 355	**1 780**	5 135	6 683	11 818

If and how a column is displayed, is set with the pop-up menu for the co-

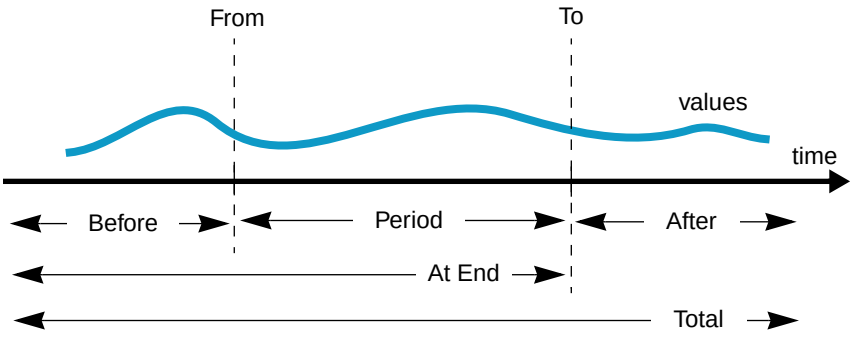
lumn:



All the column values depend on the time interval defined on the Selection definition page. In the illustration that follows, the time points (i.e. Card IDs) From and To refer to the selected time period:



They define the Period, which is the basis for all other values, based on time intervals:



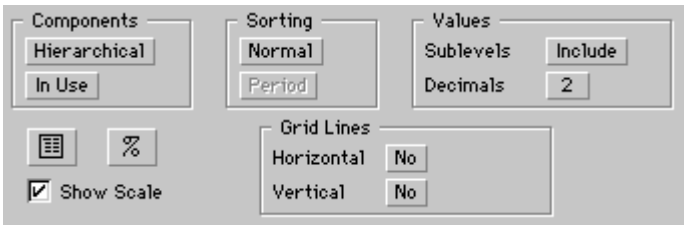
E.g. the value At End is the sum of all values, from the very first in the file (which also meets all other criteria in the selection, but for the time restriction), until the Card ID entered in the To-box.

In addition to the measures illustrated above, the following ones are also available:

Negative, Positive. Splits the Period sum in its negative and positive parts.

Count. Gives the number of Lines in the selection.

Options



Components

The presentation follows the hierarchy defined in the dimension chart.

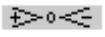
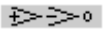
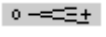
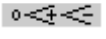
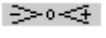
Shows each component at the lowest level, and every other component that is directly coded.

All components are displayed, regardless if they are directly coded or not.

Only directly coded components are shown.

Sorting

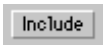
You can choose to sort components either on the basis of the structure in the dimension chart (Normal), or based on the component values in a column of your own choice. The sorting orders are:

Sorting order	Explanation	The numbers -4, -2, 0,1,3 will be ordered as
Normal	As in dimension chart	3, -4, -2, 1, 0
	By decreasing value	3, 1, 0, -2, -4
	First by decreasing positive value, then increasing negative, zero last	3, 1, -4, -2, 0
	By decreasing absolute value	-4, 3, -2, 1, 0
	By increasing absolute value	0, 1, -2, 3, -4
	Zero first, then by increasing positive, then decreasing negative value	0, 1, 3, -2, -4
	By increasing value	-4, -2, 0, 1, 3

Values

Sublevels. Often, but not always, you want to see the aggregated values for high level components.

Only the aggregates of directly coded components are displayed.



Each component aggregate includes directly coded values, and all sub-level values.

Decimals

See section “Decimals” on page 84.

Presentation of the dimension charts

Controls how the dimension hierarchy is presented. You set this as a general property of each dimension chart. You can overrule this setting here, if needed.

Display of percentages (appears in chart view, only)

Affects how percentages are displayed in chart view.
The alternatives are: None, percentages without decimals, and with one decimal place.

Show Scale (appears in chart view, only)

Allows you to control if the horizontal scales will be displayed or not (see “Black and white horizontal bars” on page 106.):

Grid lines

See section “Grid lines” on page 84.

Printing, Export, and Notes

See section “Printing” on page 87.

Working interactively in the output area

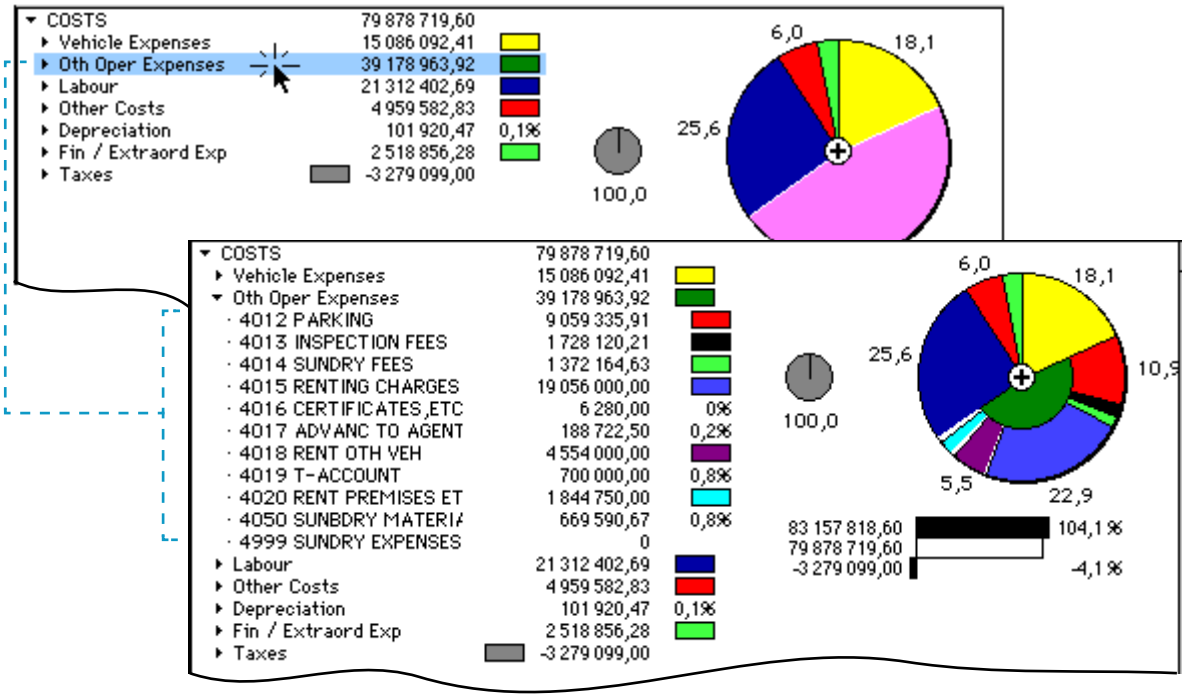
You basically have two different ways to explore more details in the output area of a Components template:

- Unfolding high level components to give a more detailed view, within the same template, using regular point-and-click operations.
- Showing the underlying details of a number or graphical element, with a transfer to a Lines template. In this case using the crosshair tool.

Unfolding components

You can expand a component to its subcomponents in two ways:

- Click on the components hierarchy symbol or directly on the component text, e.g. CL Labour in the same way as you expand a component in a table.
- Click on the pie sector for the component.

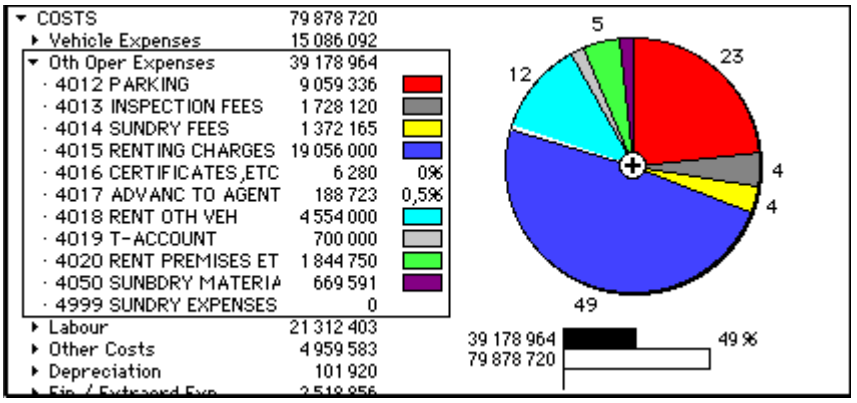


Collapse component. There are two ways to collapse an expanded component:

- Click on the components hierarchy symbol or the component text.
- Click on the inner pie sector for the expanded component.

Pie for subcomponent. If you expand all pie sectors in this example, you get overwhelmed by all its pieces. The remedy is to focus on a specific subcompo-

nent. If you hold down the Shift key while clicking on a component, e.g. Oth Oper Expenses, the chart changes to:



This chart now corresponds to the values inside the frame. The black and white horizontal bar chart shows the relative size of this pie, compared to the original one.

To reverse this operation, Shift-click on the same component (Oth Oper Expenses) again.

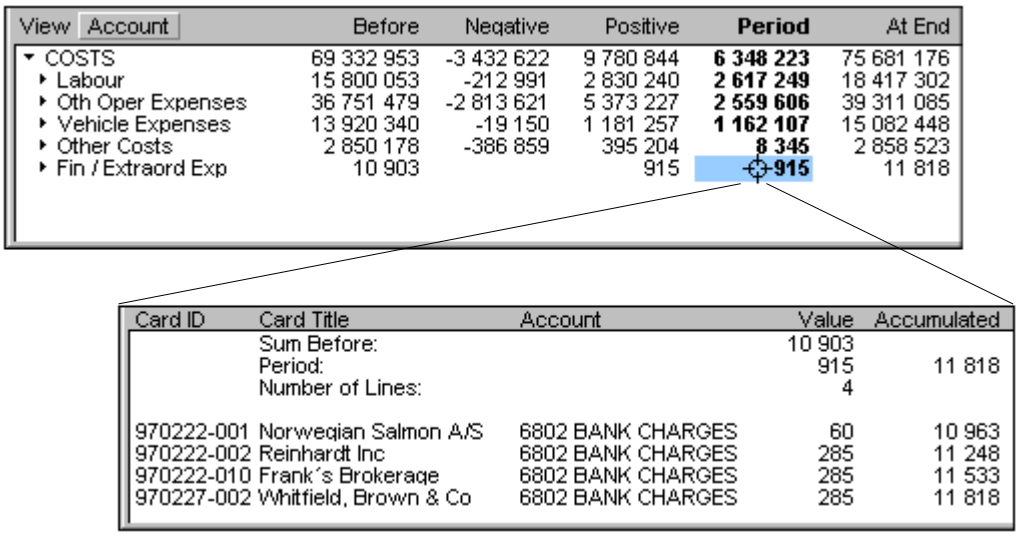
If you click (without holding down the Shift key) on a higher level component. the boxed area moves to that level. You will then have to expand this component to see its subcomponents.

Using the crosshair tool

The point-and-click method to successively unfold more details is often all you need. But if you want to see the individual transactions, this is not enough. You get these details, for a certain element in the output area, with a similar operation. Press the Ctrl-key, to change the cursor to a crosshair symbol and place it over a number or a pie-segment in the output area. When you press the left mouse button, you will get a new Lines template, which will show these very details.

Table view

If you Ctrl-click on any number in the output area, the corresponding Lines will be displayed in table view. The header lines Sum Before, Period, and Number of Lines, will always be shown:

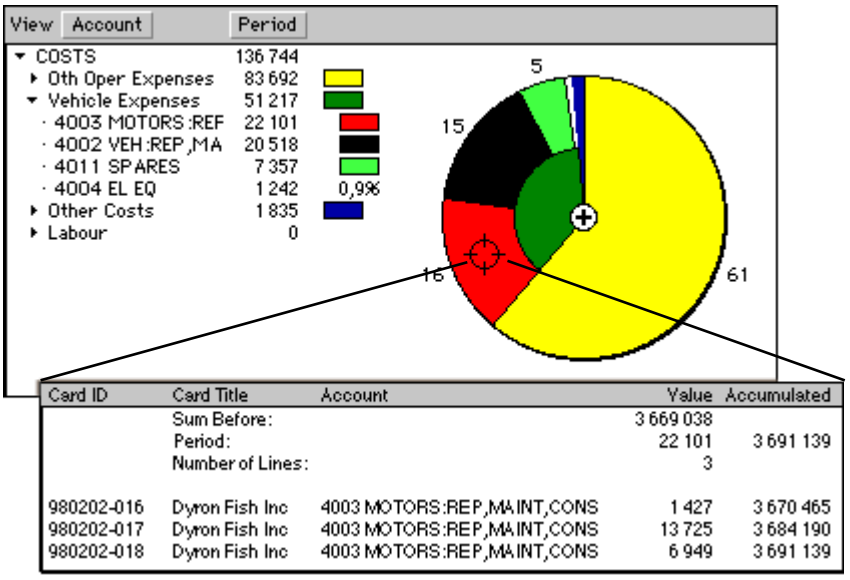


View	Account	Before	Negative	Positive	Period	At End
▼	COSTS	69 332 953	-3 432 622	9 780 844	**6 348 223**	75 681 176
▸	Labour	15 800 053	-212 991	2 830 240	**2 617 249**	18 417 302
▸	Oth Oper Expenses	36 751 479	-2 813 621	5 373 227	**2 559 606**	39 311 085
▸	Vehicle Expenses	13 920 340	-19 150	1 181 257	**1 162 107**	15 082 448
▸	Other Costs	2 850 178	-386 859	395 204	**8 345**	2 858 523
▸	Fin / Extraord Exp	10 903		915	**915**	11 818

Card ID	Card Title	Account	Value	Accumulated
	Sum Before:		10 903	
	Period:		915	11 818
	Number of Lines:		4	
970222-001	Norwegian Salmon A/S	6802 BANK CHARGES	60	10 963
970222-002	Reinhardt Inc	6802 BANK CHARGES	285	11 248
970222-010	Frank´s Brokerage	6802 BANK CHARGES	285	11 533
970227-002	Whitfield, Brown & Co	6802 BANK CHARGES	285	11 818

Chart view

Ctrl-clicking on any element (number or pie sector) in chart view of a Components template, will produce exactly the same type of result. As in this example:



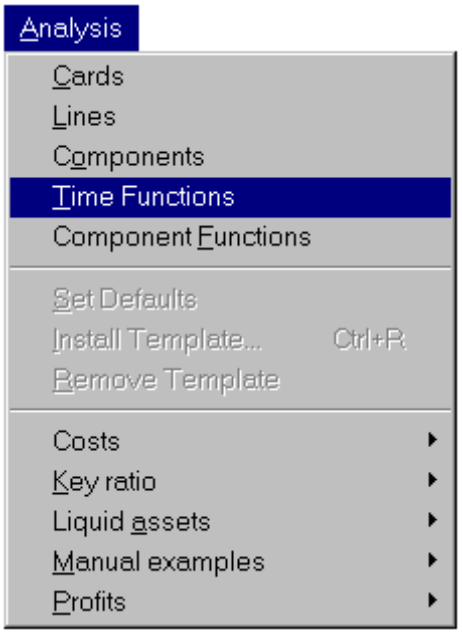
Card ID	Card Title	Account	Value	Accumulated
	Sum Before:		3 669 038	
	Period:		22 101	3 691 139
	Number of Lines:		3	
980202-016	Dyron Fish Inc	4003 MOTORS:REP,MAINT,CONS	1 427	3 670 465
980202-017	Dyron Fish Inc	4003 MOTORS:REP,MAINT,CONS	13 725	3 684 190
980202-018	Dyron Fish Inc	4003 MOTORS:REP,MAINT,CONS	6 949	3 691 139

The target pie sector represents the period value 22 101, which is ”explained” in terms of the Line values that add up to this value (you find it the header line Period).

12

Analysis Templates

Time Functions



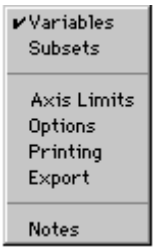
Introduction

In Time Functions you typically select many subsets of data. For each subset you define a variable that holds a scalar measure of the selected values. Usually the most useful measure is the sum of all the selected values. But in some cases you choose another measure from the list of available alternatives (e.g. number of transactions, the average value, etc).

Based on the selection variables, you can build formulas of your own choice. E.g deviations of actual values from budget values, ratios between profit and sales, etc.

The results are presented as functions of time. In a table of numbers (table view) or graphically (chart view).

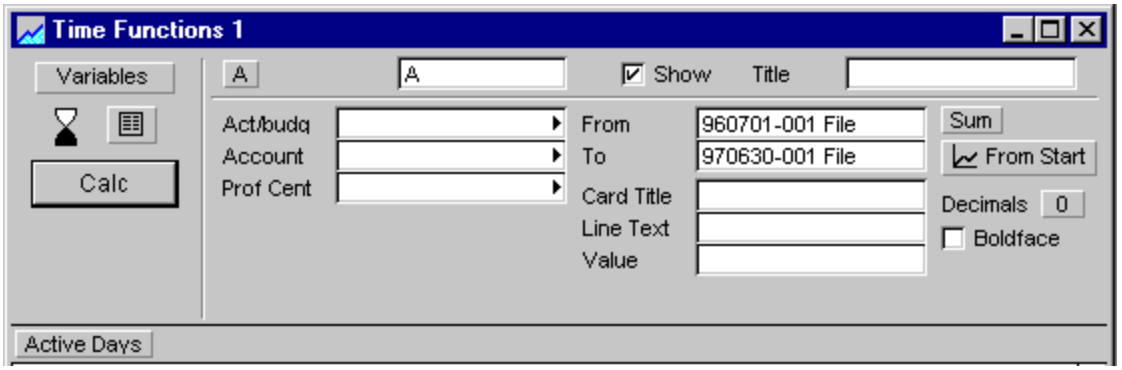
At any instant you can change the basic time unit, which defines the *time resolution*. There is a long list of such resolutions, which are predefined in HAT. The available alternatives span from yearly measures, down to single Cards or Line items. You can also use your own, customised, time scales.



Definition pages

Variables

The Variables page is the most prominent of the definition pages:



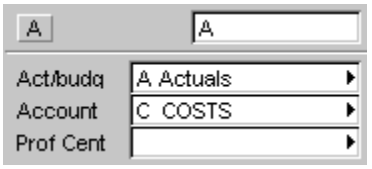
If you have not made any special changes to the default template (with Set Defaults), the first Variables page will be an empty page named A. With the pop-up menu which currently has this name in it, you can create two things:

- a *New Selection*, i.e. another selection variable which allows you to specify a measure based on the usual selection boxes.
- a *New Formula*, where you can define a formula with selection variables, and perhaps with other formula variables, as elements.

Defining selection variables

The selected Lines

You enter selections in the same way as in all other templates, e.g Actual Costs:



The names

Variable name. 'A ' is the default name, which you can change to any other name in the right box. In addition to letters and numbers, the dot, space and numbersign (#) characters are allowed in a name. All other characters will be changed to a dot.

Example

If you enter the string

'Actual&Costs'

HAT will change this to

'Actual.Costs' (with a dot instead of the ampersand)

Title. The Title box

will not show up unless the Show box is ticked. Enter any text string to be a title in the column for this variable. If you leave it empty, the name of the variable will be used instead.

The measure

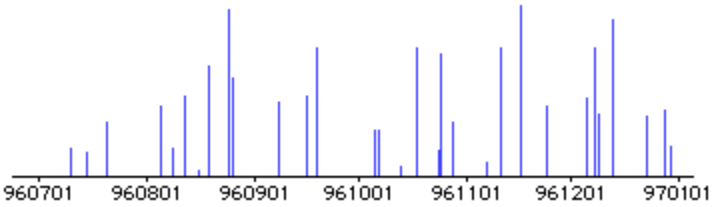
The two pop-up menus to the right of the From and To boxes, define what measure to use.

First pop-up menu. Choose any of

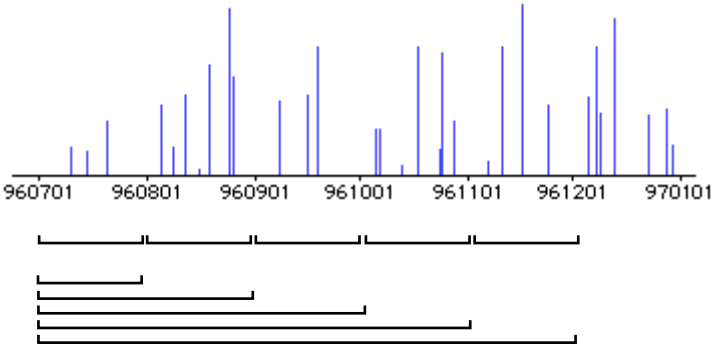
Count	Number of Lines
Sum	Sum of values in the selection
Product	Product of values in the selection
Average	Arithmetic medium
Geom. Mean	Geometric medium
Maximum	Largest value
Minimum	Smallest value
First	First value
Last	Last value

Sum is certainly the one you will use most frequently, but occasionally any of the others is useful.

By Period or From Start. The transactions in the selection could be spread along the time axis something like this:



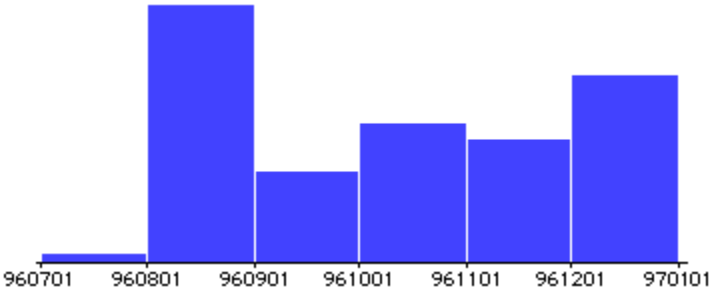
If the basic time unit has been set to e.g. Month, and the type of measure to Sum, you can choose to sum these transaction values By Period (i.e. by month) or From Start. They are both illustrated in this chart:



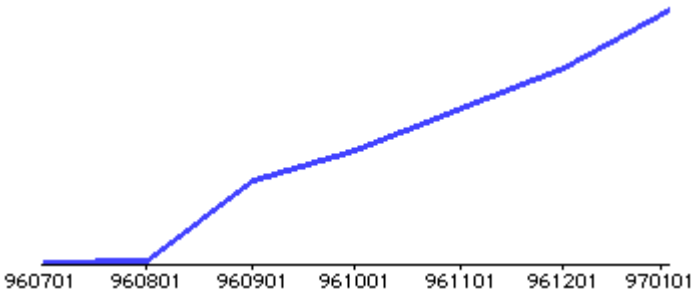
showing which intervals are used for calculating the measure. If the measure is based on Sum,

- each By Period value will be the sum of values during the month
- each From Start value will be the sum of values from the very first value, until the end of each month. In other words – the running total, or accumulated value over time.

In chart view a selection variable set to By Period, is always displayed as a bar chart:



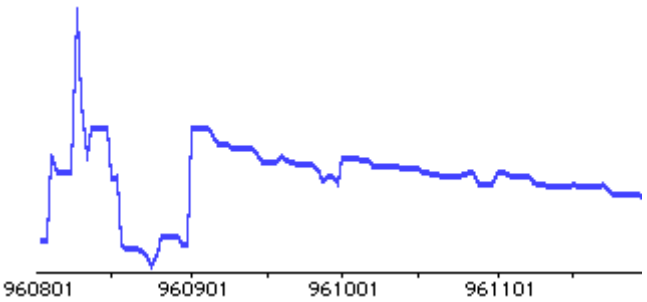
But if it is set to From Start, it is always a line chart:



In the bar chart, the area of a bar corresponds to the total transaction value during the month. The accumulated values in the line chart are exactly correct at the end of each month. The slope of the straight line segment between two such values may be conceived as showing the average rate of change between these values.

The same logic applies to the other measures. E.g. if the pop-up menus are set to,

you will get the average value of all transactions during each period. What happens if you set the second pop-up to From Start?
The average value displayed at the end of each period will be based on all transactions from the very first in the selection, until the end of the period. The average will thus be based on a successively larger number of transactions. So, for a certain selection, you often tend to get a curve that approaches the average transaction size, with successively smaller fluctuations:



The important thing to note is, that although you may tend to think of the From Start setting as representing ”accumulation” in the sense of successively adding period values, this is only true for the (very frequent) case where the first setting is Sum. In other cases you should consider how From Start is defined, to get a correct understanding of the displayed chart.

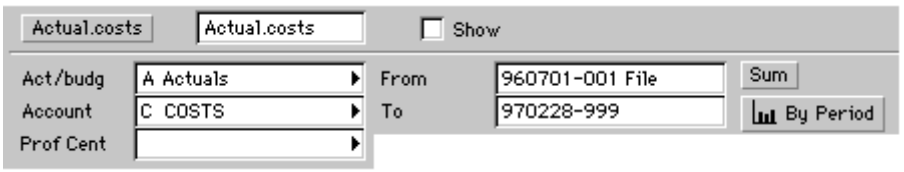
Defining Formulas

Based on selection variables, you often want to calculate other values, such as the deviation between actual figures and budget, return on investment (ROI), return on sales (ROS), liquidity ratios, and a multitude of other useful measures.

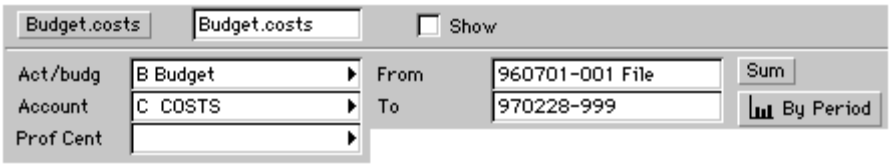
Basics

We illustrate with a simple example – calculating the deviation of actual outcome compared to budget values. Two selection variables have been defined:

1. Actual costs by month, until the end of February 1997



2. Budgeted costs per month, for the same time period



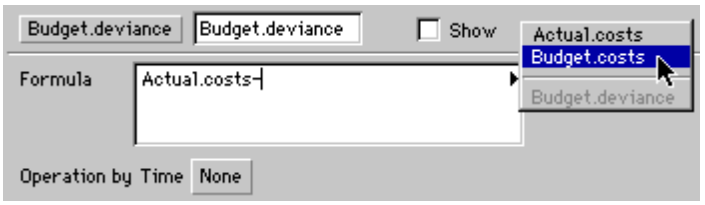
By selecting *New Formula* in the pop-up menu, you get

The common way to express the budget deviance is to calculate the difference

Budget.deviance = Actual.costs - Budget.costs

but you sometimes want it expressed as a percentage, also (see below).

Enter the elements in the formula box, either by entering the full arithmetic expression from the keyboard, or by using the pop-up arrow in the upper right corner of the formula box. If you left-click on it, the variables will be displayed. Right-click will display the list of operators (F1+left-click is another alternative):



The latter method helps when you have long, descriptive, variable names.

MacOS

The corresponding commands are:
Single click on the pop up-arrow to get the variables list, and Alt-click to get the list of operators.

If we have chosen to display all values (from the selections and the formula), the result looks like this:

Months	Actual.costs	Budget.costs	Budget.deviance
Before	0	0	0
960731	2 978 479	9 023 061	-6 044 583
960831	16 519 769	8 445 103	8 074 666
960930	11 205 154	8 478 689	2 726 465
961031	9 699 356	9 559 681	139 676
961130	10 223 712	2 680 631	7 543 082
961231	9 040 799	14 338 500	-5 297 701
970131	11 653 895	9 949 459	1 704 436
970228	8 376 552	8 700 906	-324 354
970331	0	0	0
970430	0	0	0
970531	0	0	0
970630	0	0	0

If we want the budget deviation expressed as a percentage, the following formula is one reasonable way to define it:

Budget.dev.pct = Budget.deviance/Budget.costs*100

This is our second formula, and the table will have another column:

Months	Actual.costs	Budget.costs	Budget.deviance	Budget.dev.pct
Before	0	0	0	
960731	2 978 479	9 023 061	-6 044 583	-67,0
960831	16 519 769	8 445 103	8 074 666	95,6
960930	11 205 154	8 478 689	2 726 465	32,2
961031	9 699 356	9 559 681	139 676	1,5
961130	10 223 712	2 680 631	7 543 082	281,4
961231	9 040 799	14 338 500	-5 297 701	-36,9
970131	11 653 895	9 949 459	1 704 436	17,1
970228	8 376 552	8 700 906	-324 354	-3,7
970331	0	0	0	
970430	0	0	0	
970531	0	0	0	
970630	0	0	0	

Available operators

Operators in formulas. The elementary operators (+, -, *, and /) are usually all you need, but there are a lot of other operators that are useful in some cases:

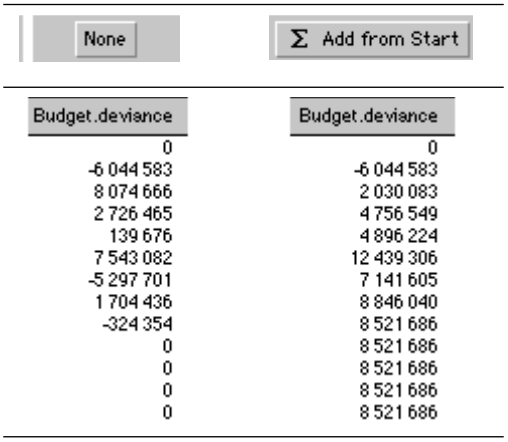
	Operator symbol	Description	MacOS symbols
Time	T	Time, in years (i.e. T=0 at From date, T=0.5 at middle of first year, T=1 at end of first year, T=2 at end of second year, etc)	
Arithmetic	+ -	Addition and subtraction	
	* /	Multiplication and division	
	^	Power	
	sqr	Square	
	sqrt	Square root	√
Exponential	exp	Natural (base e) exponential function	
	exp2	Base 2 exponential function	
	exp10	Base 10 exponential function	
Logarithmic	ln	Natural (base e) logarithmic function	

	Operator symbol	Description	MacOS symbols
	lg	Base 2 logarithmic function	
	log	Base 10 logarithmic function	
Trigonometric	sin	Sine (argument in radians)	
	cos	Cosine (argument in radians)	
	tan	Tangent (argument in radians)	
Rounding	round	Nearest integer	≈
	up	Upwards (to nearest integer)	»
	down	Downwards (to nearest integer)	«
	int	Integer part (i.e. round ”towards zero”)	
	frac	Decimal part (i.e. keep decimal fraction only)	
Special	abs	Absolute value	
	sign	-1 if argument negative, +1 if positive, 0 if zero	
	ran	Random number in interval [0-1]	
	pi	Pi (3.141592…)	π

MacOS

The column ’MacOS symbols’ includes *alternative* Macintosh symbols. Note that they work in Macintosh only, you cannot port them to a Windows environment.

Operation by Time. The pop-up menu below the fomula box, allows you to define operations on consecutive period values. You may want to to see how the budget deviance accumulates over time, for example. To get these values calculated and displayed, set this pop-up to Add from Start. The values will be:



Budget.deviance	Budget.deviance
0	0
-6 044 583	-6 044 583
8 074 666	2 030 083
2 726 465	4 756 549
139 676	4 896 224
7 543 082	12 439 306
-5 297 701	7 141 605
1 704 436	8 846 040
-324 354	8 521 686
0	8 521 686
0	8 521 686
0	8 521 686
0	8 521 686

The full list of operations follows:

Setting	Meaning
None	No operation
Σ Add from Start	Accumulate period values
Δ Difference	The difference between consecutive values. If applied to a selection variable, defined as Sum: From Start, the result will be same as Sum:By Period.
Π Multiply from Start	Multiplies consecutive values. Useful e.g. with index series, where multiplication is the basic operation
÷ Quotient	The quotient between successive values, i.e. the inverse of multiplication

Switching between variables

When you work with a template using many variables, you often want to switch quickly from one variable to the other. Instead of changing it via the menu, you can simply click on its column header (provided it is displayed, of course).

Subsets

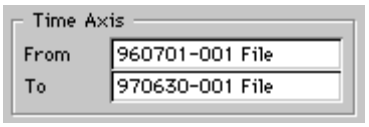
See section “Subsets” on page 59.

Axis Limits

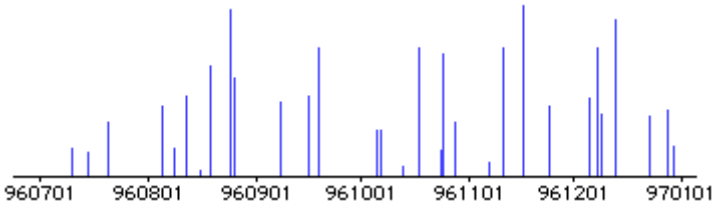
The variables in a Time Functions template, may be defined for different time spans – depending on what is entered in the From and To time boxes for each variable. On the definition page Axis Limits you set the time span covered by the template, as a whole.

Time Axis. The settings in the From and To boxes not only determine how the tables or diagrams are displayed. They also indirectly define the Before value, which will be explained further.

Assume that the Time Axis is set to

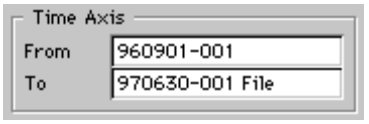


for a certain selection, and that the transactions time series looks like this:

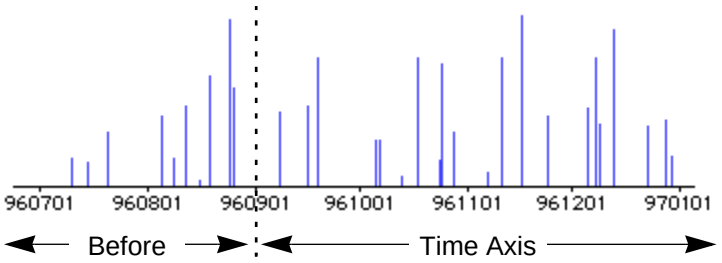


If the From date is changed to 960901, the series in all presentations (tables or charts) will begin at this date, but it will still be possible to refer to transactions before 960901. This is important in the (common) case where you want a selection variable to show the accumulated values, starting from an entry level defined by transactions preceding its starting point.

If the Time Axis boxes in this example were set to

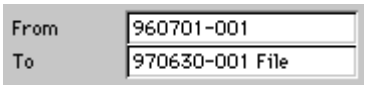


it would implicitely define the following basic time scale:

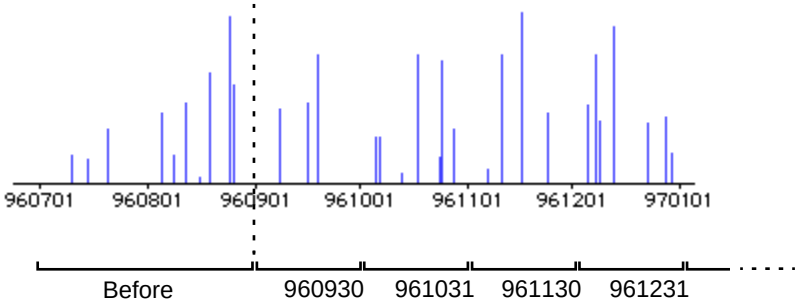


Although any selection variable defined within this context, primarily is defined within the Time Axis time span, it can also ”reach” into the Before time span.

E.g. if the selection variable would be defined as Sum By Period for the time interval



with the time scale is set to Months, the value intervals would be:



The illustrated intervals have names corresponding to how they are named in the Time Functions table:

Months	Period values
Before	105 210
960930	906 537
961031	581 911
961130	822 502
961231	175 123
970131	971 766

Value Axis. Sets the vertical limits, in chart view.

Example You may want to always show the zero base line. Then use the setting:

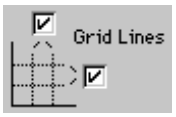
If nothing is entered in these boxes, HAT will automatically adjust the scale, to encompass all values (without wasting any ”screen estate”).

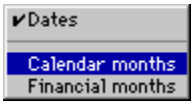
Shortcut to the Axis Limits definition page. If a Time Functions template is displayed in chart view, you can click anywhere along the axis, in the outer border, to get the Axis Limits definition page displayed.

Options

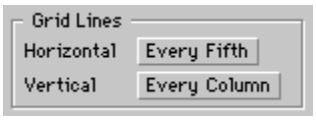
On this definition page a lot of different settings are gathered. They are grouped in two sections – Graphic Presentation and Grid Lines.

Graphic Presentation. This section concerns the chart view only

Setting	Meaning
	Displays the values in exponential format
	Changes the direction of the graphically displayed values, in the vertical direction. Note that the values themselves are not changed.
	Displays gridlines in the diagram, vertically and/or horizontally

Setting	Meaning
	Determines what time scale to use. The built in time scale is called Dates. It is the only one available, if no custom Time Scale has been defined, in the Database Menu.
	Displays vertical lines: A red line representing the Reference Point (see Database Settings…page 67). A green line showing current date, according to the system clock
	The horizontal zero line is shown as a dotted line.
	Controls how the bars are displayed: side-by-side, overlapped, etc.

Grid Lines. These settings are only relevant for table view. Horizontally there are a lot of different options. Vertically you can choose between having a dotted line between every column, or none at all.



Printing, Export, and Notes

See section “Printing” on page 87.

Other settings

Chart and Table views

Use this pop-up menu to change between the chart and table views.

Time Scales

In the leftmost part of the output header, you control the time scale resolution, used to display the results. All entries above the dotted line are standard resolutions, always available in HAT. Below the dotted line you will find the custom time scales which have been installed via Time Scales in the Database menu. Most of the standard resolutions are self-explanatory. But those with the word Active in them, may need further explanation.
All the selection variables defined for a certain template, collectively define the set of Lines that are included in any of these variables. A Line in this set is called *active*, if it has a non-zero value. If a Group contains a Line which is active, also this Group will be referred to as *active*. And so on, up to the Day level.

Example

The menu is set to Active Cards, and the measure of the selection variable A is set to Sum: By Period . You will then get the sum of all Line values in each

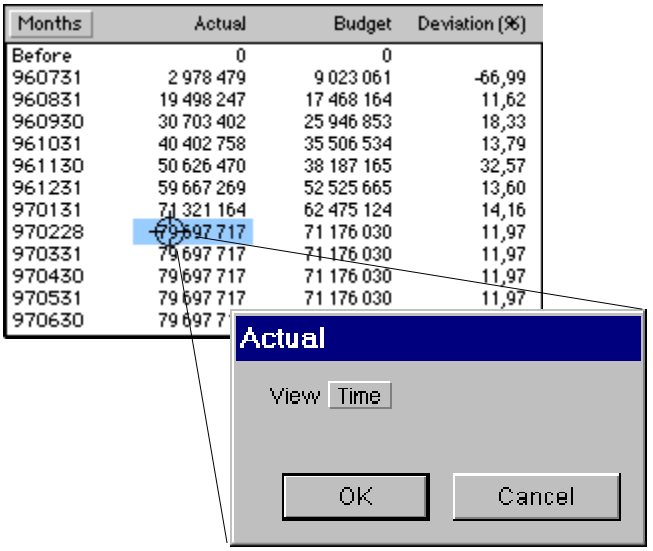
Card. The time scale will be rather detailed, too – including the ordinal numbers (-008, -022, etc):

Active Cards	A
Before	0
960707-008	305
960808-022	400
960817-004	664
960824-008	1 600
960824-009	997
960825-002	150
960825-004	1 589
960825-005	1 150
960825-007	1 030

Working interactively in the output area

As usual in HAT, the general idea is to show the underlying details, by simple point-and-click operations. You can click on tabular or graphical elements. The result will always be presented in table view. Whether the element you click on represents a ”pure” selection, or is the result of a formula, makes a distinct difference.

Clicking on a selection variable element



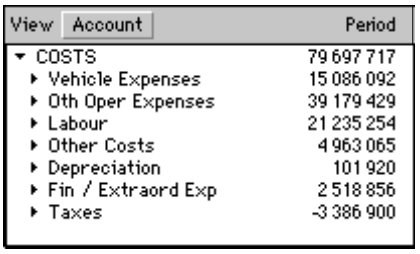
In the dialog window you specify along which dimension you want the number to be displayed in more details. The intrinsic time dimension is the default choice, but you can also choose one of the custom defined dimensions, instead:

The specification of the element will depend on the type of choice:

If the choice is Time. The full list of lines specifying the element, in terms of the underlying numbers, will be shown in a Lines template:

Card ID	Card Title	Account	Value	Accumulated
	Sum Before:		71 321 164	
	Period:		8 376 552	79 697 717
970202-001	Adjust v 6 Rest	5010 WAGES LINE 16	-33 540	71 287 624
970202-001	Adjust v 6 Rest	5011 NON-RECURRENT AMOUNTS	33 540	71 321 164
970202-002	Import duties	4012 PARKING	24 603	71 345 767
970202-002	Import duties	4012 PARKING	16 511	71 362 278
970202-003	Hogia Data Ltd	6741 FEES DP	2 094	71 364 372
970202-004	Charles Ryden	4002 VEH:REP,MAINT,CONS	520	71 364 892
970202-005	Hellas Carpentry	4002 VEH:REP,MAINT,CONS	9 700	71 374 592
⋮	⋮	⋮	⋮	⋮
970228-072		8317 TAXES	-151 372	79 700 664
970228-072	Contrib etc	8317 TAXES	-3 047	79 697 617
970228-074	Esso Norway A/S	6802 BANK CHARGES - PK-BANK	50	79 697 667
970228-075	Statoil	6802 BANK CHARGES - PK-BANK	50	79 697 717

One of the custom dimensions. The corresponding Components template will be displayed, e.g. if the dimension is set to Account:

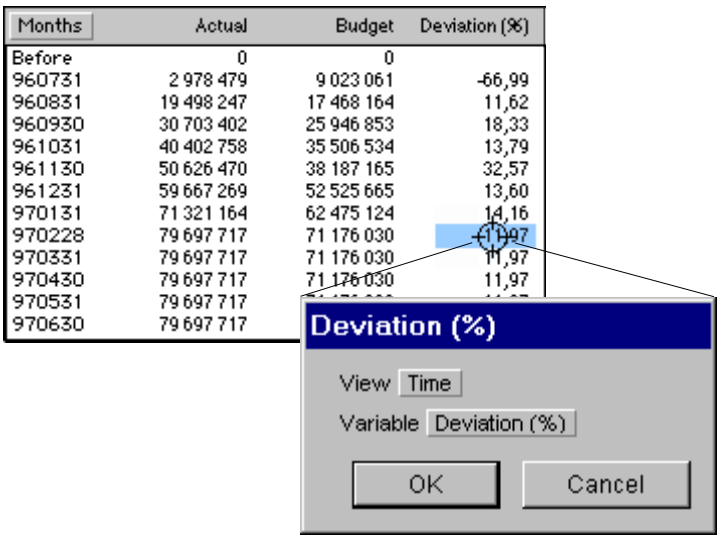


You will see the number specified by account, unfolded one level. By pointing and clicking you can reveal further details, as usual in a Components template.

Clicking on a formula element

You will be asked not only to decide what dimension to show, but also if you would like to see the formula value itself exposed in more detail, or rather see one of the underlying selection variables. Often you can just as well click on the

selection variable itself to achieve this, if it is displayed.
The following type of dialog will show up:



The derived template depends both on the View and the Variable settings.

If Variable is set to a selection variable (Actual or Budget in this example), you will get exactly the same result as if you had clicked on the selection variable element directly in the table. I.e. when View is set to Time you will get a Lines template, and when it is set to a custom dimension (e.g. Account), you will get the corresponding Components template, expanded to the first level, as already explained (see section “Clicking on a selection variable element” on page 126).

If Variable is set to a formula variable, such as Deviation (%) in the illustration above, you will get a *formula expansion*. The constituent elements of the formula will be displayed, with every formula element (which may be a selection, or another, lower level, formula variable) displayed in one column each.
Depending on if View is set to Time or a custom dimension you get the following derived templates:

View is set to Time. You get a Time Functions template, with the same reso-

Months	Actual	Budget	Deviation (%)
Before	71 321 164	62 475 124	14,16
970228	79 697 717	71 176 030	11,97

lution as before. Change e. g. from Months to Weeks if you want another resolution.

Note that the formula elements will always be displayed, also in the case where they are not displayed in the template from which it is derived.

View is set to a custom dimension. Will produce a Components Functions

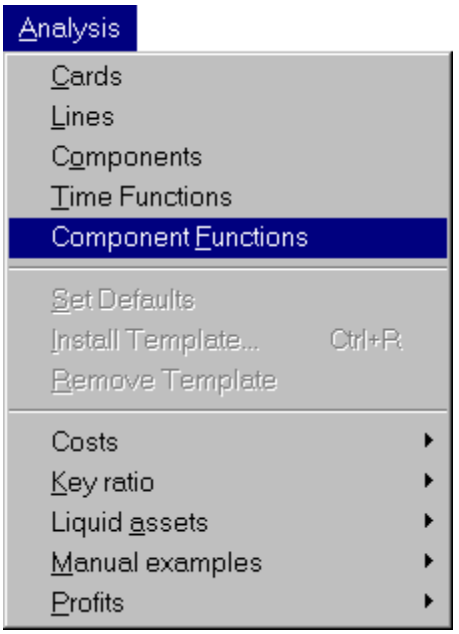
View: Account	Actual	Budget	Deviation (%)
COSTS	79 697 717	71 176 030	11,97
Vehicle Expenses	15 086 092	12 747 353	18,35
Oth Oper Expenses	39 179 429	35 131 354	11,52
Labour	21 235 254	19 615 657	8,26
Other Costs	4 963 065	3 760 375	31,98
Depreciation	101 920	91 728	11,11
Fin / Extraord Exp	2 518 856	2 278 993	10,52
Taxes	-3 386 900	-2 449 430	38,27

template. The dimension component will be expanded to the first level. All the formula elements will be displayed (same as when View is set to Time).

13

Analysis Templates

Component Functions



Introduction

This type of analysis template is very similar to Time Functions – instead of showing the results as functions of time, you get them as functions of any of the other – custom – dimensions. You can easily change between different views, e.g. from Accounts to Profit Centres. As for Time Functions you typically define a number of selection variables. By default the scalar measure of these selections is the sum of all the selected values.

You can build a wide variety of formulas based on the selections. E.g deviations of actual values from budget values, ratios between profit and sales, etc.

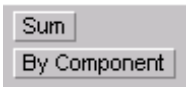
The results are presented as functions of the components in the selected dimension. Choose between presenting them as a table of numbers (table view) or graphically (chart view).

Definition pages

Variables

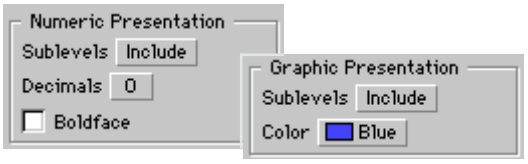
Selection variables

Define and name variables in exactly the same way as for Time Functions. See section “Defining selection variables” on page 116. Only the differences will be further explored here.



The first entry of the second pop up-menu has aother name. It is called By Component, but corresponds directly to By Period, in Time Functions. You typically use the alternative From Start when you want a running total to be calculated.

To the right on the Variables definition page, you will find a few settings that are particular to Component Functions.
Depending on if you are working in table or chart view, they look slightly different:



Sublevels. The alternatives are Exclude and Include:

Exclude	Only values that are directly coded to the component, are aggregated in the measure for the component.
Include	All the sublevel values are included, also.

Example In the common case where the measure on each component is the sum of all its values, the setting Sublevels : Include for the variable, will give the sum of all subsidiary component values, in addition to the directly coded values.

Formulas

These are built in the same way as formulas in Time Functions. Only the available operators differ in a few cases.

Operators. See “Available operators” on page 120. Compared to that list of operators, one is not applicable to Component Functions, and two new operators should be added:

- The Time operator (T) is not relevant for Component Functions.
- Only the operator **!** is special for Component Functions. It designates specifically the highest component, excluding all sublevels (e.g. in a summation of all the values).

Sum: Before or After. If you have one variable which has values that represent quantities, and another that represents prices, the sum of the price-times-quantity-values is probably what you would like to see in the hierarchical sums.

Example

You want to calculate price times quantity for the products in product group 1:

	Qty	Price	Total
Group 1	9	45	115
Product A	5	10	50
Product B	3	15	45
Product C	1	20	20

The value 115 is the sum of the values beneath 115, in the same column. This is what you get if you set this pop-up to Sum: After. It can be spelled out as follows: ”first calculate the formula values Total=Qty*Price, and then Sum them hierarchically After these calulations”.

If instead the pop-up is set to Before (i.e. the default setting) you would get the table:

	Qty	Price	Total
Group 1	9	45	405
Product A	5	10	50
Product B	3	15	45
Product C	1	20	20

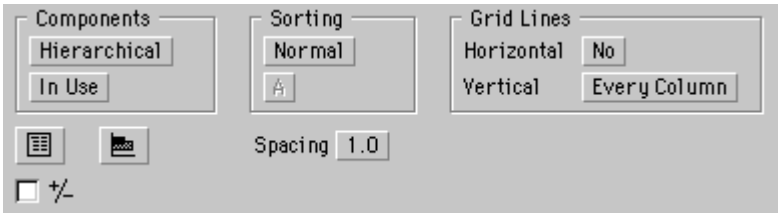
i.e. the hierachical sums are calulated Before the formula (in this case Qty*Price) is applied to the resulting values. The Total will be 9*45=405, which is not very meaningful in this case.

Subsets

See section “Subsets” on page 59.

Options

This definition page has a number of settings:



Components

The first menu allows you to choose between two display formats:

Hierarchical/Flat.

Hierarchical	The components are displayed according to the way they are structured in the dimension chart.
Flat	Only the lowest level components and directly coded components are displayed.

All/In Use.

All	All components are displayed, regardless if they are used to code any transaction in the database, or not.
In Use	Components which are not used to code any transaction, are excluded.

Sorting

Sorting order. The alternatives are:

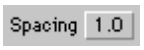
They are exactly the same as the sorting criteria in Components. See “Sorting” on page 133.

Sorting criterion. You can choose any of the displayed variables/formulas as the sorting criterion.

Grid Lines

Allows you to display gridlines both horizontally and/or vertically, to make the tables and graphics easier to interprete.

Other controls in Options

	Changes between different ways to display the components hierarchy.
	Selects one of a number of bar chart lay-outs. Only available in chart view.
	The value axis direction is reversed; in graphical display, only.
	Line spaces can be set from 1 to 6 lines.

Printing, Export, Notes

See “Printing” on page 87.

Working interactively in the output area

To drill down in the output area, you work in exactly the same way as for Time Functions.

Both numerical and graphical elements are ”clickable”:

- When you click on a value defined by a selection you get the option to choose along which dimension you want the details displayed – the built-in Time dimension or one of the custom dimensions:
  - Time produces a Lines template
  - a custom dimension will give a Components template showing data along the chosen dimension, expanded one level
- Clicking on a formula value gives you the option to get a formula expansion, i.e. all the elements of the formula will be displayed. Alternatively you can specify that any single one of the underlying selection or formula variables will be displayed in more detail. If you choose a selection variable, the result is equivalent to clicking directly on a value defined by the selection, and the result will be as described above. Choosing a formula variable will produce a regular formula expansion. See section “Clicking on a selection variable element” on page 126.

Other Component Functions controls

View

You can easily change the dimension, along which all the values are displayed:

Instead of installing a number of templates of a similar kind, it is often better to install one single template, and then simply change this pop-up to get data presented along different dimensions.

Automatic adjustment

This control is only available in chart view, in the low left corner of the window.

If the bar chart is not optimally adjusted to the window, you can click on the adjustment symbol.

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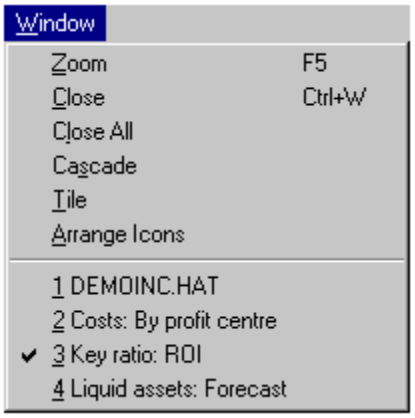
The Window Menu

Introduction

The first part of the Window menu consists of operations on individual or groups of windows, the second part is a list of the currently open HAT windows:



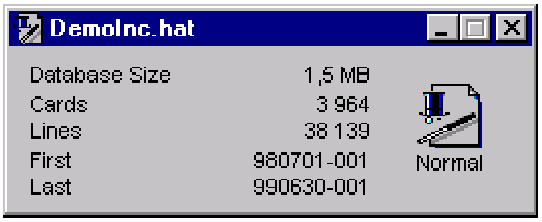
Window commands

Zoom ..etc are all standard operating system commands. Only one of them requires a special comment.

Close All

Closes all open windows, including the database window. I you have a lot of open windows, this command provides a quick way to close them all, in one step.

But note that the database window



is one of them. It represents the entire database, i.e. if you choose Close All, you will get a dialog window asking if you want to close the database itself. Press No to to keep the database active.

MacOS

The Window commands are somewhat different:
Zoom adapts the window to show as much as possible, using a minimum of screen area.
Maximize expands it to the whole screen. You can also combine holding down the Alt-key while clicking the zoombox, to achieve this.
To close all windows with one command, click the closebox while pressing the Alt-key.

Selecting a window

Use the Window menu to quickly switch between HAT windows. The currently active window is marked with ✔ .

MacOS
If, and only if, more then one database is opened by the same HAT application, the open templates will be grouped hierarchically under its HAT-file name.

Other aspects

Memory requirements

Each open analysis window is treated as an “analysis at work”, i.e. it uses space in the computer internal memory. You should therefore avoid having too many HAT windows open at the same time.

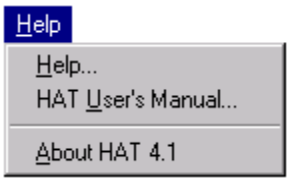
Alternative closing commands

You can also use the close box, if the window has one.

The Enter key can be used to close a Card window.

15

The Help Menu



Introduction

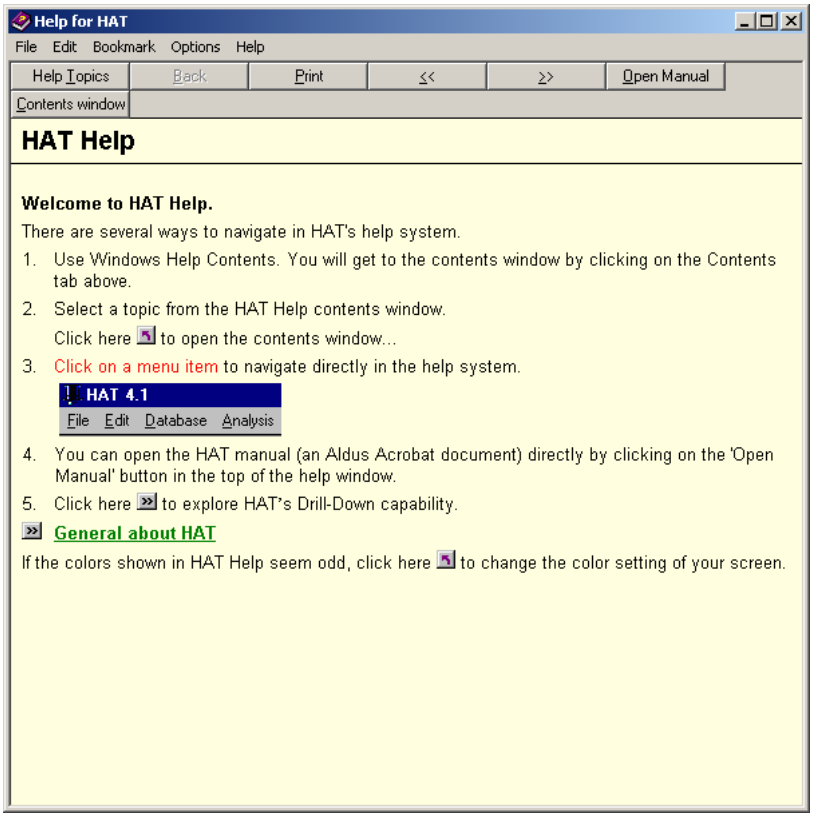
This menu only contains three elements:

- Help ...
- HAT User´s Manual ...
- About HAT ...

Commands in the Help Menu

Help...

Much of what you will find in this manual is also covered in HAT Help. Use HAT Help as an instant source of information in the moment a question arises. When you activate the Help-command, you get the Help for HAT window (to the right, below). A click on the Contents window button, displays a systematic view that follows the HAT menu logic (left picture):



By clicking on the underlined text elements you get directly to the corresponding subject. For further information on how to use HAT Help, see the instructions in the Help itself.

MacOS

No specific Help is available for Macintosh. Macintosh users are instead refered to this manual for information on how to operate HAT.

HAT User´s manual ...

This menu element is only available if the file HATmanual.pdf resides in the same folder as the HAT program. To be able to open and read this file you have to have Acrobat Reader installed on your computer. Acrobat Reader is a free software from Adobe Systems Inc. You can download the latest version from many Internet sites, e.g. from

http://www.adobe.com

About HAT…

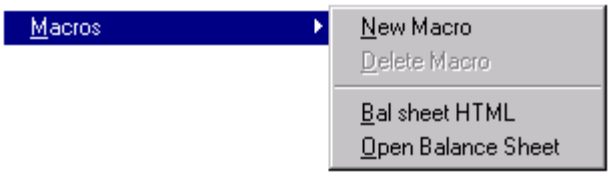
About HAT gives general information about HAT, and the option to subscribe to information about HAT.

MacOS

You will find the corresponding information in the menu under the -menu, when the HAT-program is the currently active application.

Appendix A

HAT Macros Reference



Introduction

You can “program” HAT to perform a series of tasks that you normally do by interacting with the HAT user interface. With HAT Macros you can automate long chains of tasks, which may not only be time consuming, but also prone to handling errors. You can also make life simpler for an occasional user of an HAT application – by installing macros that only requires the user to be able to find the Execute menu, and release the mouse button on the appropriate menu element.

A HAT Macro is a series of commands/steps, which are described in a HAT Macro script.

Example

The following macro updates a HAT database and saves it to the file ready.hat (for another example, see “Creating macros” on page 65.):

```
// global definitions
Signature    AG

// remove outdated cards and lines
DeleteCards  950101  951231
DeleteData   Filters:Subsets:Badcards

// import fresh data
Import  “C:\data\new\fresh update.hat”  -pw bingo

// save the updated database
Save  “C:\data\ready.hat”  FN   P-  M-
```

The script consists of a number of text lines. One line for each command, and at least one line for each comment.

Often, but not always, a command has one or more parameters. These parameters can be names of templates, names of other macros, and a lot of options controlling different aspects. E.g. the Save command,

```
Save  “C:\data\ready.hat”  FN   P-  M-
```

from the script above, has been specified to save the database to a file named ready.hat in the directory C:\data\, in the regular Analyser format (FN), excluding the Protection (P-) and the Macro (M-) sections.

Spaces are important. The commands and the parameters are separated by whitespace (space or tab characters). The number of whitespace characters between the options does not matter, but one single whitespace in the wrong place can change the meaning of the script, and make it unintelligible for HAT. Many parameters have themselves whitespace characters in them. Use “double quotes” around such a string, and HAT will interprete it as one single entity. E.g. the Import command in the example (above) has the parameter

```
“C:\data\new\fresh update.hat”
```

Without the qoutes it would be interpreted as two separate semantic entities, because of the space after fresh. An empty parameter can be defined by “”.

Comments. Use them extensively. They make it much easier to understand a script. There are two comment formats in a HAT Macro script:

Line comments	//Comment text	Can only be used for single line comments
Block comments	/*Comment text*/	A comment has to start with /* and end with */, if it extends over many lines

HAT Macros and Commands Section

The Commands Section is an optional section in a HAT file which has the HAT-Text file format. It is primarily used as a component in batchoriented types of tasks, e.g. for automatically producing HAT files from external host systems. The syntax and the commands in a Commands Section are identical to those in a HAT Macro.

Commands

Syntax of command descriptions

Element	Meaning	Examples
{dim}	dimension number in range 1 to 12.	7, for the seventh dimension
{template}	A full template pathname. Parts are separated by a colon (:)	“Costs:By category”
{filename}	A valid file pathname, either a full or a partial pathname. Partial pathnames start at the directory where the original document file is located.	Full pathname: C:\data\ready.hat Partial pathname: “..\ready.hat”

Note on pathnames. The rules for pathnames are those common to all Windows systems:

- Directories are separated by a backslash (\).
- Double point (..) refers to the parent directory.
- Full pathnames use the format format drive:\dir\file, where the directory part (dir\) may occur zero or more times.

- Filenames are not case sensitive.

MacOS

- Folders are separated by a colon (:).
- Partial pathnames begin with a colon, which in most cases can be omitted.
- Double colon (::) refers to the parent folder
- Full pathname uses format volume:folder:file, where the folder part (:folder) may occur zero or more times
- File names in are not case sensitive.

Details by command

Execute {macroname}

Executes the macro named {macroname}.

Circular calls are not supported.

ErrorFile {filename}

Defines a file which logs the error messages. Most of the error messages ocurring after this command are placed in a new file called {filename}.

Only fatal error messages are displayed in alert dialogs.

Any previous error log file is closed.

The error message file name is stored in the database for later use. It is in effect as long as the database is open.

Signature {sign}

Defines a signature to be used in data operations.

By defining the signature this way you avoid the dialog when the signature is first needed.

Password {password}

Defines a password for the current database.

Transform {template} {option} {option} {option} ...

Opens or activates the given template, calculates it, transforms all data in the active window, and finally closes the template window.

The {template} element can be:

- Base which means the complete database
- a global subset name
- an analysis template pathname (Cards and Lines only)

The following options are avaliable:

Option	Explanation
A	Add a transformed duplicate
D{dim}={expr}	Dimension expression, e.g. D3=\ clears dimension 3.
V={expr}	Value expression. Letter A refers to the current value, e.g. V=A*2

CB={expr}	Card-ID source “Start” expression
CE={expr}	Card-ID source “End” expression
CF={expr}	Card-ID destination “Start” expression
CT={expr}	Card-ID destination “End“ expression
TF={expr}	Card title “From” expression
TT={expr}	Card title “To” expression
LF={expr}	Line text “From” expression
LT={expr}	Line text “To” expression
NF={expr}	Notes “From” expression
NT={expr}	Notes “To” expression

DeleteData {template}

Opens or activates the given template, calculates it, deletes all data in the active window, and finally closes it.

The {template} element can be:

- Base which means the complete database
- a global subset name
- an analysis template pathname (Cards and Lines only)

DeleteCards {fromCardID} {toCardID}

Deletes cards in the given Card ID interval, from the database. Partial or totally omitted Card IDs are allowed. If so, they are interpreted as when entered in the correponding Card ID box, in an analysis template.

DeleteComponent {dim} {component} {options}

Deletes components in dimension {dim}. The dimension can be specified by its number or its name. The component is specified by its HAT-code. A group of components can be deleted by specifying the group component. Components that are in use, cannot be deleted.

Options (one only):

silent	Supresses error messages

DeleteSubset {subset} {subset} ...

Deletes global subsets. Subsets can be specified by name or by using the following options:

all	all subsets are deleted
filter {string}	only subsets with names matching the string, are deleted

Multiple subsets can be specified in a single command..

DeleteTemplate {template} {template} ...

Deletes analysis templates. Templates can be specified by name, group name or by using following options:

all	all templates are deleted
filter {string}	only templates matching the string are deleted

Multiple templates and options can be specified in a single command.

OpenTemplate {template}

Opens and calculates the given template.

{template} can be:

- a global subset name
- an analysis template pathname
- pathname of an analysis template group

The command has the same effect as ticking the “Open Directly” checkbox when installing a template. When used in a Commands Section, the “Open Directly” feature is inhibited.

Note: It is not necessary to open a template (i.e. use this command) before using other template commands, e.g. the Transform, DeleteData, Print or Export commands.

Modify {template} {selector}

Modifies the given template. {selector} uses the same format as template data in template sections, but fields are separated by whitespace.

Print {template}

Opens or activates the template, calculates it, prints it to the current printer and finally closes the window. A group of templates can be specified as well. All the templates in the specified group are then printed.

Export {template} {filename}

Opens or activates the template, calculates it, and exports it to a file with the given filename. Finally, the window is closed.

Filename is optional. If no filename is specified, a default filename is used. This name is formed from the template pathname, according to the following convention, depending on operating system:

Win-32	the name separator (:) is converted to semicolon (;)
Win-16	only the last part is used

MacOS

the name separator (:) is converted to slash (/)

Import {filename} -s {importsetup} -pw {password}

Imports the given file into the database.

An import setup can optionally be specified in {importsetup}.

Opening password can optionally be specified in {password}.

If the imported file is protected and no password is given here, the user will be asked for the password.

Note: The password is displayed here, in plain text. This may constitute a general security hazard. Use the option to require a password, to open a macro script.

Save {filename} {option} {option} {option} ...

Saves the current database using the given name and options. The options are:

FT	File format = Text
FN	File format = Analyser
FB	File format = Browser
FZ+	File compression on
FZ-	File compression off
Fs	Set database name and type
P+	Include Protection section
P-	Exclude Protection section
B+	Include Database Settings section
B-	Exclude Database Settings section
s+	Include Save Setup sections
s-	Exclude Save Setup sections
s={name}	Use Save Setup named {name}
I+	Include Import Setup sections
I-	Exclude Import Setup sections
S+	Include Time Scale sections
S-	Exclude Time Scale sections
M+	Include Macro sections
M-	Exclude Macro sections
D+	Include Dimension sections
D-	Exclude all Dimension sections
D{dim}+	Include Dimension section {dim}
D{dim}-	Exclude Dimension section {dim}
D{dim}A	Include only Active components in dimension {dim}
D{dim}U	Include only components In Use in dimension {dim}
C+	Include Cards section
C-	Exclude Cards section
C{dim}C	Use HAT-codes for dimension {dim} in cards
C{dim}H	Use host codes for dimension {dim} in cards
C{dim}T	Use dimension texts for dimension {dim} in cards
CT	Include cards/lines referred in templates only

U+	Include global subsets
U-	Exclude global subsets
T+	Include Template section
T-	Exclude Template section
TO	Include open templates only
T={filter}	Template filter string
F+	Include Analysis Defaults section
F-	Exclude Analysis Defaults section

Close {window}

Closes all windows with the name {window} in the current database. Changes made in those windows are lost.

Close

Close command without any parameters closes the current database. The database is closed after the execution of all other commands.

The dialog for saving changes made to the database is not presented.

Quit

Terminates the HAT application, after execution of all other commands.

The dialog for saving changes made to any open database is not presented.

Beep

Sounds the system speaker.