



White Paper

Enterprise Integration with Livelink®: Partner Solutions and Add-on Modules

March 2001

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The Post-2000 Enterprise

Now that corporations have successfully crossed into the year 2000, many of them with fresh Enterprise Resource Planning (ERP) implementations, their information technology (IT) organizations are facing a new challenge: how to support a post-2000 workplace that is characterized by:

- Unprecedented competitiveness in every industry, requiring continuous innovation in both product and service offerings
- A highly mobile workforce that works anywhere, anytime and has information requirements 24 hours a day, seven days a week
- Transactions and information that need to travel instantly across geographic and organizational boundaries
- Instant collaboration among organizations, their business partners, and customers to seize new opportunities and solve problems
- Work processes that require information from multiple sources to drive business transactions through the organization
- Requirement for a global presence with a single corporate message, purpose, and set of values

The reality is that almost every organization is facing e-business transformation as well as the challenges of supporting a global, distributed workforce. The Internet is the enabling technology for both. Satisfying these imperatives however, has created some key technical challenges for IT:

- Electronic data capture to speed processing through an enterprise
- The Internet as the primary interface between an organization and its customers
- Server-based enterprise systems that communicate with each other and outward-facing applications
- An infrastructure that connects customers, business partners and employees with each other and the information they need to support common initiatives

This paper is intended to show how Livelink and its complementary modules and partner solutions provide front-end data capture and Web-based interactions, back-end application to application integration, and the infrastructure that connects these, as well as serving the information delivery needs of a global constituency.

The New Front Office

Recognizing that people prefer self-service, many firms have implemented Web-based front-ends to gather data, distribute information, and conduct business transactions. The user-friendly interface provided by Web browsers, in conjunction with well-designed access points provided by portals, allow every customer and employee to get to the information or process that they need quickly.

This capability has allowed the Internet to become the primary source of interaction between many corporations and their customers. Most busy people prefer it that way—they can execute a change-of-address transaction at their own convenience, without writing a letter or fax or being placed on music hold. More importantly, the customer can be assured that their information is entered in exactly the way that they want it. There is an expectation today by customers and employees that every transaction that can be carried out over the Internet, should in fact be available over the Internet.

But not every transaction today originates electronically. Paper documents in the form of purchase orders, bills of lading, invoices, and correspondence inundate corporate mailrooms even today. Eliminating paper has become a key goal for many organizations, not only to save on paper and storage costs, but also to eliminate the endless filing, retrieving, and photocopying that accompanies paper documents. Many firms turn incoming paper records into electronic ones as soon as possible, typically in the mailroom—eliminating even the need to deliver them manually to a specific person. Electronic records make information sharing easy—there is no need to make and deliver photocopies—a significant cost saving in today's geographically distributed organizations.

Open Text partner solutions and Livelink modules offer a number of opportunities for browser-based customer interactions, as well as conversion of paper records into electronic ones. These are categorized and described in subsequent sections covering Electronic Forms, Interactive Dialogs, and Imaging Solutions.

Application-to-Application Communication

As organizations transform their back-end processing systems to support new business opportunities, IT departments find themselves scrambling to interface diverse applications and connect the browser-based front-ends to multiple back-end systems. IT no longer has the time to write one-off interfaces between applications. Responding to the need to quickly support unanticipated corporate initiatives, IT is demanding more than ever that applications support standard interfaces such as Common Object Request Broker Architecture (CORBA), Component Object Model (COM), and Extensible Markup Language (XML).

The inability to leverage new opportunities due to a lack of system integration can cripple a business. On the other hand, those organizations that can reduce cycle times through process integration have a competitive edge. Successful process integration requires integration of divergent business software applications such as ERP, legacy, and various Relational Database Management System (RDBMS)-based information systems.

Increasingly, organizations appreciate the benefits of tightly integrated work management applications as they wrestle with staffing shortages, employee turnover, and lack of time or budget for end-user training. Applications that are easy to use and can prevent users from making errors are indispensable in today's hectic work environment. Specific benefits realized from well-integrated business processes include:

- Reduced processing time, resulting in better customer service
- Greater efficiency and effectiveness in operations, resulting in a more competitive corporation
- More streamlined processes for employees, resulting in lower error rates and less training time
- Less impact when an employee leaves since more knowledge is retained in the system

Customers are able to integrate Livelink with enterprise applications using both partner solutions and optional Livelink modules. For example, NetManage® provides bi-directional legacy access tools that allow one or more legacy and database applications to be updated from a Livelink page, greatly simplifying the user interaction and hiding any complexity of the underlying host-based applications. Livelink Activators for SAP™ R/3® and CORBA allow the Livelink server application to be extended with information from SAP R/3 and other external applications respectively.

The Enabling Infrastructure

The correct infrastructure for the competitive organization is one that allows the social and technical infrastructures to merge. The necessary components are:

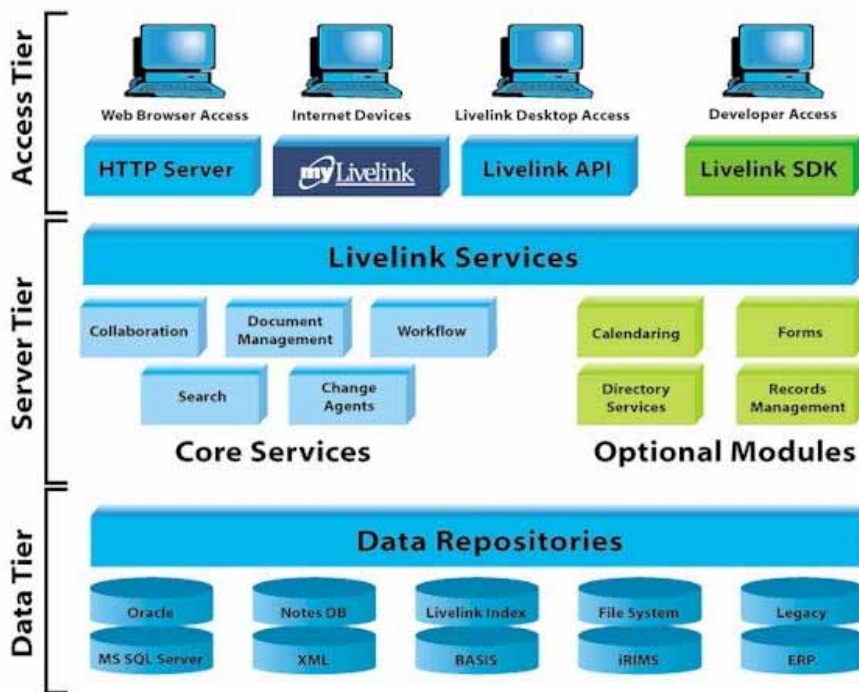
- Web-based application architectures to support the external communications and transactions with customers, information delivery to the dispersed mobile workforce, and communications with business partners
- Electronic records to shorten processing cycles, eliminate the paper burden, and support future information demands
- Access to critical information and processes through a well-designed business portal
- Process integration from initial data capture to enterprise systems that enable fulfillment
- Tools to support the collaborative networking between employees, customers and business partners
- Extensibility to meet new requirements and adapt existing processes to organizational changes

Livelink, through its functionality as well as its extensible and scalable architecture, acts as a platform for serving the information needs of global collaborative networks. By adding data capture applications at the front-end and enterprise integrations at the back-end, Livelink Workflow™ processes and the Livelink repository act as the glue connecting the enterprise internally. Livelink's Web architecture makes it ideal for supporting collaborative networks that extend beyond the organization, while still maintaining a coherent message, purpose, and corporate brand.

Livelink Integration Points

Livelink Open Interchange Architecture

To support the level of integration described in this paper, Open Text provides the Open Interchange Architecture™ (OIA), an extensible environment designed to provide a single point of access to content, legacy applications, and structured information essential to e-business processes. Using industry standards such as XML for data interchange and CORBA for distributed computing, the OIA ensures interoperability between collaboration, front-end interfaces and devices, as well as back-end systems and applications.



Livelink's Extensible Architecture


Livelink's functionality can be extended at either the client or server layers. Livelink Desktop™ Developer Edition is a COM development environment for Livelink Desktop, allowing developers to create custom integrations with Livelink's document management functionality using familiar tools such as Visual Basic.

The Livelink Software Development Kit (SDK) is a set of tools for extending Livelink's functionality to meet an organization's custom integration requirements with other information sources or processes.

The myLivelink™ Portal

The corporate portal is one way of providing access to information and processes needed by employees to achieve their daily tasks. While the various resources made available may not be integrated, all of them are often relevant to an employee's role. A corporate portal provides some level of integration through a single logon capability and a consistent view of the organization's structured and unstructured information and multiple disparate enterprise systems and resources.

myLivelink from Open Text provides users with a single point of access to a wide range of resources—including the Internet, extranets, intranets, and enterprise business systems such as Lotus Notes™, SAP, J.D. Edwards™, and others. System Administrators can tailor myLivelink content according to pre-defined user profiles—allowing organizations to filter and categorize information according to corporate structure, occupation and other criteria. These profiles define a master set of preferences that users can easily customize and extend. Each template can be altered to meet the demands of specific job functions. By integrating an organization's intranet and extranet, users can also collaborate more effectively with customers, partners and suppliers.



myLivelink™

Open Text's *collaborative knowledge portal* allows each user to create a personalized view of enterprise information and resources. myLivelink, a highly customizable Yahoo-like interface to Livelink, allows users to personalize the display of information such as tasks, projects, favorites, search, URLs, and Web content from multiple Livelink systems and external sources within a single Web page.

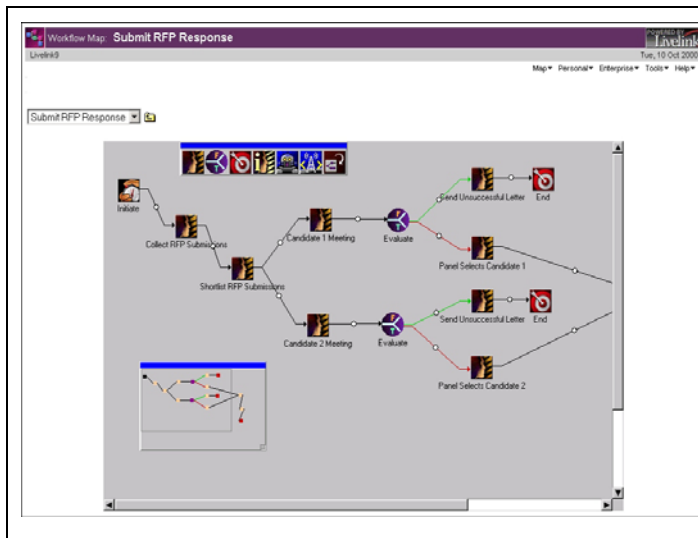
A key part of the myLivelink system is its set of predefined information sections or “widgets” that access instances of Livelink. myLivelink includes widgets that access Livelink sites, discussions, projects, favorites, inbox, task lists, and brokered (federated) search, as well as widgets that access information sources other than Livelink.

Livelink Workflow

The companies that are most successful in leveraging the power of the Web are those who have implemented tightly integrated business processes spanning from the initial user experience to the ultimate fulfillment of the Web-initiated interaction. The integration of work steps with the appropriate information required to complete them

allows corporations to achieve significant improvements in the efficiency and effectiveness of their operations.

Livelink features a rich set of workflow tools and options that drive a business process from the initial data capture through multiple work steps to a conclusion, which may result in data stored in Livelink or elsewhere. With Workflow XML Interchange, workflows may now include steps outside of the Livelink application.



Automate Complex Business Processes

Livelink's Java-based Workflow Designer enables a user with the necessary privileges to create a workflow map by dragging-and-dropping steps and assignees, attach documents or other objects, create sub-workflows, define conditional loopbacks, set milestones, and specify project details such as deliverables and due dates.

The first step in a workflow is often a data capture step. The data is captured either through an electronic form or by means of an imaging solution that releases a form to Livelink as a work package. Several partner solutions are available for this purpose (described in this paper), as well as the Livelink Forms™ module. In either case, the information entered by an assignee can be used to determine the routing of the workflow package as well as the assignee of subsequent steps. Additional information can be dynamically presented in subsequent steps, based on the context of the user's role and the task at hand.

By supplying critical data to users with each task, work is completed more quickly and within a quality process. Furthermore, the status of a workflow can be monitored on the standard Workflow Status page or custom workflow reports can be written by the Livelink Administrator using Livelink's LiveReports™ SQL query tool.

The Livelink Repository

Livelink's repository and workflow are the glue connecting front-end data capture applications to the back-end enterprise applications they serve. With its secure, central repository, Livelink provides functionality for storing and managing every type of object—including forms, documents, and images—and providing controlled user access to these objects. All of the data capture solutions described in this paper allow forms or other digital images to be stored in Livelink folders defined by a Knowledge Manager.



Livelink Repository

With Livelink, users can easily navigate or search their way to required business forms, documents and processes. Access to all objects is controlled by permissions while audit trails are available to track changes and usage history.

Livelink's repository management features include:

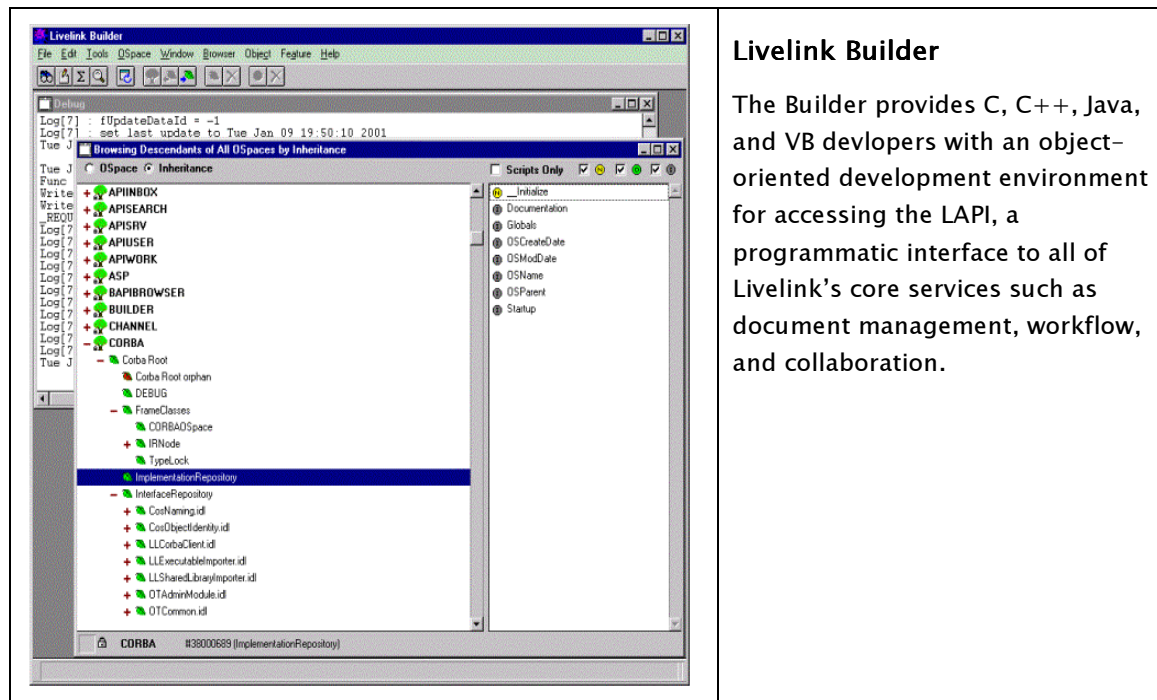
1. Access control—Up to nine levels of permissions are available to control access to Livelink objects. Public access can be assigned to objects such as HR forms to which everyone needs access, while restrictions such as who can view, reserve, edit, or delete, may be placed on other documents or objects, including forms.
2. Change control—A document can be reserved by an individual or group while changes are in progress, preventing multiple users from simultaneously changing a document and corrupting each other's work.
3. Versioning—Documents and forms can be versioned and a version history maintained so that previous versions of a document or form can be retrieved and viewed individually. The number of versions to keep can be specified.
4. Metadata—Document classes can be defined with specific attributes.
5. Searching—Both the full-text content and metadata attributes of documents are fully searchable. This applies to form fields as well.
6. Event History—For each object, Livelink's audit trail automatically records the date and time of action, who performed the action, and a description of the action. For a document, audited activities include who worked on it and who reserved it.

Livelink Application Integration

The Livelink SDK is an object-oriented development environment that provides facilities for creating custom modules and integrating with other enterprise systems. Livelink's core services such as team collaboration, document management, business process automation, enterprise group scheduling, and information retrieval can be accessed and customized using the Livelink API (LAPI).

Developers use the SDK to create new modules, extend existing ones or integrate Livelink with other enterprise applications using C, C++, Visual Basic (VB), and Java.

Extensions to LAPI are also available for Distributed Component Object Model (DCOM), CORBA, and SAP's Business Application Programming Interface (BAPI).



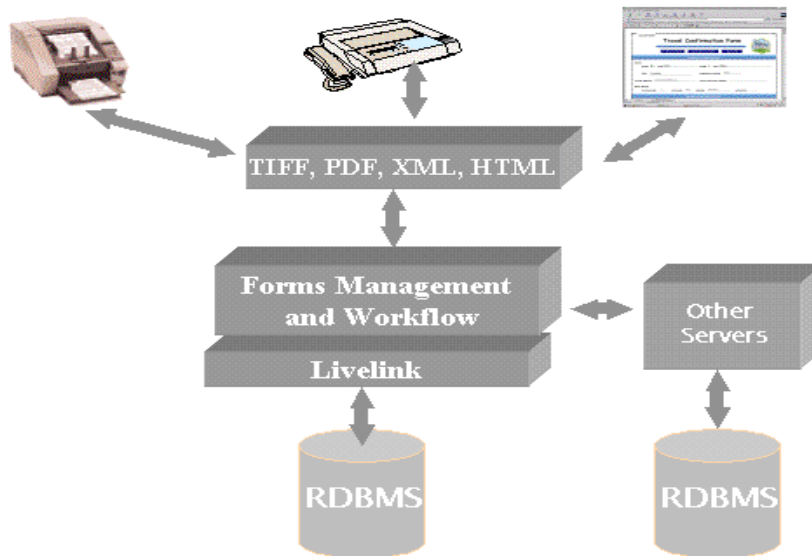
Livelink Builder

The Builder provides C, C++, Java, and VB developers with an object-oriented development environment for accessing the LAPI, a programmatic interface to all of Livelink's core services such as document management, workflow, and collaboration.

Customers and partners use the Livelink SDK to add new features and capabilities to Livelink, extending its functionality for a customer-specific need, or to create a solution with a horizontal or vertical focus. Additionally, partners have wrapped Livelink functions as COM and CORBA objects, making them easier to use in specific development environments. The ability to build on Livelink's core functionality and application infrastructure makes it a highly extensible solution.

Data Capture Solutions for Livelink

The data capture solutions available for Livelink support paper, fax, and copier images in addition to electronic forms. Even though the implementations offered by our different partners may vary, most architectures support a process similar to the one illustrated in the diagram below:



Data Capture Architecture for Livelink

1. Images are captured from scanners, fax servers, and digital copiers. Optional software and operator-assisted image correction and enhancement are also available.
2. In production scenarios, there is usually a forms or image server to perform character recognition, conversion, and high-speed data transfer. In addition, form fields are converted into data and documents are converted into text and made available for full-text indexing and searching in Livelink.
3. Electronic forms are captured from a Web application.
4. Images and forms are stored in Livelink for viewing by users in support of a business process.
5. Form field data can be sent to an enterprise system by Livelink or another server for processing and custom functions such as customer feedback.

Solution Summary

A number of data capture solutions for Livelink support paper, fax, and copier image capture. ActionPoint™, Cardiff Software™, and Kofax® Image Products all offer production imaging solutions, while eCopy™ provides a capture solution for digital copiers and Formark® offers desktop and departmental scanning. For electronic data capture, a number of e-forms solutions are integrated with Livelink's workflow and repository, including ActionPoint, Cardiff, and Formark in addition to the Livelink Forms module.

The table below summarizes the more detailed information that follows in subsequent sections for each partner listed.

A. Electronic Forms Solutions			
Vendor Product(s)	Function Provided	Livelink Integration	Enterprise Integration
Open Text Livelink Forms™	Electronic forms in HTML format that can be designed, filled in, and viewed in a standard Web browser.	Core Livelink module. Fully integrated with Livelink's document management, search, and workflow functionality.	In a workflow, form field data can be interchanged with external applications using the Workflow XML Interchange step. Using Livelink SDK, external database interactions and custom submissions can be developed.
Open Text Livelink PDF Forms™	Electronic forms in PDF format that can be filled in and viewed using the Adobe Acrobat® plug-in in a standard Web browser.	Optional Livelink module. Fully integrated with Livelink's document management, search, and workflow functionality.	In a workflow, form field data can be interchanged with external applications using the Workflow XML Interchange step. Using Livelink SDK, external database interactions and custom submissions can be developed.
ActionPoint Dialog Server™	Delivers XML data from interactive Web pages to back-end systems. Can generate a Portable Document Format (PDF) version on the server.	Storage to/retrieval from Livelink from scripts within Active Server Pages or Java Server Pages.	Connect to RDBMS through Activex Data Objects (ADO), Open Database Connectivity (ODBC), Java Database Connectivity (JDBC).

A. Electronic Forms Solutions			
Vendor Product(s)	Function Provided	Livelink Integration	Enterprise Integration
Cardiff Software eForm Warehouse™ Suite for Livelink includes: 1. PDF+Forms™ 2. TELEform® 3. Connect Agent	Design and deploy electronic forms in PDF format.	Integrates with Livelink PDF Forms. Completed forms are stored in Livelink with Connect Agent. Forms can initiate Livelink workflows.	Connect Agents connect data with Enterprise platforms such as Microsoft® SQL Server, Oracle®, ODBC-compliant databases, and XML data applications.
Formark LiveForms	Horizontal solution for highly workflow-centric applications requiring forms input. Form and data is stored as XML.	Delivers dynamic form input via XML-based forms to Livelink workflow. Enables workflow role assignment from the form.	Form fields can be populated or validated from an ODBC database. Workflow and data can cross into other systems such as e-mail.

B. Imaging Solutions			
Vendor Product(s)	Function Provided	Livelink Integration	Enterprise Integration
ActionPoint InputAcce® for Livelink	High-volume conversion of paper and faxes to XML, images, or transactions.	Categories and attributes captured on export to Livelink folders. Images stored in Livelink.	Perform lookups and validate against external sources. Archive documents as permanent records.
Cardiff Software eForm Warehouse Suite for Livelink includes: 1. PDF+Forms 2. TELEform 3. Connect Agent	Capture handprint, machine print, and bar codes from paper documents.	Scanned images are stored in Livelink with Connect Agent.	Connect Agents connect data with Enterprise platforms such as Microsoft® SQL Server, Oracle, ODBC-compliant databases, and XML data applications.
eCopy	Enables users to integrate scanned paper documents with other applications using their digital copier.	eCopy Desktop™ client application (formerly called MailRoom®) links to Livelink via Open Document Management API (ODMA).	Links directly to Microsoft Exchange and Lotus Notes™ corporate e-mail address books.

B. Imaging Solutions			
Vendor Product(s)	Function Provided	Livelink Integration	Enterprise Integration
Kofax Ascent Capture® for Livelink	Out-of-the-box solution for scanning, fax import, image review and cleanup, Optical Character Recognition (OCR) and Image Character Recognition (ICR), bar code recognition, data validation and correction, and image archive.	Creates links between Capture index fields and Livelink attributes. Releases OCR files into Livelink folders for full-text indexing.	Custom validation scripting to any ODBC-compliant database.

Electronic Forms Solutions

Livelink Forms

Livelink Forms is a core module of Livelink that offers electronic forms functionality including calculations, data validation, and verification. Electronic forms are ideal for transactions requiring structured information to initiate a workflow, such as Purchase Orders, Engineering Change Orders, and many more.

Type	Rows	Attribute Items
Text Field	1 (index 0)	Author
Text Field	1 (index 0)	Headline
Text Field	1 (index 0)	Condensed Headline
Text Field	1 (index 0)	Rating
Text Field	1 (index 0)	Organizational Office
Text Field	1 (index 0)	Location Timeline
Text Field	1 (index 0)	Release Date
Text	1 (index 0)	Section
Text	1 (index 0)	Section Heading
Text	1 (index 0)	Section Paragraph
Text	1 (index 0)	Published Sites
Text	1 (index 0)	New Date
Text	1 (index 0)	Launch Date
Text	1 (index 0)	Expiration Date

Livelink Forms

The Livelink Forms module allows you to design, fill in, and view Web forms in a standard Web browser.

The Web form designer allows you to create basic Web form templates by adding various elements (fields, drop-down lists, and so on) to the template. You can export this basic form template as an HTML file and enhance it in an HTML editor to add graphics, layout, and so on. You can then add the enhanced HTML form back into Livelink as one of many “views” of the original form template.

The Livelink Forms module’s capabilities include:

- The ability to design Web form templates using the built-in Web form designer in a standard Web browser without any other client software required
- The ability to enter data into a Web form that is based on an Web form template created using the Livelink Web form designer
- The ability to create multiple HTML “views” of a single Web form template that can serve as alternate data entry or presentation interfaces for the form data
- The ability to deploy Livelink–designed Web forms in the Livelink repository using configurable revision and submission mechanisms
- The ability to deploy Livelink–designed Web forms in Livelink Workflows, choosing a different “view” for each performer in the workflow process
- The ability to version form templates so that forms based on a template are updated automatically

- The ability to create Livelink LiveReports SQL queries to generate reports, including graphs and charts, of form data stored in SQL tables
- The ability to use JavaScript for custom processing, such as field validations or pre-populated fields based on the Livelink user using the form

Livelink Forms are fully integrated with Livelink's document management functionality, including version histories, audit trails, and security. Forms have a unique set of permissions to control how forms are used and modified. Furthermore, form fields are fully indexed and searchable. In addition to using forms to initiate workflows, form values can also be used to determine routing in workflows.

Livelink PDF Forms

With the optional Livelink PDF Forms module, an Adobe Acrobat PDF form template can be used to create the Livelink form template as well as to create PDF "views" for any form template, regardless of whether it was created using the Livelink Web form designer or by uploading a PDF form template into Livelink.

Forms can be designed using Adobe Acrobat 4.x. Existing paper forms and other form types can be converted by scanning and saving them in PDF format. Since the same form can be made available for print and online use, designers can manage the layout, content, and appearance of these forms to mimic a traditional paper-based form still in use.

The screenshot shows a web browser window displaying a Livelink PDF form titled "PURCHASE ORDER". The form is designed to look like a traditional paper-based purchase order. It includes the following elements:

- Header:** "ABC CORPORATION" logo on the left, and "PURCHASE ORDER" title on the right.
- Form Fields:**
 - Purchase Order No. (text input)
 - Date (text input)
 - Vendor (text input)
 - Ship To (text input)
- Table:** A table with 4 columns: Qty, Description, Unit Price, and Total. It has several empty rows for data entry.
- Footer/Summary:**
 - Approval (text input)
 - Notes/Remarks (text input)
 - TOTAL (text input)

Livelink PDF Forms™

Livelink PDF Forms can mimic the appearance of paper-based forms.

Livelink PDF Forms have the same properties as Livelink Forms, including full integration with Livelink's document management, search, and workflow functionality, configurable revision and submission mechanisms, form template versioning, SQL report generation, and JavaScript for custom processing.

Livelink PDF Forms Professional

Livelink PDF Forms Professional is a package that combines Livelink PDF Forms with Cardiff eForms Warehouse for Livelink. eForms Warehouse extends and enhances the capabilities of the Livelink PDF Forms module, by offering:

- Point-and-click form template design with automated JavaScript creation
- Server-side data verification
- A form processing system
- Integration with Livelink workflow
- Extraction and reuse of submitted data via external ODBC databases or XML
- Storage of submitted forms in Livelink where they can be indexed and searched
- The ability to capture paper forms and store them as PDF or TIFF documents in Livelink

For more information about Cardiff's eForm Warehouse, see "[Cardiff eForm Warehouse Suite for Livelink](#)" on page 17.

ActionPoint Dialog Server

The user-friendly interface provided by Web browsers, in conjunction with interactive applications, allows every enterprise participant to complete even complex tasks using a browser. This is especially critical for external users, who often abandon a process if it is too slow or complex. It may be easier to do business with another vendor by virtue of their superior (in other words, faster and easier) ordering process. Software such as Dialog Server from ActionPoint is particularly useful in sales situations, where a potential customer must be guided through a purchasing or information-gathering process.

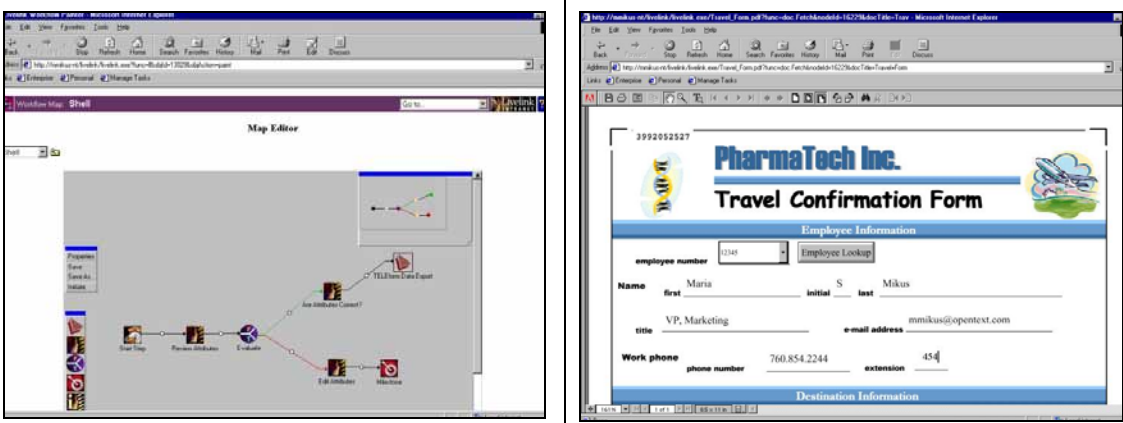
<p>Designate your beneficiary.</p> <p>Primary Beneficiary Full Name / Relationship / Percent*</p> <p>John Doe * Brother 100</p> <p>Contingent Beneficiary (optional) Full Name / Relationship / Percent*</p> <p>* Enter the percent of the insurance proceeds that you want each beneficiary to receive. The primary total must be 100%, and if you entered contingent beneficiary(s), the contingent total must be 100%.</p> <p>Continue</p>	<p>Dialog Server</p> <p>ActionPoint dialogs give instant feedback, guiding users to easily complete their Web interaction accurately the first time. In the course of determining the primary insurance beneficiary, Dialog Server asks for a second beneficiary if the first is not accountable for 100% of proceeds, and immediately asks for that person's name and relationship as well as re-calculating the percentage of the proceeds remaining. If it still does not add up to 100%, another text box appears dynamically for further user input.</p>
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There are several ways in which Dialog Server can be integrated with Livelink:

1. **To supply information to an interactive dialog:** If the Web page generated by Dialog Server contains a URL that identifies a Livelink document through its object ID number or other key field that can be used to perform a search (customer ID, for example), the script that calls Dialog Server can first retrieve an XML document from Livelink. The XML document then can be used to populate the Web page.
2. **To store information from an interactive dialog:** When the user submits information, Dialog Server generates an XML instance for that session that is stored in Livelink. The document can be stored as XML or PDF, attributes can be set with specific values contained in the XML document, and a workflow can be initiated. Other back-end systems that are accessible via ADO, JDBC, or Web server scripts can also be updated.

Cardiff eForm Warehouse Suite for Livelink

The **PDF+Forms** component of Cardiff eForm Warehouse Suite for Livelink provides a complete package for form design, data verification, and processing of PDF-based forms. Cardiff's Form Designer includes point-and-click tools to create a new form or to convert existing paper forms into online electronic forms. Developers can set client and server-side processing rules and connect to database and archive applications without programming. Using PDF+Forms, organizations can publish the same form in electronic and paper formats.



The left screenshot displays a 'Map Editor' window with a workflow diagram. The workflow starts with a 'Form Designer' icon, followed by a 'Form Processor' icon, then a 'Data Export' icon, and finally a 'TELEform Server' icon. The right screenshot shows a web browser displaying a 'PharmaTech Inc. Travel Confirmation Form'. The form includes sections for 'Employee Information' and 'Destination Information'. The 'Employee Information' section has fields for 'employee number' (12345), 'Name' (first: Maria, initial: S, last: Mikus), 'title' (VP, Marketing), 'e-mail address' (mmikus@opentext.com), and 'Work phone' (phone number: 760.854.2244, extension: 454). The 'Destination Information' section is partially visible at the bottom.

The Livelink workflow shown on the left ends with a data export step to the *TELEform* Server to extract data from a form and store it in a database, while the form itself is stored in Livelink. Meanwhile, the user sees only the form shown on the right, and is unaware of the processing that occurs behind the scenes when the Submit button is clicked.

Formark LiveForms

Formark solutions such as Process-FastTrack and PDM Enabler rely on LiveForms for dynamic forms-based process automation. These solutions focus on tightly integrating a process with the information required to complete each task along the way, at the same time hiding process complexities from the user. LiveForms are XML-based work packages that dynamically present instructions and work to process participants based on their role, form values, and the current work step. The result is information presented in the context of appropriate actions that the user can take to complete the task at hand. Not only is the flow of work improved, but its progress can be monitored and controlled as well.

Formark® LiveForms

A LiveForm is used to initiate a Livelink workflow. The appropriate participants and their roles are selected in drop-down menus. During subsequent work steps, the form fields and participants change dynamically to support the current task. With LiveForms, the process and the form have become one, hiding underlying complexities from the user.

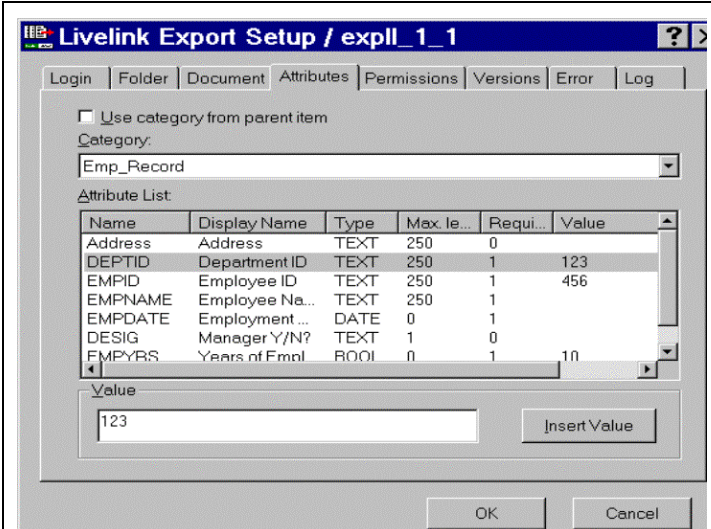
With Formark LiveForms, a Livelink workflow is initiated when a user fills in a form such as the Engineering Change Request shown above. The appropriate participants and their roles are selected using drop-down menus populated with data from Livelink or a legacy application, dynamically changing the workflow distribution. Livelink workflow is hidden from the user—they are simply completing the task at hand. As the work package progresses through the organization, it dynamically changes at each workflow step. Data already entered may be locked while additional fields are added to support the current workflow step. The task at hand establishes the context and therefore presentation of the form.

Since the form is a single object, the form and its data are stored together and a complete, legally binding record is retained. Multiple electronic signatures can also be used within the form.

Imaging Solutions

ActionPoint InputAcce/ for Livelink

InputAcce/ is a modular and configurable system for high-volume document capture, supporting scanners using ISIS or TWAIN drivers. The client-server architecture consists of the Enterprise Server in addition to separate InputAcce/ client modules. Enterprise Server's database and CaptureFlow capability are optimized for scanning, recognition, conversion, and high-speed data transfer. The InputAcce/ client modules perform various image capture, data capture, and processing functions, while the Enterprise Server Export Module delivers a variety of document types and formats to Livelink.



Livelink Export Module

An administration interface is provided for browsing to a folder location or workflow in Livelink, as well as for viewing available categories to map the scanning variables and attributes to attribute fields in Livelink (shown at left). These configuration parameters are saved as a template for subsequent batches of scanned images.

Production scanning functionality includes:

- Image enhancement and image quality assurance
- OCR
- Key-from-image capabilities
- Ability for operators to index specific regions on the page by using a mouse to select the area to be indexed
- Image conversion to any one of three Adobe PDF formats

With the forms processing modules, single-page and multi-page documents can be automatically identified and associated with predefined page and form templates. Data recognition, character inspection, and data validation capabilities are also provided.

When exporting to Livelink, the user can choose a Livelink folder or work package in existing assignments to receive images, as well as specify the following:

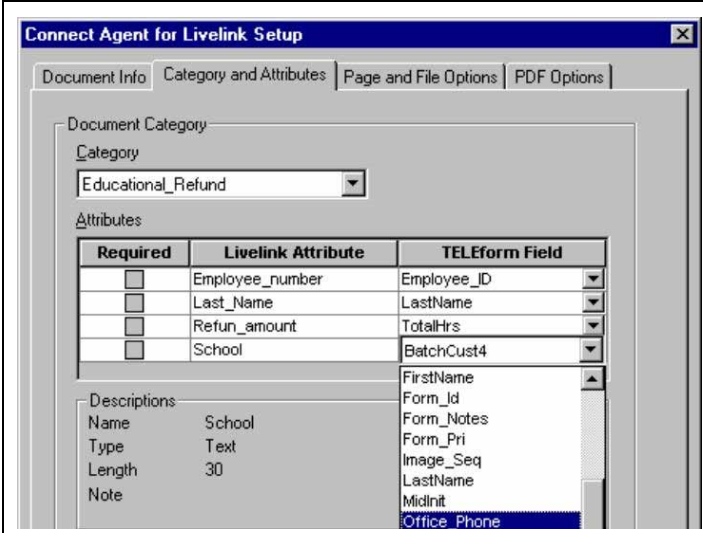
- Image storage format
- Actions to take upon errors
- Naming conventions
- Logging
- Access permissions
- Versioning if the document already exists
- Livelink log-in to use

Cardiff eForm Warehouse™ Suite for Livelink

The Cardiff eForm Warehouse Suite for Livelink includes:

- *TELEform* for Livelink
- PDF+Forms for Livelink
- Connect Agent for Livelink

Cardiff *TELEform* provides a forms processing and document capture solution for high-volume scanning and fax applications. The integrated solution supports image capture and conversion to digital formats, information validation, population of one or more databases, as well as storage and retrieval of scanned documents from Livelink.



Required	Livelink Attribute	TELEform Field
<input type="checkbox"/>	Employee_number	Employee_ID
<input type="checkbox"/>	Last_Name	LastName
<input type="checkbox"/>	Refun_amount	TotalHrs
<input type="checkbox"/>	School	BatchCust4

Connect Agent for Livelink Setup

The Connect Agent for Livelink includes wizards providing the Administrator with control over where scanned documents are stored, mapping of index fields to Livelink categories and attributes, selection of image formats, and image ordering. The image on the left shows mapping of *TELEform* fields to Livelink attributes.

The *TELEform* data capture functionality provides desktop or server-based high-speed scanning that supports TWAIN, ISIS, and other popular scanner interfaces.

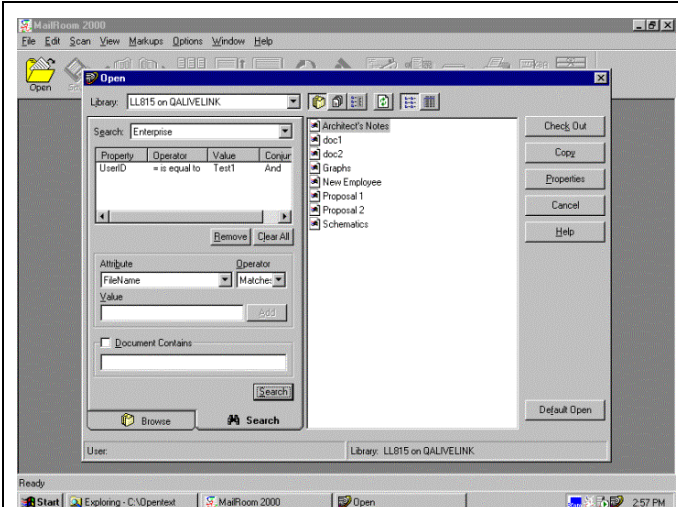
Other functionality includes:

- Recognition software for hand print (ICR)
- Machine print (OCR)
- Bar code, check box (Optical Mark Recognition or “OMR”), and signature fields from paper documents
- Automatic form identification with the *TELEform* Reader
- Software Re-Scan for image enhancement
- *TELEform* Verifier for data correction as well as database validations and user-defined rules
- Indexing options such as operator keying, pre-filling data from previous fields or images, database look-ups, and custom business rules created via a Basic Script interface

eCopy Suite for Open Text Livelink

The eCopy Suite for Livelink is designed to take advantage of the high-speed scanning capabilities of new digital copiers and scanners. An eCopier touch screen equipped with eCopy ShareScan acts as the scanner or copier gateway to the network. ShareScan converts paper documents into electronic images (TIFF or PDF files) using a Canon, Océ, or other digital copier. These images are then sent to the desktop for storage and retrieval.

eCopy Desktop (formerly called MailRoom) is the desktop companion that integrates with Livelink using ODMA. The scanner, copier, and fax images can be easily stored into and retrieved from Livelink. Using eCopy Desktop, the images can be annotated, as well as manipulated using whiteout, highlight, markup, and “rubber-stamp” tools. The annotations and other markup may be stored as a separate layer or as a flattened image that cannot be further manipulated.



eCopy Suite for Livelink

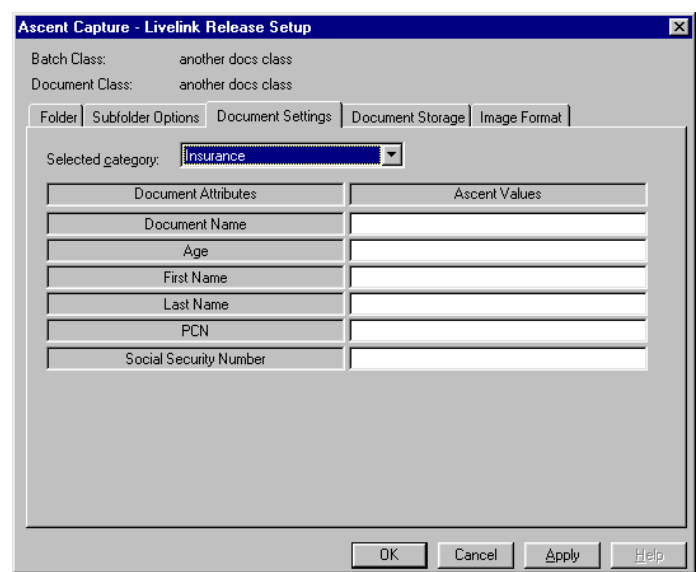
Using the eCopy Desktop client, users can easily browse or search for an image stored in Livelink using attribute information.

The integration between eCopy Desktop and Livelink supports the following functions:

- Save scanned documents to Livelink folders
- Fax or e-mail stored documents
- Combine scanned documents with other Windows applications such as Microsoft Word
- Annotate and manipulate images
- OCR scanned images for conversion to Microsoft Word, as well as full-text indexing for later searching
- Control access and versions

Kofax Ascent Capture for Livelink

Ascent Capture is an out-of-the-box production capture solution, including document, data, and Internet-distributed capture that is fully integrated with Livelink. The administrative interface allows identification of Livelink folders where information is stored, mapping of Ascent Capture index fields to Livelink attributes, and selection of image formats. After the setup is complete, users can begin scanning and releasing batches into Livelink.



Document Attributes	Ascent Values
Document Name	
Age	
First Name	
Last Name	
PCN	
Social Security Number	

Ascent Capture for Livelink

The Release Setup module is used to specify how and when documents are to be released into the Livelink system from Ascent Capture. The Document Settings function shown to the left is used to assign Ascent Values to Livelink document attributes.

Scanned documents can be stored as TIFF or PDF images.

The scanning functionality includes support for local or remote high-speed scanning as well as low-end SCSI scanners using ISIS drivers, and the following features:

- Field indexing, allowing zones specified in the document or form to be associated with data fields
- Virtual ReScan to dynamically correct documents that are highly skewed
- Custom validation and correction scripting

- Image enhancement features
- Recognition of handwriting (ICR), machine print (OCR), check marks (OMR) and bar codes, as well as document OCR and indexing to support full-text searching in Livelink

The Livelink Release module runs unattended on a Windows workstation and can be configured for automated release scheduling during off-hours.

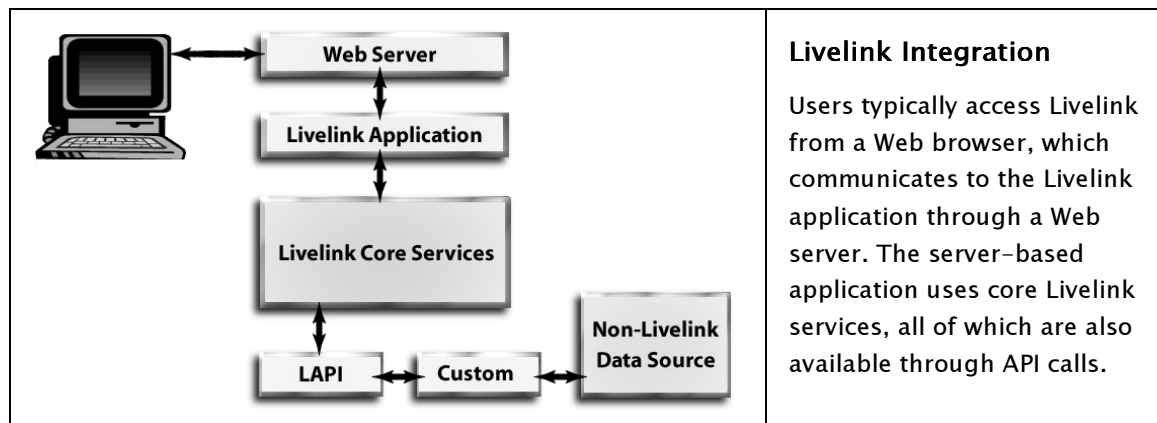
Server-Based Livelink Integration

As organizations continue to seek business process improvements, the demand for providing the customer with information from enterprise systems in the Web browser has increased dramatically. Not only do external users need interactive dialogs to assist in complex transactions, but the application must often present existing information for the user to make a decision. Examples include buying additional insurance or changing cable or telephone service options.

This demand for data includes both documents such as policies or contracts, as well as highly structured data such as supplier information. The structured and unstructured data are often maintained in separate systems supported by different underlying hardware and software technologies. They may also be separated geographically.

There are a number of options available to customers seeking to integrate information from other systems into Livelink workflow or to make non-Livelink data available to a Livelink user for the purpose of viewing or updating. The most common solution is to use the Livelink SDK to write a custom module that accesses Livelink core services through LAPI ([described earlier](#)). Customers and partners use the Livelink API (LAPI) extensively to create custom applications that access other data sources and integrate this information into a Livelink application.

Additionally, there are partner solutions with higher-level interfaces for the Livelink API, host access options from NetManage, and Livelink Activator modules for CORBA and SAP. All of these facilitate the integration of user-facing Web-browser processes with enterprise applications.

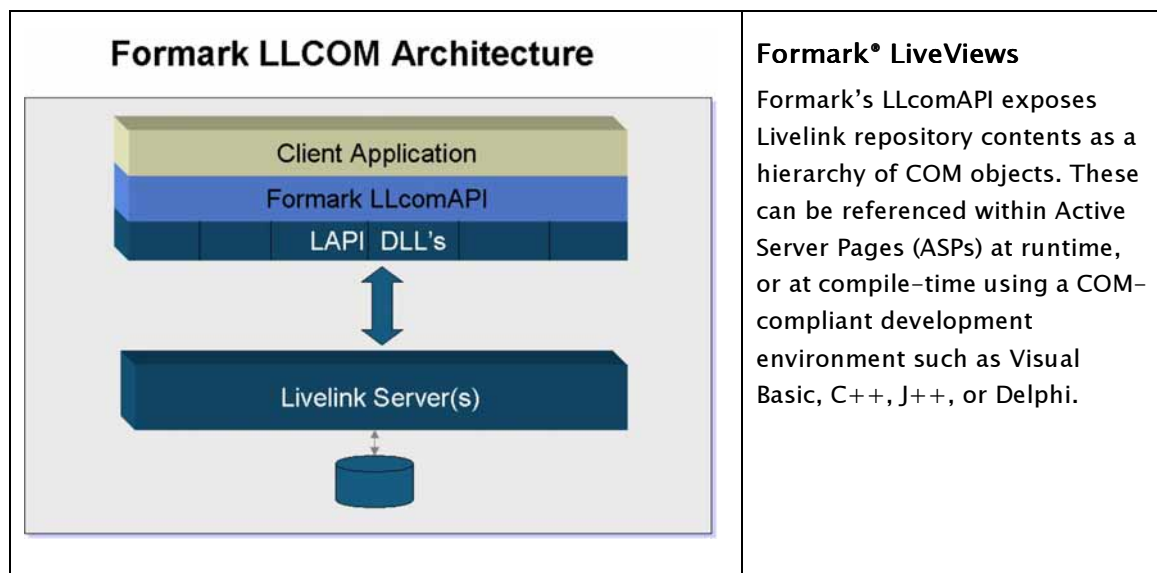


Additional Interfaces to Livelink Services

Several Open Text partners have written higher-level access layers for the Livelink API (LAPI). These include Formark and Morningstar Systems.

Formark LiveViews

LiveViews are used to develop custom interfaces for Livelink using Formark's Livelink COM API. This software encapsulates the Livelink API to provide a COM-compliant programming interface to a Livelink repository. Exposed Livelink components include Workspaces, Folders, Compound Documents, Documents, URLs, Aliases, Projects, Task Lists, Tasks, Discussions, Topics, Replies, Categories and Attributes, Inbox/Project Tasks, Workflow Assignments, Workflow Attributes, Workflow Status, as well as Users and Groups.



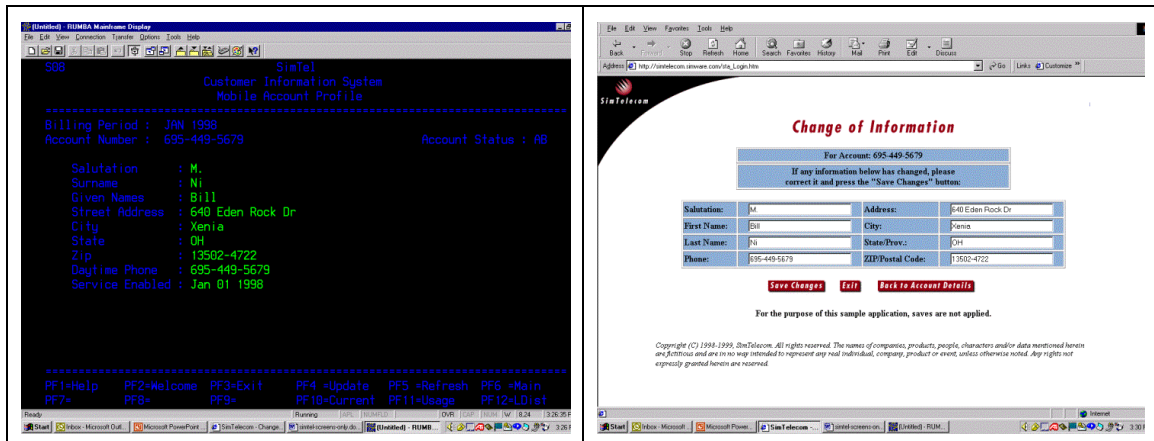
SOAPPlus® Livelink Module from Morningstar Systems

The SOAPPlus module for Livelink enables programmers to interface with Livelink from any language that supports HTTP socket programming. SOAP (Simple Object Access Protocol) requests can execute virtually all of Livelink's functionality and capabilities by posting a SOAP-formatted XML document to the Livelink server. After receiving the request, SOAPPlus fetches any values that the function needs, executes it, and returns the values in a SOAP-formatted XML response. SOAP requests can be made through HTTP port or HTTPS ports.

Morningstar Systems provides other complementary solutions for Livelink, including Content Mover, a utility to move content between Livelink instances, and the Multi-Company Support Livelink Module that allows one Livelink instance to support multiple user domains.

Legacy Access with NetManage Solutions

Creating a suitable user interface for external or occasional users can be particularly challenging when the underlying application is mainframe or host-based. Terminal emulation cannot compete with the simplicity and familiarity of a Web browser interface. Software from NetManage allows the back-end application complexity to be hidden from end-users, who are able to view and update information from one or more host-based applications through a Livelink interface.



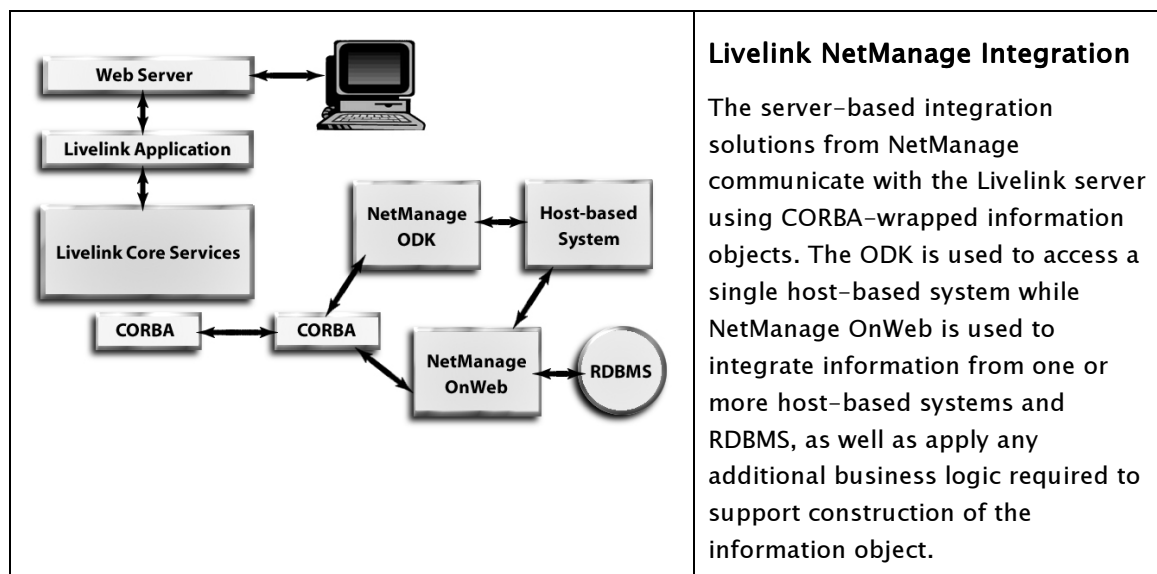
On the left, the operator accessing a host-based application requires PF keys and some training to navigate through the customer application. On the right, the browser-based Customer Profile update page allows the operator to perform the same function more easily and without training, as well as allowing customers to manage their own profile information at their convenience over the Internet.

Access to host-based systems from Livelink is provided by NetManage server-based development tools, the RUMBA® ObjectX Development Kit (ODK), and NetManage OnWeb. In addition, using RUMBA Browser Edition, host terminal sessions can be added as Web pages in myLivelink. This allows the myLivelink user to view and access all of the relevant information required to complete a business transaction, regardless of its source.

NetManage ODK for Livelink

The RUMBA ODK provides browser-based access and Web display of any single host system or database without client software being downloaded to the desktop. RUMBA® ObjectX™ combines a rich, object-oriented development environment for connectivity applications with custom application development tools.

The ODK includes a collection of JavaBeans as well as well-documented tools for selective re-engineering of AS/400 and mainframe applications to provide user-friendly graphical user interfaces (GUIs). With this kit, developers can enhance character-based legacy applications quickly and easily, hiding the complexity of the host-based application from the business user. Integration with Livelink utilizes CORBA to deliver “green-screen objects” to the Livelink server. The host information is delivered to the user in a Livelink page, hiding any underlying complexity associated with the legacy system.



NetManage OnWeb

The OnWeb Development environment has been extended to provide Livelink developers with a CORBA interface to access OnWeb’s information objects. The Livelink application can query these objects and receive data from one or more host-based systems or RDBMS. Business rules may also have been applied. All of this will be transparent to the end-user, who only sees integrated information in the Livelink page. Livelink developers can focus on the Livelink aspects of the application while the data access components are encapsulated within OnWeb information objects. This integration will also allow events within the Livelink environment to trigger actions or responses within OnWeb.

Livelink Modules

Livelink Activator™ for CORBA Development Kit

The Livelink Activator for CORBA Development Kit makes CORBA services from non-Livelink applications accessible to Livelink, allowing developers to create modules extending Livelink's functionality and integrate with other enterprise applications. These Livelink modules may be developed using any CORBA-compliant programming language, such as Java and C++. In addition, this adds distributed functionality to Livelink since CORBA services anywhere can interact with a central Livelink server.

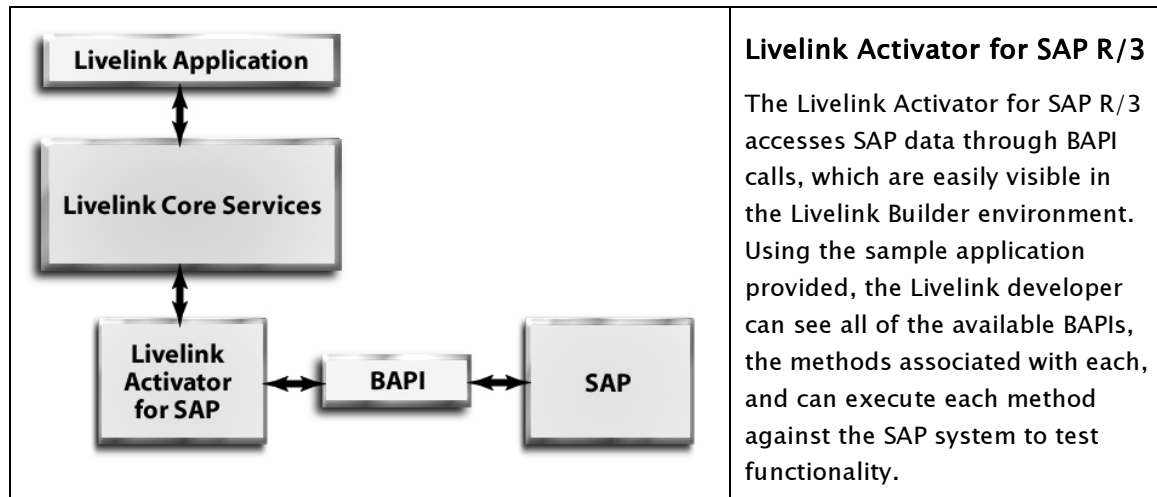
The Activator interface enables CORBA objects to behave as local Livelink objects even though they may have been created with Java and reside on remote network servers. The Activator includes an Interface Definition Language (IDL) compiler that allows developers to navigate the IDL structure and view its source using the Livelink IDL Browser. (IDL is a programming language-independent specification used to define the protocol between applications).

The NetManage solutions described earlier are an example of the use for which the Livelink Activator for CORBA Development Kit was intended, which is for calling any other API from within Livelink.

Livelink Activator™ for SAP™ R/3®

Each Livelink customer using SAP R/3 has some unique requirements that can only be met with a custom solution. Typically, these would include support for customer specific business processes that have been implemented in SAP. The Livelink Activator for SAP R/3 is available to permit a Livelink implementation to include SAP information in a Livelink page without having to understand the complexities of R/3 programming.

Just as Livelink has an API for accessing core services through a custom application, SAP has made available BAPIs (Business Application Programming Interfaces) to access most of the common objects such as Sales Order or Employee in the SAP R/3 system. This is the method recommended by SAP for custom application development. The Livelink Activator exposes these BAPIs for all of the commonly used SAP Business Objects within the Livelink Builder environment, making access to SAP information much easier for the Livelink application developer.



The Activator development environment includes a sample application that displays all of the Business Objects in the R/3 system being accessed, including custom objects created only in that R/3 system. Once the developer has chosen an object, all of the methods for that Business Object may be displayed and executed from the interface.

For example, if the Customer or Employee object is chosen, and the developer chooses the GetList method, all of the associated member records can be displayed. This interface has greatly simplified the process by which a Livelink developer can find, identify, and test the appropriate Business Objects and methods provided by SAP for inclusion in a Livelink application. This interface allows an application to both read from and write to the underlying R/3 system.

Server Integration Solution Summary

Vendor Product(s)	Function Provided	Livelink Integration	Enterprise Integration
Formark LiveViews	Develop custom interfaces for Livelink using Formark's Livelink COM API.	Encapsulates the Livelink API to provide a COM-compliant interface to Livelink repository components.	Can reference anything accessible to Active Server Pages.
Morningstar SOAPPlus	Develop Livelink interfaces from any language that supports HTTP socket programming.	Execute virtually all of Livelink's functionality by posting a SOAP-formatted XML document to the Livelink server.	Can process requests and responses from non-Livelink SOAP-enabled applications.
NetManage ODK	Display and update host information from a Web page in Livelink.	CORBA-wrapped Data Objects accessible from Livelink development environment.	Single host access to 3270-based, AS 400 or VTxxx applications, RDBMS, and COM components or JavaBeans.
NetManage OnWeb	Provide a single integrated view of multiple data sources and executed business rules to Livelink.	CORBA-wrapped Information Objects accessible from Livelink development environment.	Multiple host access to above, plus server execution of business rules.
Open Text Livelink Activator for CORBA Development Kit	Access non-Livelink CORBA services from Livelink.	Navigate the IDL structure and view its source. Displays the status of imported programs in the Livelink Importer Browser.	Foreign CORBA objects behave as local Livelink objects.
Open Text Livelink Activator for SAP R/3	Allows SAP data to be viewed and updated from Livelink.	Extensions to the Livelink SDK provide access to SAP data.	Any SAP R/3 BAPI or Remote Function Call can be invoked from within Livelink.

Conclusion

The ability to tightly integrate business processes and provide all of the necessary supporting information to end users is a key factor in driving efficiency in an organization's operational processes, as is the ability to extend these processes beyond the enterprise. Livelink, with the extensibility provided by its partner solutions and add-on modules, provides a platform by which:

- Customer, partner, and employee information in formats such as paper, e-forms, and interactive Web dialogs can be easily captured.
- The initial data capture can initiate a workflow that drives the transaction through the enterprise and into partner extranets where required.
- Documents required to support the transaction are securely stored in the Livelink repository and are made available at the appropriate steps.
- Non-Livelink structured information required to support the transaction can be delivered and updated through access to legacy systems using standards-based interfaces such as XML, CORBA, and COM.
- Feedback can be provided to the transaction initiator via the Web using Livelink's custom development tools.

The net result is improved information, speedier processing, more opportunities for collaboration both within and beyond the organization, as well as an extensible architecture with which to respond to new opportunities and challenges.

With the exception of NetManage OnWeb scheduled to ship in Spring 2001, the integrations and add-on modules for Livelink described in this paper are available now. Further possibilities will present themselves as Open Text partners continue to leverage new features such as the XML Workflow Interchange available in Livelink 9.0.

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