



Case Study:  
Spread COM

## Enterprise-wide Application for Single-Source Data Capture at ALM Services

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The logo for FarPoint, featuring the word "FarPoint" in a bold, black, sans-serif font. The letter "o" in "Point" is replaced by a blue sphere with a white highlight, giving it a 3D effect.

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## Introduction

This document describes the process that was used to develop an enterprise-wide, client-server application for ALM Services, Inc. (ALM) to use as single source data capture system. This application, named Enterprise Application or EA, was developed during the 11 month period from 1/1/98 to 11/30/98 and has been installed in all four ALM offices. EA has been designed to contain all the information ALM needs to run its business and positions ALM for the future by facilitating the re-engineering of its business processes. This report will document all aspects of the development process and will explain why this project was successful.

## Background

“In our Enterprise Application, we have used Spread ... and have found it will load a large amount of data, very quickly.”

Pete Cormier  
VP and Mgr, Information Technology,  
ALM Services, Inc.

ALM Services, Inc. is a wholly owned subsidiary of Arkwright Mutual Insurance Company formed in July, 1997 as a result of a strategic alliance with Liberty Mutual. ALM's mission is to provide property underwriting, loss prevention, claims management and sales support services exclusively to Liberty Mutual and its customers. ALM maintains offices in Waltham, MA, Atlanta, GA, Columbus, OH and Pleasanton, CA.

The development of ALM's Enterprise Application (EA) was initiated in January, 1998 at the direction of ALM's Chief Operating Officer. The project objectives are listed below.

- Develop a corporate data repository to support ALM's overall business needs.
- Replace an existing application (PROPLOC) which had been used to:

*Record very limited policy and location underwriting information and send reinsurance premium payment requests to Liberty Mutual reinsurance accounting.*

PROPLOC needed to be replaced because it was no longer suitable as a front-end data collection application. In order to effectively underwrite business, ALM requires a comprehensive, accurate application to maintain the specific location information required and provide access to all company personnel.

## Project Team

A new project team was created in January, 1998 which was comprised of a project manager (this writer), one full time developer, three coop students and one consultant. The project manager was the primary communicator between users and developers, and led the analysis, design and development phases. The project manager coordinated the testing efforts, developed the user manual and training materials, and delivered the training. The one full time developer functioned as the lead technical person and designed the technical architecture. This developer created all of the visual basic code and related stored procedures and was involved the technical design of every component of the application.

Two coop students from Wentworth Institute of Technology, Boston and one coop student from The University of Massachusetts, Boston wrote virtually all of the stored procedures used to convert data from the source system and populate the new database. The one consultant who was retained for the entire project, participated in the analysis, design and development activities and was responsible for the reinsurance component as well as all interfaces with Liberty Mutual.

At various times during the project, additional consultants were utilized to perform clearly defined tasks requiring specialized expertise such as data modeling, and database maintenance. Project team members also included ALM underwriting personnel including management, professionals and technical assistants as well as representatives from Liberty Mutual Reinsurance Accounting. Technical assistance was also provided by the ALM information specialist, as well as information services personnel from Arkwright Mutual Insurance and Liberty Mutual insurance.

## Project Phases

There were four main phases of the development cycle as outlined below:

1. Project Scope, High Level Business Requirements and Data Model Development (12 weeks)
2. Detail Business Requirements and Detail Technical Design (14 weeks)
3. Data Conversion, Development and Testing (13 weeks)
4. Training and Implementation (9 weeks)

This is a total of 48 weeks.

Each of these phases is discussed in more detail below.

### **1. Project Scope, High Level Business Requirements & Data Model Development**

The first stage of the project involved the definition of the project scope, high level business requirements and development of a corporate, logical data model down to the data element level. This stage lasted 12 weeks and required participation by business sponsors from each area of the organization including underwriting, engineering, claims, sales and finance. The project scope was defined by the Chief Operating Officer (COO) and the high level business requirements were defined by the ALM Underwriting Manager and reviewed and revised by selected underwriting professionals.

Employing the services of an experienced data architect consultant, ALM developed a logical data model which addressed the current and future needs of the organization. During the modeling process, support was provided by the Arkwright Mutual data architect who participated in numerous reviews during the development process. A key element of this process was the availability of the business sponsors from each area of the organization.

The tangible deliverables of this stage included:

- A document which described the scope and high level functional requirements.
- A fully normalized, logical and physical data model down to the data element level.

## **2. Detail Business Requirements & Detail Technical Design**

During this stage of the project the detail functional requirements were specified and the technical architecture and design was established. This phase lasted 14 weeks and involved discussions with underwriting technical assistants and personnel from ALM and Arkwright Mutual Information Services.

The decision to utilize Visual Basic 5.0 and SQL Server 6.5 on an NT platform was made during this phase. To enable development to more easily accommodate additions or changes to business requirements, and to ensure a more maintainable system, the project team decided to develop the application using the standard three logical layers of user, business, and data services. However, to keep the complexity of the system in check, the team decided to physically implement the system using a two-tier client-server approach rather than a three-tier approach. The separation of the application into the three logical service layers will facilitate any future attempt to re-deploy the system using true N-tier architecture.

The deliverables of this phase included a document containing the scope and functional specification, a technical architecture document and a prototype of the GUI functionality. These documents and the prototype were completed on June 1 and presented to users and senior management to validate the scope and requirements. The requirements were subsequently modified as a result of these discussions and were finalized by July 1. A detailed project plan was also developed at this time which identified all the project tasks.

### 3. Development & Testing

The development stage was a very iterative stage of the project which lasted 13 weeks and involved two simultaneous development efforts: conversion and application development.

During the data conversion component of this phase, the programs were developed which populated the database with data extracted from the source system being replaced: PROPLOC. The source system database contained 400 MB of de-normalized data. All policies with expiration dates greater than or equal to July 1, 1997 were selected and converted into EA. In some cases, this means EA has three years of history for a customer, since most ALM policies are written on an annual basis. EA currently contains 2,821 accounts, 4,641 policies and 79,431 locations. The data conversion was actually performed multiple times during this period (more than 10) and was subjected to user review throughout this phase.

The application was also developed during this stage which is comprised of the GUI, standard modules, class modules, various controls and the stored procedures called by the application. During this phase, deviations to the business requirements were not only made, they were encouraged from the user participants. Small components of the application were provided to users who evaluated functionality and provided feedback to the development team. Subsequent builds contained recently suggested modifications, and were continued to be evaluated. The application GUI is consistent with Arkwright Mutual IS GUI guidelines. The application also includes the procedures used to export data to external entities and import data from external entities.

The testing effort during this phase served multiple purposes. Users were given the opportunity to test various components of the system as they soon as they were developed. Users validated and often refined requirements, familiarized themselves with the application navigation and design, and identified problems. The result of this testing approach was that the application was tested and refined while the users gained a thorough understanding of the application.

#### 4. Training & Implementation

During this phase, the user manual was finalized and the training materials were prepared. MS Front Page was used to develop the user manual which contains instructions, guidelines, form shots etc. The manual is available to all users through a link to an Intranet Web site on the ALM network. The underwriting technical assistants from the Waltham office were the first group of users to be trained, which was done in early October. The training program and user manual were evaluated and modified before they were finalized and presented to the remaining users.

Lotus Notes was used to develop a conference database which is used as a vehicle for two-way communication. General bulletins are posted in one area of the conference and the other area of the conference is where users can post questions to the developers and all other users can view the questions and subsequent answers. This approach allows users to learn from each others questions.

### Functional Requirements

EA was designed to capture all the information required to underwrite a risk by while addressing all the limitations and problems associated with the system being replaced, PROPLOC. As a result EA contains 21 forms which are used to capture account, policy, location, and reinsurance data used by underwriting. EA also contains functionality to import information from Liberty Mutual applications and export data other entities including Liberty Mutual

EA is used to perform the following functions with respect to Policy and Location information:

- Capture coverages, limits, and deductibles that apply to a policy and a specific a location. While PROPLOC allowed limits and deductibles to be entered for only 6 different coverage types, EA allows the user to pick from a complete list of up to 65 coverages associated with the policy form being used.

- Capture address, construction, protection, and values for each location. While PROPLOC contained only 10 value types, EA allows the user to select up to 21 different value types.
- Calculate premium using the formula of Rate X TIV or calculate rate using the formula of TIV / Premium.
- Allocate policy premium to each location by using the ratio of TIV for the location to the TIV for the policy.
- Produce location schedule reports and spreadsheets in the format required by Liberty Mutual Policy Production Department.
- Capture endorsements, cancellations and renewals.
- Generate geographic exposure specific codes for EQ, Flood and Wind based on zip code
- Populate Zip codes where they are missing.

EA is used to perform the following functions related to reinsurance processing.

- Enter layers and ceded amounts for a reinsurance cession.
- Enter certificates, reinsurers, brokers, premiums and commissions related to a layer.
- Identify coverages and locations associated with a placement.
- Produce a report detailing the transactions related to a cession over time.
- Produce a 'box' report which reflects all participants of each layer.

EA is used to import data from the following Liberty Mutual systems

- Policy Information Control (PIC)
- Premium Data Entry System (PADES)
- Finalist Zip Code Verification

EA is used to export data to the following entities

- Liberty Mutual Reinsurance (URS)
- Liberty Mutual Corporate Reporting (CPR)
- Arkwright Boiler & Machinery Services (ABMS)

## Screen Sample

Here is a sample screen from the application:

The screenshot shows a software interface with a left-hand navigation pane and a main data display area. The navigation pane includes folders for Transactions, Account, Policy, Location, and Reinsurance. The main area displays data for 'Zonalick Industries' across three tables. The top table lists accounts with columns for Account #, Name, Address, City, State, and Zip. The middle table lists policies with columns for Policy #, Name, Eff Date, Exp Date, Type, Status, and TIV. The bottom table lists locations with columns for Location #, Name, Address, City, State, SIC, TIV, PL, and PP. A status bar at the bottom provides details for the selected account, policy, and location.

Acc #	Name	Address	City	State	Zip
1234567	Zonalick Industries	12 Franklin Park Drive	Albany	NY	93339
6034965	Zucchera-French Inc.	22 Fortuantao St	Franklin	CA	94598
4072135	Zutlaenta Companies	398 Johns Road	Bryantville	MD	63044

  

Pol #	Name	Eff Date	Exp Date	Type	Status	TIV
MC2-123-123123-123	Zonalick Industries	1/1/98	1/1/99	IM	Active	\$6,590,000
MC2-123-123456-123	Zonalick Industries	1/1/97	1/1/98	AREB	Cancelled	\$300,000

  

Loc #	Name	Address	City	State	SIC	TIV	PL	PP
1	Building 34	23 Fortner Lane	Waltham	MA	0112	\$1,000,000	Y	Y
2	Office Park	342 Wilmer Drive	Waltham	MA	6321	\$4,550,000	Y	Y
3	Office Bldg	World Trade Center Conx	Manhattan	NY	6321	\$710,000	Y	Y
4	Warehouse	4 Nyag Way	Toledo	OH	6321	\$730,000	Y	Y

Acc #: 1234567 | Pol #: MC2-123-123123-123 | Pol Name: Zonalick Industries | Loc #: | Layer #: | Cert #:

Figure: Application Screen with Spread

## Technical Specifications

EA was developed using Visual Basic 6.0, SQL Server 6.5 and DO 2.0 as the data access method calling stored procedures on NT. The upgrade from Visual Basic 5.0, which had been the original language of choice, came early enough in the process to convert to the newer version with no impact to the project schedule. EA contains 434 stored procedures. There were 107 stored procedures used to convert the source data and populate the database. There are 327 procedures called by the application. The EA executable is 2.2 MB and uses 21 forms, 3 standard modules, 47 class modules and 4 user controls. EA contains 26,396 lines of code (executable statements); this count excludes blank lines, headers and comments.

EA utilizes eight (8) different 3rd party software products, including FarPoint Spread. ALM's lead developer researched the best available desktop tools in the market and recommended the tools which were acquired and integrated into the application, at very economical prices. We adopted the philosophy to purchase a product, instead of build ourselves if a better tool existed.

## Critical Success Factors

There were four reasons why this project was successful.

**1. Senior management established a reasonable scope.** The COO set a clear scope at the outset of the project and was available at key moments during the life of the project to clarify and refine the scope as needed.

**2. Sponsors focused on daily tasks.**

As the primary business sponsor, the ALM Underwriting Manager was continually available during this project and focused the analysis efforts on the daily tasks and duties of professional and technical underwriting personnel. This approach allowed the team to identify opportunities for re-engineering and focus on ways to make the application do work for the underwriters.

### **3. Highly motivated project team.**

The individuals that made up this team developed into a cohesive group with a singular vision of developing and deploying a superior application in a short amount of time. Like many other successful projects, significant extra effort was often expended to meet internal milestones. Consultants were employed as their specific business and technical expertise was needed. Other participants included sponsors from both ALM and Liberty Mutual Reinsurance Accounting as well as IS personnel from ALM, Arkwright Mutual and Liberty Mutual.

### **4. Software Products.**

The products used (VB 6.0, SQL Server) enabled the application to be developed quickly, allowed other products to be integrated easily and specific products (Spread) provided functionality that did not need to be developed.

## **Using Spread**

In our Enterprise Application, we have used Spread with VB 6.0 in an unbound mode. We have found it will load a large amount of data, very quickly. Several of our grids routinely return hundreds and thousands of records in a few seconds. The column sort feature has been especially useful since it allows our users to sort on any column in the grid. We have also found that the ability to reference actual row numbers has made it much easier to manipulate rows and columns, compared with other products we have tried that use relative reference numbers. We have also developed type-ahead functionality in conjunction with Spread's search capability which allows a user to enter as many characters as is known, to locate a specific account.

## About the Authors

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## More Information

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FarPoint Technologies, Inc. is a leading provider of professional solutions for enterprise-wide development in Microsoft Visual Studio .NET, Microsoft SharePoint, Microsoft BizTalk, COM, ActiveX and other enterprise platforms. FarPoint set the standard for spreadsheet components with the world's best selling spreadsheet component, Spread, and continues to set high standards in component architecture, offering products across a range of platforms.

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