Fortis™
The ultimate decision making tool

INTEGRATING WITH FORTIS

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Westbrook
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White Paper

Contents

Introduction

Westbrook Technologies provides many opportunities for integrating your primary business applications with the sophisticated document-management capabilities of Fortis. This paper describes the integration possibilities and details the technical integration methods, such as Component Object Model (COM) or Open Database Connectivity (ODBC), that can be used to document-enable your applications and share data between them and Fortis.

Many integration scenarios can easily be accomplished by your existing IT technical staff. Others may require consultation with Westbrook Technologies' Client Services staff. And some integrations can only be performed by Westbrook Technologies personnel. Whichever integration scenario you decide best fits your business needs, Westbrook Technologies is ready to assist you in providing the necessary information and guidance in developing a custom solution.

Integration Possibilities

Software applications can interface with Fortis in three ways:

- Enabling integration solutions provide a direct connection between the primary application and Fortis, or use middleware to enable the primary application to communicate directly with Fortis. Enabling solutions usually involve document-enabling an application to allow end users to quickly retrieve the Fortis documents that pertain to a record in the primary application.

- Add-on solutions involve middleware or a database tool such as a trigger that interfaces between the primary application and Fortis and enables automatic updates of Fortis index data. Add-on solutions are typically data-related.

- Core solutions involve changes to the Fortis application itself and can only be performed by Westbrook Technologies personnel.

Enabling Integration Solutions

A direct connection between your application and Fortis often takes the form of a button, a menu option, or a floating toolbar in the primary application. When an end user activates the linked object, the code behind the object logs the user on to Fortis, opens a database, runs a variable Query, selects the results, and opens the document(s) in the Document Viewer.

The basic requirement for creating a direct connection to Fortis is that your primary application must support some level of customization so that the application is able to call Fortis. Interacting with Fortis can be done using one of the integration techniques supported by Fortis: COM, ODBC, the Web, database engine integration, or Dynamic Data Exchange (DDE). Using one of these techniques, the direct connection can pass a piece of data, such as a customer ID or an invoice number, from an open record in the primary application directly to Fortis. When Fortis runs the variable Query defined by the direct connection, this piece of data is inserted into the Query prompt and Fortis retrieves the document(s) corresponding to the primary application record.

A simple example of a direct connection is a View button in an accounting package. Clicking the View button passes the Vendor ID number to Fortis, which then retrieves the corresponding invoice.

If your primary application does not have scripting or other integration capabilities built in, a second type of enabling solution involves writing a piece of middleware, typically in Visual Basic, that acts as the go-between the primary application and Fortis. When an end user activates a shortcut key or floating toolbar, the middleware VB program extracts the necessary field value from the primary application and then performs the steps required to log on to Fortis and retrieve the related document(s).

Another enabling solution involves the use of an HTML URL hyperlink to access Fortis documents. If your primary application supports HTML, it can use the Web to access Fortis. When an end user clicks a button or activates a menu item in the primary application, a URL string is constructed by concatenating a series of variables. This string is then sent to the Fortis PowerWeb server, which opens the Fortis document inside the user's browser. If your primary application supports the integration of such controls as ActiveX, then users can view Fortis documents right inside your primary application without needing to open a browser. The link can bring up the Fortis Document Viewer within your application so that users never have to switch to Fortis.

Add-on Integration Solutions

Add-on solutions use middleware code or database tools such as triggers to perform data-related actions.

An example of an add-on solution involves the use of database triggers to verify index data, or update and delete data. Triggers execute a specified set of code when certain actions are performed on a Fortis database table. You can use database triggers for any data-driven purpose. Your only limitation is set by the capabilities of your database management system.

For example, a trigger can be set to access a corporate mainframe database whenever a Fortis document is saved to verify that the account number exists. If the account number entered as index data cannot be found in the corporate database an error message displays warning that an incorrect account number was entered.

An example of an add-on middleware solution created by Westbrook Technologies is QuickFind. Users can click a button on the desktop or activate a shortcut key to retrieve a document from Fortis. QuickFind opens a prompt where the user types in the relevant item of data, such as a Customer ID or account number. QuickFind then logs the user on to Fortis, opens a database, runs a variable Query using this data in the Query prompt and opens a document in the Document Viewer.

Core Integration Solutions

A core integration solution involves a change to the code of the Fortis application. Only Westbrook Technologies personnel can make a core change to Fortis. Core solutions usually involve a Software Engineer and a Quality Assurance Analyst or Technician spending at least a week designing, coding, and testing the enhancement. While not inexpensive, a core

solution can be exactly the custom solution required to make the most efficient use of your information.

Data Entry Assistant is a core integration solution that automates the indexing process by using data sources to store information about how to connect to the primary application acting as the data provider. Inside Fortis, the end user enters a unique value in an index field and activates Data Entry Assistant, which uses ODBC to connect to the primary application, extract the necessary index information, and paste this data into the corresponding Fortis index fields. Data Entry Assistant greatly decreases the time involved in indexing documents and guarantees accurate results, keeping Fortis index data in sync with an external ODBC-compliant data source.

An example of a core integration solution that is now part of the Fortis product is the use of the Properties fields in Microsoft Office products. Word, Excel, and Outlook each maintain a set of Properties about every document or file created (e.g. Title, Subject, Author, etc.). The core solution involved integrating these MS Office Properties with the Fortis Office option. When a user imports a Word, Excel, or Outlook document using Fortis Office, Fortis checks to see if the Document Type selected contains an index field with the same name as one of the fields in the MS Office Properties set. If Fortis finds a match, the data in the MS Office Property field is automatically entered into the corresponding Fortis index field.

Integration Techniques

Fortis provides a variety of methods that enable you to integrate Fortis with your other applications or with a Web site.

- Microsoft's COM is a widely-used component software model that provides a powerful yet easy-to-use platform for building distributed applications. COM has become the component standard in the past decade, and offers a considerable amount of stability in processing high volume data. Fortis supports a COM toolkit to enable access to standard Fortis objects.

- Fortis PowerWeb is a robust Web server that supports practically limitless customization and integration possibilities. Customizing PowerWeb is as simple as editing the PowerWeb template files using any standard text editor or HTML authoring tool.

- ODBC is an industry-standard API that enables applications to communicate with different database engines using the same source code. The goal of ODBC is to make it possible to access any data from any application, regardless of which database management system (DBMS) is handling the data. Fortis supports several database engines that are completely ODBC-compliant.

- Structured Query Language (SQL) is the standard communication language for relational database management systems (RDBMS). All the database engines supported by Fortis (SQL Server and Oracle) use SQL. Not all database back ends support the same functionality, but for the most part, core functionality remains intact across these engines.

- DDE protocol is a set of messages and guidelines that enables a conversation between two software applications. Fortis supports an extensive set of Request, Poke, and Execute DDE commands.

COM Integration

Fortis provides a COM toolkit that is accessible using any programming language that supports the use of COM objects, such as C++, Delphi, Visual Basic (VB), and Microsoft Office's VBA.

The Fortis API is provided as a COM in-process server and exposes a number of Fortis objects to enable external applications to access a variety of properties and methods. Other objects are created indirectly by referencing a property of an existing object or by referencing the result of a method call on an existing object.

All objects created indirectly maintain an internal reference to an Application object, and all database objects maintain an internal reference to a database object. This enables the client to continue to manipulate objects without maintaining explicit references to the higher level objects.

Many objects have properties or method results that take the form of collections. Collections implement the standard COM properties and methods. The default method permits the concise selection of items using numeric and character indices.

The Fortis COM model contains the following objects and properties. In the Fortis object hierarchy, an object is followed by the object type in parentheses. A pluralized object is a collection of the object types.

Application
    Databases (Database)
        Formats (Format)
        PickLists (PickList)
            Values (PickListValue)
        DocTypes (DocType)
          Fields (Field)
        RootFolder
           Documents (Document)
               Fields (Field)
               DocFile
                  Pages (Page)
           Folders (Folder)
        RootQuerySet
           Queries (Query)
               Prompts (Prompt)
               Tabs (Tab)
                  Conditions (Condition)
                  DisplayFields (DisplayField)
                  SortFields (SortField)
                  Results (Document)
           QuerySets (QuerySet)

A complete syntax of properties and methods for all these objects is available in the *Fortis Programmers Reference Guide*.

The Fortis COM API is typically used for batch importing and batch updating large amounts of data. Using COM, an external application can examine a list of Fortis databases, open a Fortis database, navigate the Folder and Query Set hierarchy, run Queries, view documents, add new documents, modify existing documents and data, and log on to different Fortis workstations. These COM objects, along with the ActiveX (magview.ocx) Fortis Document Viewer control already available, provide a powerful mechanism for integrating your applications with Fortis and developing custom business solutions.

Web Integration

Users access the Fortis PowerWeb server using a Web browser, not a Fortis client station. Therefore, the only requirement for a third-party application to access Fortis documents via the PowerWeb server is to construct a URL containing the path to the PowerWeb server and the necessary Fortis Query information to retrieve a specific document. The PowerWeb server then logs the user on to Fortis, runs the Query, and displays the document(s) found in the PowerWeb Document Viewer inside the user's browser. If the third-party application is not capable of dynamically calculating the necessary URL, middleware can be designed to perform this function.

You can customize the user interface in countless ways using the PowerWeb templates. However, you can personalize the interface for individual customers using the PowerWeb hyperlinks. You can automate the logon procedure and provide direct access to specific documents. Unlike using Fortis on a WAN where all databases display in the database list and the entire Folder hierarchy displays in the Document Explorer, PowerWeb lets you hide all other databases, Folders, Query Sets, etc., except those pertaining to a specific user. The thin client access is also much faster than a traditional LAN/WAN client access. Creating a custom interface that is unique for each user presents limitless business possibilities in servicing your customer base.

For more information on PowerWeb, see "Fortis PowerWeb: Product Overview," available from Westbrook Technologies' Knowledge Center.

Database Integration

You can integrate external applications directly with a Fortis database using ODBC and database engine integration techniques.

ODBC Integration

ODBC achieves open database access by inserting a middle layer, an ODBC driver, between an application and the DBMS. Function calls made to the ODBC interface are then passed to the ODBC driver for a specific database engine. Because Fortis supports ODBC-compliant databases, the data stored within a Fortis database can be accessed using standard function calls from ODBC-compliant applications.

You can use ODBC with multiple drivers and data sources to enable your application to access data simultaneously from more than one data source. The ODBC API is used both between the application and the driver manager, and between the driver manager and each driver accessing a different data source.

Using ODBC, you can enable programmatic access to the data in a Fortis database, external to Fortis. Typical ODBC operations involve updating a Fortis database record from an external data source or retrieving Fortis data for reporting purposes. ODBC enables the use of sophisticated reporting software to quickly access Fortis database tables.

ODBC is an extremely fast integration method because it provides direct access to the database. Other access methods, such as DDE, are slower because they must interact with the Fortis application before making calls to a Fortis database. However, ODBC integration with Fortis is only capable of updating or retrieving existing database records, not adding new ones; you must use the COM API to add new database records to Fortis using data from an external data source.

ODBC access to a Fortis database can add significant updating and reporting functionality to your Fortis system. However, you must have a thorough knowledge of how Fortis works internally to use ODBC properly. Incorrect ODBC calls to Fortis can potentially cause damage to the Fortis database, even to the point of corrupting the data beyond repair. For this reason, Fortis does not support additions or deletions of database records using ODBC; you can only modify or retrieve records. To assist you in developing ODBC integration with

Fortis, Westbrook Technologies provides a technical paper with complete descriptions of all Fortis database tables. Contact Westbrook Technologies' Client Services for details.

Database Engine Integration

In addition to the database-access functionality provided by ODBC, each individual database engine can provide extended access functionality to Fortis using techniques specific to that database engine, such as SQL integration. Whereas ODBC integration involves direct access to a Fortis database table from another application or reporting tool, SQL integration involves the use of tools that reside on and execute from the database engine itself, such as SQL triggers.

Triggers execute code on the database server whenever a Fortis database table is modified. Administrators can use triggers to implement sophisticated business logic, to calculate derived fields, or to perform extra data validation by verifying an entry in a Fortis database with an external master database. Another common use of database triggers is to maintain an audit trail of when a database record changed and who changed it.

Triggers can be defined to run immediately before or after a change is written to a database. Administrators can define multiple triggers for the same condition and specify the order in which they should execute.

DDE Integration

DDE protocol is a set of messages and guidelines that enables a conversation between two software applications. DDE can request an item of information from one application and display that information on a form or report in another application. DDE exchanges require three arguments to maintain a proper DDE connection:

- Application, which identifies the partner application to be included in the conversation

- Topic, which identifies the document or data file that is the target of the conversation

- Item, which identifies the information to be transferred between the two applications during the conversation

Once you establish a conversation with Fortis, you can call three basic DDE functions: Request, Poke, and Execute. The Request command requests data based on a given item. The Poke command sets data associated with a given item. The Execute command lets you carry out either a command or a set of commands in Fortis.

Using DDE, you can remotely control Fortis as a DDE server application from a DDE client application, either third-party software or your own custom application. The capabilities of the Fortis DDE API let external applications quickly and efficiently use the Fortis import, index, and retrieve functionality. These capabilities enable the administrator to customize and streamline the Fortis interface or automate certain processes. Also, by controlling the output of Fortis documents using the print, fax out, export, etc. functions, DDE enables data to be more effectively distributed within an organization.

DDE is similar to the COM API in providing access to Fortis objects except that DDE is a direct connection into the Fortis application. Fortis and the DDE application are both running on the desktop, and the DDE application passes calls to Fortis. Fortis performs the requested

function and passes data back to the DDE application. In contrast, COM executes an instance of Fortis but does not actually run the application on the desktop.

Summary

Westbrook Technologies provides many possibilities for integrating your primary business applications with Fortis. Enabling integration solutions, add-on solutions, and core solutions allow you to customize Fortis to fit your business needs. Enabling integration solutions provide a direct connection between the primary application and Fortis, or use middleware to enable the primary application to communicate directly with Fortis. Add-on solutions involve middleware or a database tool such as a trigger that interfaces between the primary application and Fortis and enables automatic updates of Fortis index data. Core solutions involve changes to the Fortis application itself and can only be performed by Westbrook Technologies personnel.

The Westbrook Technologies Client Services staff is always available to discuss your integration requirements and assess the types of solutions possible. We can offer assistance in helping you design and execute your own integration solutions, or we can send you a proposal for creating a core solution.

For additional information about Fortis or other Westbrook Technologies products, visit www.westbrooktech.com.