

Arrow Research Corporation

tencia™

Business Benefits

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1.0 Introduction

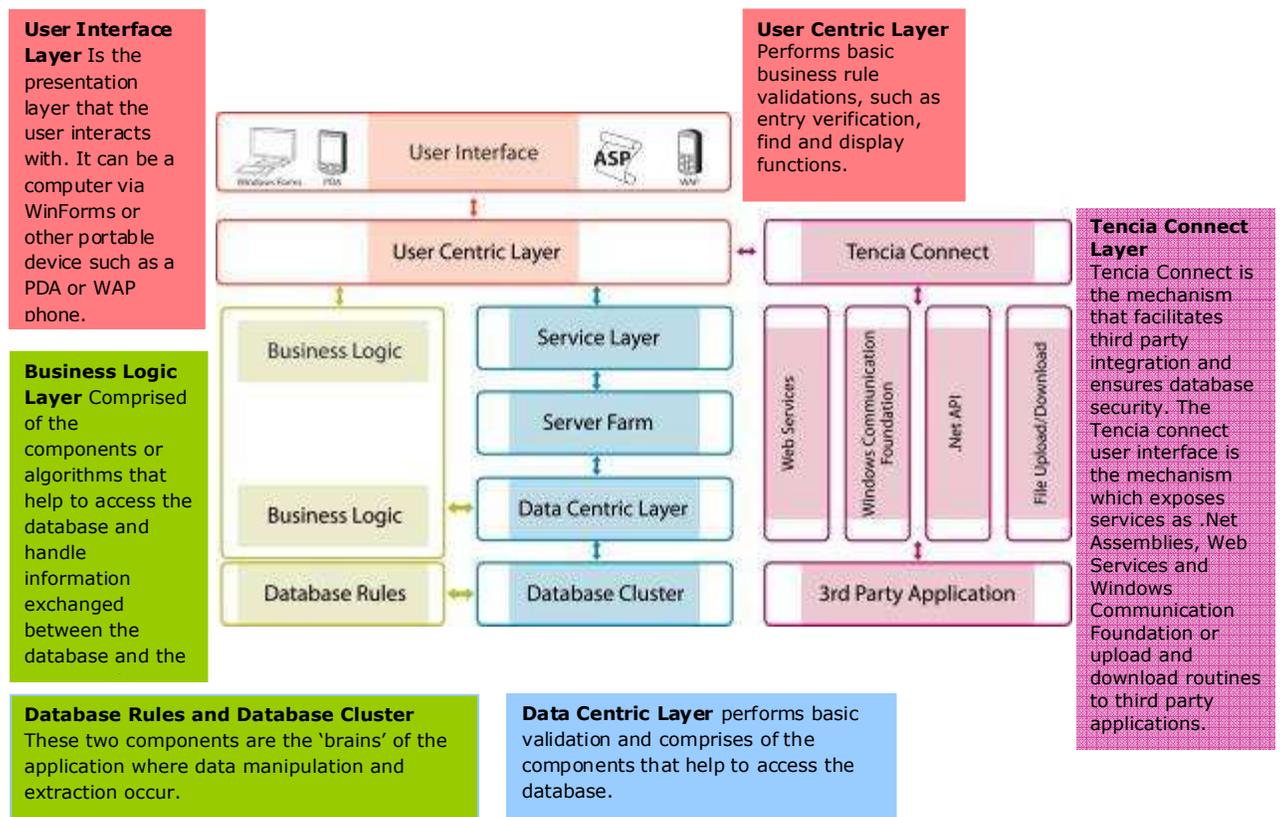
Since the release of its flagship product offering Arrow Financials, Arrow Research Corporation has continued to enhance this offering growing from a 5 full module offering to a 32 bit Windows application with a comprehensive set of 11 full modules, 9 sub modules and 2 internet based modules with options to use an SQL database and a Windows XP graphical user interface. In order to continue to meet the ever changing demands of today's business environment Arrow Research Corporation has identified the need to develop a financial software solution that reflects the Internet driven 24/7 world, giving business users the power to access financial and business information, anywhere and at anytime.

Today the ability to exchange information between various applications, divisions and internal business units is pivotal to the success of any business. The requirement for disparate applications to be able to 'talk' to one another has lead to the development of financial solutions such as Tencia that have the ability to harness the power of web services as a means of uniting information across various applications. Web services can overcome compatibility issues such as different operating systems, platform and language allowing systems (that conform to web services standards) to be linked up more easily than ever before. In addition to this, the trend towards the need for remote access to information from all points of the globe has lead to the development of Tencia as a web based business system that can be accessed over the Internet.

2.0 Tencia Framework

Tencia is a multi layered application that has been written in Visual Basic .NET utilising Microsoft's .NET framework. In recent times there has been an industry shift from developing applications in a classic client/server model to the development of layered or N-tier applications using the robust and feature rich platform of Microsoft .NET.

Figure: 2.1 Tencia - Systems Architecture diagram



What are the benefits of an N-Tier (multi-layered) application?

The key benefits of developing an application based on an N-tier architecture include:

The ability to create flexible and reusable applications

By separating the application into layers it becomes easier to modify or extend the application without breaking or having to recompile code, making it easier to change functionality and business rules with the least amount of impact on the whole application. For example, if an application is divided into logical isolated layers that can be de-coupled from the rest of the application, a change to the underlying database layer would not affect the user interface layer. What this means in effect is that changes or enhancements to the software application should be easier to implement creating the potential for rapid application development and greater speed to market for enhancements.

Scalability and extensibility features of an N-tier approach

Other benefits are the scalability and extensibility offered through the use of an N-tier approach. The N-tier approach allows the application to be moved from a smaller to a larger operating system and for it to take full advantage of the larger operating system in terms of overall performance. That is, the applications ability to speed up user response times and capacity to deal with larger numbers of users. The N-tier approach allows many people to use the application with a minimal impact on resources due to the layered structure.

The N-tier structure of Tencia enables the system to be extensible through the addition of new functions while minimizing impact on the rest of the system. As such there may be instances where adding a new function may impact a single layer of the application. In the past such changes may have generated a cascading effect that would have impacted many areas of an application.

Additional Security features

N-tier applications can provide a greater degree of security. Tencia has been built with extra authentication, logging and monitoring systems, Tencia's authentication processes are customisable which gives you the flexibility to add layers of security to the areas of the application that best suit your organisation needs. Security tokens (a type of data encryption) are used in Tencia which further enhance the authentication processes and can increase security levels at various layers within the application. In addition, different layers of the application can be physically located on different machines, adding an extra security feature to the application.

3.0 Web Services

Why are web services important?

Web services are important in today's business environment because they provide a means for organisations to link up their systems and interact with one another, more easily than ever before. Increasingly we see businesses needing to work more closely with their suppliers and customers as well as organisations engaging in more joint ventures and short term alliances in the pursuit of various business opportunities. Therefore businesses need to be able to quickly leverage the power of web services to link up their systems to acquire the flexibility and capability to do more business electronically with a wider breath of partners in different ways, and at a reasonable cost.

Tencia provides organisations with the control to give discreet access to areas of their application to selected third parties via the use of web services.

Web services make information more accessible to remote users

The web services layer of the Tencia application operates on a web server.

The web services layer enables Tencia to run over the Internet making information readily accessible to remote users, anywhere in the world at any time. The advantage here is that users in geographically dispersed locations or multi user locations can have access to the same information at any time they choose providing businesses with fast and accurate financial and business information at their fingertips allowing them to be informed and giving them the power to make faster decisions.

3.1. No requirement for access products

Tencia operates as a full forms application when run over the Internet and connected to web services via a VPN. Full forms applications have significantly more functionality than browser applications and as a result Tencia does not require an internet browser or a thin client access product such as Citrix to operate in this environment. Such access products can be difficult to install and costly to purchase and maintain, while a VPN is inexpensive to install.

4.0 Tencia User Interface

The Tencia user interface has a familiar look and feel with enriched features including; dockable panels, standard and dynamic menus, navigations panels and tabs to enhance the users experience and reduce the number of windows and/or sessions of the application that an end user may need to run in order to perform a job function.

Figure 4.1 Tencia main application window

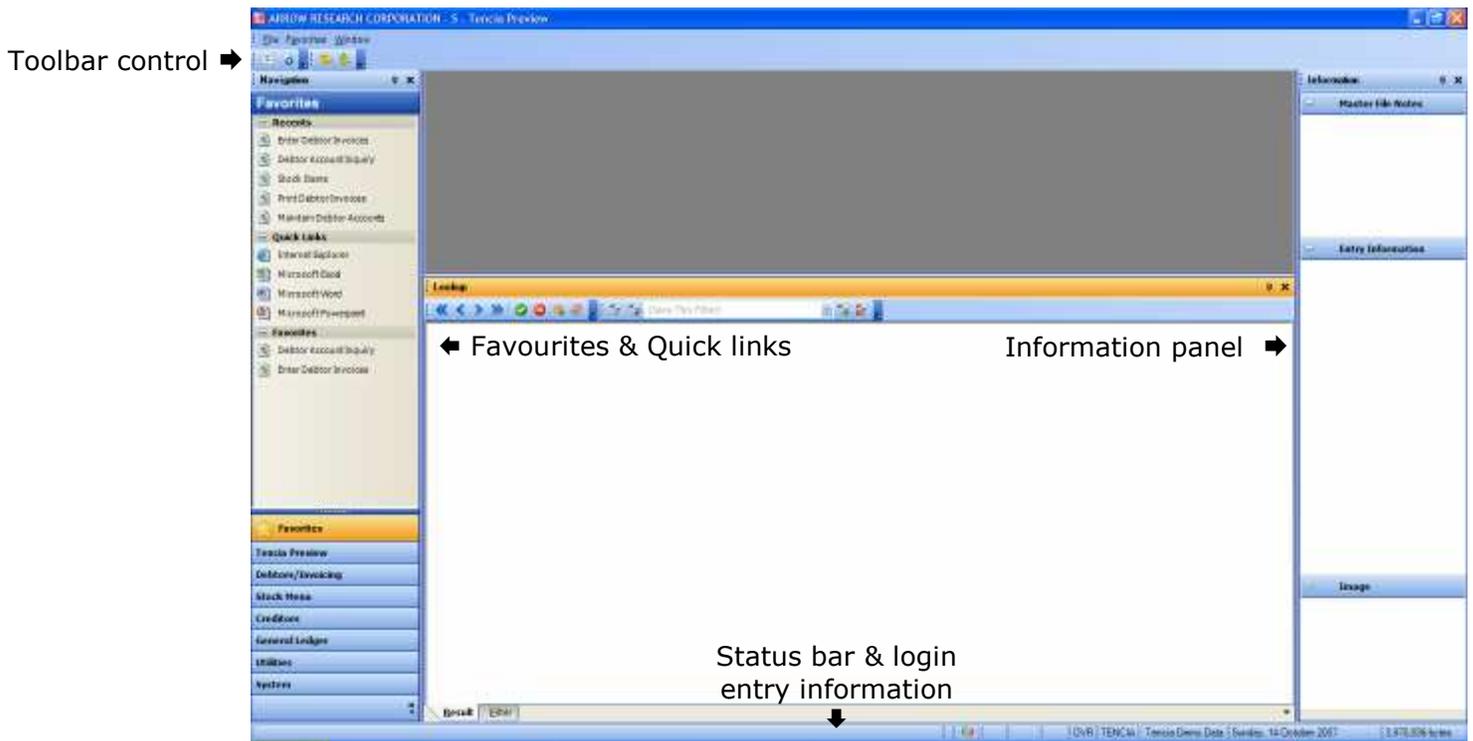
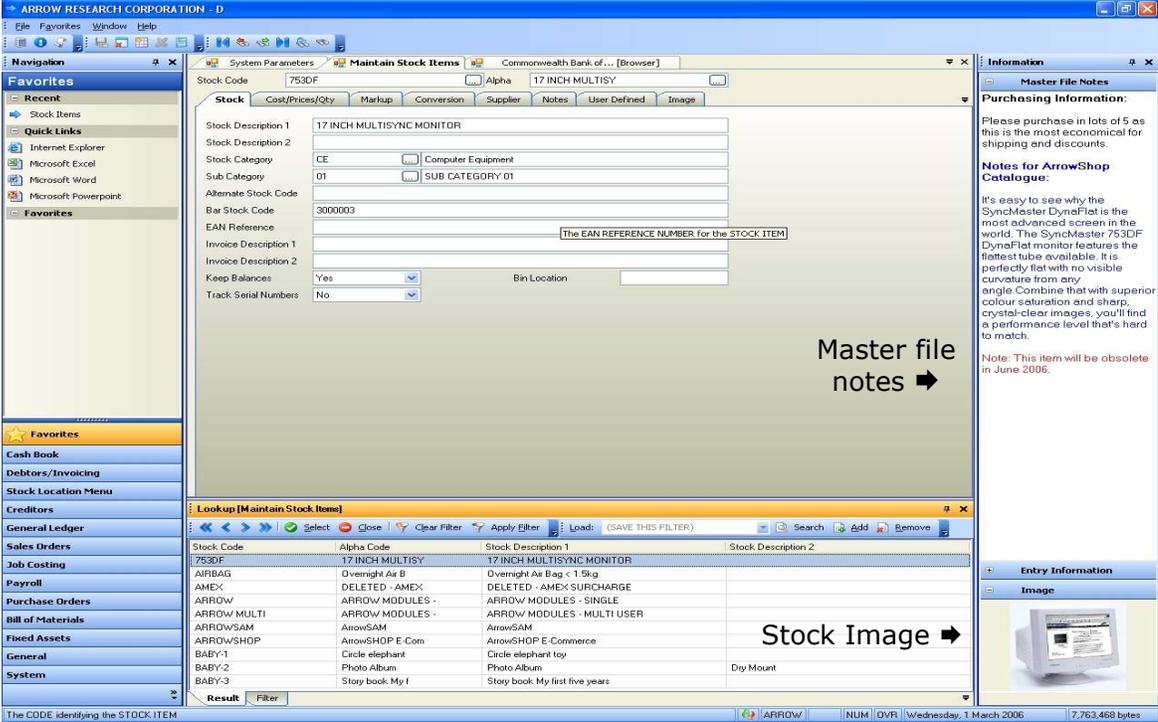


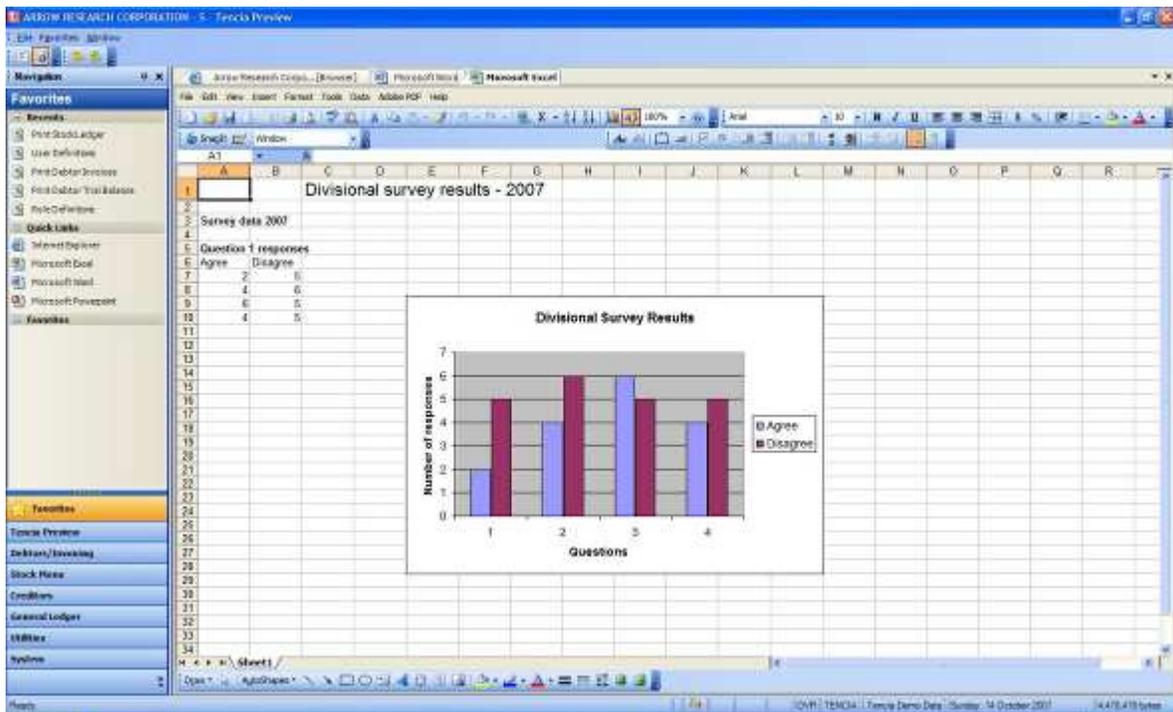
Figure 4.2 Maintain Stock items screen



4.1. User Experience

The Tencia interface extends the Microsoft Office experience into the Tencia application and there is no obvious switching between applications making the interoperability of the application appear seamless.

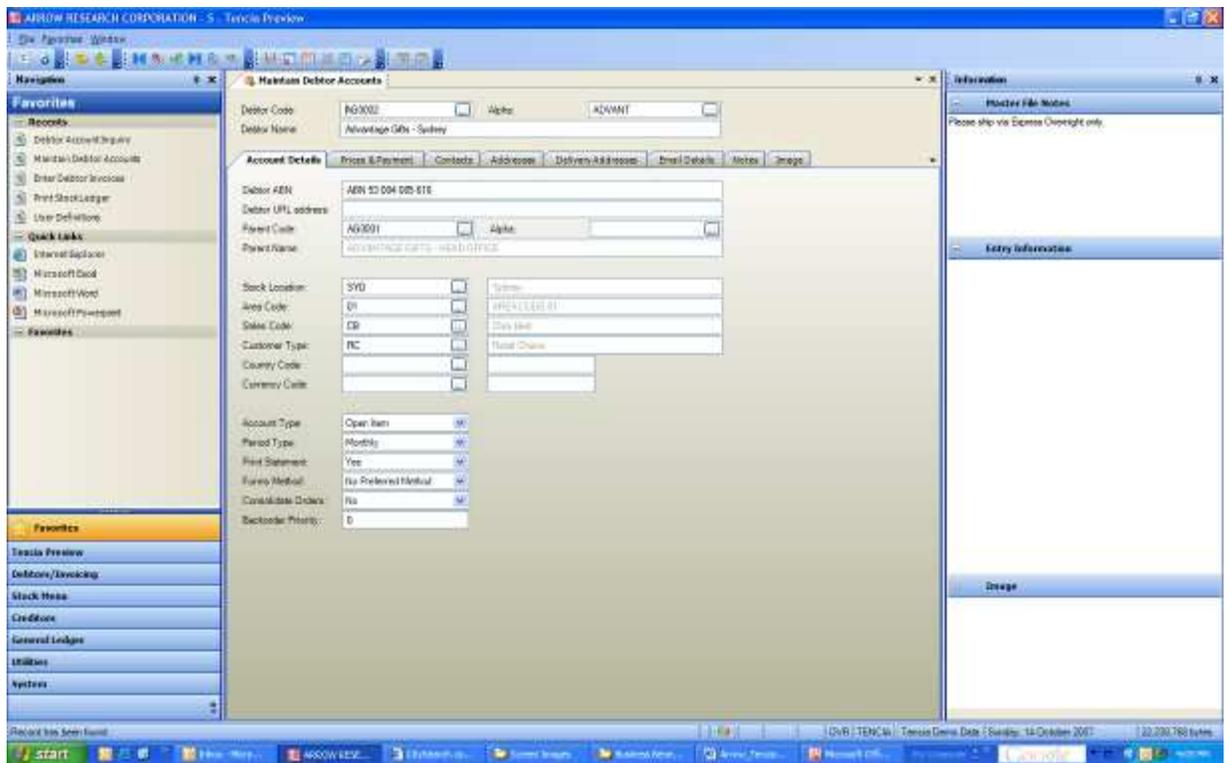
Figure 4.3 Microsoft Excel accessed via the Tencia favourites menu bar.



4.2. Dockable Panels

The Tencia application includes new features such as the introduction of dockable panels to give users more control over the look of their desktop. These panels can be grouped, expanded or collapsed as needed, helping to improve workflow by locking frequently used panels together allowing users to jump quickly and easily to other areas of the application and removing the need to open additional windows.

Figure 4.4 Maintain debtors screen



4.3. Dynamic Menus

The menu bar in the Tencia application has both a standard and dynamic component. The standard menu does not change whereas the dynamic menu options change in accordance with how the user interacts with the system and the selection that they make. Each menu also contains shortcut keys for quick access and the regular function keys that users are currently familiar with that use Arrow Financials are still operational.

4.4. Increased Field Sizes

Field sizes have been increased significantly so that more characters can be entered into various fields, enhancing the usability of the application. Examples include; description fields, quantity, value and cost fields and sales codes.

Specifically changes have been made to the following areas:

- Sorting and analysis codes such as sales codes will be 4 characters
- Master file codes, such as Debtor or Creditor codes will be between 12 and 15 characters.
- Stock item codes fields will be increase to 30 characters in length
- Transaction reference numbers will be 30 characters in length
- Description fields will take up to 50 characters
- Quantity, value and cost fields will hold 14 characters to the left of the decimal point and will hold up to 6 characters after the decimal point.

4.5. Navigation Panels

The navigation panel contains options for a user to add quick links to the favourites section of the navigation panel. Quick links can be created to link to regularly used Tencia modules or programs or to external Microsoft Office applications such as Microsoft Word or Internet Explorer. For instance if a financial report was exported to Excel and a user wanted to access it, they could open the Excel application within Tencia without having to shut down the application or search around through their program menu for it, the process would appear seamless. The navigation panel provides users with the flexibility to set up their workspace in a way that is most suitable for their job role, grouping the items that they access most frequently together.

Figure 4.6 Tencia navigation panel

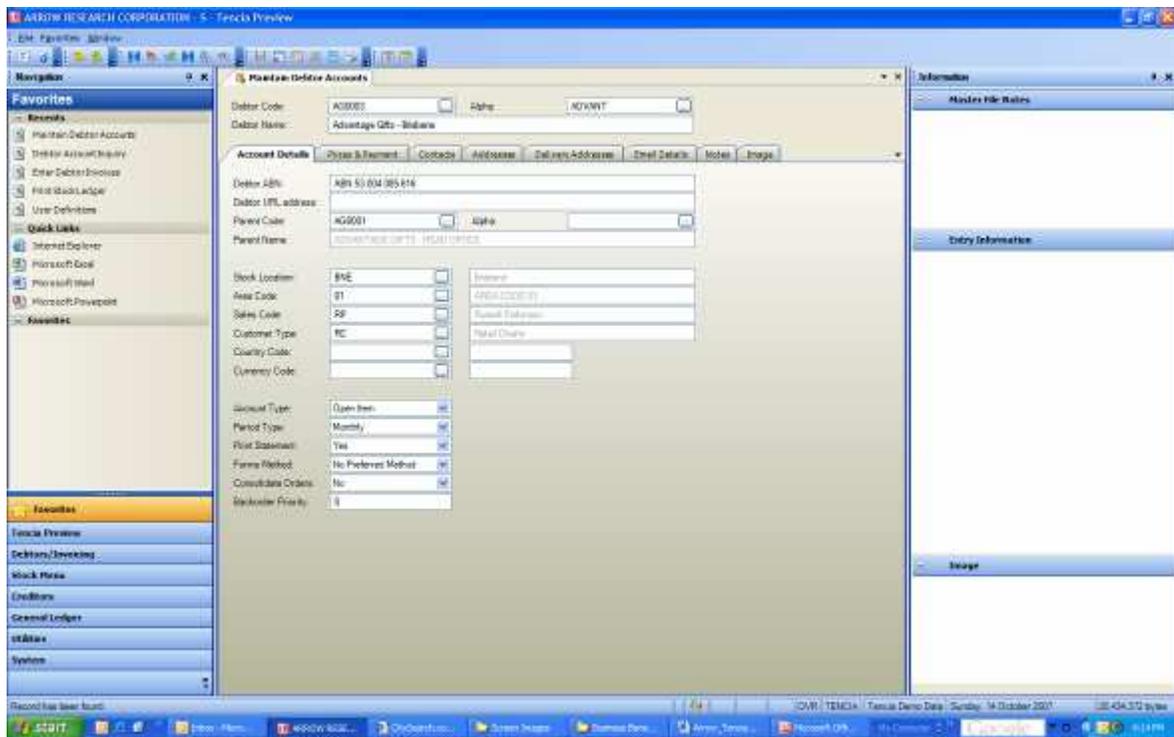


Tabbed Structure

To enhance the user's experience, tabs are used in the application to group similar and related options into the 'tab pane' making the users interaction with the application simpler.

For instance, in the application panel you may have a number of views open within the 'Maintain debtors tab' as there are a number of sub tabs such as debtors, contacts, addresses, delivery, email details, notes, image, allowing a user to easily identify the subcategories of information that may be necessary or required by them to perform a task.

Figure 4.7 Tabs within the maintain debtor accounts program



5.0 User Settings and Preferences

There are a number of elements within the Tencia user interface which provide the opportunity for the employee to engage and personalise their experience to align more closely with their business tasks.

5.1. Data Lookup

Searching, inquiry and the subsequent presentation of this data, can be customised according to the business tasks and processes an employee is required to perform.

The data lookup functionality in Tencia is responsive to each individual user's requirements, and is achieved via a comprehensive and dynamic filtering capability.

For example, within debtor invoice entry, to easily find a range of customers a filter could be applied to display debtors that have a postcode equal to 2000.

Every search function has a comprehensive set of filters incorporating selection criteria, with various options available to instantly locate a desired record.

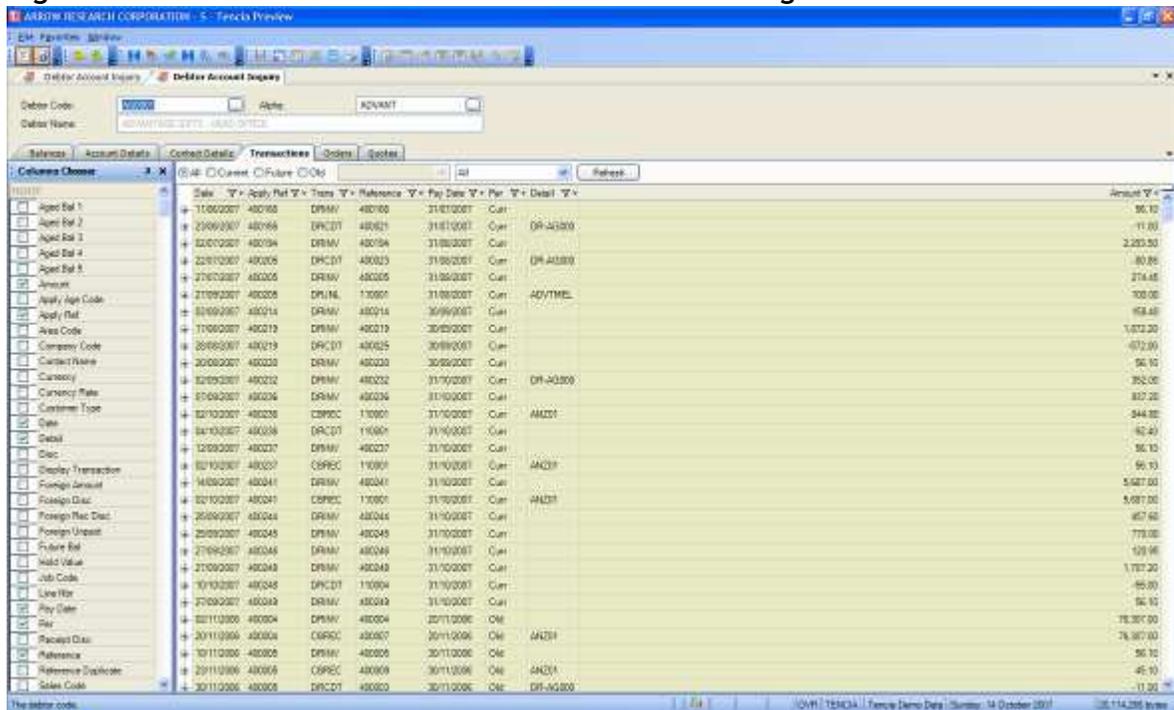
The benefits of this adhoc user driven data lookup facility ensures that the user can search and retrieve data effortlessly, minimising the time required to find information augmenting the user experience.

5.2. Inquiry Programs

All inquiry programs within Tencia incorporate easy to use dynamic and comprehensive design tools which enable the user to instantly alter an inquiry view, ensuring that the data is presented in the most appropriate manner in accordance with an individual user's preferences and requirements.

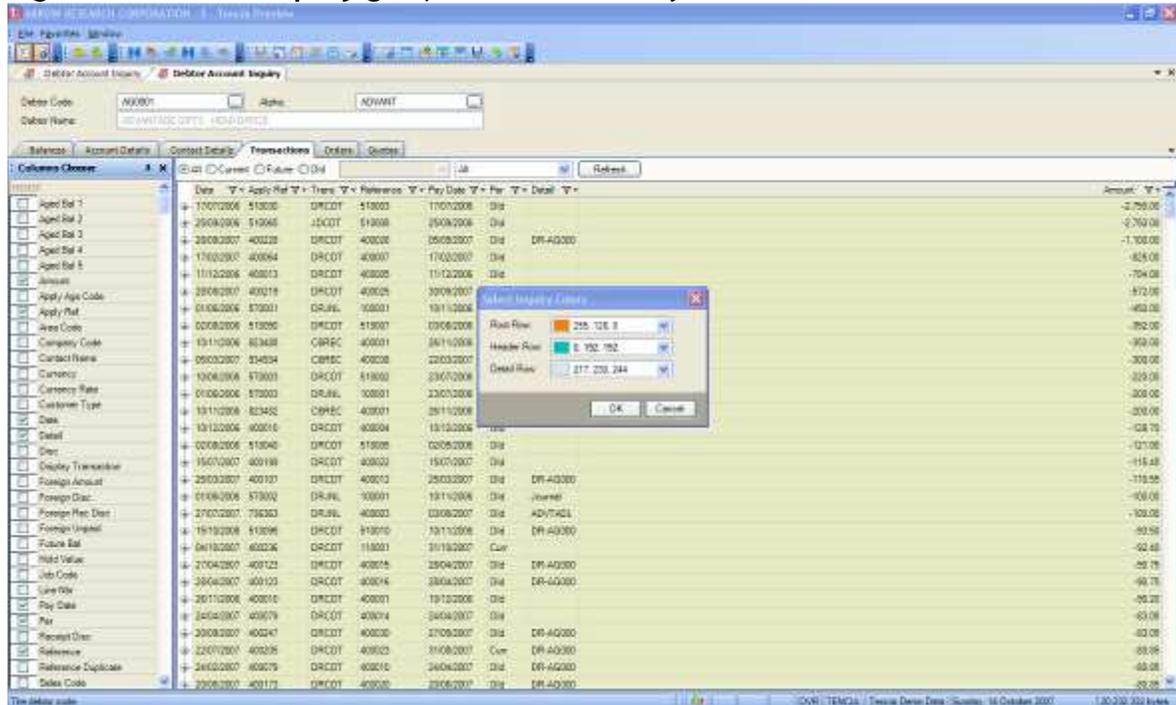
The inquiry design tools incorporate user-based column selector functionality. This facilitates the selection and re-ordering of the columns displayed on an individual users inquiry screen. For example, the stock inquiry program does not display the bin location of a stock item by default and this may be an important element for a warehouse user. Within a matter of seconds this user's inquiry view could be altered to incorporate the additional column, and conversely columns which are not required could be removed from the inquiry view.

Figure 5.1 Tencia column chooser and transaction listing



Another design tool available within the inquiry programs is the ability to define inquiry grid colours for each user, ensuring the user can interact with Tencia in accordance with their individual colour preferences.

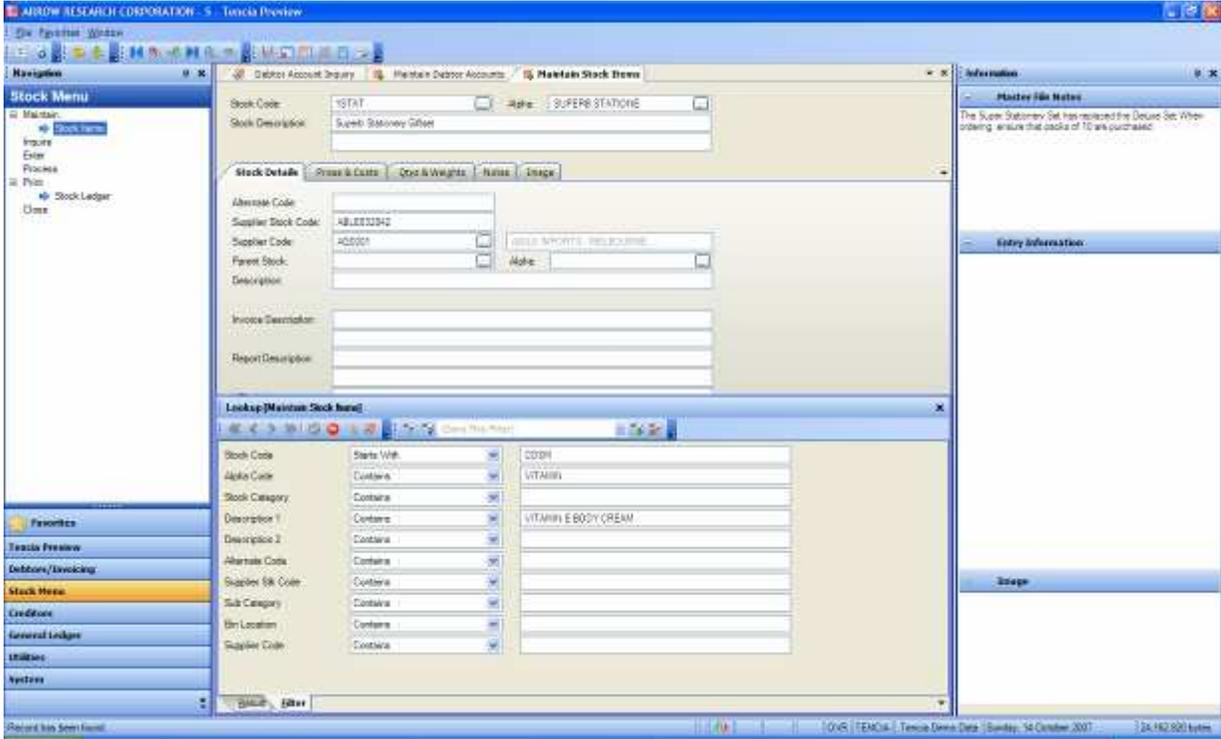
Figure 5.2 Tencia inquiry grid, colour selection function



Similar to the search filters available within the data lookup section 5.1, the comprehensive dynamic filtering functionality is also available within inquiry programs for each user.

Tencia has the facility to save search filters, so they may be applied as required when searching for data. The benefits of saving these user defined search filters ensures that the repetitive searching of data can be as efficient as possible.

Figure 5.3 Tencia filter function



5.3. Favourite Programs

This facility allows the creation of an efficient seamless working environment for the user, and ensures that the user is able to personalise the navigation pane to access common programs and files more directly and minimising potential distractions.

Each user has the facility to add any programs into their favourite's area, once again extending the interoperability between applications and thereby achieving desired results sooner.

The ability to remain in the familiar Tencia workspace also leads to increased productivity benefits for the user.

5.4. User Defaults

Another opportunity for the user to more closely align the Tencia user interface with their business tasks is to apply user defaults to the Tencia programs that the user interacts with on a daily basis.

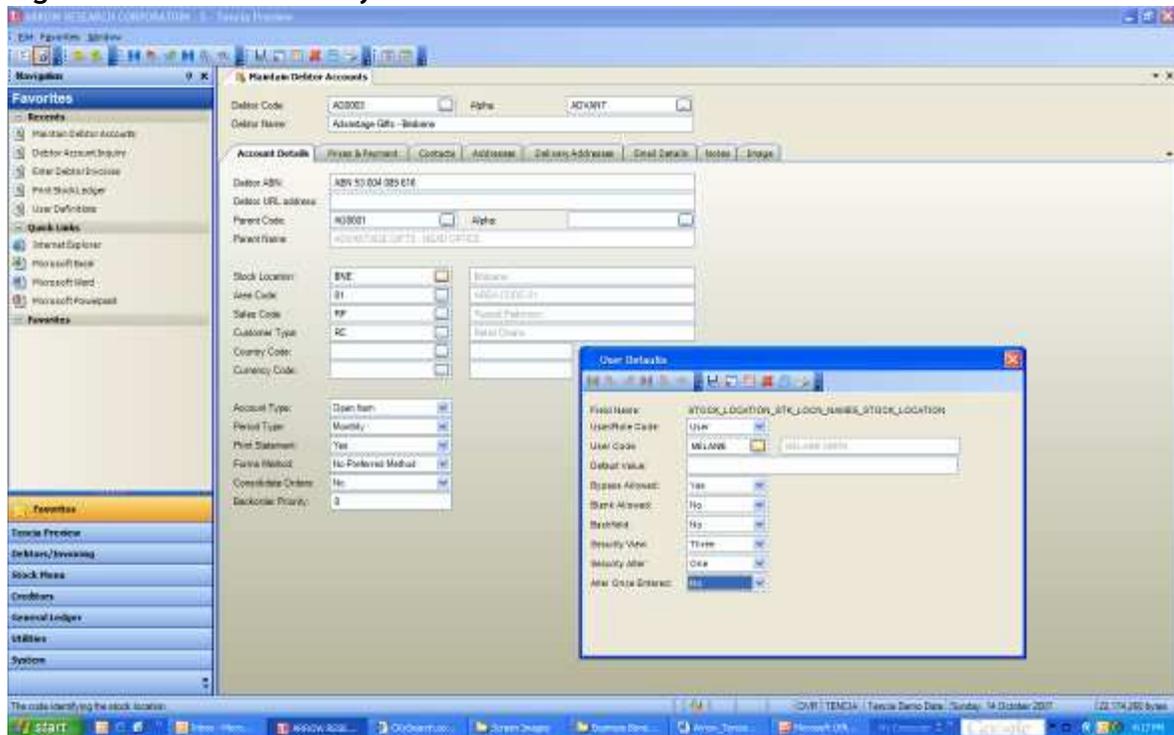
A user default enables a pre-determined action or circumstance to be applied to fields within a program.

It is possible for each field to:

- Specify a default value
- Nominate if the field can be bypassed
- Nominate if the field can be blank
- Select if backfield key can be used
- Allocate a security level to the field
- Nominate if the security level can be altered
- Permit alteration of the field once a value has been entered

This comprehensive list of default conditions enables the user to engage with the Tencia application with heightened productivity and minimum distraction.

Figure 5.3 Tencia user defaults



6.0 Security Model

The Tencia user experience is not limited by one simple action; it is an interconnected cycle, to ensure the return on experience generates shared and sustainable value.

A transparent layered security model provides the foundation for the Tencia user experience, with the aim of delivering a user experience which helps both employees and system administrators become more efficient and productive.

To ensure employees and administrators can focus on performing their business tasks, the following security elements have been incorporated within the Tencia application.

6.1. Role Classification

Tencia incorporates the concept of **roles**. In simple terms a role is used to group/segment individual users that have similar characteristics in full or part.

A role could therefore be based on a variety of characteristics for example, job function (customer order entry & processing) or position (senior management).

The benefits of a role based user experience include:

- Ensures a consistent user experience for employees
- Is intuitive based on the users role
- Easy to apply changes to a number of users quickly via the role classification

6.2. Code Level Permissions

Incorporating another layer of security within the role is the facility to assign code level permissions on predefined system key codes, such as, debtor, creditor and stock codes. There is a comprehensive list of approximately 30 key codes (see appendix 1) where it is possible to allocate read, write, delete and view cost permissions.

Figure 6.1 Tencia role code level permissions

Role	Description	Company	Code	Read	Write	Delete	Costs	Current
Company Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
User Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Area Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Bank Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Creditor Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Debtor Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Journal Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Staff Member Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Employee Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Purchase Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Supplier Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Job Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Stock Category Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Sales Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
BFI Stock Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Branch Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Account Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Payment Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Department Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Stock	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Customer Type Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Supplier Type Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Sub-Category Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Stock Location Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Invoice/Expense Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Asset Type	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				
Job Type Code	TENCADEMO	<input type="checkbox"/>		<input type="checkbox"/>				

A practical example of this would be where a company has geographic sales areas, with multiple sales people within each area. By creating a role classification based on geographical sales area (NSW-Central) and applying permissions to return data equivalent to a specified key code, namely customer type, filters the data from the Tencia SQL database for the role by the nominated customer type key code.

To further filter the data another key code permission could be applied to the sales code, to only permit access to customers with the nominated customer type that are linked to a specific sales code within the role. Once again filtering the data enables the sales person to only interact with a sub set of customers that meet the criteria of the key codes, customer type and sales code.

The benefits of applying code permissions include:

- Limiting the type of data users can access, ensuring sensitive details are not easily accessible
- Creating greater efficiencies for employees, by only displaying data that is relevant to their business tasks
- Improved data integrity by restricting access and interaction with data through the application of read-only permission for selected roles

6.3. Role User Defaults

Within each role it is also possible to create user defaults in entry, masterfile, process and report programs, further enhancing the user experience.

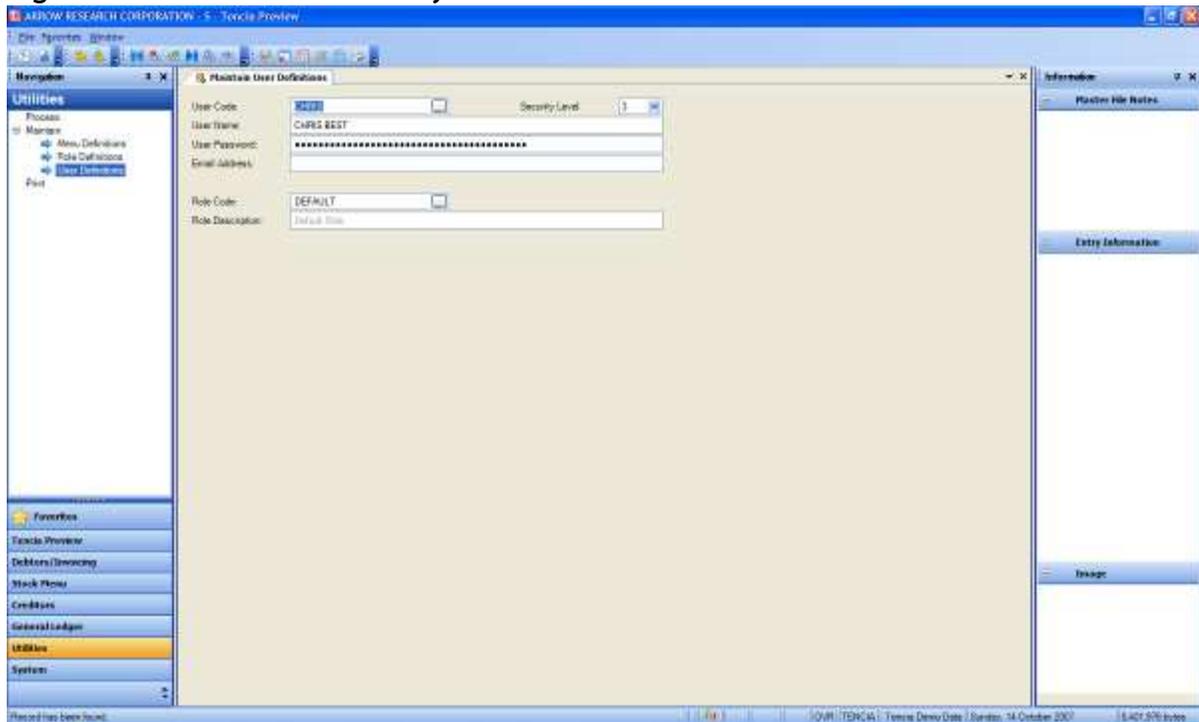
A user default enables a pre-determined action or circumstance to be applied to fields within a program.

An example of this could be when a sales order is entered for role NSW-Central, where certain fields such as, sales code, price code and tax code could be by-passed.

Benefits of the user defaults that exist within Tencia include:

- Streamlining data entry, by-passing certain fields
- Minimise errors during data entry
- More closely align the user experience with employees job function
- Increase integrity of data

Figure 6.2 Tencia Role User Definitions



6.4. Security Levels

In addition to the above role security elements, security levels can also be applied to individual menu programs. A security level of 1-9 can be assigned, with 9 representing the highest security level. A user can then be allocated a security level which will determine which programs are displayed on their menu.

To add another layer and deepen the security experience, security can be applied to a field level within a program by applying view or alter permissions.

It is also possible to allocate a security level to certain process options within Tencia such as, the release of sales orders from an on-hold status.

The benefits of such a comprehensive, layered security model in broad terms ensures scalability and flexibility in applying security preferences to each individual business circumstance.

7.0 Online updating

Although each business has its own unique characteristics there is a common thread throughout. The ability to view, report, and retrieve accurate and timely information from the business application is vital in facilitating confident decision making, forecasting and planning.

7.1. General Ledger

The Tencia application is fully integrated across all modules. When a transaction is entered, for example, a supplier's invoice with inventory items, the individual supplier's account is updated by the value of the invoice, as is the trade creditors liability account and the GST tax inwards account in the general ledger. Individual stock item balances are increased by the quantity received, as are the values in the stock on hand asset accounts in the general ledger.

This online general ledger feature enables financial reports to be extracted for not only the current and historic periods (e.g. months), but financial reports can also be generated for future periods up until the end of the next financial year.

One of the obvious benefits with an online general ledger is the alleviation of traditional month-end processing and reconciliation bottlenecks. Tencia makes it possible to reconcile, on an as-required basis throughout the month, balance sheet control accounts such as debtors, creditors, bank and stock control. This is achieved without compromising either the integrity of the financial data or flexibility in data entry processing.

7.2. Sales Reports

Within Tencia, when a customer invoice or credit note is processed sales reports are updated immediately.

Distributing and accessing up-to-date sales information for both the sales and management teams facilitates the monitoring of performance as required. For an individual sales person this could be weekly, enabling the sales person to assess and proactively monitor their performance against forecasts throughout the month.

8.0 Reporting

Tencia offers enhanced report processing and flexibility in the development, design and production of reports. The report designer enables users that have knowledge of SQL to create and modify reports in a straightforward manner. By applying SQL commands and by dragging and dropping fields on the report designer screen, users are able to create highly customisable and flexible reports. The report designer enables users to quickly and easily make modifications to the data items that they want to include and display in their reports and changes can be made to field lengths, alignments, colours, and font sizes, etc. In addition, imagery can be imported into a report.

The processing of reports can be done on the Tencia server which speeds up report processing times and does not affect application performance speeds. Large amounts of data coming from the SQL database in a web services environment can be resource intensive and can slow down an application, in order to overcome this, the Tencia report server was developed. If you are not running web services in your environment, and the users workstation has a direct connection to the database layer, reports can still be run locally on your machine and printed to any local or network printer.

A reporting inbox similar to an email inbox has been developed to store saved finalised reports. All reports are landscape in orientation and are created to offer users single or continuous views. Reports come with a table of contents allowing users to quickly click on a link and navigate, drill down or zoom in and out of an area of the report that they are interested in. Furthermore, thumbnail views of the report details are an additional option which a user may select.

Figure 8.1 Tencia reporting inbox

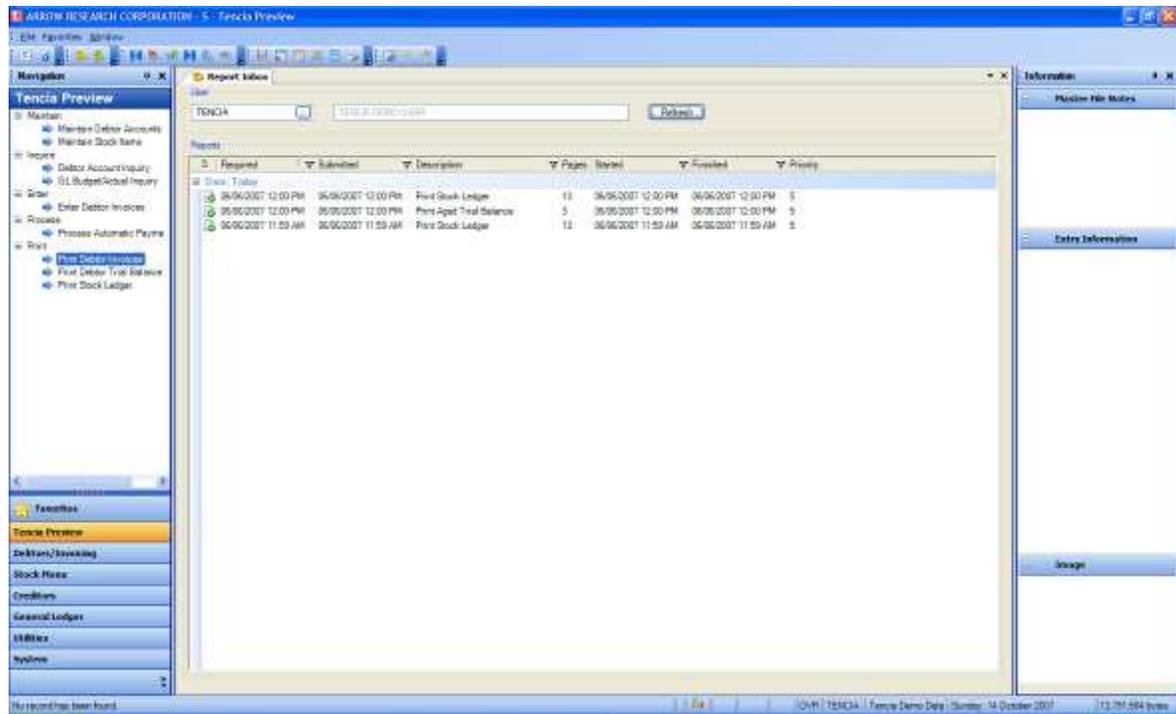
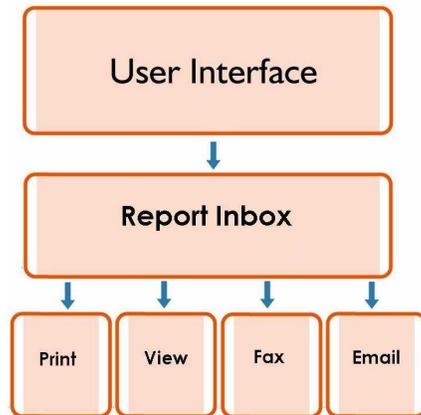


Figure: 8.3. Tencia reporting process flow and outputs



Reports can be exported to a range of different formats including pdf, html, rtf, tif or into Excel. Sharing of reports has become increasingly simple with the ability to easily email, print or fax a report from within the Tencia application. Alternatively a user's reporting inbox can be shared with other users if the appropriate permissions are applied.

9.0 Processing Workflow

An intrinsic element of business applications is the requirement to perform certain tasks that are multi levelled and which necessitate a sequence of steps to be undertaken before data is altered or updated.

Some examples include creditor automatic payments, payroll processing, automatic allocation of backorders, automatic generation of purchase orders and the processing of general ledger standing journals.

For those business tasks incorporating a processing component as listed above, it is imperative that the user is able to perform these tasks in a secure, flexible and efficient manner.

The Tencia processing work flow incorporates the above imperatives, which is illustrated in the following creditor automatic payments example:

- Firstly, the criteria for selecting creditor invoices for payment is determined, and there is a comprehensive list of variables to include\exclude during this phase. Once the selection criteria have been confirmed, this process is then submitted to the process inbox. Similar in design to the Tencia report inbox, the process can either be run locally on the workstation or on the Tencia server.
- Secondly, once the process has been received in the user's process inbox the option exists to review and edit the creditors and invoices that have been selected for payment, as per the criteria nominated in the above phase. It is possible via the process editor to delete creditors or individual invoices, alter payment amounts or alternatively delete the complete creditor payment run. If required this editing phase can be performed intermittently over a period of time.
- Thirdly, once the required alterations are made to the creditor payment run via the process editor, the creditor automatic payment process is confirmed and updated. At this point creditor payment transactions are created and posted to the relevant creditor accounts. A confirmation report for this process is then sent to the users report inbox, for review and archiving.

It is the editing and review phase of the processing workflow that facilitates the streamlining of alterations to the data, presenting the user with the opportunity to closely monitor and refine what transactions are ultimately updated and generated.

Figure: 9.1 Tencia process workflow diagram



Appendix 1 - Role Definition Key Codes

Area Code
Asset Code
Asset Type
Bank Code
Bill Stock Code
Branch Code
Company Code
Creditor Code
Customer Type Code
Debtor Code
Department Code
Employee Code
General Ledger Account Code
Income/Expense Code
Job Code
Job Type Code
Payment Type Code
Payroll Code
Purchase Code
Sales Code
Section Code
Staff Member Code
Stock Category Code
Stock Code
Stock Location Code
Sub Category Code
Supplier Type Code
User Code