



K2 and BPM

THIS PAPER DESCRIBES THE CAPABILITIES OF K2 BLACKPEARL WITHIN THE CONTEXT OF BUSINESS PROCESS MANAGEMENT (BPM)

September 26



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**ABSTRACT**

This paper describes the capabilities of K2 blackpearl within the context of business process management (BPM). It does not provide a definition of BPM or argue what qualifies K2 blackpearl as a business process management suite (BPMS). It does provide context on what K2 believes is important to consider and an overview of each of the features available within the platform — across design, assembly, execution, monitoring and optimization of process-driven applications.

WHAT THIS PAPER IS AND ISN'T

There is a wealth of information on BPM and the features necessary to be considered a BPMS. Often perspectives are written or influenced by people selling software — BPMS vendors — and there continues to be considerable debate between vendors and analysts. The market is still evolving and vendors attempt to work definitions to their own advantage. It is converging, but not yet fully formed.

K2 blackpearl is a BPMS, as generally defined by the market. But that term is only valuable for classification. There are numerous products classified as BPMS, but there are major differences between them. Analysts, such as Forrester, are creating categories for BPMS vendors (human-centric, document-centric, integration-centric, etc.) to help customers more easily distinguish between product capabilities and relative strengths.

A discussion of basic features a BPMS should provide is of some value, but all features are not of equal value to all people in all cases. It is presumptuous to assume otherwise. Our assertion is that decision makers need to understand whether the vendor technology is the right fit for their needs, their plans and their environment.

This paper will not wax philosophical on the variances of the BPM definition. Instead, our intent in this paper is to provide a straightforward explanation of the features provided by K2 blackpearl within the context of BPM language and to provide enough information so that you can make an educated decision when comparing products and determining which product is the right fit for your organization.

If you are new to BPM and looking for the basics, you can find a good description here:

http://www.cio.com/article/106609/ABC_An_Introduction_to_Business_Process_Management_BPM_/1.

This paper also does not go into the specifics K2's position on emerging standards such as BPEL, BPMN and others. However, some information on our perspective can be found here:

<http://www.k2.com/contentpage.aspx?id=266>.

ACCESSIBLE BPM AND DYNAMIC BUSINESS APPLICATIONS

At K2, we understand that the implementation of process-based solutions is not simple. Organizations must navigate their own legacy, politics, cross-departmental or business variances, budget limitations, vendor requirements, resistance to change, policies, regulations, and so on. Implementing solutions that can span and transform can be daunting and complex.

However, it is our belief that the technology used to implement process-based solutions should be easy to use, and the people best equipped to navigate these complexities should be active participants in the design, assembly and optimization of these solutions.

Business processes are essentially transaction facilitators. They are sets of actions that people or systems take based upon information or other actions. The problem with the term “business process” is that it is incomplete. It often implies a linear set of predefined activities, which may or may not be true. Some processes are in fact linear and fairly rigid, such as procurement within a government agency. Others may change quite frequently, such as adjustments to investment decisions based on market fluctuations. Some are long running and some temporary. Others are ad-hoc, requiring reallocation of work and allowing people to bring in others at any time. When considering a technology vendor, it is important to consider dynamic activities, reassignments, unanticipated events that change actions or information, integration with other systems, non-linear communication, and other non-anticipated activities.

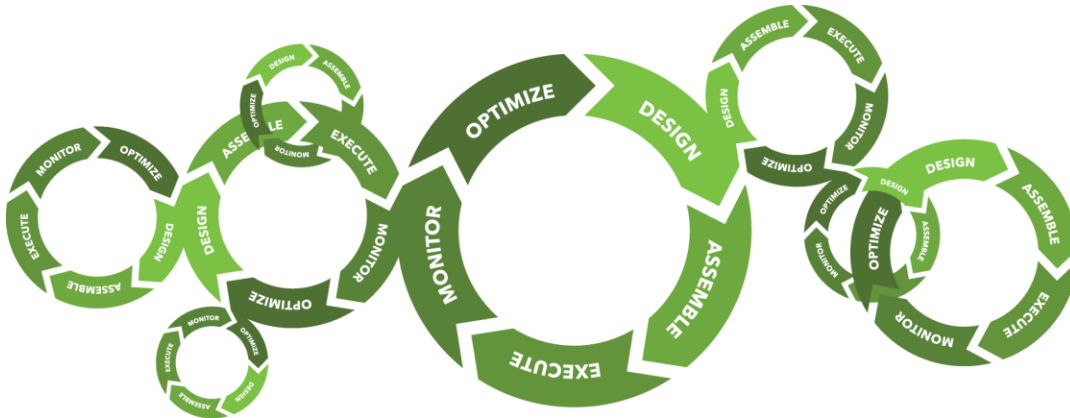
However, technology that makes it simple to implement dynamic, process-based solutions is only one piece in a sophisticated puzzle. It is often the aggregation of processes, information, communication and daily activities that make a truly useful piece of software. Technologies like portals, BPM, SOA, EAI, BAM, e-mail and others are converging. But more than that, they are converging in a way that allow a greater number of end users to participate in the process of designing and building what they need and allowing them to evolve their software as the business, or their understanding of it, evolves. Some are saying this is the next wave of BPM. Others are saying it is bigger than that. We've classified this new generation of applications as dynamic business applications. You can consider dynamic business applications the next wave of BPM, or a superset. It really doesn't matter.

MORE INFORMATION ON DYNAMIC BUSINESS APPLICATIONS CAN BE FOUND HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=522](http://www.k2.com/contentpage.aspx?id=522).

Much like a business process, the BPM implementation process is often described in linear terms. A common circular flow is shown below.



Sometimes the circle makes sense. Sometimes it actually looks like a spiral. Sometimes there are multiple, coexisting spirals that may have some dependencies on one another. The first process may be a sub process of another with dependencies on others.



Although the basic circular flow may be simplistic, this model does provide a framework that we can use to describe various features of the K2 blackpearl software.

One final item of note before we get into the detail: K2 blackpearl is built on the Microsoft platform. It uses .NET as its underlying technology and includes integration with Microsoft products — including Office and SharePoint. Many of the features described are either built on or leverage Microsoft technologies. K2 does support integration with non-Microsoft technologies. Salesforce.com is already supported out-of-box, and SAP will be available soon. However, K2 customers have usually made some investment in Microsoft technology, in Office tools and back-office support.

DESIGN

People are involved in application and process design — that's common sense. What's interesting is the *type* of people that *can* be involved. K2 designed the K2 blackpearl platform to work with designs declaratively, meaning that the definition of the process is independent of the designer that was used to create it. This allows us to provide different design experiences for different types of people with varying technical skills.

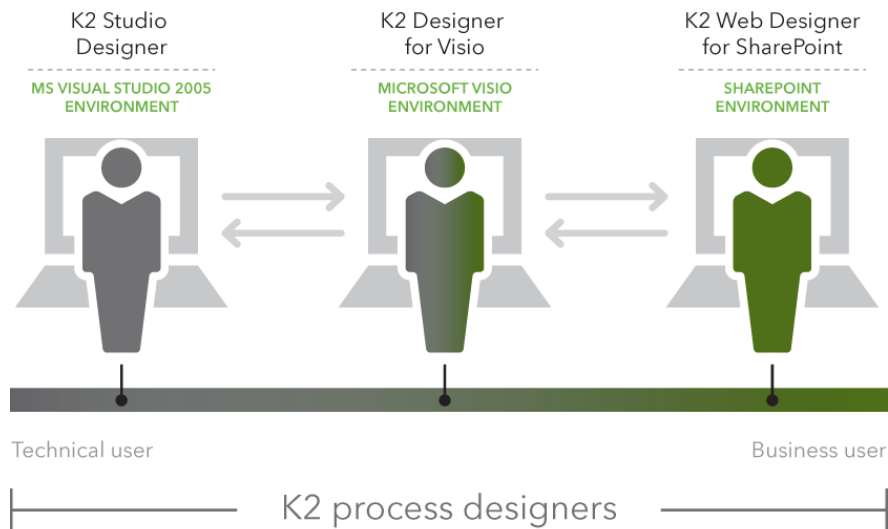
It is recognized that some organizations have fairly rigid standards for building and deploying business solutions. It does not matter whether you mandate that IT must be responsible for all software builds and changes or you allow other people in the business to actively participate. K2 blackpearl was designed to handle these scenarios and anything in between.

MORE INFORMATION ON COLLABORATIVE DESIGN IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=433](http://www.k2.com/contentpage.aspx?id=433).

K2 provides designers for various components of a BPM or dynamic business application. These include designers for processes, business entities, forms, policies and reports.

PROCESS DESIGN

K2 provides three types of process designers today, and additional design canvases are planned. Each canvas is targeted at a specific type of person.



The K2 Web Designer for SharePoint is for the SharePoint 2007 user or power user who wants to design and run workflows within the SharePoint environment.

The K2 Designer for Visio can be used by anyone comfortable with Microsoft Visio, but is generally used by a business analyst or process specialist.

The K2 Studio Designer is for IT professionals comfortable working within the Microsoft Visual Studio 2005 environment.

Additional planned design canvases include an independent, browser-based designer and a business-user-targeted, thick-client interface. Please [contact us](#) directly for more information.

All K2 design canvases are visual, leveraging drag-and-drop and wizard-driven interfaces to guide designers without requiring significant technical ability. Microsoft .NET Framework 3.0 Windows Workflow Foundation Schedules and associated Microsoft .NET code are automatically created, regardless of designer, for interoperability and extensibility.

MORE INFORMATION ON K2 AND WINDOWS WORKFLOW FOUNDATION (WF) IS AVAILABLE HERE:

[HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=269](http://www.k2.com/contentpage.aspx?id=269).

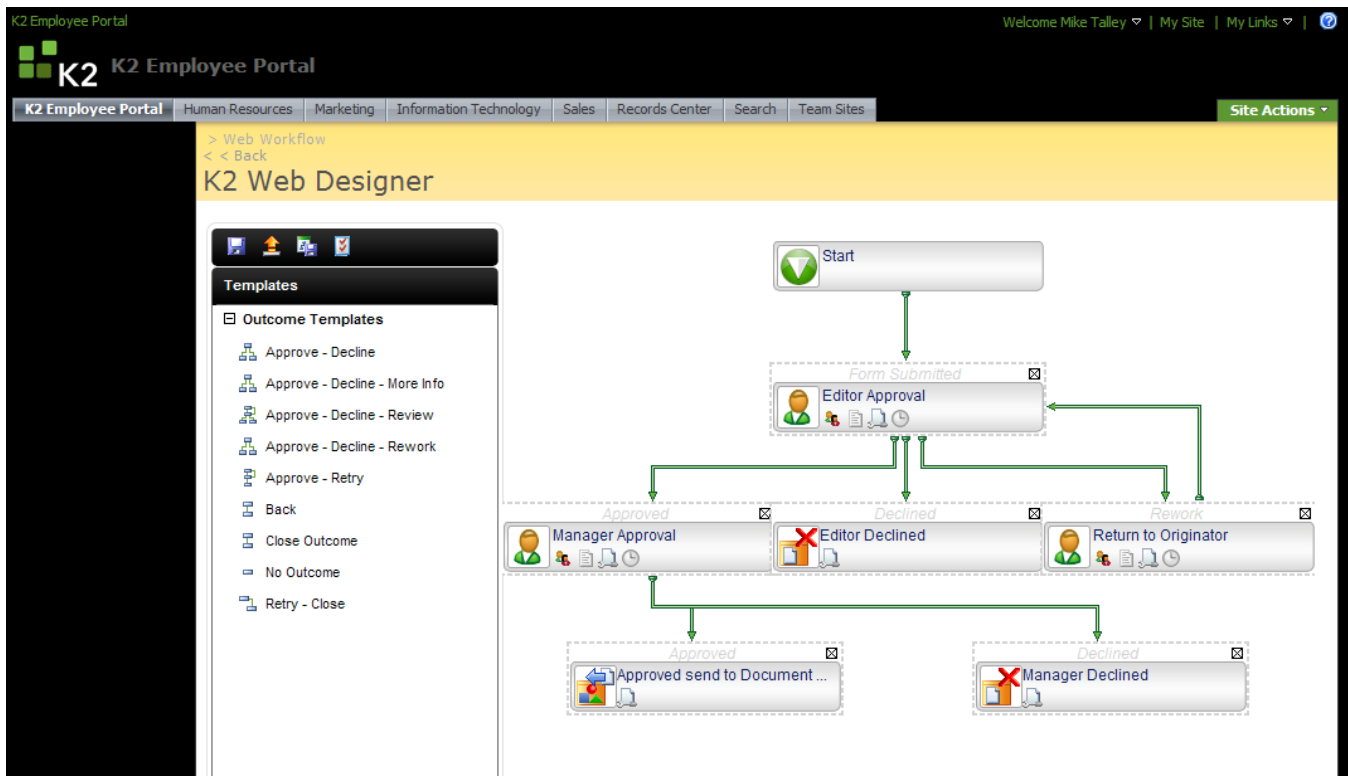
MORE INFORMATION ON K2 AND .NET IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=264](http://www.k2.com/contentpage.aspx?id=264).

The following provides a little more detail on each process designer.

K2 Web Designer for SharePoint

K2 provides a visual drag-and-drop and wizard-driven interface for building SharePoint-based processes from within the SharePoint environment. SharePoint users can build processes that span documents, sites, libraries, lists and more, without the need to build forms or understand technical concepts.

The designer is available for Microsoft Office SharePoint Server (MOSS) and Windows SharePoint Services (WSS) 2007. Processes created in the K2 Web Designer for SharePoint can be imported into the K2 Studio Designer to allow for more sophisticated activities and integration.



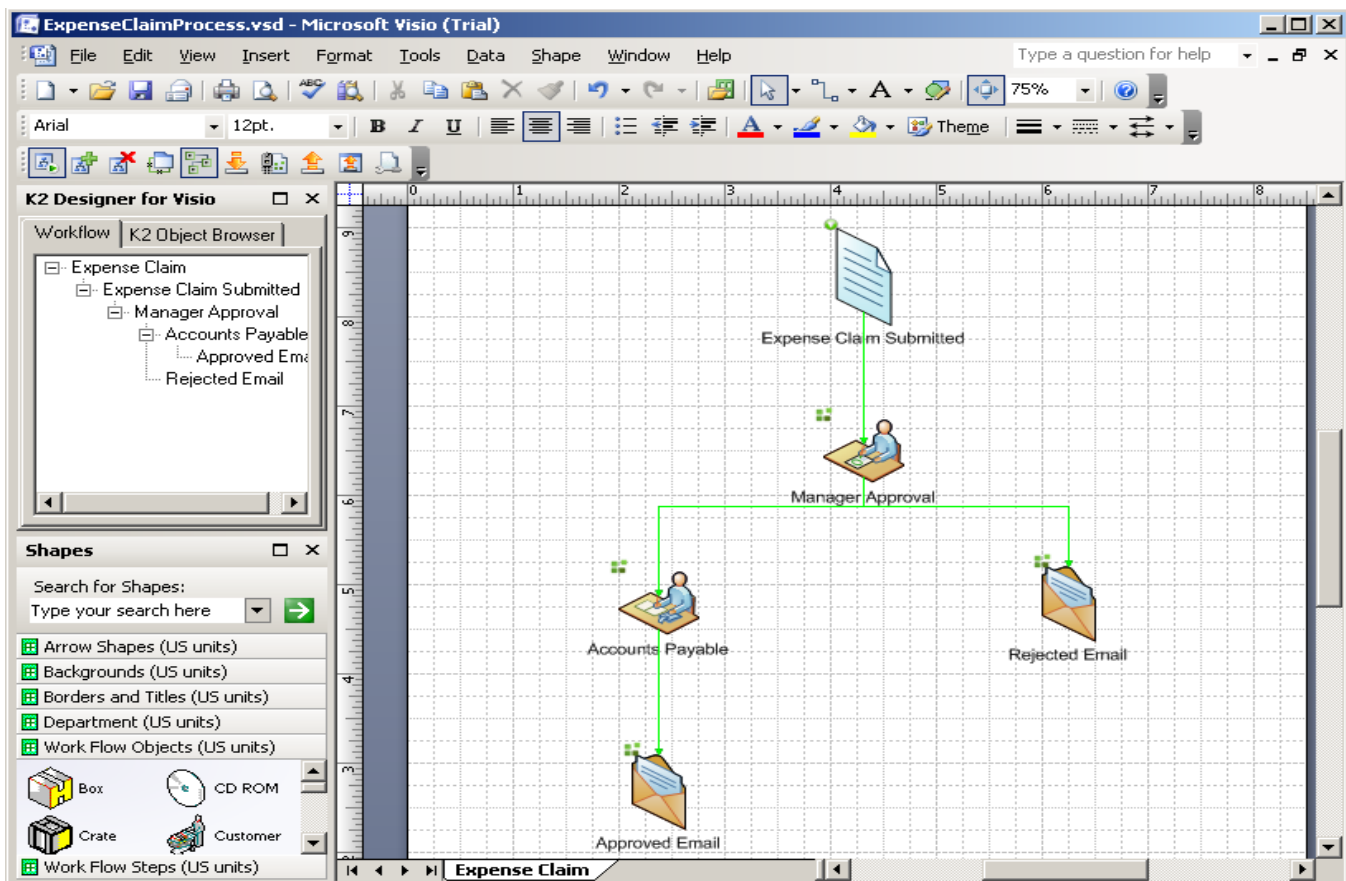
MORE INFORMATION ON THE K2 WEB DESIGNER FOR SHAREPOINT IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=417](http://www.k2.com/contentpage.aspx?id=417).

K2 Designer for Visio

K2 Designer for Visio is an add-in to Visio 2007. There are no stencil requirements — simply use any of the built-in stencils that come with Visio. A user can also open any previously created, Visio 2007-compatible diagram. This allows the designer to use a classic “lines-and-boxes” diagram, a floor plan, a swim-lane diagram or any other diagram that may have been used in the past to visualize the process.

The K2 Designer for Visio also takes advantage of easy-to-use wizards available in other K2 design canvases. This benefit allows customers to have a simple Visio-based experience, while at the same time leveraging the power the K2 platform has to offer.

Processes designed in Visio can be opened within the K2 Studio Designer, modified, extended, and opened again in Visio for further changes or adjustments. This gives Visio and Visual Studio users the ability to collaborate on process design in comfortable and skill-appropriate environments.



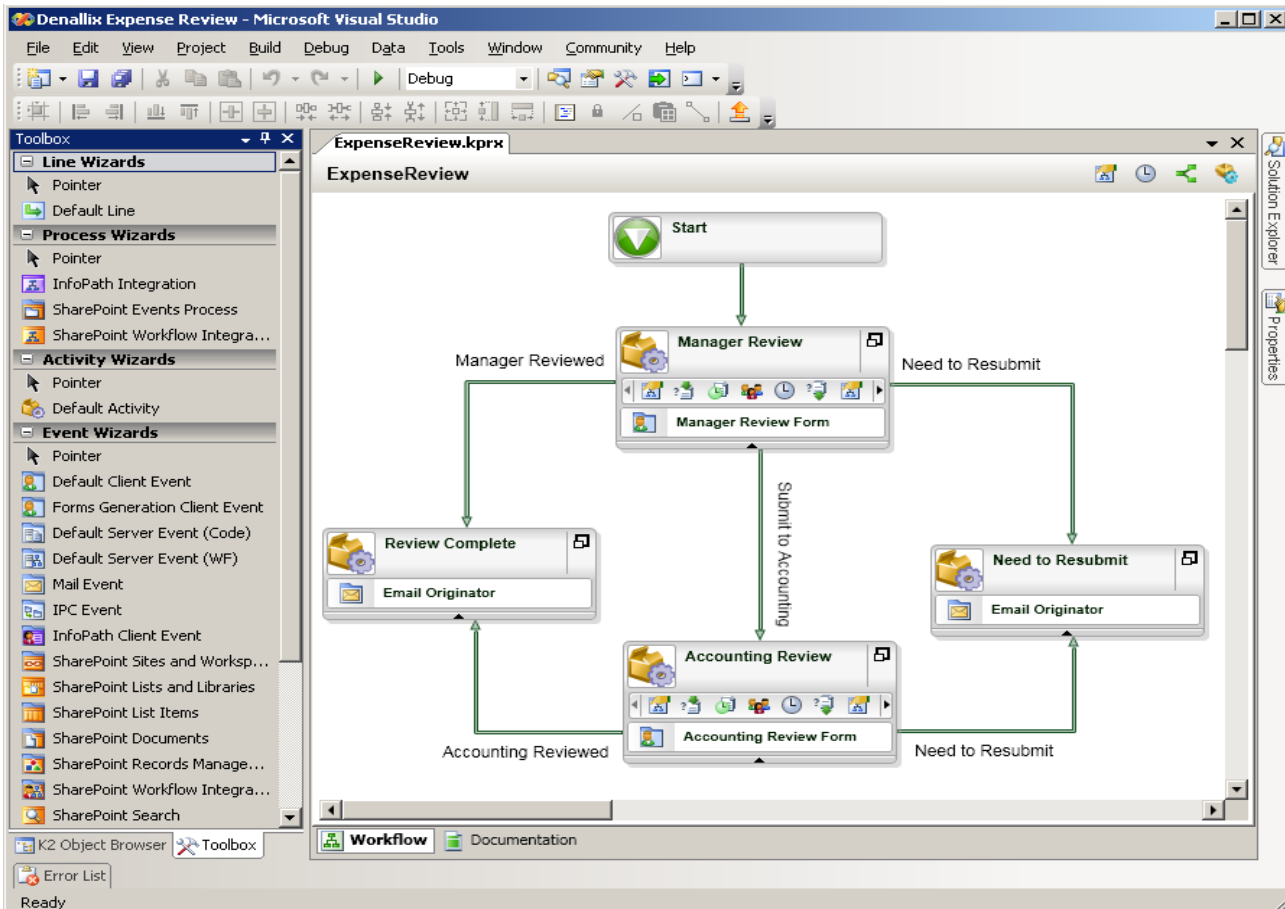
MORE INFORMATION ON THE K2 VISIO DESIGNER IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=267](http://www.k2.com/contentpage.aspx?id=267).

K2 Studio Designer

K2 Studio Designer is a fully integrated extension of Visual Studio 2005 and provides a powerful design experience, allowing access to all of the K2 tooling and the generated Microsoft .NET Framework 3.0 Windows Workflow Foundation Schedules and associated Microsoft .NET code for all appropriate K2 objects.

Any process designed in the K2 Web Designer for SharePoint or the K2 Designer for Visio may be exported to the K2 Studio Designer, allowing a developer to enhance those processes. Processes created in the K2 Designer for Visio may also be sent back from the K2 Studio Designer, allowing for bi-directional modification of the process by both the business analyst and the developer.

As with all of the K2 design tools, wizard-driven templates are made available to the developer, and the developer has the option to access the generated Microsoft .NET components as necessary.



MORE INFORMATION ON THE K2 STUDIO DESIGNER IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=268](http://www.k2.com/contentpage.aspx?id=268).

MORE INFORMATION ON OUR DESIGN TOOLS CAN BE FOUND HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=272](http://www.k2.com/contentpage.aspx?id=272).



BUSINESS ENTITY DESIGN

K2 SmartObjects are business entities that surface, use and manage business information from any number of existing line-of-business systems. They can also encapsulate data that does not currently reside in an existing system.

The K2 SmartObject Designer is integrated with Visual Studio 2005 and provides a visual interface for building and deploying composite entities. SmartObjects can be created and used locally or can be shared among application designers for use in different types of applications and design tools.

MORE INFORMATION ON K2 SMARTOBJECTS AND THE K2 SMARTOBJECT DESIGNER IS AVAILABLE HERE:

[HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=412.](http://www.k2.com/contentpage.aspx?id=412)

FORMS

K2 provides integration with a number of forms technologies that can be leveraged based upon solution requirements.

K2 provides wizard-based integration with Microsoft InfoPath and InfoPath Forms Services. InfoPath provides a rich environment for designing forms, without writing code, that access process and business data.

MORE INFORMATION ON K2'S INTEGRATION WITH INFOPATH IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=262.](http://www.k2.com/contentpage.aspx?id=262)

SharePoint-based forms can be automatically generated based upon workflow designs, without requiring form design by the end user.

The K2 ADO.NET data provider allows developers to build complex, form-driven applications in .NET that easily integrate with process and business entity data.

An additional Web-based forms designer is planned for an upcoming release that will provide business users with the ability to quickly build forms using a drag-and-drop interface.

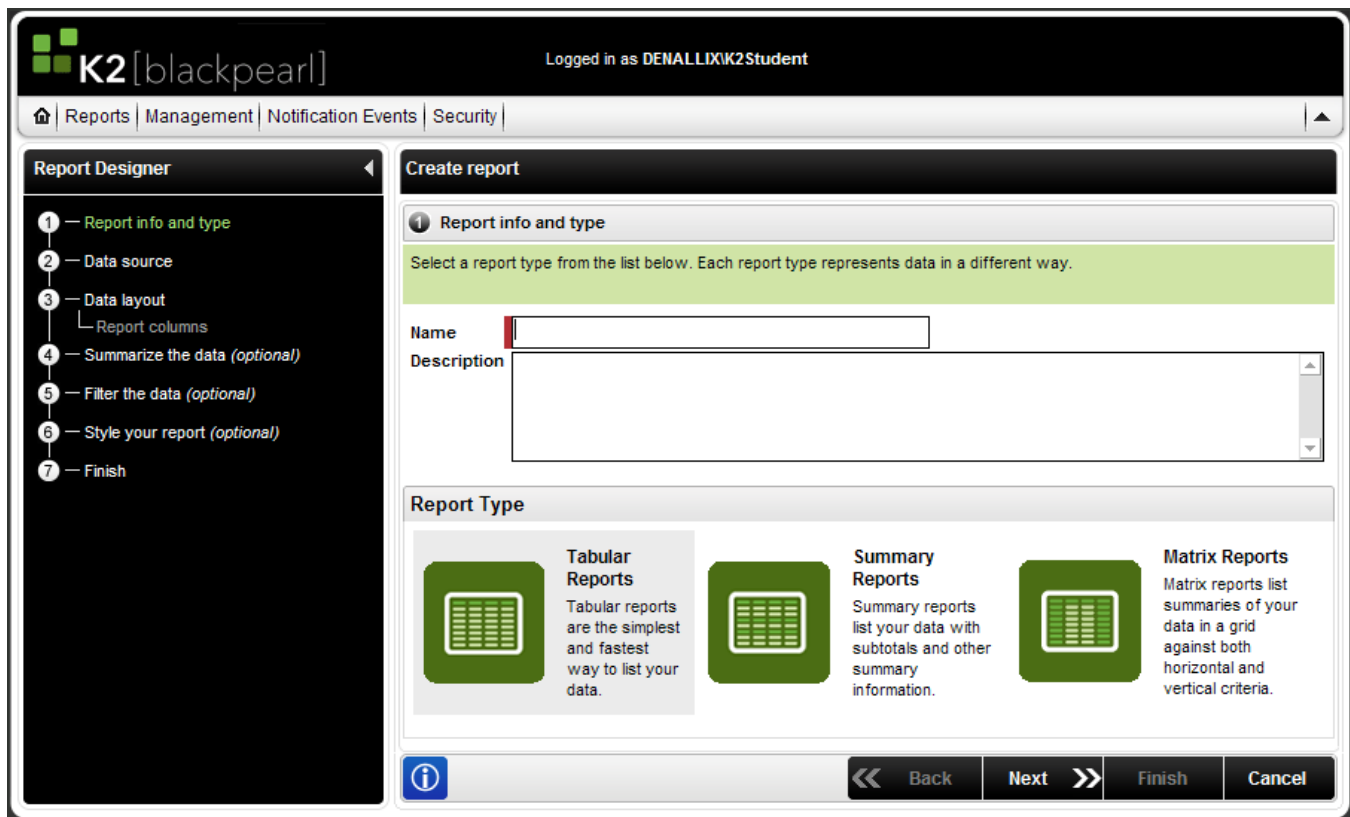
POLICIES

The K2 Policy Designer gives business and technical users the ability to define or change business rules and policies for applications. The designer provides a bridge, allowing each type of user the ability to use language most familiar to them.

REPORTS

K2 blackpearl provides standardized reporting features by leveraging Microsoft SQL Server 2005 Reporting Services for storing and rendering reports.

Using the K2 Report Designer, any user can create rich, ad-hoc reports, regardless of their technical skill. Both process data and SmartObject data is surfaced in the K2 Report Designer, providing the ability to create reports that span all relevant information about business applications.



MORE INFORMATION ON THE K2 REPORT DESIGNER AND REPORTING CAPABILITIES WITHIN K2 IS AVAILABLE HERE:

[HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=273.](http://www.k2.com/contentpage.aspx?id=273)



ASSEMBLE

K2 gives business and technical people the ability to assemble applications from reusable items, rather than having to rebuild common solution components each time a new solution is needed.

K2 blackpearl provides for the creation and storage of reusable components, the capability to build extensible wizards and includes a library for the management of global settings.

REUSABLE COMPONENTS

K2 blackpearl provides the ability to create and publish components that can be reused to build any number of dynamic business applications. Components include business entities, processes and parts of processes, forms, policies, and report designs.

Business entities created using K2 SmartObjects can be used across both process- and non-process-based applications to provide access to line-of-business systems and K2 process-based information. Developers can use the ADO.NET data provider and the K2 API to surface this information, both within K2-based and third-party or custom applications.

Both **processes** and **parts of processes** can be shared across applications. Designers have the ability to simply select, drag and drop what they would like to be available for use by others. Other designers have the ability to either use what has already been built and extend it or call any other process as a sub-process.

Forms can be created once and used across multiple applications or across activities and events within a single application.

Policies built within the K2 Policy Designer are maintained separately from the process or application, allowing them to be used across processes and applications.

Report designers can store and reuse reports in either private or public folders.

MORE INFORMATION ABOUT REUSABLE COMPONENTS CAN BE FOUND HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=567](http://www.k2.com/contentpage.aspx?id=567).

ACTIVITY AND EVENT TEMPLATES

K2 blackpearl provides activity and event templates that allow users to easily add functionality to any business application. These templates are guided wizards that prompt designers for information needed to create processes and applications.

K2 blackpearl includes a large number of predefined templates. However, a K2 Wizard SDK can be used by a developer to create custom templates and make them available to users within the Visio and K2 Studio design tools.

GLOBAL SETTINGS LIBRARY

K2 blackpearl provides the K2 Environment Library for storing configuration parameters and settings that are used within the wizards. Settings that may change between environments, such as database connection strings and SharePoint site URLs, can be stored in the library.

This also simplifies deployment. A user can simply specify the predefined target environment without having to specify settings each time.

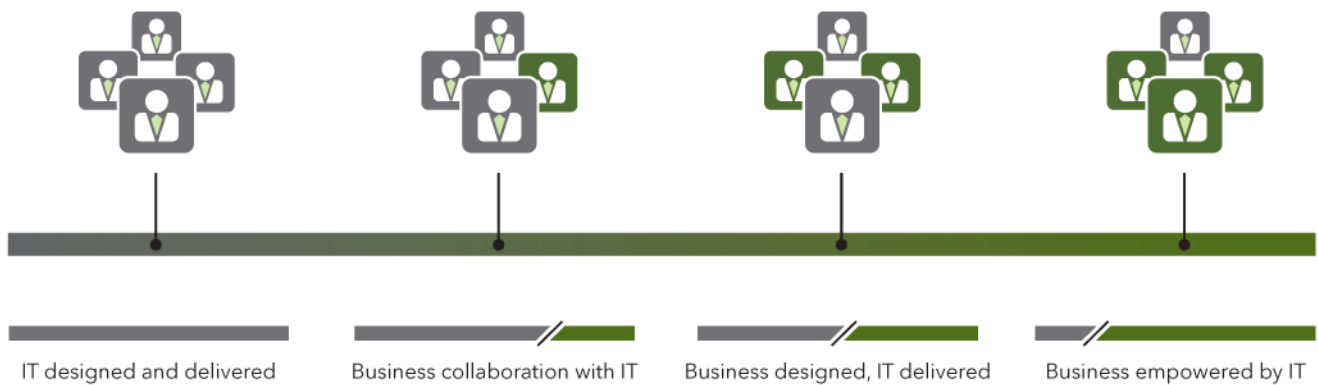
MORE INFORMATION ABOUT THE ENVIRONMENT LIBRARY CAN BE FOUND HERE:

[HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=567.](http://www.k2.com/contentpage.aspx?id=567)



ASSEMBLE COLLABORATIVELY

K2 blackpearl reduces the time it takes to design and build dynamic business applications by giving business and technical people the ability to work collaboratively. Business entities, processes, forms, policies, reports, templates and environmental settings can all be shared in creating a single solution.



Assembling dynamic business applications together
 THE SPECTRUM OF COLLABORATION

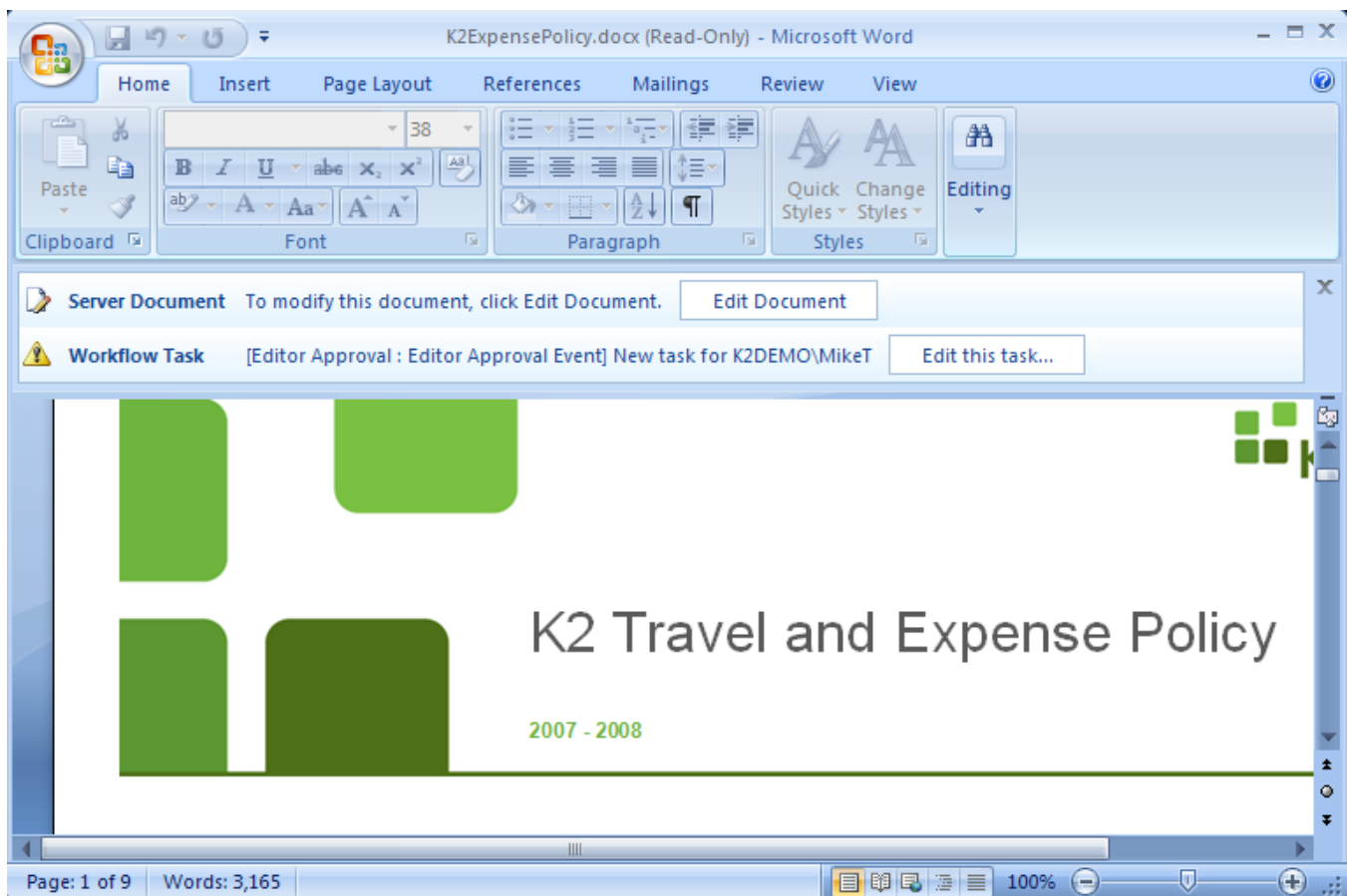
MORE INFORMATION ABOUT COLLABORATIVE DEVELOPMENT CAN BE FOUND HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=433.](http://www.k2.com/contentpage.aspx?id=433)

EXECUTE

K2 provides an execution environment that is flexible, scalable, secure and comfortable for the end user.

END-USER EXPERIENCE

While businesses can build complete custom solutions with K2, most leverage Microsoft technologies already being used daily by their business users. End users may access information and complete work directly within SharePoint; within Office productivity tools such as Outlook, Word and Excel; using forms through InfoPath or their browser; or even within other third-party applications.



For process-driven applications, K2 blackpearl allows for both structured and relatively unstructured process flows.

Some business processes are completely rigid — they almost never change, are repeated frequently, and the end user has no control over how they do their work or the next steps involved in the process. However, that level of rigidity does not make sense for all processes and all businesses. In many cases, business processes take different paths based upon actions taken, exceptions, changes to information, changes to business conditions,



changes in staffing, required collaboration and other variables. Even processes that seem to require a great deal of structure may need to allow for some variability.

K2 blackpearl provides capabilities that allow users to affect change within a process without having to engage a technical resource or make changes to the process definition or underlying code.

For example, K2 blackpearl includes delegation and redirect functionality to allow end users to change who works on a particular task or tasks on the fly. Work does not have to be completed serially. K2 blackpearl supports parallel flows and scenarios where collaborative work is required as part of a larger set of more structured activities. Additionally, the K2 Event Bus can be used to set up actions that are triggered by business events. It could initiate a series of tasks, trigger other processes, alter current activities or generate notifications to take action.

COMPOSITE APPLICATIONS

In addition to traditional BPM scenarios, K2 blackpearl provides an environment for building applications that aggregate and surface data and capabilities across business systems. These applications may include, but do not necessarily require, process automation.

BEHIND THE SCENES

Reliability

K2 blackpearl provides both fail-over and load-balancing capabilities to ensure that mission-critical applications built on the K2 platform are available at any time. In addition, K2 provides the ability to run components on separate servers to provide the greatest level of flexibility for providing a high-performance environment.

Error handling

The K2 platform provides out-of-the-box functionality for logging actions and errors that occur in the environment. Logging options such as log file locations, error-reporting capabilities and logging levels are all easily configurable.

By default, all errors are surfaced in the K2 Management Console, and tools are provided to identify and repair errors in processes that are running in the environment. In addition to the K2 Management Console, notifications can be configured on the system to send an e-mail when an error occurs.

Auditing and compliance

K2 blackpearl provides the ability to audit all data changes and keep track of specific tasks that occur within the system. By default, K2 tracks information, such as assigned user, task duration and process duration. Tracking changes made to specific data fields in an application can be configured at design-time on a per-application basis.

Security

The K2 platform provides a robust security mechanism that allows the setup of granular permissions on applications, tasks and data fields. Permissions can be set at an individual user level and at a role level.



By default, K2 blackpearl integrates directly with Microsoft Active Directory for user and group information. However, K2 provides the ability to use any .NET-based security provider to retrieve user and group information from any user store in the organization, including SQL databases and LDAP sources.

Extensibility

With an SOA-based architecture, the K2 platform capabilities can be easily extended. In addition, the K2 API provides a .NET-based mechanism for interacting with the K2 Server to provide functionality that extends out-of-the-box capabilities.

Scalability

With the ability to support multiple server configuration schemes, K2 blackpearl lets you scale your applications as your business needs change. Whether your organization needs a single-server environment or an environment that includes many servers configured in a cluster, K2 blackpearl can support any scenario.

MORE INFORMATION ABOUT K2 DEPLOYMENT OPTIONS CAN BE FOUND HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=673](http://www.k2.com/contentpage.aspx?id=673).



MONITOR

K2 blackpearl provides a robust environment for monitoring specific process and application information, such as task duration trends and bottlenecks, as well as reporting on business information.

REPORTING

K2 blackpearl leverages Microsoft SQL Reporting Services and provides a rich environment for monitoring business applications. Standard reports included with K2 blackpearl provide an in-depth look at applications running in the K2 environment so that business and technical users alike can watch for trends, bottlenecks and areas for improvement within their applications.

In addition to the standard reports provided with the blackpearl platform, the K2 Report Designer allows users to build ad-hoc reports to monitor application information and business information surfaced in K2 applications.

The screenshot shows the K2 [blackpearl] Report Viewer interface. At the top, it says "Logged in as K2DEMO\bp-service". The breadcrumb navigation includes "Reports | Management | Notification Events | Security". The report title is "Process Instances" for the folder "CustomerCreation" and process "CreateCustomer". Below the title is a table with the following data:

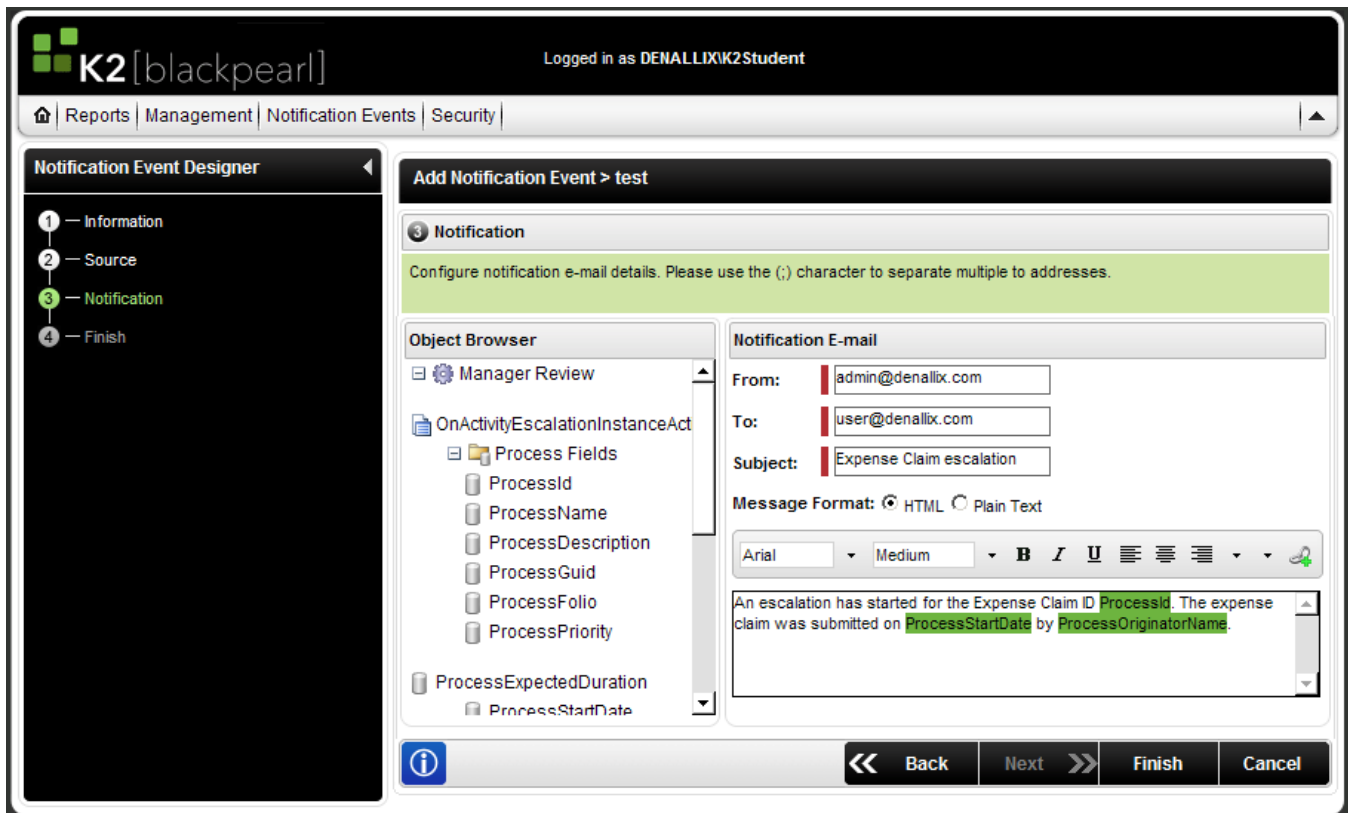
Process Folio	Start Date	Finish Date	Originator	Status	Duration	Priority
ABC corp setup	9/24/2007 1:28:39 PM		K2:K2DEMO\bp-service	Error	10:00:23:51	Medium
ABC Setup	9/24/2007 1:32:12 PM		K2:K2DEMO\bp-service	Error	10:00:20:18	Medium
ABC Setup	9/24/2007 1:34:54 PM	9/24/2007 1:40:23 PM	K2:K2DEMO\bp-service	Completed	00:00:05:29	Medium
ABC Customer Setup	9/24/2007 1:44:12 PM	9/24/2007 1:49:55 PM	K2:K2DEMO\bp-service	Completed	00:00:05:42	Medium
Test	9/24/2007 6:11:04 PM		K2:K2DEMO\bp-service	Running	09:19:41:25	Medium
test1	9/24/2007 6:39:19 PM	9/24/2007 7:41:34 PM	K2:K2DEMO\bp-service	Completed	00:01:02:15	Medium
Bob	9/24/2007 6:46:11 PM		K2:K2DEMO\bp-service	Running	09:19:06:19	Medium
Atom Pharmaceuticals	9/24/2007 7:11:22 PM	9/24/2007 7:41:05 PM	K2:K2DEMO\bp-service	Completed	00:00:29:43	High
Ajax Telecommunications	9/24/2007 7:53:06 PM	9/24/2007 8:00:25 PM	K2:K2DEMO\lanthonyp	Completed	00:00:07:18	High
DeltaBank	9/24/2007 9:26:30 PM	9/24/2007 9:33:53 PM	K2:K2DEMO\lanthonyp	Completed	00:00:07:23	High

At the bottom of the report viewer, there are three buttons: "Create New", "Rerun", and "Cancel".

MORE INFORMATION ON REPORTING CAPABILITIES WITHIN K2 IS AVAILABLE HERE: [HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=551](http://www.k2.com/contentpage.aspx?id=551).

BAM / REAL-TIME NOTIFICATION

The K2 Notification Designer gives users the ability to configure notifications based on events that occur within the K2 environment. Notifications can be configured for system events, ranging from a specific process starting, to a particular business entity being updated, to a specific person being assigned a task within an application. Notifications can be configured to use business logic built in the K2 Policy Designer to provide granular information.



MORE INFORMATION ABOUT THE K2 NOTIFICATION DESIGNER AND REAL-TIME NOTIFICATION CAPABILITIES CAN BE FOUND HERE:
[HTTP://WWW.K2.COM/CONTENTPAGE.ASPX?ID=571.](http://www.k2.com/contentpage.aspx?id=571)



OPTIMIZE

Change is inevitable. Business processes change, new systems are added and bottlenecks are uncovered. With K2 blackpearl, these changes don't have to mean a long cycle of development rework. The K2 blackpearl platform provides tools and features that allow both business people and technical people to easily handle application changes quickly and with minimal impact to the organization.

K2 blackpearl's business-centric designers provide business and technical people with tools for implementing changes on the fly. Management tools provide administrators with the ability to manage changes to an application easily.

ON-THE-FLY CHANGES

Business-centric design tools — such as the K2 Web Designer, K2 Designer for Visio and the K2 Policy Designer — provide simple ways to make changes to business applications. Using a tool such as the K2 Policy Designer allows an authorized business user to make changes to specific business logic without the need to deploy the entire business application again.

The K2 Management Console provides the ability for authorized users to dynamically modify users, roles and groups that are involved in business applications. This allows ad-hoc changes to occur on a per-instance basis, rather than affecting the underlying process.

VERSIONING AND ROLLBACKS

The K2 Server provides an automatic mechanism for versioning applications at the time of deployment. Versioning options, such as number of versions to store, are all configurable.

The ability to rollback to any previous version of an application is also available via the K2 Management Console.



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