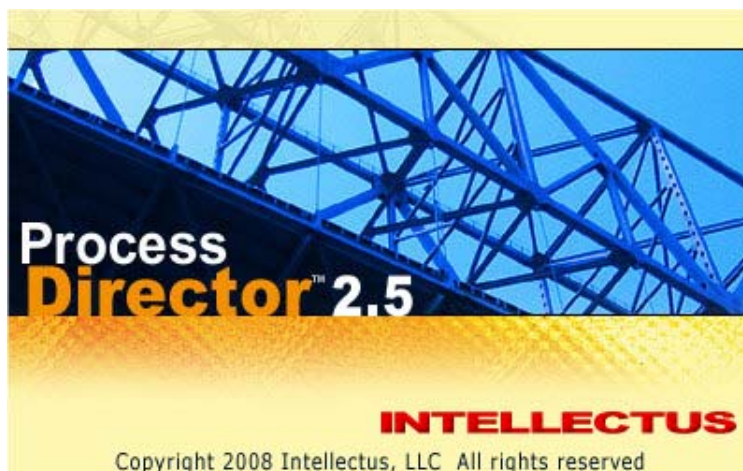


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Intellectus Process Director

ENABLING E – BUSINESS THROUGH
PROCESS AND TRANSACTION
AUTOMATION



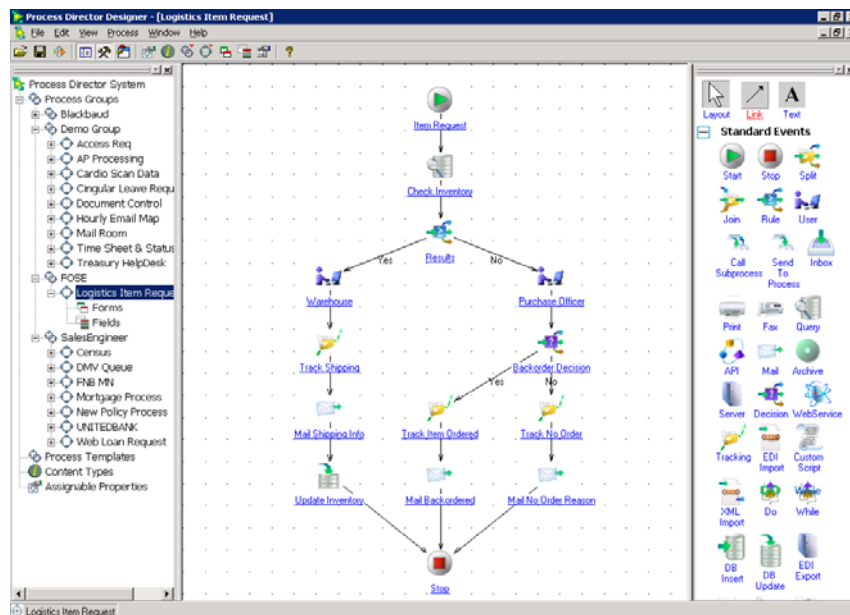
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INTRODUCTION

"Creating e-business processes without a vision for workflow is shortsighted and expensive. Workflow addresses e-business needs, will streamline transactions, and is the glue for process coordination and consistency." — Gartner Inc¹

The advent of e-business has spurred new demand for fast, flexible business process automation. Behind every online transaction is a complex workflow that automates business operations and decision processes. Businesses engaged in e-commerce of any kind must be able to rapidly build and deploy that workflow to connect frontline customer service with back-office operations, efficiently handle exceptions, and quickly adjust rules in response to changing conditions.

Also heightening the need for robust workflow solutions is the ability of e-business to bring customers and partners directly into the transaction chain. Wherever business processes were once exclusively internal, they have been extended beyond the boundaries of the enterprise. When a customer applies for a loan, a vendor disputes an invoice, or a supplier requests inventory levels online, this triggers a more complex string of events than ever before. Workflow is needed to capture the business rules required to assign, route and manage these transactions. Managing process automation well is therefore a key requirement for any company to succeed and thrive in today's marketplace. Companies need fast, scalable procedures to automate the sequence of actions, activities or tasks behind each transaction and track the status of each step along the way.



The benefits include:

- Reduced operating costs
- Shortened transaction cycle times
- Accurate completion of transactions
- Peak efficiency achieved through maximum transaction automation
- Identification and resolution of out-of-tolerance transactions
- Improved customer service
- Complete control, audit trails and metrics for all process steps

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THE LIMITATIONS OF TRADITIONAL WORKFLOW PRODUCTS

Conventional workflow products generally do not provide the nimble, versatile workflow development capabilities required by today's e-businesses. Most traditional products are bound by proprietary development environments and scripting languages that require special training. The resulting need for extensive coding and specialized expertise can result in lengthy and labor-intensive deployments that delay or scuttle automation projects.

Many of these products also evolved from document management solutions that are unable to handle the transaction-based scenarios and the high rate of exceptions that are inherent in e-business. Others are handicapped by their function as workflow components created for specific enterprise applications such as SAP or Siebel, allowing them to interact with their parent application, but preventing them from communicating with the network of systems usually required to process a given transaction or operation.

INTELLECTUS PROCESS DIRECTOR: ENABLING E-BUSINESS

Intellectus Process Director overcomes the limitations of standard process automation solutions with an open, industry-standard development environment based on Microsoft Visual Basic for Applications. **Process Director** goes further, with a unique automatic code generator that reduces deployment time, a powerful routing engine capable of handling everything from exceptions to external and sub-processes, and the ability to integrate with disparate front- and back-office applications. It also offers a rich feature set that facilitates faster, easier, smarter process and transaction automation.

Designed for enterprise and production-level process automation for e-business applications like self-service online purchasing as well as traditional workflow targets like claims processing, **Process Director** bridges the gap between collaborative groupware products and transaction-oriented Enterprise Application Integration (EAI) solutions. This provides the application-to-application and human-to-application interfaces that can enhance and complete traditional transaction oriented EAI solutions. It enables e-business by automating the content that fuels transactions. And, solutions can be designed and deployed faster than ever before — with a fully integrated designer and server, built-in test and debug features — to bring maximum efficiency to complex business transactions.

Process Director is highly scalable platform and sophisticated tools make it possible to rapidly deploy automated business processes mirroring person-to-person, person-to-application or application-to-application interactions. It is capable of connecting employees, partners and customers with a wide variety of business content — from email to documents, fax and transactions — to automate and manage the work environment.

Process Director provides the framework for enterprise-wide, multi-application work management for business processes, complex application integration, and strategic e-business implementations.

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KEY BENEFITS TO THE ENTERPRISE

Process Director can automate any transaction or business process that uses rules-based decision-making, and then serve as the engine that drives those processes from beginning to end. It provides faster time to market than competitive products, reduced cost of ownership, complete flexibility and maximum productivity by enabling organizations to:

- **Respond immediately to changing business requirements** by releasing business logic from the restrictions of proprietary development environments and providing graphical workflow design tools that make it possible to change processes quickly.
- **Eliminate the time and expense of learning proprietary scripting language**, thanks to an open, industry-standard process automation development environment based on your choice of JAVA or Microsoft Visual Basic for Applications (VBA) — proven environments with a base of millions of knowledgeable developers.
- **Increase developer productivity and lower the cost of ownership** via designer wizards, reusable process and event templates, and the Integrated Development Environment made possible by embedding JAVA, VBA, debugging tools and other functions into the **Process Director** architecture.
- **Save hours of code writing and speed deployment** with a unique automatic code generator that builds code as soon as the developer drags-and-drops default events in the product's graphical designer interface.
- **Bring customers and partners into the automated transaction chain** by seamlessly incorporating them into business processes whether they are initiators, contributors, reviewers or active participants.
- **Migrate workflow applications from the department to the extended enterprise** with a scalable process automation infrastructure that also supports corporate growth.
- **Maximize business productivity** by implementing processing by exception scenarios, rules-based routing, and automatic task prioritization which enable the automation of as many transactions and tasks as possible.
- **Distribute workload for optimum performance** through a multi-server architecture that allows entire processes and/or individual process tasks to be assigned to specific or multiple servers.

"In order to gain a competitive advantage, we have to increase case volumes and reduce client service times. Intellectus Process Director's versatile standards-based development environment allowed us to rapidly develop an underwriting application that integrated with our existing applications and databases and met our necessary time-to-market requirements. We anticipate tripling our volume and significantly enhancing client satisfaction and retention without increasing costs associated with the resource allocations."

— Paul Smith, AVP of Information Systems at Hannover Life Reassurance

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SYSTEM ARCHITECTURE

Process Director consists of four main components. They are:

(1) PROCESS DESIGNER

This graphical **Designer** tool permits fast development with a drag-and-drop interface, graphical workflow maps, intelligent forms and embedded VBA. Users build business processes by dragging and dropping icons that represent components of the process onto a process map, then linking each icon with arrows to indicate the desired sequence of events. Point-and-click Wizards automatically generate VBA scripts for standard events such as sending mail, querying a database, and invoking an API, reducing development time by requiring coding only for custom processes and events.

(2) PROCESS SERVER

The **Process Server** Component is the routing engine responsible for moving work through a process, evaluating rules, handling split and join events, managing entry to and exit from sub-processes, and keeping track of expiration timers for process and event instances. It is designed with a connectionless architecture that enables clients to communicate with the database rather than the server, thereby avoiding the usual server bottleneck. This results in a highly scalable solution with the ability to distribute events to multiple servers. All compiled code is preloaded from the database for optimum performance.

(3) ADMINISTRATOR

The **Administrator** Module performs administrative tasks such as process monitoring, exception management, ad hoc routing, database maintenance, server configuration, reporting, and assignment of user privileges. The Administrator also enables process configuration for multiple server environments.

(4) DESKTOP CLIENT

Options include thick client/server, thin Web/portal and custom clients.

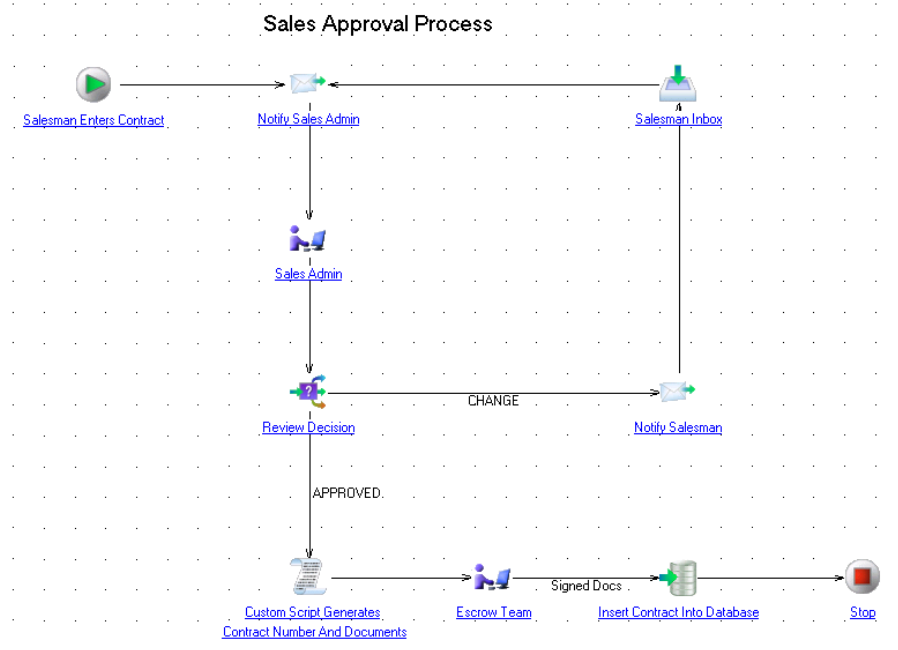
KEY FEATURES AND CAPABILITIES

Process Director provides a complete set of tools to streamline the development and automate the processes associated with e-business transactions and other business operations. The toolset includes:

(1) DRAG-AND-DROP DESIGN

The graphical design tools provided in the **Designer** give developers an easy-to-use and easy-to-change visual map of processes, events and work items. Users simply drag and drop event icons from the Designer toolbox onto the process map, then dictate the order of events by linking icons with arrows.

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(2) NON-PROPRIETARY DEVELOPMENT ENVIRONMENT

Process Director provides an Integrated Development Environment (IDE) that embeds both JAVA and Microsoft Visual Basic for Applications (VBA) support with enhanced editor capability, automatic syntax checking, object browser, debugging tools and IntelliSense. The use of VBA, with its 3.2-million-plus base of developers, eliminates the need for users to learn proprietary scripting language. Combined with the other components of the IDE, this increases developer productivity and reduces the cost of ownership.

(3) WEB SERVICES

Web services in **Process Director** allow connectivity of your Business processes with various Applications to support an extended and integrated service provision to internal and external customers. It provides manageability and reuse to the Process enabled applications of the companies.

Process Director Web services are built on the following standards.

XML-----The eXtensible Markup Language, a general purpose markup language capable of describing data and documents that are shared among different systems connected via internet.

XSL-----The eXtensible Stylesheet Language, a set of language technologies for defining XML document transformation and presentation

SOAP---The Simple Object Access Protocol ,a protocol that provides a basic messaging framework among the network.

WSDL---The Web Service Description Language , a service description on how to communicate using the webservice.

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(4) Flexibility in Deployment

Process Director overcomes the limitations of standard process automation solutions with an open, industry-standard development environment. It goes further, with a unique automatic code generator that reduces deployment time, a powerful routing engine capable of handling everything from exceptions to external and sub-processes, and the ability to integrate with disparate front- and back-office applications. It also offers a rich feature set that facilitates faster, easier, smarter process and transaction automation. **Process Director** can be thus used as independent of any other application because it has a stand alone **Process Management System** or in tight integration with other services like Documentum, RAPID WorkPlace™ etc.

(5) REUSABLE PROCESS TEMPLATES AND CUSTOM EVENTS

Process Director users have the option to create process templates and custom events and then save them for re-use. This allows quick modification of processes and events for the next department, location or application, eliminating the need to build new components from scratch.

(6) PROCESSING BY EXCEPTION SCENARIOS

Every work event created in **Process Director** has a dedicated Exception Queue designed to efficiently handle errors or situations outside of normal business parameters, such as a loan request for \$900 million. Exception Queues and the events that can be associated with them quickly isolate transactions in error and can be configured to alert managers or supervisors by e-mail, or route work to specialists for fast resolution. When the problem is resolved, the item rejoins the regular workflow. This model ensures that out-of-tolerance transactions receive the attention necessary to complete the transaction chain. It also maximizes productivity by asking valuable employees to intervene in problem situations only long enough to resolve a specific snag and redirect the transaction to the automated work path.

(7) ADVANCED ROUTING CAPABILITIES

Work can be routed automatically based on user, user role (e.g., loan processor), rules, data values (e.g., whether a loan request is more or less than \$400,000), timers (e.g., expiration interval), and exception events. Sequential grouping of individuals or job functions is also supported, allowing a work item to be assigned to the first member of a group and then automatically routed to the next member if the first member is unavailable or unable to do the task in the specified time. In addition:

- Rules driven routing functionality automates the path a work item takes and delivers work to the cognizant participant.
- Process participants can manually assign or consign some or all of their work items to other users if they are unavailable, if a work item requires further research, or if it is being delegated to another role or user group. This ad hoc routing makes it possible to preempt a workflow task based on personal evaluation.
- Work items that are waiting in a queue can be pulled and assigned for immediate handling in exception situations where the normal process automation rules need to be bypassed.
- Work can be routed to multiple users, roles or even sub-workflows simultaneously. This type of parallel routing and processing can result in significant reductions in transaction cycle times.

(8) AUTOMATIC TASK PRIORITIZATION

Process Director is capable of automatically prioritizing work items within a given process based on a specific event trigger, an expiration date assigned to an item, or data input as part of the process such as an account balance or customer status. Users can also change task priorities manually at any time in the process.

(9) E-MAIL INTEGRATION

Event Properties - Notify Form Incomplete

Event Name
Patient Form Incomplete

Notification | Tracking | Triggers

Enable notification

Select Email Server
Bravera Mail Server

Description
Automatic Email Notification

Subject
[@PatientLastName] Form Returned Incomplete

Recipients
[@TriageDesk;

Message
The form for Patient [@PatientLastName] has been returned from the IT Process Queue, having been found to be incomplete. Reference RAPID item [WorkItemId] when you correct the omissions. To go directly to the patient form click http://twp.george.county.gov?RapidID=[WorkItemId].
This is an automated notification message. For questions regarding how to use RAPID

Help OK Cancel Apply

Tasks, timers and events can trigger e-mail, pager and cell phone notifications to stimulate work completion. These notifications can be triggered based on the expiration of an event, a user action or an error condition.

(10) FLEXIBLE FORMS ENVIRONMENT

Process Director gives developers the option to use Web forms, RAPID WorkPlace X forms, or any third-party electronic form product to gather user input (such as a loan application) or deliver data (such as a loan approval or rejection). Web forms can be in any format, including HTML, ASP, XML and URL-linked. A form can be displayed automatically at the appropriate point in the user interaction. Data can be pushed or pulled from the forms to automate database queries; pass parameters to external systems, applications or processes; and/or used for data input or display.

(11) DYNAMIC DATA FIELD DESIGN

For maximum ease of development, **Process Director** allows users to add or edit data fields on the fly during the design process, eliminating the need to define all fields before process creation. Data fields can be associated with form fields and can be tested to determine the conditional routing path of the work item. Data fields can be associated with a passed or received parameter for an externally invoked system API, populated by automated database query events, or used to push data to other external applications in the user environment.

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(12) SUPPORT FOR SUB-PROCESSES AND EXTERNAL PROCESSES

Process Director reduces development complexity by enabling users to implement a nested process automation design revolving around sub-processes. Rather than forcing a single large process to accommodate all possible outcomes for a work item, sub-processes can be used to hand off work to other processes. For example, a *purchase requisition approval process* could launch an *inventory receiving process* after the purchase order has been approved. Work items may have multiple exits defined within a given process, and each of these exits may call or pass the work item to either a subprocess or an entirely different process based on the success, failure or result of previous operations.

(13) SIMULATION/VALIDATION

Each process automation application created with **Process Director** can be comprehensively tested and debugged on the same computer on which it is designed before going into production. The Designer automatically validates each new process definition before deployment to check for errors or inconsistencies in the process definition. (For example, the system checks to see that each process has only one Start event.) Events can then be simulated to ensure that the process will operate as intended at deployment.

(14) CHOICE OF CLIENT INTERFACE

Internal process automation users often prefer a user interface provided by traditional thick Windows clients, while most customers, partners and external users may prefer a thin-client SOA XML browser interface. **Process Director** can deliver both, as well as a robust COM Control for development of a custom client interface to either embed the process automation functionality in an existing application or create a custom desktop environment. Process automation can be distributed so that users can participate in workflow solutions anywhere in the world.

(15) AUTOMATIC PROCESS VERSIONING

Process Director automatically installs new process versions as changes are implemented without bringing down the server. This provides process continuity as changes are implemented or refined.

(16) WORKLOAD DISTRIBUTION

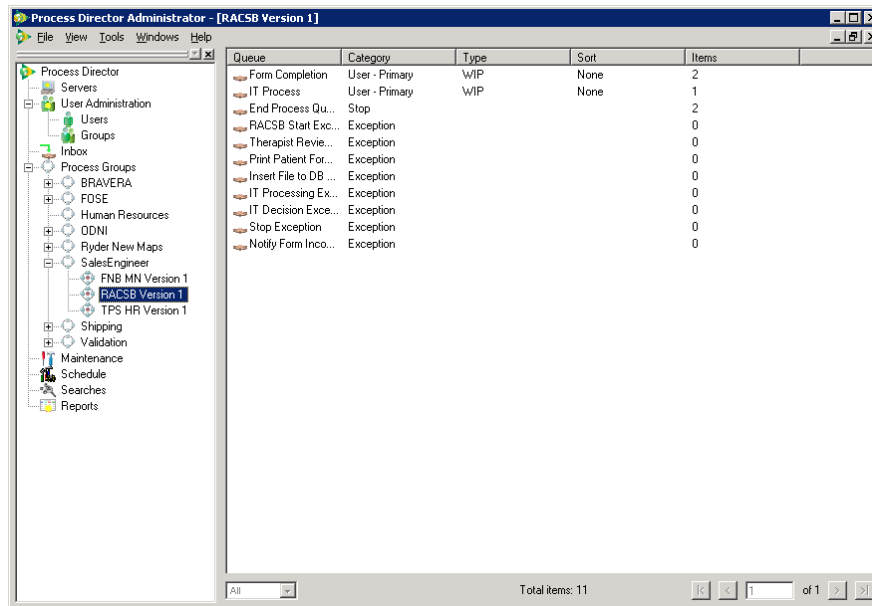
Process Director has a multi-server architecture that is designed to distribute the process workload across as many physical servers as necessary. Up to 16 **Process Director** server instances can be run on a single physical server. This makes it possible to offload CPU-intensive processing events such as database queries to a separate server or a separate instance on a single server to avoid slowing down the main workflow. Multi-server configurations are natively supported, and assigning entire processes or individual events to a server is easily accomplished using the Administrator. This can be done without interrupting the system.

(17) REAL-TIME GRAPHICAL STATUS REPORTING

The Administrator component of **Process Director** furnishes an at-a-glance look at the status of any process work item, individual workload and error conditions. This makes it easy to keep close tabs on system activity as well as determine the tasks pending for a user or group, re-

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assign some or all tasks to other users, or re-prioritize the existing work. Metrics gathered by the system can be analyzed to improve process performance and monitor employee progress.



The screenshot shows the Process Director Administrator interface. On the left is a tree view of the system structure, including Servers, User Administration, Groups, Process Groups, and various process versions like RACSB Version 1. On the right is a table listing queues with columns for Queue, Category, Type, Sort, and Items.

Queue	Category	Type	Sort	Items
Form Completion	User - Primary	WIP	None	2
IT Process	User - Primary	WIP	None	1
End Process Qu...	Stop			2
RACSB Start Exc...	Exception			0
Therapist Revie...	Exception			0
Print Patient For...	Exception			0
Insert File to DB...	Exception			0
IT Processing Ex...	Exception			0
IT Decision Exce...	Exception			0
Stop Exception	Exception			0
Notify Form Inco...	Exception			0

(18) DETAILED PROCESS AND PERFORMANCE REPORTING

Standard reports for work items, work item history, and summary statistics by task or process definition can be generated and viewed through the Crystal Reports viewing window embedded in the Administrator. **Process Director** tracks all work statistics, including who, what, where, when, how long, and how many; the information that provides the feedback on the efficiencies and improvements of the process automation.

(19) PERFORMANCE AND SCALABILITY

Performance and scalability were designed into **Process Director** from the beginning. **Process Director** is our third generation workflow product, and from the outset it was conceived to support high transaction and user volumes. All process definitions, events and compiled Visual Basic code are encapsulated and persisted in the workflow database. At server start up, all compiled process and event code is loaded from the database for the fastest possible performance. **Intellectus Process Director's** multi-server architecture provides a smooth migration path to support business growth. Using the Administrator, additional servers can be added to accommodate an expanding process load, or to isolate critical or intensive operations on a separate server for maximum performance. New servers can be brought on-line without interrupting system operation whenever the workload outstrips the existing system resources.

CONCLUSION

Whether you are extending the functionality of a groupware product, automating production transactions, automating internal processes with supporting content, or automating inbound requests from your Internet site, or integrating your business processes with other applications through web service, **Process Director** provides the fastest way to design and deploy process

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automation in your environment. **Intellectus Process Director** gives you the power to connect people, content and processes within and outside your enterprise. Your business imperative is to wring out the inefficient processes in your organization to maximize productivity and profits. To do this you need to automate every transaction, from simple internal processes like employee leave requests, to the complex transactions that fuel your business.

SYSTEM REQUIREMENTS

SUPPORTED SERVER PLATFORM

- Microsoft Windows Server 200X

SUPPORTED CLIENT PLATFORMS

- Microsoft Windows
- Netscape and Internet Explorer Browsers versions 5.5 and above
- Any environment via Web Services

SUPPORTED DATABASE MANAGEMENT SYSTEMS

- Microsoft SQL Server
- Oracle

INTELLECTUS, LLC
300 Bucksley Lane, Suite 305
Charleston, SC 29492

Tel: 866 588 0771 (Toll free),
Tel: 703 439 1150
Fax: 440 425 1160
sales@Intellectus.com
www.Intellectus.com

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