



NetPower Enterprise Application Suite III Technical Highlights

“Business Solutions - Beyond Excellence...”

London, May 5th, 2002 – English Version



© 2002-2003 NetPower Solutions Ltd. – All Rights Reserved
www.netpowersolutions.net



Technical Aspects

Here follows an overview of the system technology and limitations:

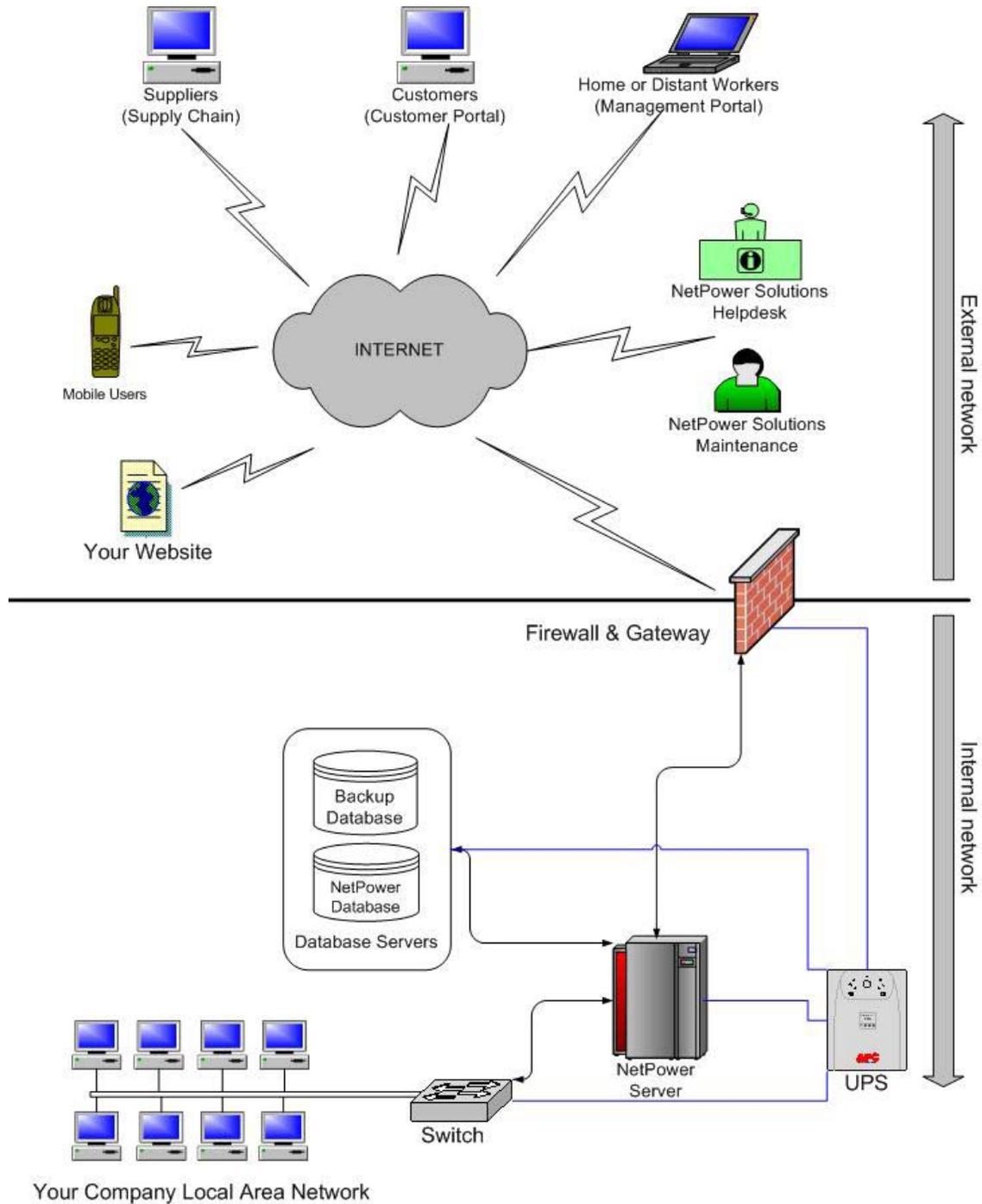
- 1. System Load:** the system has been tested successfully with up to about 250 users. Because of the web-based nature, the only limit there is to the number of users, has to do with the Server the system is installed on. Statistically, the limit should be around 5000 concurrent users per server. Raising the server capacity will logically result in more users being able to use the system.
- 2. Server and Data Security:** in basic version, the heart of the system resides in a Linux Server. This Unix architecture, which always stands behind and works in conjunction with a gateway that also acts as a firewall against hacking, guarantees safe working environments and protects data as much as technology allows. In addition we use Session Technology and Stealth Redirection to secure every page in the software. Extra features can be added when working with very sensitive data.
- 3. Privacy Security:** according to European and U.S. laws, each company should protect to the maximum possible extend all data of private persons. The NetPower Software only gives access to certain pieces of data to those people who really need to get this information so they can accomplish their duties as they should. Other personnel are not granted access to this type of information. In addition, automatic back-ups are taken at pre-set times so data does not get lost. Depending on the level of security requested, this back-up is a passive tape-streamer (back-up every night), a back-up Server (which only starts working once a problem has been detected) or a full-time Raid 5 Server (which actively monitors problems, back-ups in real-time and immediately switches to another hard-disk when a problem occurs).
- 4. Encryption Technology:** in all systems using information gathering over the internet (such as with tele-maintenance or by using the Customer or Management Portal), the data will be encrypted to minimise third party data sniffing activity. Especially with sensitive data, this is a very important security aspect: hackers or sniffers, who might get the data, cannot do anything with it without the proper encryption key, which is user-specific. The system uses Class II Keys although technically speaking Class III Keys can be used as well.
- 5. Stealth Redirection:** this is only part of the several security aspects, but this technology hides the exact URL from user's browser address bar, thus minimising intrusion by own personnel.
- 6. Browser Support:** all Microsoft Internet Explorer browsers from version IE5.0 are supported and all Netscape Navigator from version 7.0 are supported. Opera and Mozilla are equally supported.
- 7. System Requirements:** the system works on Linux, Windows and Mac workstations and Unix, Linux, Mac and Windows Application Servers. AS400 systems may qualify under certain conditions.



8. **Language Support:** the system is standard offered in a multi-lingual version, with English being the standard language. Additional languages can easily be added. Arabic language and other right to left languages are also supported if the users have the proper keyboards installed on their client computers. Adding a language is just a matter of translating the proper language modules, which are kept separate from the actual application code.
9. **Modular Lay-out:** because of the modular lay-out of the concept, features can be added or deleted without interrupting the correct system operation, or even interfering with it. This opens a wide range of perspectives for companies that want to gradually increase the system's operations, or change them because of changing market conditions.
10. **Programming Technology:** the system uses a combination of JAVA and XML. Java modules are written in Java Server Pages (JSP) for the GUI (Graphical User Interface) and in plain Java for the Servlets.
11. **Database Requirements:** all database types can be used thanks to the XML approach. Examples are: Access, Oracle, Informix, SQL, MySQL, etc...
12. **Tele-Maintenance and Debugging:** because of the very nature of the system, it is very easy for an operator at our helpdesk to manually enter the system from a distance and debug or assist the user who is having a problem, thus greatly reducing problems. There's no limit to the number of intervening people, and network load will hardly increase during these support operations.
13. **Up-Time:** tests have proven an average up-time of 99.50 % in production circumstances. Stability is therefore assured. To guarantee data availability after power shot-downs or interruptions, all servers are connected to an Unlimited Power Supply (UPS).
14. **Cockpit Control:** thanks to the web-based approach, authorised users can log on to the system at any time at any place provided they have proper authentication. This enables management to check figures or other statistics from any place 365/7/24h.

Sample snapshots of the software can be found at the end of this document.

Here follows a schematic overview of the hardware installation:



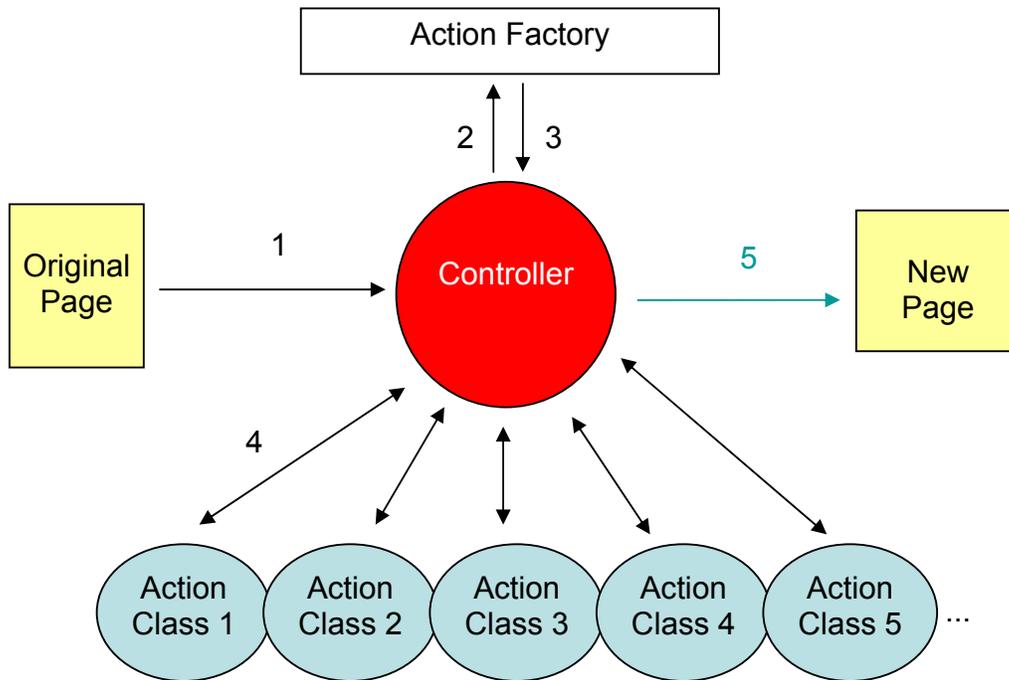
State of the Art Technology

Introduction

NetPower Solutions' Enterprise Application Suite III uses state of the art technology, which reflects the most recent programming architecture evolutions in a Java environment.

Controller

From the very beginning, we've had as a primary objective the system's modular approach and the ability to "go as you grow™" by clicking on extra functionalities within an existing environment. This dynamic and modular approach has been achieved by using the Controller at the very heart of the Java system.



When a form is submitted from a page in the system (1), a referral known as the Action Type is given with this submit query to the Controller. The controller will then check in the Action Factory (2) – basically a hash table in which all previous action objects have been listed – which Action Class to choose.

Reusing a single action for multiple requests greatly reduces the number of actions that must be turned into an object. This is referred to as an action being instantiated.

If the Action Type cannot be found, a new Action Object is generated and added to the hash table. The Action Factory will send the object of the appropriate Action Class (3) back to the Controller.



This pattern allows us to alter the Controller's behavior dynamically – it is a Strategy Pattern. Without the Controller having any knowledge of which classes are available or how these classes work internally, it can yet process the request. In other words, the way the Controller processes a request is done at run-time level by plugging in a Process Strategy.

While the processing is embedded in several Strategy Classes, the perfect separation of these classes greatly enhances maintenance issues and also guarantees there's no limit on the type of processes that run within the application.

So as the action object determines the Controller's behavior, an Action Router Object (5) will be generated by the Action Class, which will forward or redirect the request to the appropriate web component (typically a JSP page, HTML page or another servlet).

The main advantage of this approach is the fact that the architecture is dynamic and very abstract. Any new feature or functionality can simply be added by plugging in a module on the Controller, after which the links are dynamically generated. The customer can as a result just order an extra module, and doesn't have to be worried about integration problems.

In addition, the GUI (Graphical User Interface, the pages a user sees) is totally separated from the software logic and architecture. As a result, every possible lay-out can be linked to the heart of the system without having to re-programme the code.

Multi-Language Features

The previous releases already offered multi-language features. However, not all language items were dynamic: some sentences were hard-coded and especially in communications with suppliers and customers, the languages could not easily be changed.

In this release, all language items are depending on the user that has logged in. Indeed, when a user logs in, a Session Scope is created containing the user's language preferences. Upon the Action Return Object generating a page, the Session Scope knows exactly which language to fill in on the page.

Within the same session, other languages can be used, e.g. to generate a document for a customer or a supplier. This is done by using Language Tags.

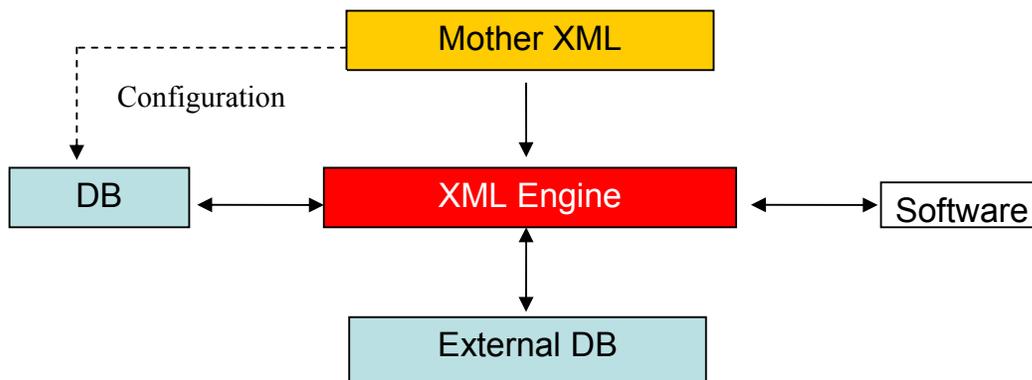
The main advantage of using these Tags is that the GUI is again totally separated from the underlying code. This in turn offers a lot of advantages in rapidly customising the look and feel of a customer version, which saves costs. Also, multi-character sets and right-to-left languages are very easily integrated.

Dynamic XML Engine

XML is an ideal language to link different database systems with existing software. NetPower Enterprise Application Suite III uses a Mother XML file to describe the main database in which all system data will be saved. This Mother XML file enables the system to use any known Database type because the database typical variables are taken into account.

The XML Engine is used as “glue” between the Java classes and the Database. Indeed, any given query is transformed by the XML Engine into a Database-specific query, of which the results are then returned into a programme-compatible value. This process is known as Casting. For example, a string field can be known as a Varchar type in the database. The XML engine will translate the string query into Varchar types and return the result as a string type.

In addition, the XML Engine will also be able to cast with external databases, e.g. when integrating with existing systems or when performing collaborative supply chain.



Connection Pooling

When the web server entity of the EAS III application server is started, a so-called Connection Pool is activated. This Connection Pool keeps a number of database connections activated. When a User Session requires a connection with the database, one connection gets reserved out of the Connection Pool. As soon as the connection is no longer needed for that user, the connection goes into a Recycling Process. The whole process takes just milliseconds.

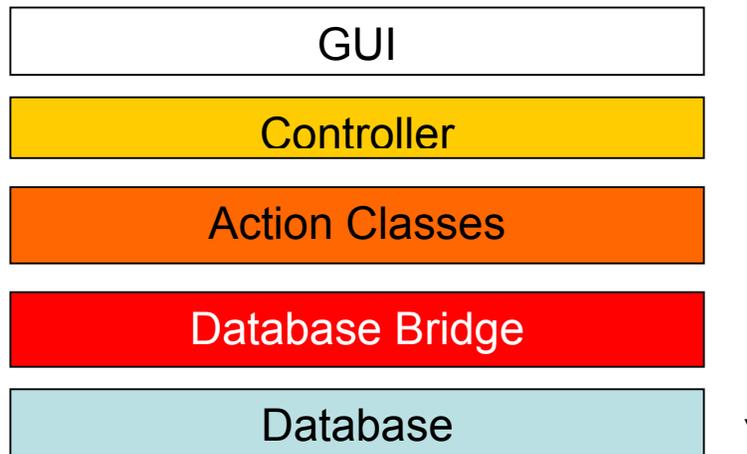
In case the full connection pool is reserved, users that need a connection go into Listening Mode, and the longest waiting listener is awarded a connection as soon as one is going into Recycling Mode. This process as well is taking only milliseconds.

The main advantage of the Connection Pool is the speed advantage. Indeed, because connections with the database remain open – but well below maximum load, a tremendous timing advantage is realised because the connection does not have to be opened and then closed again, which traditionally takes up most of the connection time.

In addition, the system offers more scalability and the number of users can be increased dramatically because the Listening Mode works as a Load Balancer without passing over maximum load capacity, regardless of the number of users on any given moment.

Connection Pool and XML Engine together form the Database Bridge.

All systems described earlier, give the following architecture overview:



Security

One Tag that is narrowly associated with previously explained Language Tag technology is the Security Tag.

The User Session involves the creation of a User Object. Whenever a page is loaded into the browser, the Tag will check if the User Object has the necessary authorisation to view that page. The User Object works in that case as a Unique Access Key to that page, checked by the Security Tag. If the Key is refused, one cannot access the page. So even if a user would be able to retrieve a certain page which he has no authorisation on, the content will never be displayed.

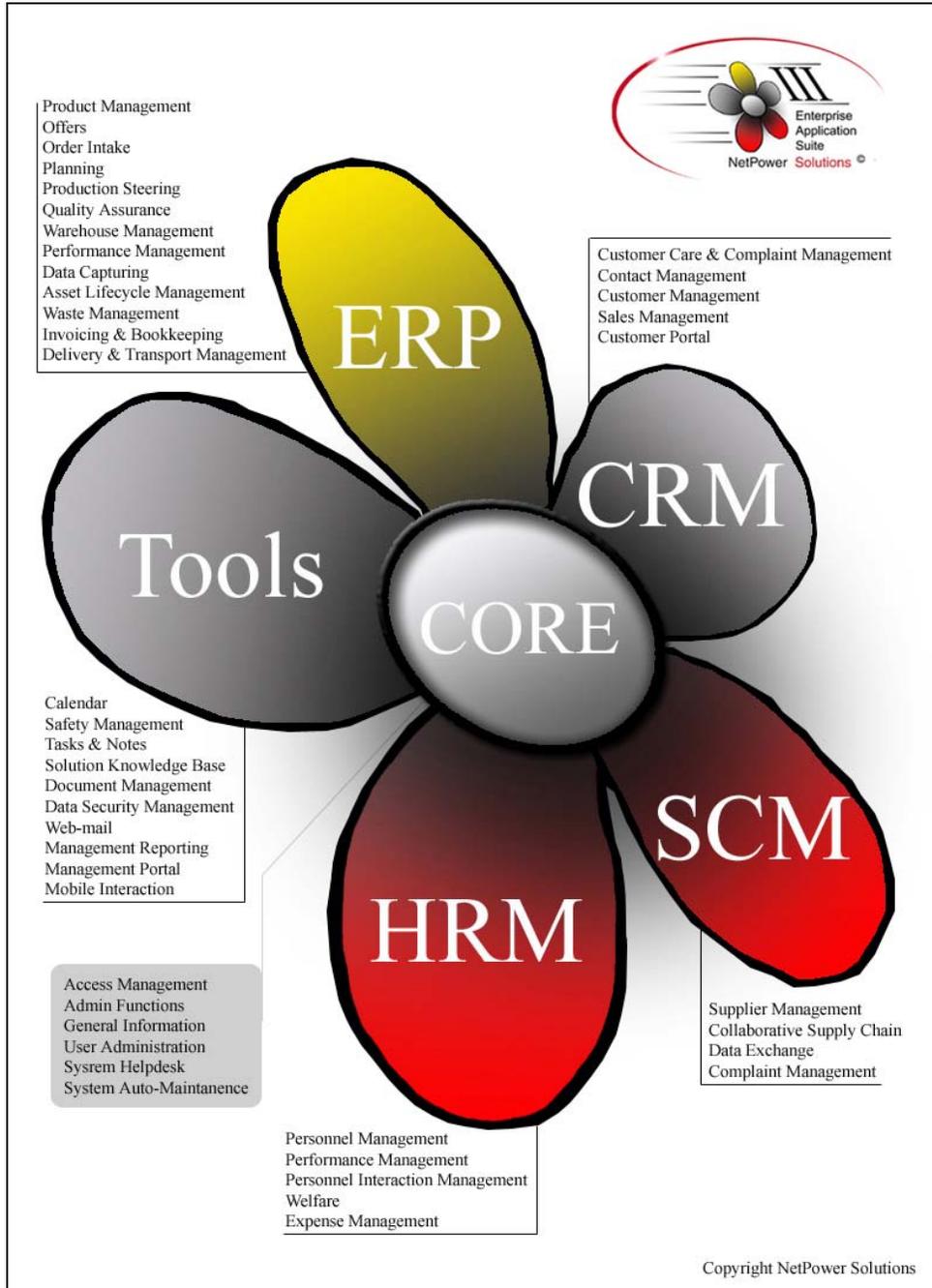
In addition to the session technology and the security tags, the system also uses Stealth Redirection so users never see the address of the page which is being loaded.

Radio Frequency Data Capturing

NetPower Solutions' Enterprise Application Suite III can be used with Radio-Frequency real-time scanning equipment. A Java RF Module checks constantly which scanner is receiving data and sends the info to the XML Engine for processing. This is a unique approach with fully web-based systems on the market today. NetPower is the only solution offering you a totally web-based real-time RF system on the market today.

Modular System Overview

The NetPower Software has the following modular approach, all centred on what we call the CORE (Cockpit Overview & Response Engine). On this CORE, all modules – current and future – can be connected. Some modules can only be installed if other modules are as well. The whole scheme is shown hereunder.





In all events, and regardless of any combination of modules that is chosen, the NetPower Enterprise Application Suite gives you a perfect blend of:

- **Security** – stop fraud, hackers and flaws
- **Relationship Building** – with your customers, personnel, suppliers, banks, transporters
- **Efficiency** – cost and operational control, safety, environmental respect
- **Productivity** – Produce, steer, plan, foresee, cut costs
- **ROI** – see your return on investment materialize from the first quarter

In the field of technology, the NetPower Enterprise Application Suite is entirely J2EE compatible. Interaction with other software using this technology becomes very easy. Interaction is also possible through XML.

CORE Module

CORE stands for **Cockpit Overview & Response Engine**.

The CORE system includes a hardware part:

- A Server and Database system
- A Gateway and Firewall system
- A back-up system
- A broadband internet connection with fixed or dynamic IP address
- An UPS power back-up system

The CORE system includes also a software part:

- Cockpit Control over all system functions
- Dynamic and secure access system
- Unlimited User Profile management
- Automatic date and time synchronization with an online atom clock
- Automatic switching between printing and mailing documents. The mail address can either be imported or filled-in when mailing.
- Simultaneous multi-language environment for users, suppliers and customers that use the system or interact with it. Right-to-left languages such as Arabic are also compatible.
- System auto-maintenance features, including doing processor-intensive calculations at nighttime.
- System helpdesk connections and FAQ database
- Secure environment with Stealth Redirection, Session Technology and Secure Socket Layer (SSL) connections
- Automatic logging of user activity

The CORE system finally is supported by a Service Level Agreement:

- Training and helpdesk support
- On-site interaction within 24 hours
- Off-site interaction within 8 hours
- Bug fixing and system upgrades
- Safety updates
- Maintenance

ERP Modules

ERP stands for Enterprise Resource Planning

1. Product Management - will manage all products that your company can offer/produce
2. Offers - allows you to create, modify, duplicate and otherwise manipulate an offer for a specific customer, based on his/her offer-request
3. Order Intake - allows you to generate and manage orders, based on your accepted offers, including internal orders and repeat orders
4. Planning - allows you to add your “pending orders” to your production planning, taking into account personnel availability, machine statuses, available and ordered raw materials, maintenance needs, etc. Includes emergency re-planning features.
5. Production Steering - allows you to put your planned orders, maintenance, tuning, warehouse manipulations into production and monitor quality; includes safety procedures
6. Quality Assurance - allows you to determine the quality results for each of your products in comparison to set standards and the Quality Handbook, and print quality reports
7. Warehouse Management
 - Raw Materials - controls the raw goods in your warehouse and is linked with SCM for optimal production efficiency. Control includes adding, ordering, deleting, move and write-off materials.
 - Work in Process (WIP) - allows you to manage your “work in process”, including location of these goods and value estimation.
 - Finished Goods - allows you to manage your products that are ready for delivery or call-off. One can also proactively notify the customer goods are ready for delivery.
 - Maintenance Equipment - allows you to manage your Maintenance Equipment and Maintenance Products.
8. Performance Management - allows the personnel to register their work hours. This can be done either automatically or manually.
9. Data Capturing - allows you to retrieve data from sources other than keyboard or mouse, e.g. scanners and machines
10. Asset Lifecycle Management - allows you to manage your machinery, including safety, maintenance, efficiency and workload/performance monitoring



11. Delivery & Transport Management - allows you to manage deliveries, dispatching and transports to your customers
12. Waste Management - this module will manage the products that didn't pass quality control as well as waste generated during production.
13. Invoicing & Bookkeeping – manages the XML link with an external Invoicing & Bookkeeping software. Includes invoice, reminders and credit note generation.

CRM Modules

CRM stands for Customer Relationship Management

1. Customer Care & Complaint Management - this module is responsible for correct follow-up of customer helpdesk requests. This can be related to reporting a problem (bug), a request for a new feature or a question related to training. The system uses a ticketing system to this purpose. The Network Status feature gives a graphical interpretation of the company's network performance and server loads. Ideal for maintaining a network consisting of multiple servers and handling crucial data. Can be linked to the Mobile Module for critical warnings.
2. Contact Management - allows you to manage contact persons. In addition to adding, modifying and deleting contacts, one can also make exports to Excel™ and Outlook™.
3. Customer Management - allows you to manage customers, including individualized mass email campaigns to specific customer groups and Service Level Agreement (SLA) performance monitoring.
4. Sales Management
 - Leads - leads are persons who have shown some kind of interests in your company or product. It is also possible to convert a lead into a contact.
 - Opportunities - this module manages possible sales opportunities towards existing customers. These opportunities will contribute to your forecasts. They can also be linked to your marketing to calculate the ROI (Return On Investment) of your marketing strategy.
 - Forecasts - this module is important for sales managers and can also be used towards customers. It's used to forecast future opportunities and leads, and to improve sales performance.
5. Customer Portal - this module is a website portal for the customer from which he has access to all data related to this customer, including but not limited to
 - Order Status
 - Delivery Status
 - Make an offer request
 - System and Network Status
 - Relationship History
 - Invoicing situation



SCM Modules

SCM stands for Supply Chain Management

1. Supplier Management - allows for adding, modifying and deleting suppliers. It also supports ordering of raw materials and maintenance goods.
2. Collaborative Supply Chain - allows you to adapt the production of your supplier to your own production needs, creating a virtual link between both. Supports just-in-time deliveries.
3. Data Exchange - allows you to get the most up-to-date data of your supplier through pull or push technology, e.g. prices for raw materials. As another example, NetPower Software can connect online with banks to get the latest currency information, receive payment information, etc...
4. Supplier Complaint Management - allows the user to send complaints to his suppliers and follow them up.

HRM Modules

HRM stands for Human Resources Management

1. Personnel Management - allows the HR manager to keep track of personnel information, including a company-wide who's who system.
2. Performance Assessment - allows you to add evaluation and confidential data to a user account. This includes payroll activities.
3. Welfare - this module deals with complaints and incidents of personnel within the company, including incident history.
4. Personnel Interaction Management - allows you to notify other users (depending on your permissions) by means of a message board. Content depends on company policy.
5. Expenses - allows personnel to enter, update and follow-up on their expenses by means of a web-form.



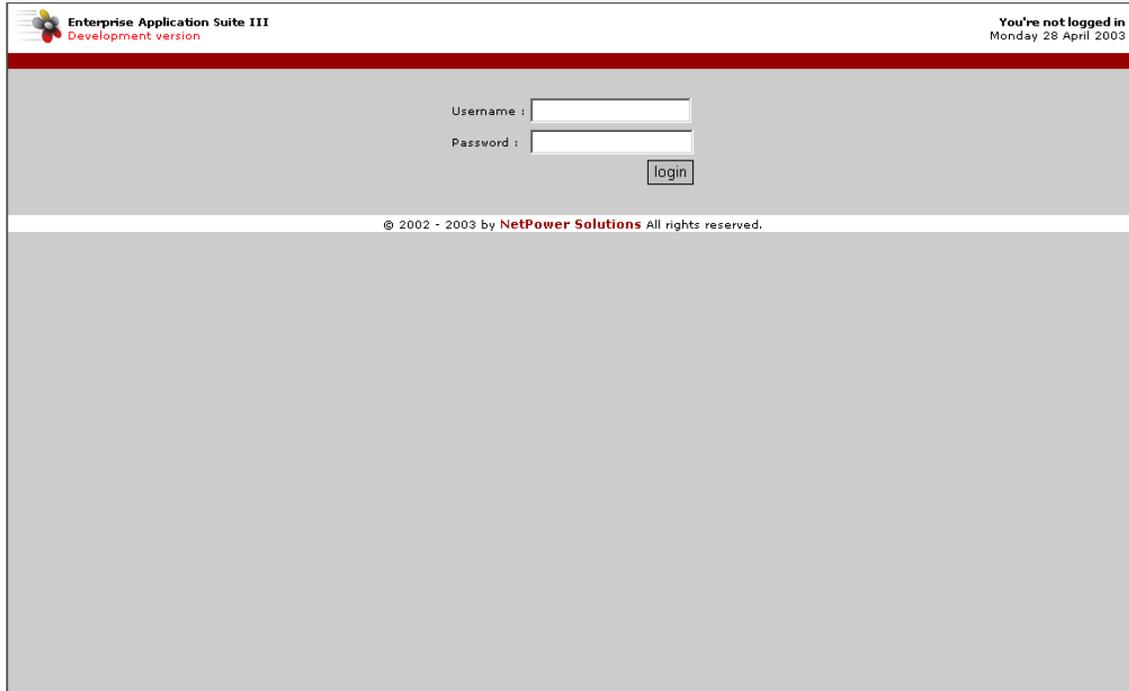
TOOLS

1. Calendar - This module generates an overview of all appointments of each employee in the company who belongs to the same entity. Meetings and appointments can be public or private, and premises are automatically reserved. Interaction with Outlook™ or similar is available.
2. Safety Management - allows you to determine safety procedures.
3. Tasks & Notes – this module can register a new task and assign it to someone. It can also generate an overview of all tasks of each employee in the company. The line manager can view pending tasks and if necessary assign these to someone else.
4. Solution Knowledge Base - this module will contain possible solutions for different problems. This knowledge base can be easily consulted. Authorized users can review and modify these solutions. This module is linked with the document management and the customer care module.
5. Document Management – a document storage allocation coupled to solid metadata that describes the content. Includes the possibility to see related documents.
6. Data Security Management – enhance your security with encryption of data.
7. Web-mail - this module is an integrated web client. It is integrated in all modules where a mail possibility exists. Import/Export with other mail systems is optionally possible.
8. Management Reporting - allows managers to get statistical information out of the system for all modules installed, focusing on cost control, efficiency and productivity.
9. Management Portal - allow managers, sales people, and maintenance personnel to access the system externally through the company website.
10. Mobile Interaction - this module is related to all mobile activities, from logistics to automatic emergency mobile phone messages to plant managers.
11. Preferences - allows each user to set his personal preferences, including user language, look and feel and much more.

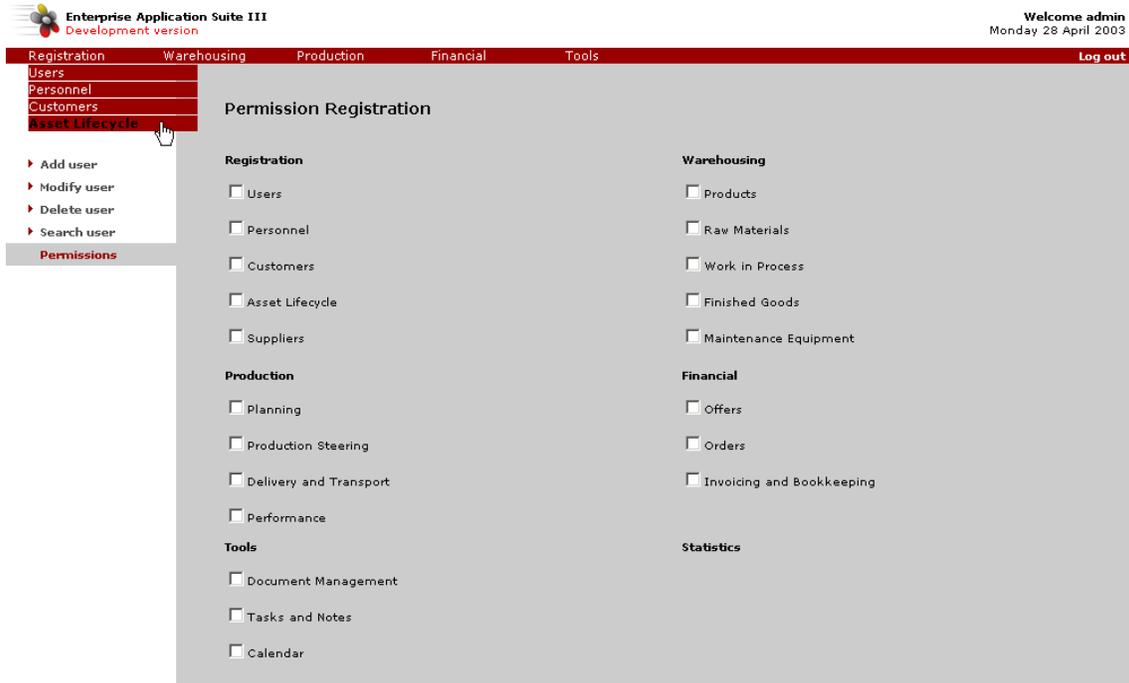
Sample Snapshots

Sample snapshots here are taken from a beta version of Release III.

Snapshot A – Log in screen



Snapshot B – Permissions and Menu System



Snapshot C – User Registration

Enterprise Application Suite III
 Development version

Welcome admin
 Monday 28 April 2003

Registration Warehousing Production Financial Tools **Log out**

User registration

Please fill in the required fields (*)

Username: *

Password: *Must be at least 8 characters long

Firstname: *

Middlename:

Lastname: *

Function: *

Department:

Territory:

Office:

Email: *

Usertype: *

Company:

Language: *

Register Reset

© 2002 - 2003 by NetPower Solutions All rights reserved.

Snapshot D – Forecasting Module

