In Pursuit of the Extended Enterprise: Integrating CRM, ERP and e-Business Applications
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Executive Summary

To truly prosper as an e-business, the organisation must become an Extended Enterprise. It must develop a network of relationships encompassing customers, suppliers, partners and their own internal activities. This network must be accessible, interoperable, scalable and efficient. Ultimately, this network will determine the success or failure of the e-business.

This network covers all key business functions. Hence, there is a need to integrate the primarily inward facing applications such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM) and legacy systems, with applications that provide outward facing connectivity to suppliers, partners and customers.

Central to the proposition of an integrated, all-encompassing network is how the organisation defines and implements its Customer Relationship Management (CRM) strategy. CRM is the kingpin of the e-business as it brings together all customer information in one ‘virtual’ environment, creating a single picture of each customer: who they are; what they buy and when they buy it; how much they have spent in the past; what problems they might have had, and so on.

In the world of e-commerce, understanding the customer is the prerequisite of success, so CRM (and, indeed, its evolution into true e-CRM) is the most critical consideration of any organisation at present. Unfortunately, implementing a CRM strategy is not easy.

CRM is not an application rather an amalgam of several separate best-of-breed applications - databases, customer service systems, sales and order tracking, accountancy packages, etc. - that integrate to create the master management system.

This document describes how DataMirror’s Enterprise Application Integration (EAI) solution, Constellar Hub, allows organisations to integrate all application and data components to form a fully functional CRM system - a powerful, data-rich infrastructure that is the foundation of a successful e-commerce architecture.

By the same token, this document also describes how other key systems, such as ERP applications, can be brought together as a coherent whole, thus creating a seamless corporate IT environment from which the Extended Enterprise can achieve its commercial goals.

1 What is the attraction of CRM?

In the early 1990s, companies began to replace the bespoke mainframe applications which performed back-office functions with packaged software suites. The rationale was that mainframe applications were too large and cumbersome to respond to rapidly changing business conditions. Enterprise Resource Planning (ERP), as it became known, tapped into the mood of the time as it offered integrated management of a company’s administrative and supplier-related functions.

Customer Relationship Management (CRM), which first gained prominence in the mid-1990s, was the logical progression of ERP as it was designed to enhance a company’s front-desk activities.
In Pursuit of the Extended Enterprise - Integrating CRM, ERP and e-Business

Customer interaction entered a new era with the advent of call centres supported by CRM software which allowed companies to direct marketing activities and build relationships with distinct groups of customers. CRM also promised to improve the profitability and effectiveness of the company by automating many processes, making better use of available staff and reducing overall costs.

CRM offers a utopian answer to many challenges. With an integrated CRM solution companies can detect changes in customer buying habits, understand their needs faster than the competition and respond to customer demands in double-quick time.

Equipped with a CRM system, the company’s sales and marketing staff can react to trends detected by their data warehouse by offering or deleting special promotions, adding or removing products from the website. Because a CRM system permits the construction of data warehouses, populated with cleaned and aggregated data, staff can also analyse up-to-date data in near real-time with no waiting for lengthy periods to pass between batch downloads.

An integrated CRM system consolidates corporate information, so the response times to customer questions are greatly reduced. It becomes possible to answer a customer’s question in one telephone call, instead of having to call the customer back later. A by-product of this speed of flow is that the information itself, being current, has greater value.

2 The pitfalls of CRM

It is clear that, to be effective, a CRM system must integrate seamlessly with the company’s data warehouse. Indeed, to fully live up to expectations, the CRM system must integrate with all corporate applications and systems external to the company. This includes ERP and e-commerce applications.

Unless disparate systems are interconnected, the information they contain cannot be leveraged to best advantage. Decision makers using them to compile reports may find that data conflicts, doesn’t make sense or, even worse, is just not be available. So, in order to provide the highest quality and most timely information, a business must combine information stored in both front-office and back-office systems.

It is a relatively simple matter to integrate the information in the front-office systems because their architectures are very similar. The real challenge is to combine and integrate the information stored in the back-office systems with that of the front-office systems. This is because back-office systems are usually very different, from the hardware used to the way data is represented and stored.

CRM is an external facing system that consolidates the back-office information into a format acceptable to the outside world. It is a unique combination of back- and front-office. It follows that a CRM system implemented without integration to the back office is not the external window to the corporation that it needs to be. Indeed, CRM’s value is greatly diminished if it is not integrated with back-office systems.
The challenge of integrating front- and back-office is considerable. The back-office systems are often old or proprietary technology. The CRM solution is typically new technology, usually UNIX-based client-server systems. Seamlessly integrating these disparate systems into a scalable, clean and manageable whole is the obvious route forward. But before we consider how to merge contemporary and traditional architectures, it is vital to consider the impact of e-commerce on the established business model.

3 Enter the Internet

Whilst companies are right to concentrate on the issues answered by CRM, the Internet and related technologies have opened the door on limitless growth opportunities. Unfortunately, CRM and the Internet are not natural bedfellows.

When today’s CRM solutions were first developed, even the most perceptive of suppliers did not realise that the Internet would become a vehicle for such tumultuous change in the way people and businesses interact. The Internet presents incalculable opportunities but it also heralds the arrival of new rules of engagement which IT strategists ignore at their peril.

The Internet embraces the globe so the traditional constraints of time and distance are negated. In the US, for example, over 70 million households now have access to the web, a level of acceptance which is still growing and is being duplicated in other countries.

Any enterprise with a presence on the web has access, in theory at least, to a limitless and diverse population of prospective customers, any of whom could demand a product or service at any time, day or night. Potential markets are enormous and, if the e-business can implement an IT strategy which efficiently serves the buying population, unprecedented revenue growth is possible.

4 e-commerce Challenges

The revolution is impacting both the supply and demand chains by creating opportunities to radically reduce the cost of doing business while improving sales and service. The New Economy also presents significant commercial challenges, each of which places a corresponding demand on the IT infrastructure of the e-business.

For example, the buying population of the Internet is infinitely dispersed - culturally, geographically and linguistically. As a group, e-customers are unpredictable. They have an unlimited array of needs and tastes. They browse and shop when it suits them. They have an immeasurable number of choices yet finite tolerance for unresponsive service. There is an attendant need, therefore, for the company’s CRM system (or more precisely, e-CRM system) working with the data warehouse to view each buyer as a unique opportunity.

In the Bricks and Mortar economy, accurate and up-to-date information about customers is prerequisite for effective CRM. The same is true under the rules of the New Economy. Indeed, the ultimate goal of e-CRM is to give the appearance of perfect understanding of the needs and buying habits of each individual e-customer.
On the supply side, deregulation of markets has greatly increased the potential for competition. Almost any company, or indeed individual, who has access to a minimum of resources can set up a credible enterprise which can sell its products or services over the web.

In every market, it seems, new entrants appear daily. In banking, financial services, retailing, travel and media, there is only one game in town and everyone wants a seat at the table. This frenzied activity is matched only by the tenacity of the competition.

Every scrap of market share is contested which places a burden on the efficiency of the e-business. Hence, the company’s ability to grow profit margins through cost control becomes a central issue. Again, it is clear that only by integrating key applications - including ERP and CRM - can the e-business hope to deliver the appropriate, accurate and up-to-date information upon which decisions can be made with confidence.

5 Multi-Channel Strategy

There are additional hurdles to overcome for those established businesses that have become used to traditional channels-to-market.

As the Internet revolution gathers pace, more transactions will take place over the web year-on-year with the knock-on effect that growth in established customer interaction channels will decline.

This is not to say, however, that the Internet will totally replace other customer interaction channels. Telephone call centres, shopping malls, mail order catalogues and person-to-person contact each will still have a place in the New Economy, but each one’s respective importance will change. These channels will coexist in much the same way that TV, radio, cinema and theatres share the entertainment market.

Businesses can no longer depend wholly on traditional marketing and response centres, based on CRM systems, for handling demand. So there must be an element of restructuring, to integrate the Internet as part of an all-encompassing multi-channel marketing strategy. Without an e-CRM system, the company may find that customers decide its is too costly, too difficult or, indeed, too impersonal to deal with.

6 Loyal Customers

The Internet has increased the number of customer touch-points that a company can use to connect with its customers. But in an environment where competitors are only a click away, the standard of customer service becomes a heightened priority.

With today’s technologies, the Internet is a relatively impersonal channel of communication. There is minimal personal contact between customer and e-business, so brand loyalty comes under threat.
In the e-commerce world, retaining existing customers is recognised as the bedrock of success. Research has revealed that the cost of gaining a new customer is six times higher than the cost of retaining an existing one.

This realisation has focused companies’ thoughts on customer retention. The unanimous conclusion is that companies must make it easy for customers to do business. If the customer is satisfied with the service provided, he or she is more likely to stay loyal to the brand.

Sharing every piece of relevant data - and, therefore, building an accurate picture of each individual customer - over a whole array of platforms is a prerequisite for brand loyalty. However, as well as keeping existing customers happy, the organisation must also explore new opportunities and endeavour to cultivate new sources of brand loyalty.

But, of course, the more touch-points the customer has, the more effort the company has to put in to integrating its customer-centric data. Securing brand loyalty in the e-commerce world does not come easily.

7 Speed of Thought

Gaining access to the right data is only half of the challenge. When serving customers via the Internet, the speed by which people and applications can access the right data is equally important.

Organisations have traditionally supported customer service operations with a mixture of service levels, ranging from the slowest (batch) to the fastest (real-time). These have typically been defined by the importance the organisation attaches to the information.

For example, a retail bank needs to have the ability to send real-time information to the ATM networks to prevent fraud. However, many back-office account reconciliation functions only require overnight batch processing.

As new technology portals open, the requirement to marry the two extremes of service levels increases. No one would expect every business process to change to support the new generation of real-time systems. However, there is a need for on-line channels to perform business functions in real-time, based around a legacy of batch-oriented back-office systems.

8 The Challenge in a Nutshell

Amidst this confusing array of challenges, companies are struggling to create architectures that enable them to both maintain existing systems and capitalise on the wealth of information therein, whilst creating a fully integrated e-business platform which treats each customer as an individual.

Enterprises the world over are attempting to bring some order to the chaos and achieve the highest levels of customer service by implementing the logical successor to CRM, that is e-CRM. Furthermore, the need to integrate other back- and front-office applications - to create the elusive Extended Enterprise - has become a burning issue.
Yet the suggestion that organisations can make the fundamental changes to internal systems to support a new way of business is not feasible in the short-term and can easily create a massive risk in managing the change.

Balanced against this is the fact that e-business customers are demanding faster service and greater responsiveness than ever before. To be globally competitive, the e-business must offer uninterrupted 24x7 service, which means that speed is has never been more critical to an organisation’s ability to trade. For any organisation with e-commerce aspirations, there is a pressing need to act.

9 From Chaos to Clarity

IT analysts Arthur Anderson have encapsulated these myriad, interwoven issues in the phrase Enterprise Application Disintegration which it describes as ‘... a consequence of the ad hoc, opportunistic, market-driven evolution of information technology and the only partial foresight of human thinking.’

‘EAD exists because humans are by nature partial in vision, unsystematic in thinking, short-term oriented, impatient, urgency-driven, and generally more tactical than strategic in action and implementation. Therefore, EAD is, at root, a problem of bad Enterprise Architecture.’

If this definition was designed to make people sit up and take notice, it certainly achieves its objective. But the report from which it originates also gives an indication of the rewards for those companies prepared to confront the issues.

‘The vision of e-business is the concept of ‘The Virtual Multi-Enterprise’; and its promise is the realisation of that concept, with the expectation of incalculable economic, operational and cultural benefits. These benefits are summarised in the ideas of revenue enhancement, operational cost reduction, and increased capital effectiveness through increased capital efficiencies and decreased capital asset intensities.’

e-business, says the report, ‘implies the instantaneous, or near real-time, integration of all data and applications both within the enterprise and between collaborating enterprises.’ It also notes that whereas companies used to achieve uniqueness through bespoke application development, e-businesses, using packaged applications, achieve uniqueness through the arrangement of key components.

The report’s most apocalyptic pronouncement is that the promise of e-business will never be realised without a solution to the problem of EAD. Thankfully, a way forward is proffered ‘If EAD is the problem, Enterprise Application Integration is a solution.’

10 Straight Through Processing

Before we look at the role of EAI in creating the Extended Enterprise, it is important to consider two concepts that are central to the optimism of the Arthur Anderson report - Straight Through Processing (STP) and Zero Latency Enterprise (ZLE) - which, it says, form the operational foundations of a successful e-business.
The report defines STP as ‘... the idea, methodology, and technology of capturing discrete and semantically atomic units of data and information once and only once throughout the enterprise to avoid recapture, re-entry, and redundancy at various points of need in the enterprise.’

For many companies, this concept is light years away from the present. The typical organisation will have front-office systems - such as CRM - for customer-facing activities; middle-office systems for functions such as risk management, and back-office systems - such as ERP - for handling payments, settlement, accounting and other functions.

The problem is that systems are developed or acquired at different times, from different vendors to support different applications. They might have been introduced as a result of merger or acquisitions or ‘bolted on’ in haste to handle e-business or Internet-based trading.

It is likely that some systems are interoperable, particularly if they are supplied by competing vendors. So, business processes are hindered, with manual intervention often needed to move information between systems. This may involve manually creating extract files or tapes, or even printing information from one system then re-keying it into another.

Consequently, few companies are able to adhere to a cohesive IT strategy. STP solves this problem by ensuring the automatic flow of information between disparate systems across the organisation without manual intervention. Moreover, it achieves this without affecting the operation of the participating systems or the application software which runs them.

11 Zero Latency Enterprise

STP delivers seamless access to information held on each participating system and provides a method of handling different transaction formats, data formats and information formats. It also has the ability to handle exception conditions, for example an interruption in the flow of transactions between systems. Thus, STP provides the infrastructural basis for CRM and indeed EAI, but how does it measure up to the needs of the inherently impatient e-customer?

This is where ZLE comes into play. The Arthur Anderson report describes ZLE as ‘... the idea, methodology, and technology of making possible instantaneous, or near real-time, updates and access to discrete and semantically atomic units of data and information wherever and whenever needed by any authenticated human or application in the enterprise for whatever authorised use at any point of need at the instantaneous time needed.’

Time is a critical metric of performance for e-businesses. The phrase Return on Minutes neatly sums up the ethos. It means minimising not only the time spent by the organisation managing and changing replicated data within the data warehouse, but also the response time experienced by on-line customers. In essence, STP exists to enable ZLE.

By implementing an EAI solution which is squarely focused on these concepts, the benefits of the New Economy suddenly appear within the grasp of aspirant e-businesses.
12 DataMirror - background

Companies do not expect to answer these complex issues without assistance from vendors. But the EAI market presents prospective customers with a baffling array of choices. It is not always easy to find the appropriate software vendor to partner with. This is where experience and stability come into play.

Established in 1993, DataMirror Corporation is a leading provider of enterprise application integration and resiliency solutions. In 2000, DataMirror extended its comprehensive product family by acquiring the proven technology of Constellar Corporation, developer of the first EAI platform to enable companies to accelerate the integration of new and existing corporate systems, data warehouses and e-Business applications.

Over 1,500 companies worldwide use DataMirror software to integrate their data. Flexible and cost-effective, DataMirror solutions provide a reliable, instant flow of information across the enterprise and beyond. All DataMirror solutions are backed by superior customer support and considerable application integration expertise.

DataMirror's market-leading Constellar Hub solution provides the means to integrate any combination of back-office, business-to-business solutions and front-office, business-to-customer solutions. In short, DataMirror Constellar Hub provides the ability to rapidly build and realize the benefits of the Extended Enterprise.

13 DataMirror Constellar Hub

Constellar Hub enables an organisation to implement the appropriate business processes to ensure that e-commerce transactions are successfully integrated with the company's other core systems. Integration at both the data and application level ensures that ERP and legacy systems can be incorporated into a cohesive, corporate system.

Constellar Hub is based on non-intrusive, EAI/messaging technology which performs data integration in real-time. This means that organisations can acquire best-of-breed software at will, and seamlessly integrate dissimilar applications, whether they are batch or messaging systems, legacy or Internet-based.
EAI solutions based on the Constellar Hub are highly scalable with the emphasis on performance. The Hub can handle huge volumes of complex data from multiple sources and provide real-time access to the data.

The hub-and-spoke data integration architecture provides for high scalability, guaranteed data integrity and robust interface management. Furthermore, the expense and risk of hand-coding can be avoided through the Hub’s easy implementation between data warehouse and enterprise systems.

As a transformation engine, Constellar Hub loads data as part of its function. The complementary Warehouse Integrator is an aggregation engine that refines the loaded information, thus concentrating its value. Utilising a dimensional framework, Warehouse Integrator enables massive scale data aggregation to be performed in a single pass and in a fraction of the time taken by traditional SQL-based data warehouse providers.

**14 What about CRM?**

The benefits of Constellar Hub, and its adherence to STP and ZLE principles, becomes apparent when it is considered at the heart of a CRM environment which incorporates components that need to be tightly integrated.

These typically include Sales Force Automation (SFA), to increase the success and efficiency of the sales force; Marketing Automation (MA), to gather knowledge, fulfil orders and enhance customer satisfaction; and Customer Service and Support (CSC), to provide knowledge management tools, a competent backup service linked either to call centres or self-service help.

The most effective CRM systems make data from internal systems available at the customer touch-points, thereby allowing either the on-line experience to be tailored to the individual, utilising one-to-one marketing techniques, or providing information relevant to the transaction at hand, such as up-to-date pricing and inventory levels.

Companies adopting CRM, and indeed e-CRM, should be able to capitalise on the knowledge held in their existing systems. In doing so, the company will provide a better service to customers and so promote brand loyalty.

With the Constellar Hub providing the interconnectivity and interoperability between the disparate CRM components, the front-desk customer touch-points share and leverage the same data as those people servicing customers. All authorised staff have the entire case history for each customer at their fingertips.

In the back-office, the data on which the business depends is stored in an enterprise data warehouse, where any errors and inconsistencies are resolved, regular cleansing takes place and one single version of factual data can be generated for reporting and decision-making purposes.
Using a Constellar Hub solution which links SFA, CSC, MA and other software, an organisation’s marketing personnel can interact with customers by leveraging the data resident in myriad CRM components, data warehouses, ERP and e-business systems.

15 Della.com - a brief case study

Constellar Hub has an enviable track record of successfully integrating back-office systems with customer-facing web applications. Working in close partnership with complementary suppliers ensures that DataMirror solutions are ideally positioned to meet the challenges of today’s economy.

At Della.com, for example, Constellar Hub was employed to integrate information from a wide variety of vendors, regardless of the nature of each vendor’s IT systems. By providing a single, consistent means of integrating systems, Della.com can now rapidly acquire additional vendors, giving the company unprecedented market agility.

Della.com provides a gift registry service to wedding couples who can submit a list of items they would like the wedding guests to purchase. Della.com has many high profile retail partners - such as Amazon.com, Banana Republic, Crate and Barrel and The Gap - at whose stores guests can purchase items for the couple.

As an e-commerce start-up, Della.com raced to get its website online. The company faced the challenge of exchanging data between its web-based customer contact points and the disparate systems of many retail partners. Della.com selected Constellar Hub EAI architecture to provide a fast and flexible solution to integrate its systems with those of its partners, irrespective of data format, frequency or volume.

The key benefit is that Della.com’s on-line ordering systems now facilitates updates that can be made in stores or via the website. This means that goods can now be purchased in real-time, either on-line through the Della.com website or ordered at the store. Irrespective of how the gifts are bought, the list is rapidly updated so that other guests can purchase gifts of their choice that have not yet been bought.

Constellar Hub has provided Della.com with a high-performance, scalable solution for rapid interface development and management. This example demonstrates that Constellar Hub solutions are ideal for business-to-business data integration over the Internet. What’s more, customers of Della.com can now be treated as individuals. Hence, Della.com has completed the groundwork for the successful implementation of a true e-CRM solution.

16 - Conclusion

Organisations aiming to exploit the immeasurable opportunities presented by e-commerce must empower the network of relationships, both external and internal, that are critical to delivering the right product to the right customer faster, more cost effectively and with a greater emphasis on customer service than the competition.
If the data needed to achieve this is not formatted or stored in ways that can be shared easily, such as in an enterprise data warehouse, the organisation cannot function to its maximum potential.

Implementing an EAI solution means that an organisation can, for the first time, easily move information between previously incompatible systems. This permits the consolidation of information, which increases its value by permitting ready comparison. It also facilitates the rationalisation of application systems and the standardisation of processes.

Any company wishing to exploit e-business needs to either hook transactional systems up to a web-based front-end system, or integrate applications across the customer-value supply chain. Either way, the goal is the same - to provide better service through greater understanding of each individual customers’ needs. EAI, the antidote to Enterprise Application Disintegration, provides a coherent solution to these multifaceted challenges.

Only by integrating all of a company’s information from multiple, disparate applications and making it available in a consistent format, an organisation can freely use all the commercial information at its disposal.

In a market which is changing and converging, DataMirror is the pre-eminent supplier of EAI solutions that encompass the best aspects of both ETL and Integration Broker technologies. DataMirror’s EAI solutions help organisations achieve high information velocity - the key enabler to successful e-business - by adherence to the principles of STP and ZLE.

As a result, DataMirror presents an opportunity for companies with aspirations to thrive in the New Economy to choose a single EAI solution which will play the pivotal role in integrating legacy systems, ERP, CRM and e-commerce applications and, ultimately, realise the dreams of the Extended Enterprise.
About DataMirror Corporation

DataMirror (Nasdaq: DMCX; TSE: DMC) delivers solutions that let customers integrate data across their enterprises. DataMirror’s comprehensive family of products includes advanced real-time capture, transform and flow (CTF) technology that gives customers the instant access, integration and availability they demand today across all computers in their business.

Over 1,500 companies use DataMirror to integrate their data. Real-time data drives all business. DataMirror is headquartered in Toronto, Canada, and has offices worldwide. DataMirror has been ranked in the Deloitte and Touche Fast 500 as one of the fastest growing technology companies in North America.

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