



The kBOS Platform

Total Knowledge Management

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The kBOS Total Knowledge Management (TKM) approach is defined by the kBOS Strategic Knowledge Management Framework .

The kBOS Platform provides two unique features:

- It is the only platform supporting the development of knowledge-centric solutions as opposed to information solutions increasing by an order of magnitude the competitive value of the resulting solutions.
- It is the only business platform to provide the complete range of integrated tools to meet the needs of today's IT departments from workflow to web services management to business intelligence applications.

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Background

The business and technology solutions matrix

In the past twenty years Enterprise or Business Solutions have been developed from the business and the IT 'stables' in relative isolation and deployed solutions often reflect an oscillating preference to business or technological perspectives.

We can distinguish three main themes that have dominated business interest: knowledge management, business process management and enterprise integration. The way these themes have been addressed by the business and technology perspectives is summarised in the following table. This business and technology solutions matrix highlights only some typical alternative options, many more are available making the overall landscape rather complicated and sometimes confusing. However the fact remains that many elements of the solutions matrix shown below are part of the actual Enterprise systems in operation today.

	Business Perspective	Technoogy Perspective
Knowledge Management	The Learning Organisation The Intelligent Enterprise Intellectual Capital	Data mining Groupware Content management Business Intelligence Ontologies
Process Management	BPR Service break through Customer Driven Company Lean Organisation Time based	BPM Workflow CRM
Business Networking and Enterprise Integration	Strategic Frameworks Extended Enterprise Supply chain integration Process Networks Real Time Enterprise	ERP Enterprise Architectures Intranets Corporate portals EAI Web services

The Knowledge Management dimension

Many innovative companies have long appreciated the value of knowledge management to improve their processes, products and customer service and to create competitive advantage. The level of interest in knowledge management has grown dramatically during recent years as enterprises recognise that they operate in a knowledge economy and that knowledge is their most valuable asset. At the same time knowledge management theories and technologies have reached the maturity level required for business confidence and endorsement. The major factors driving the growth of KM software and services market are exploding information repositories, increasing business automation and real-time information needs, leveraging tacit knowledge, speed-to-market and the challenge to innovate to remain competitive.

The Process Management dimension

The process orientation became popular in the 90's through Business Process Reengineering (BPR) which advocated radical improvement in business performance as measured by cycle time, quality, cost and customer focus through redesign of business processes. BPR, even though with questionable success, addressed the demands of the customer driven market and fuelled a number of customer focus strategies. This in turn increased the demand for Business Process Management and work flow solutions and CRM systems which have now reached wide industrial acceptability.

The Integration Dimension

Business networking and integration has moved from the supply chain integration to process networks and to the Real time enterprise whilst technological approaches range from ERPs to EAI technologies and corporate portals. Web services provide a promising approach for flexible integration and easier development of dynamic business networks.

The business challenge

The Requirements

The new knowledge based digitally networked global economy is characterised by a highly dynamic competitive market and a highly distributed business environment. Some of the challenges are:

- Monitoring and reacting to new and changing competition;
- Readiness to exploit new technologies or market innovations;
- Fast product cycles and frequent updates;
- Managing distributed mobile or remote employees;
- Handling a high number of inquiries from different communication channels;
- Interacting on line with many partners and customers;
- Managing critical dependencies on suppliers and business partners.

The Total Knowledge Management approach

Business objectives	kBOS features
Utilisation of all company knowledge assets in operational processes	The kBOS knowledge centric solutions enable full use of the companies knowledge both implicit and explicit in processes.
Maximise the growth of knowledge assets	Measurement, experience and feedback can be combined in and used in strategy and process improvement
Establish competitive knowledge based dynamic capabilities.	Specialised tools

The kBOS approach to addressing the business requirements outlined above relies on combining two solution strategies.

- Provide a multidimensional solutions development platform
- Address the organisational responsiveness and adaptability

Requirements for a multidimensional solutions development platform

Successful organisations are beginning to evolve from reacting to infrastructure problems to proactively managing IT services. For this a multidimensional platform is required to give companies the enable companies to develop fast but with a high degree of dependability applications to support new business opportunities or urgent problems. The key to meeting the practical demands of new functionalities and frequently daily changes can only come from reaching a point of automatic translation of business functionalities to application components. The development platform must therefore combine many of the key business and technology solutions in a unified framework.

Organisational responsiveness and adaptability

The new business order is distinguished by its **emphasis on precognition and adaptation**, in contrast to the traditional emphasis on optimisation strategies based on prediction of relevant business patterns. Consequently, it is widely recognised that the **principal determinant of business competitiveness is adaptability** often linked to Real Time Enterprise related approaches. Fast and accurate adaptation to an increasingly complex and dynamic business environment points to solutions based on the technology used in **control systems**.

The operation of cars, aeroplanes, engines and most electrical appliances and instruments used in every day life is based on feedback control. System's response is controlled through measuring the difference between desired and actual output and providing corrective compensation. Dynamic control is obviously more difficult in the context of organisational/business complexity. This complexity arises from the interdependence of business, management and technological variables and creates serious difficulties in defining control criteria (i.e. measurement(s) of the organisational system performance), the feedback loop(s) associated with the selected criterion or criteria and critically the specification of actual business control mechanisms.

Control systems provide the means to adjust the system response to the design performance targets. This means that performance control can be effectively undertaken in the context of organisational characteristics that may reflect a particular stage of maturity in the company's capabilities. The control system will then be expected to support the optimisation of performance in the specific level of maturity and will allow the organisation to move to the next level. The transition through various stages of maturity in key organisation capabilities takes time and requires determined and consistent efforts over many years. The strategy should however satisfy the demands for sustainable development and profitability.

The kBOS Platform Overview

The kBOS Platform offers two unique features:

- It is the only platform supporting the development of knowledge-centric solutions as opposed to information solutions increasing by an order of magnitude the competitive value of the resulting solutions.
- It is the only business platform to provide the complete range of integrated tools to meet the needs of today's IT departments from workflow to web services management to business intelligence.

kBOS - The multidimensional Business Platform

The kBOS Platform combines uniquely the widest range of tools that enable fast development of solutions driven from a business rather than a technology perspective. We have combined in a coherent business framework many of the prevailing one dimensional solutions to create a multidimensional applications development platform of unparalleled power to develop solutions, integrate them and extend them with guaranteed dependability and minimum cost.



The kBOS platform brings Knowledge Management, Business Process Management and Enterprise Integration tools to support the following three objectives:

- e-synchronisation of an organisation's internal and external environment;
- Optimum utilisation of existing IT investments;
- Business performance control.

The kBOS Solutions – Building competitive knowledge capabilities

A kBOS solution irrespective of whether it support a single process or a company wide solution includes:

- The organisation model;

- The solution process models (e.g. CSR management, quality management, client interaction, etc);
- The corporate integration model ;
- The information model;
- The performance / risk measurement and control model.

The business models embedded in kBOS solutions provide the basis for process and knowledge management and the reasoning capabilities for business intelligence and performance control. Using the kBOS platform organisational, process, information and optimisation models are embedded into the software and become the backbone for enterprise integration and adaptation to the ongoing changes.

The kBOS platform offers *knowledge networking* meaning that users, organisational elements, process activities, applications, electronic devices and internet information can be linked in the business operation with customisable privileges.

The result is that knowledge management is totally integrated in the business operation and every application/solution added by the company increases its overall knowledge capability and competitive strength. The result is that knowledge management is totally integrated in the business operation and every application/solution added by the company increases its overall knowledge capability and competitive strength.

The kBOS Platform Functionality

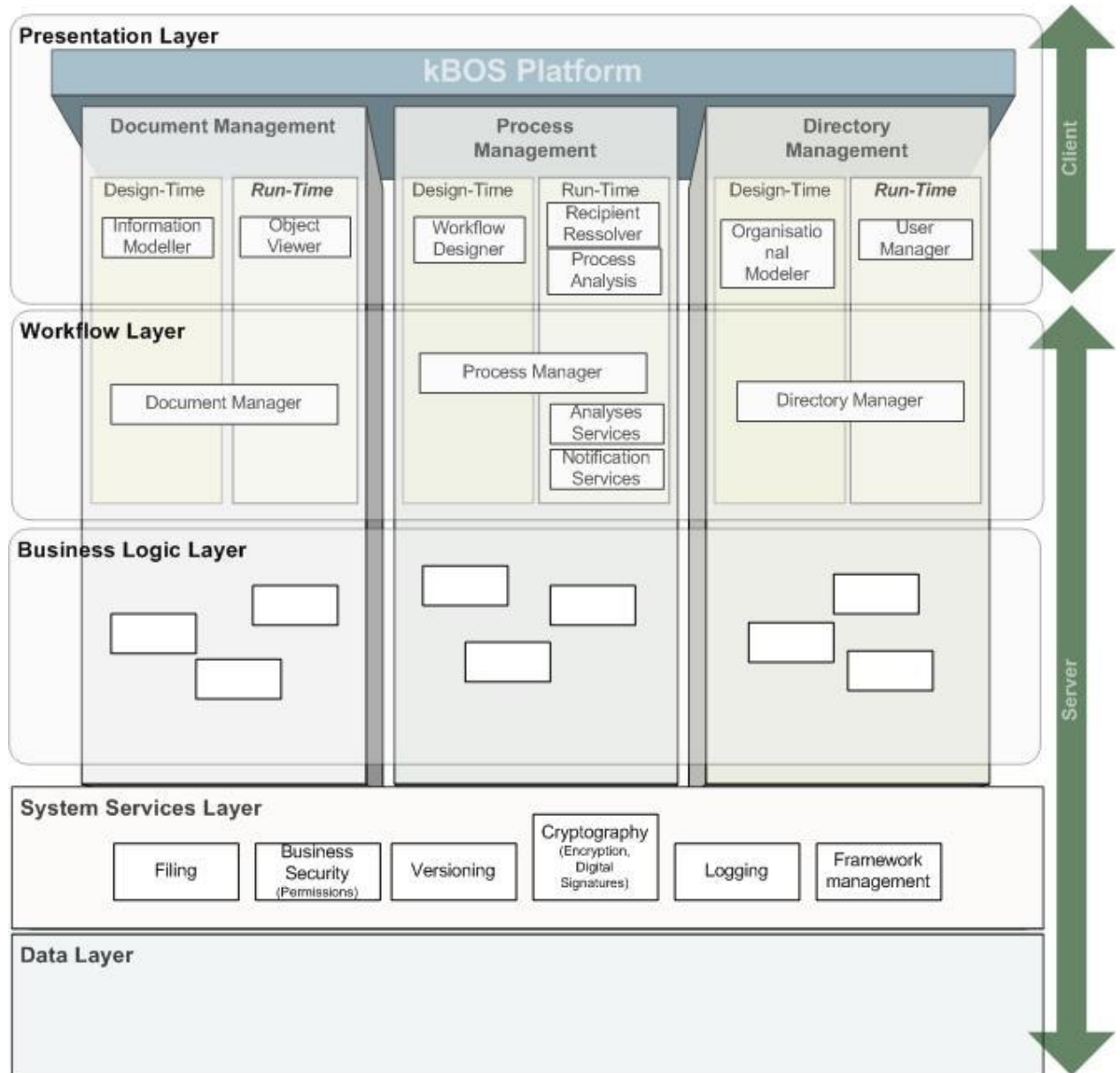
The main kBOS functionalities are:

- Organisational, business and information modelling tools;
- Work flow engine;
- Document management;
- Content management;
- Application and Process Integration (A2A and B2B) tools;
- Web services middleware;
- Datawarehousing;
- Development Support for Applications (plug-ins).

The kBOS Platform Architecture

The kBOS platform is based on Open Architecture (n-tier Architecture) and Microsoft Technologies (COM+, .NET, SQL Server). Both Windows and Web Clients are supported.

The kBOS System architecture



Each Business Service spans three layers (Presentation, Workflow and Business). Each service may also include specific database objects (tables, stored procedures, views, functions, etc.).

The Presentation layer creates the user interface, receives and displays data from the workflow layer and passes user actions to the workflow layer for execution. The Presentation layer doesn't perform any data operations itself, apart from simple validations.

The workflow layer receives requests to perform specific jobs from the Presentation layer (typically in response user actions) and contacts the components responsible for executing the job in the business layer. The workflow layer knows how to call each component and pass it the appropriate parameters. It doesn't perform any data manipulation itself, but it can translate parameters to a format understood by the other component and ensure that the parameters passed to the other component are correct.

The Workflow layer contains one or more processor classes, which the presentation layer calls to perform a job on behalf of the presentation layer. A job may be as simple as forwarding the data to a processor on the Business layer, or as complex as calling multiple kBOS services on the Business layer and handling their output.

The components of the business layer provide the core business functionality for each Business Service. They enforce business rules, retrieve and store data through the data layer, and communicate with other Business and System Services.

System Services provide functionality needed by all components in the business layer that is not part of any specific Business Service. System Services include logging and auditing support, versioning, communications, cryptography, etc.

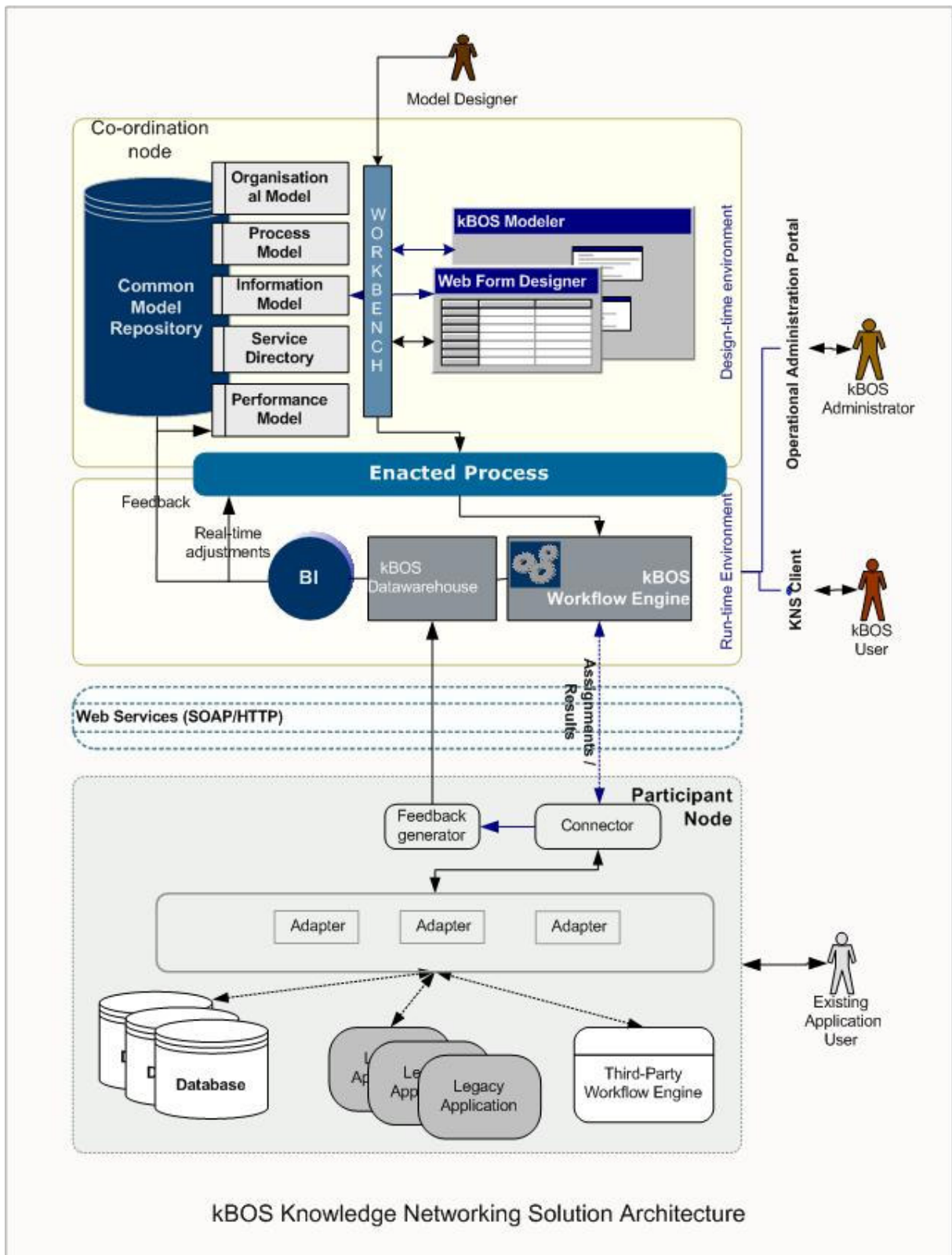
The data access layer handles both query execution and database object manipulation. The data layer can create new database objects as needed using a set of code templates.

kBOS Solutions Architecture

The kBOS solution architecture is rooted in the principles of model driven software development since these concepts were introduced in the beginning of the 90s. Model Driven Architecture (MDA) describes how to create technology-independent models of business concepts, and then map them to different specific technologies. The kBOS architecture combines the model driven architecture with web services, thus creating rich and flexible environment for building Total Corporate Solutions.

The kBOS solution architecture is shown in the following diagram highlighting the design, the run-time environment and existing applications. The run-time solution is controlled by the work flow engine. The architecture reflects a Business Network consisting of Co-ordination and Participant nodes. To balance the workload on all participants in an optimum way, all data and application adaptation services are located on the participant nodes. The co-ordinating node is mostly used as a central repository of common data and information, as well as a look-up service. The communication at the application level is achieved through standard Web Services, and at higher

level through web portals that provide information in the context of the business network, (including active process information and state, controller feedback etc) to the end users.



The kBOS Process Agents framework

The kBOS Process Agents framework provides the means for the kBOS Platform to interface and interact with external applications, events, data or web services (hereafter called 'external providers') by integrating them in a Process Definition.

The sole purpose of an Agent is to enable the kBOS Platform to communicate with an *external provider* in a preconfigured and manageable way, within a process definition.

Agents are custom, reusable components (plug-ins) of a Process Definition. An Agent is not a generic component that communicates with many applications, rather a simple dll that conforms to the Agent API, bridging kBOS through a Process Definition, with an External Provider. The Agent API provides the Interfaces for both the design-time customisation of the Agent as well as the run-time execution.

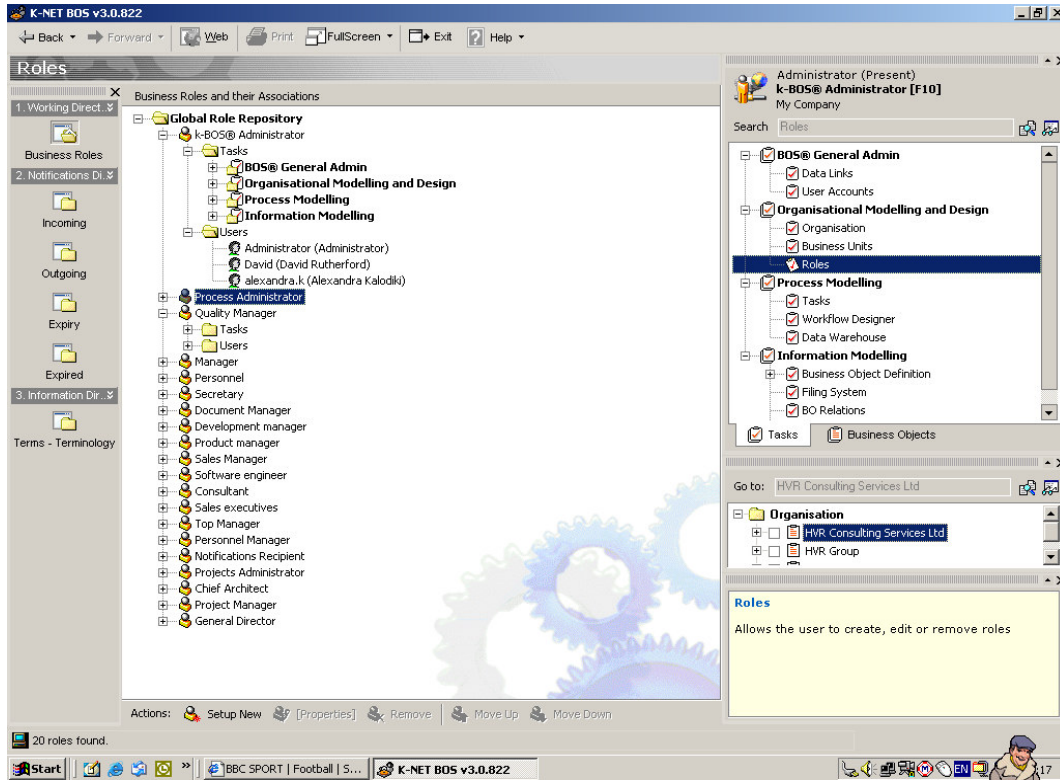
There are different types of agents, including:

- Initiation agents
- Decision agents
- Transformation agent
- Co-ordination agent
- Parallel Activity Agent

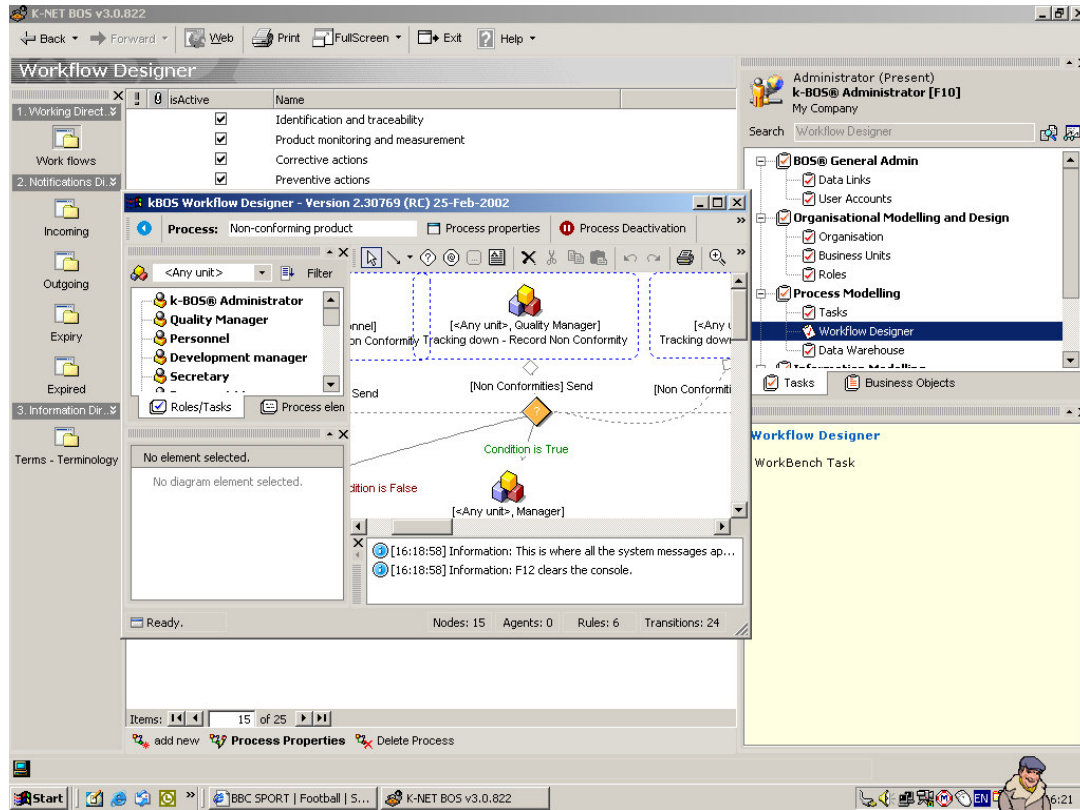
Building customisable applications

The development of kBOS solutions are undertaken by business analysts guided by the business modelling tools.

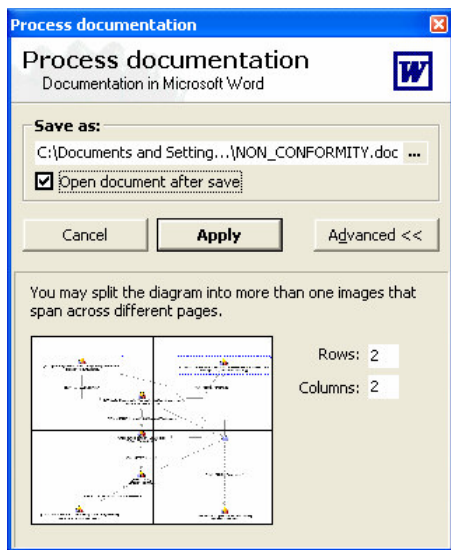
The typical application modelling interface is shown in the following screenshot.



Having defined the organisational model and process tasks the workflow designer is used to specify the flow of information between nodes defined by the business unit, the role and task.



Automatic Process documentation



The “validate process” parses the process definition and provides information on errors and warnings through the console. A process must be “valid” before it can be enacted.

The “Generate Documentation” icon provides a dialog box (left) to export automatically generated documentation of the process in a word document. The process snapshot within the document can be broken into several pieces through this dialog.

Expected Advantages and Benefits

Combined high value services with system flexibility

The value added proposition from kBOS solutions is that the enhanced flexibility provided for fast and dependable new or revised applications together with the development of high value knowledge services enables organisations to optimise their performance across different capability maturity levels to reach their ultimate objectives.



The kBOS platform does not, just, bring together an extensive set of technology tools, kBOS provides an overall *business organisational and process meta model*, that guides **enterprise wide knowledge management** in a manner that reflects the unique characteristics of every enterprise. The collective enterprise knowledge capability can therefore be controlled creating increasingly higher value knowledge services to address complete challenges and to deliver optimum performance.

kBOS delivers enhanced business control

- Improved interaction with customers, suppliers and other stakeholders;
- Innovation support through knowledge management;
- Flexibility to re-organise/re-engineer and to manage change.

kBOS solutions deliver information and knowledge control

Loosely coupled processes that span different systems, departments and organisations are difficult to manage. As a result, few organisations are able to direct up to date information to their employees, customers and partners with any degree of control.

Even fewer organisations can manage efficiently their knowledge assets. As a result, employees are often hampered in their ability to perform every day tasks and to respond fast to customer requests or business change. Management decisions are often not based on the latest information and organisational knowledge, causing missed opportunities due to long decision making processes.

kBOS provides the **only solution with nine levels of security** that can be easily managed and **adapted** to continuous business change. Permission to *business objects* is assigned according to the *users, company, business unit, role* and *task*. Further permission rights can be given to users with respect to *folders*, the *actions* they can perform on business objects or even a *specific field in the database*.

Cost Savings

Enterprises deploying the kBOS knowledge management platform will save costs and increase the productivity of individual users by shaving hours off the following knowledge-oriented tasks: information organization, information search and retrieval, expert location, avoidance of work duplication, unnecessary face-to-face meetings when digital collaboration is possible, contributions to organisational knowledge development and utilisation of high value knowledge services.

Revenue Enhancements

The kBOS Knowledge management platform enable companies to quickly and effectively leverage the intellectual capital and digital assets throughout their organization enabling them to make better and faster decisions exploiting better business opportunities. By supporting the development knowledge based capabilities fast and efficiently companies can reach and maintain optimised performance.

