

WHITE PAPER

Achieving ROI with Software AG's EntireX

Sponsored by: Software AG

Stephen D. Hendrick Kathleen E. Hendrick

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INTRODUCTION

There is currently a tremendous emphasis on application integration. IDC's 2002 *Enterprise Integration Survey* indicated that 55% of end users would currently rate the importance of enterprise integration as "critical" or "extremely important." While this finding alone demonstrates the commitment that organizations have to application integration, when these same end users were asked to rate the importance of enterprise integration two years from now, the response jumped to 85%.

Organizational commitment to application integration is not surprising. Despite the tremendous benefits that have resulted from the rapid evolution of IT, many organizations now find themselves facing a software complexity crisis. The origin of this crisis is the same rapid evolution of IT that continues to bring dramatic increases in automation. Consequently, the software complexity crisis is largely unavoidable. Some of the more pressing issues that IDC believes characterize this complexity crisis include:

- ☒ System heterogeneity, which builds from the origin of mainframes through the addition of midrange Unix and Windows servers to desktops and remotely connected devices, thereby expanding the number of operating systems and protocol stacks that need to be supported
- ☒ Programming, which originated as a procedural process model but now has largely been replaced by declarative or event-driven process models that are easier to componentize and can be dynamically bound at run time, thereby better facilitating application integration
- ☒ Processing, which originated with monolithic processing that was mainframe centric but now is widely distributed across server farms that employ a combination of partitioning and replication techniques to share workloads while remaining synchronized
- ☒ Latency, which originated with OLTP and batch processing but now has expanded to include near-real-time processing and related queue-based asynchronous processing models

While we believe that most organizations will relate to these four issues, confirmation of this software complexity crisis was again found in our 2002 *Enterprise Integration Survey*. We asked end users to identify the two most challenging aspects of their integration projects. The results are shown in Table 1.

It is not surprising to see that the integration of new technology with legacy systems is the most pressing integration challenge. Most legacy systems are monolithic and are not architected or coded with integration with other systems in mind.

It is also predictable that the number or type of systems to be integrated ranks as the second most pressing integration challenge. The complexity of integration projects is directly related to the scale and diversity of the systems to be integrated.

TABLE 1

TOP 5 ENTERPRISE INTEGRATION CHALLENGES

Q. What are the two most challenging aspects to your integration projects?

	% of Respondents
Integration of new technology with legacy systems	38.1
Number or type of systems to be integrated	32.3
Coordination between internal groups	27.1
Lack of necessary skilled resources	20.3
Technological maturity	19.9

n = 291

Base = end users

Note: Multiple responses were allowed.

Source: IDC's *Enterprise Integration Survey*, spring 2002

Given these findings, there are at least three key design points that emerge for application integration products:

- Connectivity and interoperability through adapters to a wide variety of legacy systems (the definition of a legacy system being any operational system that is part of the enterprise)
- Ability to move data between applications or data stores with complete user control over data granularity, data integrity, and latency
- Ability to map data from one format to another and perform the physical transformations

While there is no shortage of application integration products in the market, the number of products that excel at these three integration needs is limited. However, one such product is Software AG's EntireX.

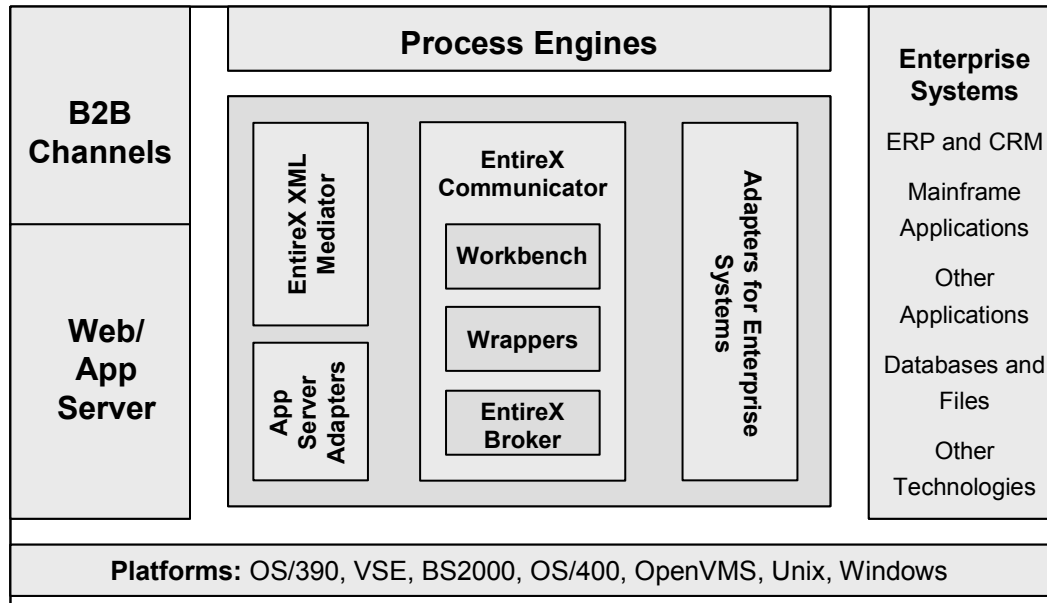
SOFTWARE AG'S ENTIREX

EntireX is Software AG's premier enterprise application integration (EAI) product. Designed to handle a wide range of integration needs, EntireX is particularly well suited for integration involving legacy systems, packaged software, and Web services. EntireX works extremely well in an environment that is host to other Software AG products such as Adabas and Natural, but it is also true that a significant number of EntireX implementations are running in non-Software AG environments. The software space in which EntireX must operate is full of old, current, and emerging standards. This can make integration a slow and costly endeavor. However, to remain competitive in business, organizations must be able to offer Web services and collaborate electronically with partners and suppliers. EntireX is prepared to address these challenges with a solution that can fill many integration needs quickly and cost-effectively. The goal of EntireX is to enable EAI to be achieved in shorter time frames with products that require little training or retooling. To this end, EntireX is designed with a graphical interface and wizards that allow an integration solution to be built primarily via point and click.

The XML format is leading the software industry at this time, and with good reason. It reduces collaboration complexity, can contain both data and information about data, and eliminates vendor lock-in. EntireX is XML compliant and able to exchange both XML and non-XML documents. Through the use of adapters and wrappers, XML and future standards that may emerge can be easily integrated into the EntireX architecture. Figure 1 is a diagram of the EntireX architecture.

FIGURE 1

ENTIREX ARCHITECTURE



Source: Software AG, 2002

EntireX exists at the heart of an organization's application integration efforts. EntireX has the capabilities to integrate all possible end points an organization may have present in its applications and services mix. Within EntireX, there exist three components that work together to deliver many integration scenarios. Those three components are detailed in the following sections.

ENTIREX COMMUNICATOR

The EntireX Communicator is an integration server composed of three components: the EntireX Broker; Wrappers, which package an endless array of message types for integration; and the Workbench, for wrapper and proxy development. A distinguishing feature of EntireX Communicator is that it is not invasive to the applications being integrated. An application business function is added to EntireX Communicator as a service, and once added, it can be integrated into virtually any internal or external system simply by generating a new wrapper. This process requires little coding and no changes to the source or target applications and can be performed through the use of wizards to make the process straightforward. As a result, there is little training required for developers and no retooling necessary.

EntireX Communicator works with any development environment and has specific bindings for COM, ActiveX, Java, and CORBA. EntireX Communicator covers all major platforms including mainframe, midlevel, and workstation platforms. Communications can be synchronous, asynchronous, or conversational and can handle request/reply and message queuing.

EntireX Communicator enables organizations to perform any type of integration required, whether it is connecting disparate back-end systems, linking legacy systems to packaged applications, or exposing mainframe functions to the Web. Both XML and non-XML formats can be processed, and preexisting adapters available through EntireX can be leveraged.

ENTIREX XML MEDIATOR

The EntireX XML Mediator is the XML broker component for the EntireX architecture. It accepts, routes, and processes XML for an organization. EntireX XML Mediator is a Web application and is designed to reside both on the Web and on a single host machine. Requirements for EntireX XML Mediator are a Web server and, because it is a pure Java application, a JVM. The EntireX XML Mediator contains components that perform functions on an XML message. The major components are: Discovery, Validator, Aggregator, Logging, and Transformer. Central to the operation of the EntireX XML Mediator is the EntireX XML Mediator Sequencer. The Sequencer executes the EntireX XML Mediator components in a user-defined sequence. When an XML message is received by EntireX XML Mediator, a Mediator message is created that contains the XML message and a properties area. The properties area can be used at the discretion of the developer to store numeric variables, logical variables, document values, or any other required value. When EntireX XML Mediator receives a message from the Internet, it is processed following the user-defined sequence. For instance, an XML message can be accepted, combined with other XML data, validated and transformed into a format a target application can understand, and routed to that application. A user may specify that a sequence splits into parallel, concurrent paths so that results from several external applications can be merged back into the original XML message. EntireX XML Mediator also accepts internal documents and transforms them to XML format for distribution over the Internet. This can be achieved through one of four gateways: email, HTTP, EntireX Broker, or EntireX XML Wrapper.

ENTIREX ADAPTERS

EntireX Adapters provide prebuilt application interfaces for integrating front-office and back-office systems both internally and with external partners. EntireX includes a number of standard adapters, supporting a broad set of application resources such as CICS, SAP, PeopleSoft, RDBMS, and WebSphere MQ (formerly MQSeries).

EntireX offers the following adapters:

- File system adapters to read and write information to the file system
- Program adapters to start external programs
- Socket adapters to read information from or write information to a socket
- RDBMS adapters to connect to relational databases
- Enterprise resource planning (ERP) and customer relationship management (CRM) package adapters, such as SAP, Siebel, and PeopleSoft
- CICS adapter to integrate with CICS applications
- APPC adapter for LU6.2-based applications (such as SAP's R/2) to serve as the gateway to a wide range of mainframe environments (CICS, IMS)
- CICS 3270 Bridge to support the construction of distributed applications that interact at the programmatic level with existing CICS applications without modifications to these legacy systems

EntireX is a robust middleware solution with the capabilities required to act as a hub for mission-critical systems. EntireX provides load balancing across replicated servers and the ability to evenly distribute load across multiple servers or use as few servers as possible. EntireX includes automatic replication with the ability to set limits on the number of replications. EntireX handles synchronous, asynchronous, and conversational communications and features optional persistence. With options such as internationalization and security, EntireX is a robust product that enables organizations to implement diverse integration solutions quickly and cost-effectively as well as expand into the realm of XML.

ROI CASE STUDY METHODOLOGY

IDC employed a structured interviewing methodology to collect return on investment (ROI) qualitative and quantitative data for Software AG customers using EntireX. Four case studies are presented. The same methodology was employed for all case studies. The information contained in these case studies represents the experiences of end-user organizations with EntireX but in no way amounts to an endorsement of EntireX.

ROI COMPONENTS DEFINED

Net quantifiable benefit (NQB) is the benefit to the organization from the implementation of EntireX. The term *implementation* can include the relative benefits in the development, deployment, operation, and maintenance of EntireX applications. NQB components can be either positive or negative. NQB can be either direct, in terms of incremental revenue generated, productivity gained, or expense saved, or indirect, from the redeployment of resources to tasks that the organization would alternatively have had to hire new and like resources to perform. All net quantifiable benefits are expressed in U.S. dollars rounded to the nearest \$1,000.

Net quantifiable cost (NQC) is the difference between the total cost and expenses associated with EntireX and the similar costs associated with the most likely alternative solution (which can be none at all). Typical NQC components include software licensing and maintenance costs, product consulting costs, training and education costs, and any added hardware costs associated with implementing EntireX. All net quantifiable costs are expressed in U.S. dollars rounded to the nearest \$1,000.

ROI CALCULATION

ROI is the ratio of total net quantifiable benefit divided by total net quantifiable cost. This ratio is equal to 1 (or 100%) when net quantifiable benefits equal net quantifiable cost, which represents a break-even condition. A ratio of less than 1 reflects a negative change, and a ratio of greater than 1 reflects a positive change.

ROI is frequently expressed as a percentage, in which case the ROI result is multiplied by 100. The percentage ROI calculation can thus be represented as:

$$\text{ROI} = (\text{NQB}/\text{NQC}) \times 100\%$$

Other ROI terms and information that may be provided in a case study include:

- The *ROI factor* is the ratio of NQB to NQC (NQB/NQC) expressed as a real number instead of a percentage.
- The *ROI \$* is the difference between NQB and NQC (NQB-NQC).

Each case study will reference the annual net quantifiable benefits and net quantifiable costs as well as the annual and cumulative ROIs over time. The reason for this is that in the early stages of some EntireX implementations, there is development cost but no benefit, which makes the ROI undefined even though there is a negative net ROI cash balance.

OTHER ROI CONSIDERATIONS

ROI is also a relative measure in that the benefits and costs of EntireX are generally compared with those of an alternative solution — typically, what the organization had been doing to address this business problem before the implementation of EntireX. It follows that NQB and NQC will be defined differently for each interviewee situation, and in some cases, the results will not be as quantifiable as in others.

Increased productivity of a workforce is often a result of implementing new software technology. Where productivity gains are achieved, IDC assumes that the resulting "found time" is put to use in some other productive use within the organization or leads to a reduction in force.

ROI DATA COLLECTION METHODOLOGY

To collect the data, IDC conducted telephone interviews in September and October of 2002. The purpose of the interviews was to understand the business problems the organizations were seeking to solve, the role of EntireX in solving these business problems, and the ROI associated with the implementation of EntireX.

Not all benefits or costs are easily quantifiable. However, the approach to ROI taken in this paper seeks to identify and quantify all significant net benefits and costs. If during the course of the interview, we encountered significant net benefits or costs that the interviewee did not feel comfortable quantifying, our policy was to terminate the interview and retire the case study.

IDC established a series of predefined questions for use in the ROI interviews. These questions were designed to enable the collection of complete ROI data as well as to provide a consistent framework for analyzing the ROI data. These questions enabled IDC to understand the organizations' general approach to development and deployment as well as evaluate the relative attributes, benefits, and costs associated with EntireX.

All data collection and ROI calculations associated with these case studies were performed by IDC analysts.

ROI TIME FRAMES

The time frame for assessing ROI varied from case to case. The shortest ROI time frame was four years, and the longest was eight years. IDC prefers ROI time frames that span three or more years.

The number of historical and forecast years in the time frame as well as the overall length of the time frame was left up to the discretion of each company. While IDC believes that longer time frames result in an ROI with increased accuracy, it is also clear that the proportion of historical data to forecast data also influences accuracy. Therefore, the parameters for ROI analysis (start year, end year, and any special analytical techniques) will be presented in each case.

The time frame for every case included two or more years of historical data and one or more years of projected data. Projected data is based on the trends suggested by the historical data after adjustments for management expectations regarding how benefit and cost components would change over time.

IDC did not adjust this data for present values due to additional assumptions that would have to be made regarding future values and the extent to which it would cloud the analysis. Therefore, all projected quantitative data is based on 2002 constant dollars.

FOREIGN EXCHANGE RATES

Case studies in this paper include companies based in the United States, Germany, Great Britain, and Canada. All financial analyses presented in this paper are expressed in U.S. dollars (USD). Consequently, historical and forecast foreign exchange rates have been used to convert currencies to USD. The annual foreign exchange rate used for historical years (1997–2001) is the average of all daily noon buying rates for the Federal Reserve Bank of New York. The 2002 foreign exchange rate is the exchange rate for the first trade day of the year. An October 2002 foreign exchange rate is used as a proxy for 2003. This projected 2003 foreign exchange rate is also used for the years 2004–2006.

The only exception to the above rules concerns the euro, which was introduced in 1999. If company data is stated in euros prior to 1999, the 1999 average foreign exchange rate for euros is used as a proxy.

CASE STUDIES

Four distinct and unrelated companies using Software AG's EntireX were interviewed for this study. The resulting case studies are presented in the following sections.

CASE STUDY: APOLLO 2000

COMPANY OVERVIEW AND BUSINESS ENVIRONMENT

Apollo 2000 Ltd. is an electrical retailer in Great Britain. A privately held company, Apollo 2000 has revenue of approximately \$72 million. Apollo 2000 has 12 superstores distributed throughout the country and as such is a second-tier regional multiple. Apollo 2000 has built a reputation for delivering product as promised to its customers. Consumers are the primary customers of Apollo 2000, with some coverage in the commercial sector. Seeking to expand its service to the customers, it has recently developed and offered a Web site where customers can place orders online.

CURRENT IT ENVIRONMENT

Apollo 2000 is an organization focused on delivering product to its customers. Although it has systems in place to enable it to perform all the necessary business operations, it does not support a full-scale IT department of its own, employing only two IT resources. Apollo 2000 has chosen to outsource its development requirements to both service providers and vendors to meet its needs. It has an "open retail" system that is the equivalent of an ERP system that was provided by a third party. This ERP system is networked throughout all 12 stores, and the supplier also provides networking support. Development of a retail Web site was performed by three vendors to Apollo 2000's specifications.

EMERGING NEEDS AND ROLE OF SOFTWARE AG ENTIREX

Apollo 2000 was looking for ways to cost-effectively expand its business. It chose to develop and offer a Web site to operate as a virtual store to allow its customers to research and order products online. The advantage the Web site offered Apollo 2000 was the ability to add a new channel without having to add administrative costs, additional personnel, or significant maintenance costs. Three vendors were selected to aid Apollo 2000 in the development of the virtual store, which is hosted by an Internet service provider (ISP). The ERP provider integrated the new Web site into the back-end ERP system while a local HTML vendor provided the Web-site design.

Software AG developed the operational internals of the Web site, linking the Web site to the ERP back-end system. EntireX was an integral component in the operation of the Web site. EntireX facilitates linking the Web site to the back-end system, ensuring that no product delivery promises are issued that cannot be fulfilled. The integration to

the back-end systems through EntireX required no changes be made to the existing applications, saving time and dollars. EntireX also provides messaging to manufacturers and distributors to enable back ordering to be done immediately. Finally, using the most current standards available, EntireX wraps messages in XML for delivery to the open retail back end. The use of XML will allow Apollo 2000 greater flexibility in the future as it expands its electronic partner connections.

ROI ANALYSIS

The ROI time frame for this ROI analysis was 2001 through 2006. Therefore, this analysis includes two years of historical data and four years of projected data. The analytical ROI approach used for Apollo 2000 differs from the other cases and is a marginal analysis. The decision to look at ROI from a marginal standpoint stems from the new and incremental nature of Apollo 2000's virtual store and the inability to disaggregate store profits down to the EntireX component level.

NET QUANTIFIABLE BENEFITS

Determining the net benefits that Apollo experienced as a result of using Software AG's EntireX product required what is termed a *marginal ROI analysis*. While it is true that benefits were gained through the virtual store, it is difficult to ascertain what percentage of those benefits were attributable to EntireX only. To perform the marginal analysis, revenue from the virtual store is attributed to the benefits as a positive value while all other costs of developing and operating the virtual store, excluding EntireX, are subtracted from that value. Therefore, the components that factor into NQB include revenue, cost of goods sold, product distribution costs, and non-EntireX application costs (development, deployment and maintenance, software hosting fees, and software change requests). The remaining value is the benefit attributable to EntireX alone. The total net benefit projected for the EntireX investment over the ROI time frame examined was just over \$820,000.

NET QUANTITATIVE COSTS

The net quantitative costs incurred by the virtual store on the EntireX investment were composed of development, maintenance, and licensing costs. All development costs were incurred in 2001, and license costs were amortized from 2001 through 2004. Therefore, the cost profile declined over time. Total net quantifiable costs projected over the ROI time frame were just over \$102,000. There were no additional projected costs accrued for training or hardware on this project. Net quantifiable costs peak in 2001 and diminish every year thereafter.

RETURN ON INVESTMENT

Given the small profit margins recognized in the electronics retail industry, ROI occurs over a longer period than found in other markets. It is not unusual to experience slim product margins and high start-up costs. Consequently, the path to profitability relies on increasing product volume, time, and tight cost controls.

During Apollo 2000's ROI time frame, the marginal ROI grew from -1,217% in 2001 to 23,781% in 2006. The marginal cumulative ROI was 801% over the ROI time frame, and the marginal cumulative ROI \$ were just over \$718,000.

BENEFITS ASSOCIATED WITH USING SOFTWARE AG ENTIREX

By using Software AG EntireX, Apollo 2000 has achieved the following:

- A self-service sales channel that has increased the range of customers buying from Apollo 2000
- The ability to message distributors and manufacturers to effect immediate back ordering
- The expansion into XML formatting

- A new sales channel without the standard administrative and people costs
- An independent sales channel that operates whether or not the back-end store systems are running
- A new revenue stream

CASE STUDY: POTASHCORP

COMPANY OVERVIEW AND BUSINESS ENVIRONMENT

PotashCorp is a Canadian mining and manufacturing company that manufactures and distributes three main product lines: potash, phosphates, and nitrogen. These components are used to supply three markets: fertilizer, feed, and industrial. PotashCorp is the world's largest integrated producer of these products. Currently, the fertilizer market accounts for roughly two-thirds of the company's business, with the remaining third being split between feed and industrial. However, the direction of the company is to increase the markets for feed and industrial because they are viewed as more stable and less cyclical than the fertilizer market. Product operations are located in Canada, Chile, United States, Brazil, and Trinidad, and the two main corporate offices are located in Saskatoon, Canada, and Northbrook, Illinois (outside Chicago). PotashCorp is a publicly traded organization, has 5,400 employees, and generates revenue of approximately \$2.5 billion per year.

CURRENT IT ENVIRONMENT

Historically, PotashCorp took a decentralized approach to its organization, with separate corporate functions for each of the product lines. Hence, each product area had its own IT group. However, over two years ago, a change in upper management precipitated a move to a more centralized approach, with a single IT group to service the needs of the entire organization. The IT group is located in the two main offices in Saskatoon and Chicago and has 55 employees. Over the course of changing from a decentralized to a centralized model, PotashCorp took time to evaluate its overall enterprise architecture. A project known as Enterprise-Wide Architecture Study (EWAS) was undertaken and led to new projects. During this period, PotashCorp changed from developing most software internally to purchasing more third-party software to meet new company objectives. PotashCorp is heavily invested in IBM systems and Adabas and Natural for its applications. However, the push into third-party software introduced Oracle Financials and a need to integrate legacy data across new packaged systems.

EMERGING NEEDS AND ROLE OF SOFTWARE AG ENTIREX

PotashCorp has been growing by acquisition. Through these acquisitions, a variety of systems have been rolled into the enterprise architecture. At the same time, PotashCorp decided to begin adding packaged applications to the application mix to update existing systems. This included packages such as general ledger and accounting.

When the decision was made to centralize corporate operations, a mandate was issued to consolidate the organization onto one system. The EWAS project and the addition of packaged software into the applications mix highlighted a need to integrate data across the organization. Consequently, PotashCorp began an evaluation of integration products that would work within the existing enterprise architecture. Message-oriented middleware (MOM) was determined to be necessary to perform the integration required, and a number of alternatives were considered.

After careful consideration, PotashCorp decided that Software AG's EntireX was best suited to its environment. This choice was based on the EntireX wrappers into the message broker as well as overall compatibility with the underlying PotashCorp system. Moreover, although other solutions may have been implemented more easily, EntireX offered other potential uses for the future that the others did not have. EntireX

has made the integration process for PotashCorp highly streamlined by significantly reducing development time frames for both incoming and outgoing data interfaces. Moreover, EntireX was an integral component in developing and delivering the customer self-service Web site. This Web site has reduced customer queries and put a wealth of information into the hands of PotashCorp's customers. The accounting and transportation information is delivered to the customers in real time as internal systems are updated. This has allowed customer service representatives to concentrate on more urgent issues and generated customer goodwill from some of PotashCorp's largest customers.

ROI ANALYSIS

The PotashCorp ROI analysis extended over a period of six years. Development of the system began in 1999 and was completed in 2000. Actual net quantitative benefits and costs are stated for 2001 and 2002. Projected net quantitative benefits and costs are provided for 2003 and 2004. This analysis was extended through 2004 in order to capture certain changing parameters of the ROI model that PotashCorp believed would only stabilize after 2004.

NET QUANTIFIABLE BENEFITS

PotashCorp experienced benefits through the use of Software AG's EntireX in two key areas of the organization.

First, EntireX was essential in enabling PotashCorp to develop the customer self-service Web site. Use of EntireX allowed PotashCorp to directly interrogate its legacy systems to expose data to its customers in real time. This enabled PotashCorp to better meet the needs of its customers and therefore remain competitive. Despite the incremental utility of this self-service business model, PotashCorp did not expect the volume of business partner queries to rise to more than 75 per month once the system reached maturity. Given the modest productivity savings achieved per query, the net benefit from this capability only amounted to about \$4,000 over the ROI time frame.

More important, however, were the benefits recognized through the integration of its legacy systems with newly implemented packaged software applications. This integration was accomplished through a series of inbound and outbound interfaces between the legacy systems running on the mainframe and newly acquired distributed systems such as Oracle Financials. Outbound interface development time was reduced from 13 weeks down to 3 weeks through the use of EntireX, and inbound interface development time dropped from four weeks down to one. On the inbound side, it now takes only one hour to build an EntireX interface. These productivity gains in development also applied to the maintenance of these interfaces due to the simplicity of the interface code. The net benefits to PotashCorp for EntireX interface development were just over \$279,000, and the net benefits associated with maintenance were just over \$344,000.

For the ROI time frame examined, overall net quantifiable benefits for the customer self-service Web site, interface development, and maintenance totaled just over \$627,000.

NET QUANTIFIABLE COSTS

The total net quantifiable cost to PotashCorp over the six-year ROI time frame included cost components for developing the EntireX customer service and EAI applications, hardware costs, EntireX licensing and maintenance costs, and training costs.

Development and maintenance of the customer service application amounted to just over \$52,000. Development and maintenance of the EntireX integration with PotashCorp's packaged applications totaled nearly \$96,000. EntireX licensing costs were nearly \$333,000 over the six-year ROI time frame. Hardware costs were a nominal \$1,660, and training amounted to just about \$27,000.

Overall net quantitative costs to PotashCorp were expected to be just over \$509,000 for the ROI time frame. Net quantifiable costs peak in 2000, diminish every year thereafter, and stabilize by 2003.

RETURN ON INVESTMENT

The ROI recognized for Software AG's EntireX by PotashCorp is 123%, which means that each \$1.00 invested sees a return of \$1.23. The cumulative ROI \$ over the ROI time frame are just under \$118,000. While this is a low ROI relative to some of the other case studies, there is more here than meets the eye. If the ROI is tracked year by year over the ROI time frame, IDC found that the ROI is in fact increasing each year, with a projected ROI of 245% in 2004. Therefore, PotashCorp is clearly reaping significant financial benefits as a result of its EntireX investment, and an ROI study executed in the future is likely to show a far greater ROI benefit.

BENEFITS ASSOCIATED WITH USING SOFTWARE AG ENTIREX

By using Software AG EntireX in its customer self-service Web site project and EAI, PotashCorp has achieved the following:

- Dramatic reduction in interface development time for EAI initiative
- Reduction in development and maintenance costs
- Increased customer awareness and satisfaction through customer self-service Web site
- Reduction in routine customer queries to customer service group
- Greater interoperability with the underlying PotashCorp architecture

CASE STUDY: NORTHAMERICAN LOGISTICS

COMPANY OVERVIEW AND BUSINESS ENVIRONMENT

northAmerican Logistics (nAL) is a division of SIRVA, which encompasses the Allied, North American, and Global van lines companies as well as Transguard Insurance and SIRVA Relocation. The mission of nAL is to provide a competitive advantage to companies that have products of high value or that require "high touch" in terms of light assembly, warehousing, distribution, or in-transit merge. Consequently, the majority of its customer base is manufacturers. nAL has 1,800 employees and revenue of approximately \$550 million. nAL was established in the 1980s to meet the needs of customers whose specialized products would be more efficiently transported via a national network of facilities and vehicles. To enable the many specialized services that accompany this type of handling, nAL provides software services that enable organizations to have visibility to their products across nAL's pipeline, the ability to share information with all parties in the pipeline, and the ability to execute transactions.

CURRENT IT ENVIRONMENT

SIRVA has 250 IT employees, of which 100 are focused on nAL IT activities. Currently, the organization is in the process of outsourcing much of its noncore IT efforts. By yearend, approximately 50% of this IT workload will have been transferred either offsite or offshore. This initiative is designed to allow the organization to focus on core and newer technologies while at the same time taking advantage of the cost savings that the outsourcing can provide. While 60% of the development work performed by IT consists of broad-based initiatives or new functionality, a full 40% is driven by customer needs. The company receives a large number of customized requests from its customers that drive functionality, and most of these involve collaborative efforts between manufacturers and their suppliers. EntireX by Software AG has played an integral role in facilitating that collaboration through data integration.

EMERGING NEEDS AND ROLE OF SOFTWARE AG ENTIREX

In the 1990s, nAL customers began to request additional information beyond basic transportation details. Its customers were interested in being able to access serialized item-level detail. As a result, two new systems were launched to work with the existing specialized transportation system: BOS (an asset management system [AMS]) and a product tracking system (PTS). BOS and PTS feed the AMS system that is the "technical center of the universe" for nAL. In the mid-1990s, a product to communicate between the mainframe and servers in the field was developed in-house. However, this system was slow and unreliable. nAL determined it was necessary to update or replace this system with one that was faster and more stable.

EntireX was selected to develop a new communications link that met nAL needs for stability and speed. However, the needs of nAL customers continued to grow as did the uses for EntireX. In the late 1990s, nAL developed its first conversational connection to the Web. This connection was used to allow customers to see mainframe data related to their shipments and products. By using EntireX, nAL was able to make mainframe data available in real time without rebuilding mainframe functionality on the Web or altering back-end applications. Moreover, customers are provided the abilities to perform functions, such as registering orders, against back-end systems. The projects initiated were performed much more quickly and cost-effectively and provided nAL a competitive advantage by providing high levels of service to their customers.

ROI ANALYSIS

The ROI time frame for nAL was a four-year period from 2000 to 2003. Actual benefits and costs are provided for 2000 through 2002. Projected best quantitative benefits and costs are provided for 2003, due to the stability of the application that would be achieved by the end of 2002. However, the changing nature of nAL's IT environment did not enable projections beyond 2003.

NET QUANTIFIABLE BENEFITS

From a net benefits standpoint, nAL characterized its benefits in terms of cost avoidance. EntireX enabled nAL to expose existing mainframe data and functions to its customers without having to rebuild functionality on the Web. The bidirectional nAL system provides reporting and transaction capabilities in real time, offering excellent service to nAL customers. Additionally, the communications link developed through EntireX provided greater speed and reliability than was previously available.

This was viewed as a huge savings, both costwise and timewise. nAL believes that application development and maintenance using EntireX is 20% more efficient than the alternatives it was considering. With a projected 319,000 hours of development required over the four years, using EntireX allows a cost savings in development alone of over 60,000 hours. The net quantitative benefits associated with development of the EntireX application amounted to just under \$1,082,000 of cost avoidance over the four-year ROI time frame. Net quantitative benefits associated with maintenance of this application were just under \$433,000. Therefore, net quantifiable benefits totaled nearly \$1,515,000 over the four-year ROI time frame.

NET QUANTIFIABLE COSTS

nAL incurred net costs in the areas of software licensing, maintenance, and training. Software licensing and maintenance costs amounted to just over \$255,000 for the four-year ROI time frame. Training costs for EntireX were nearly \$21,000 and were incurred in 2002 and 2003. These training costs are a combination of the cost of a Software AG EntireX trainer as well as that for nAL internal training. Total net costs for nAL were just over \$276,000 over the ROI time frame.

RETURN ON INVESTMENT

The ROI experienced by nAL is 549%. This means that for every \$1.00 invested in bringing EntireX into nAL, a net benefit of \$5.49 was achieved. This is an excellent ROI that can be attributed to solid benefits offset by reasonable costs. While the 549% ROI is a cumulative metric for all four years, the annual ROI is 323% in 2000, 386% in 2001, 863% in 2002, and 737% in 2003. The dramatic increase in ROI in 2002 and 2003 is a result of front-end loading of EntireX license and maintenance costs in 2000 and 2001 as well as increasing cost savings in application development.

BENEFITS ASSOCIATED WITH USING SOFTWARE AG ENTIREX

By using Software AG EntireX, nAL has achieved the following:

- Reduced development times for placing mainframe functionality on the Web
- Reduced development and maintenance costs
- Better stability and reliability in its communications link
- Highly increased collaboration between all parties with which nAL interacts
- A competitive edge through innovative and effective tracking and management systems

CASE STUDY: DEUTSCHE BAUSPARKASSE BADENIA AG

COMPANY OVERVIEW AND BUSINESS ENVIRONMENT

Established in 1933, Deutsche Bausparkasse Badenia AG is the fourth-largest savings and loan institution in Germany. It is a privately owned organization with a savings portfolio of \$30 billion and a balance sheet total of over \$4.5 billion. Deutsche Bausparkasse Badenia AG has approximately 900 employees and 1,500 field representatives that sell its products. Offering products to primarily individuals rather than commercial customers, Deutsche Bausparkasse Badenia AG does business in Germany and France. Though the bulk of its business is in personal savings and loans for construction, Deutsche Bausparkasse Badenia AG offers a wide range of financial and banking services.

CURRENT IT ENVIRONMENT

Deutsche Bausparkasse Badenia AG has one central IT department with approximately 70 employees. There are five development groups, plus individual groups to handle networking, strategic planning, and computer operations. The majority of the software applications run on IBM OS/390 platforms. However, Deutsche Bausparkasse Badenia AG is moving toward a client/server, PC-based orientation. Bank personnel tie into mainframe applications through PCs that deliver a more user-friendly graphical user interface (GUI). Most applications are custom developed by the IT group, but packaged software is used for accounting and financials. One challenge faced by Deutsche Bausparkasse Badenia AG is the exchange of data with its field representatives. To date, this has been done through the exchange of disks or other portable media. To increase the efficiency of these exchanges, Deutsche Bausparkasse Badenia AG is developing a portal through which field representatives can gain online access and electronic exchange of contract data.

EMERGING NEEDS AND ROLE OF SOFTWARE AG ENTIREX

In 1996, Deutsche Bausparkasse Badenia AG initiated a project to reengineer a loan administration application. A key part of this project was the development of a client/server platform to support not only the loan administration application but also subsequent client/server projects. Consequently, the loan administration application would serve as a prototype for other applications that would use the same client/server platform. The objective of this architectural change was to retain flexibility in the IT infrastructure. The combination of retaining existing mainframe applications and extending GUI-based interfaces to PCs was seen to provide the greatest flexibility. The benefits from this client/server platform were better applications for bank personnel with more complete information, easier-to-use interfaces, and a simplified development framework for developers. To successfully implement the client/server platform, communication had to be established between the mainframe applications and the client/server PCs. EntireX was selected to provide the mainframe-to-PC integration. The client/server platform was successful as was the use of EntireX, which required no changes to the underlying mainframe applications.

The project provided a uniquely competitive advantage to Deutsche Bausparkasse Badenia AG because it is one of few banks with such an application. It also enabled Deutsche Bausparkasse Badenia AG to hide the complexity of its mainframe applications from bank personnel, making their jobs easier, while providing the benefits of access to mainframe data and processes in real time, enabling bank personnel to respond to customer needs in a more timely and comprehensive way. Developers benefited from the separation of application logic and presentation. Consequently, productivity gains are expected to be realized for both bank personnel and developers.

A newer project referred to as eBIS is providing an Internet portal to allow field representatives to access back-end systems and data from the field on a laptop or mobile phone. Moreover, it enables applications to share data internally and over the Internet. Using eBIS, Deutsche Bausparkasse Badenia AG can receive documents in any format and convert them to XML documents. It is projected that in 2003 there will be up to eight applications up and running in eBIS and that it will have a significant impact on field representative and bank personnel productivity. Field representatives will be able to access data from the mainframe over the Internet through the portal as well as benefit from highly automated processes for managing documents and contracts. Through eBIS, Deutsche Bausparkasse Badenia AG has identified the workflows that can be most easily automated and that result in the highest benefit. Once documents are scanned into the system, they are processed by an automatic workflow without requiring intervention. The implementation of Software AG products in eBIS allowed Deutsche Bausparkasse Badenia AG to begin use of XML, and the EntireX product facilitated communication with the bank's back-end mainframe systems and enabled object-to-relational mapping.

ROI ANALYSIS

The ROI time frame for this case spanned eight years from 1996 to 2003. Part of the reason for this extended time frame was the need to capture complete development costs for the client/server platform project, which was initiated in 1996. This ROI analysis therefore includes four years of development cost (1996 to 1999) before any net benefits were observed. Development on the client/server platform was completed in 2000. eBIS project development occurred in 2000 and 2001. Only one year of projected data (2003) was included in this case study.

NET QUANTIFIABLE BENEFITS

The benefits recognized by Deutsche Bausparkasse Badenia AG through the use of EntireX fall mainly into the area of productivity gains. On the client/server platform project, the productivity gains expected for bank personnel ranged from 10% initially in 2000 to a projected 17% in 2003. Given the large number of bank personnel who use the client/server platform, the net quantitative benefit over the ROI time frame is just over \$6,744,000.

Developers also realized productivity gains by developing with EntireX. Although there was a brief learning curve for developers on the first EntireX project or two, which resulted in some productivity loss, this loss was more than offset over time by the productivity gains from the more efficient EntireX development environment. The net quantitative benefit over the ROI time frame for developers is just over \$362,000.

Deutsche Bausparkasse Badenia AG is also just beginning to see productivity gains for the eBIS project. Productivity gains for eBIS come from three sources: the internal automation of document management, end-user use of portal-based applications, and the ability to redeploy administrative staff.

The internal automation of document management by scanning documents improved the productivity for those staff associated with contract management. However, because the number of staff in this area of the bank is small, the net quantifiable benefit was only just over \$12,000 during 2002 and 2003.

The net quantifiable benefit to field representatives by portal-based access to applications on the mainframe is far more significant. Deutsche Bausparkasse Badenia AG projects that portal application use by just 250 field representatives will result in a productivity gain of just over \$483,000 in 2003, the first year that portal-based applications are available.

Staff redeployment as a result of efficiencies in the document management workflow is projected in 2003 and will result in a net quantifiable benefit of just over \$77,000.

Total net quantifiable benefits originating during the years 2000 to 2003 were just under \$7,680,000.

NET QUANTIFIABLE COSTS

The net costs incurred by Deutsche Bausparkasse Badenia AG were grouped into two categories: client/server platform costs and eBIS costs.

Client/server platform costs included EntireX licensing and maintenance, application development, and professional service costs. The development costs associated with the client/server platform were significant, amounting to just under \$5,140,000. EntireX software licensing and maintenance amounted to just under \$298,000. Professional service costs for the client/server platform project totaled just under \$55,000. Overall, client/server platform net quantifiable costs totaled just over \$5,492,000 across the ROI time frame.

eBIS costs included EntireX licensing and maintenance, application development, hardware, training and education, and professional service costs. Development of the portal was largely outsourced. Consequently, professional service costs for eBIS were just over \$133,000. Internal eBIS development costs were just under \$70,000. EntireX software licensing and maintenance amounted to just over \$64,000, which represents an incremental increase to the capacity of the licenses purchased for the client/server platform. Training and education costs were just over \$9,000, as were hardware costs for an additional server. Overall, eBIS net quantifiable costs totaled just under \$286,000 across the ROI time frame.

The combined net quantifiable costs of the client/server platform and eBIS amount to just over \$5,778,000 over the ROI time frame.

RETURN ON INVESTMENT

The net benefits and costs associated with this case study are considerable. Although the cumulative ROI associated with the client/server platform and eBIS projects as of the end of 2003 was only 133%, there are important factors that need to be understood.

The ROI time frame for Deutsche Bausparkasse Badenia AG was 1996 to 2003. With a protracted development cycle taking place from 1996 to 2000, significant costs were accrued early in the project without any offsetting benefits. However, the far-reaching impact of the client/server platform and eBIS projects is expected to drive dramatic benefits beginning in 2000 and increasing rapidly through 2003. By 2001, net costs have diminished dramatically and net benefits are increasing near \$1,000,000 per year. With expected net benefits of nearly \$3,677,000 in 2003 and minimal net costs, the client/server platform and eBIS projects are positioned to drive substantial ROI increases going forward.

It is also important to point out that the client/server platform and eBIS together represent a major IT investment, and over the long term, they are expected to contribute major IT-related productivity gains. Therefore, despite the modest ROI of 133% expected in 2003, the cumulative ROI \$ are projected by 2003 to be \$1,902,000. This represents a substantial benefit to the overall financial performance of the IT group, which should persist in future years.

BENEFITS ASSOCIATED WITH USING SOFTWARE AG ENTIREX

By using Software AG EntireX within the client/server platform and eBIS projects, Deutsche Bausparkasse Badenia AG has achieved the following:

- The ability to efficiently service field representatives in remote locations through the eBIS portal
- The ability to exchange contract documents with field representatives, thereby increasing productivity dramatically
- The provision of up-to-date information for field personnel who previously could be handicapped by outdated information
- The introduction of XML into the Deutsche Bausparkasse Badenia AG software systems, allowing for greater flexibility in exchanging information with a wide variety of users now and into the future
- The simplification of application entry and operation for bank personnel
- Significant productivity gains for both bank personnel and IT developers
- The introduction of a development framework that separates application logic from presentation, streamlining the development process

CONCLUSION AND RECOMMENDATIONS

C O N C L U S I O N

The compelling benefits described in each of these cases are strikingly similar. These benefits center around the ability of EntireX to be a highly cost-effective solution to tactical and strategic real-time integration between new applications and legacy systems.

From our interviews, it is clear that application integration was the primary objective. Although the relative age and maturity of the IT systems across these cases vary, each company's objective was based around a need to build interoperability between standalone legacy systems and newer client/server or Web-based applications. Besides being a focal point of these cases, this objective also proved to be the leading integration objective cited in our recent survey-based research.

The key attributes of EntireX that supported this application integration and that resonated across all of these interviews included support for a wide variety of legacy systems, ease of application development, guaranteed message delivery, and strong control over latency.

Because all of the cases examined here involve legacy system interoperability, the ability of EntireX to easily interface with legacy systems was critical. It therefore seems clear that the EntireX adapters, which provide interoperability with many leading legacy assets including databases, transaction monitors, and packaged applications, factored heavily into the decision-making process. Although every middleware product provides adapters, several interviewees noted that their decision to purchase EntireX was influenced by the superior capabilities of the EntireX application programming interface (API) and adapters. The implication is that Software AG has done a good job at building EntireX and its API, which translates into more infrastructure and less coding. At the same time, selected EntireX adapters, especially those for Natural and Adabas, were mentioned on several occasions as being far superior to any competing products.

The ease of application development using EntireX was especially compelling. Although most of the companies interviewed did look at competing middleware products, the extent to which EntireX marginalized the coding effort was a key criteria that influenced the decision in favor of EntireX. This simplicity in code is born out across the ROI analyses in this paper in which EntireX application development is never the key cost component. This simplicity in coding also leads to faster deployment. Although we were not typically able to quantify this faster time to market, most interviewees indicated that this faster time to market was advantageous either from a competitive standpoint or an ability to meet changing business requirements. Another derivative benefit from this simplicity in coding is the resulting ease in application maintenance due to the reduced quantity of custom coding.

Guaranteed message delivery and control over latency are important features of middleware products. Although little mention was made by the interviewees regarding the importance of guaranteed message delivery, most noted that it was a required need that EntireX supported.

All of the companies also expected near-real-time message delivery. Although it is a common feature of middleware products, the importance of this functionality was key in facilitating the near-real-time synchronization of data updates, allowing data latency to change from weeks to seconds. Although we were unable to quantify the benefit in risk reduction attributed to this near-real-time data synchronization, it is likely to be considerable from a risk management perspective.

RECOMMENDATIONS

The ROIs across these four case studies ranged from a high of 801% for Apollo 2000 to a low of 123% for PotashCorp. Two of the four case studies measured ROI \$ savings of more than \$1 million.

IDC has built a composite ROI across these four companies that takes into account the unique ROI time frames for each company. The composite ROI was created by aggregating the cumulative net quantifiable benefits and dividing these by the aggregated cumulative net quantifiable costs. Using this approach, we found that the composite net quantifiable benefits are just over \$10.6 million, the composite net quantifiable costs are nearly \$6.7 million, the ROI \$ savings over the composite ROI time horizon are nearly \$4 million, and the composite ROI is 160%. IDC believes that this is a representative ROI that takes into account the nuances of each case and seeks to reasonably account for the ROI contributions of each case study.

The legacy orientation reflected across every case in this paper provides an important context for evaluating the composite ROI. Legacy systems are generally in maintenance mode and are characterized as mature systems that in some cases are nearing retirement. As integration projects that revolve around legacy interoperability

are pursued, the ability to drive a composite ROI of 160% is particularly satisfying, given the maturity of these key legacy components, which generally are functioning at a high level of operational efficiency. Due to the fact that ROI is a relative measure that is derived from comparing actual results to a baseline, the degree of sophistication of the baseline heavily influences the magnitude of the ROI. Mature systems are generally characterized by having optimized operations, which equate to challenging baseline measurements. Therefore, Software AG should be immensely satisfied at these individual and composite ROI results. Every interviewee expressed a high level of satisfaction with EntireX during the interview process, before any ROI results were known. It is our belief that these interviewees and the companies they represent will not be surprised at these findings and that these results will reinforce the positive perspective that they already have regarding EntireX.

This collection of case studies suggests that EntireX can address a wide range of integration needs. Integration with legacy systems appears to be a strong point of EntireX, and especially a strong point if legacy Software AG products are involved. However, the features that enable EntireX to stand out include a robust feature set derived from capabilities that include synchronous and asynchronous processing support, guaranteed message delivery, and heterogeneous system support. These infrastructural features combined with a well-conceived API and adapters lead to simplified and reduced coding. The net result is that EntireX is a highly effective tool for addressing a wide range of enterprise integration needs.

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