Microsoft Dynamics® CRM

Relational Productivity Applications
Leveraging Microsoft Dynamics CRM and SharePoint for Enhanced Business Impact

White Paper

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http://crm.dynamics.com

Microsoft Dynamics® CRM

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Abstract

Evolving market forces are putting increased pressure on businesses to improve customer experience and bottom-line efficiency at the same time. These contradictory trends simultaneously demand greater quality, customization, and client engagement with lower costs. The result is a convergence between collaborative, unstructured information work and the structured tasks required to optimize relationships with customers, partners, vendors, and others. Though some people do both kinds of work, information work and structured task work are typically performed on separate information systems. Enabling information workers to engage effectively with task workers requires uniting the best elements of the collaborative, document and team-focused information worker technologies with the relational line-of-business applications that support structured task work. This paper will examine the causes of this new convergence of technology, a solution approach for the resulting new class of software, the relational productivity application. The paper will also lay out an approach to realizing the development of the relational productivity application using a combination of Microsoft® Office SharePoint® Server 2007 platform and the xRM application framework of Microsoft Dynamics® CRM. The "better together" scenario delivers an answer to today's great business challenge: how to be more customized, more rapid, and more engaged with the client while still driving down transaction costs and associated overheads.

Executive Summary

Businesses today are facing new economic and competitive challenges that are forcing them to rethink the traditional tradeoff between quality, customer experience, and price. This is not a new phenomenon, of course, but it has intensified in recent years. Businesses are expected to be innovative and customer-centric, with shorter product lifecycles and customer-driven adaptations while operating increasingly lean vendor and partner networks and related back-office processes. In IT terms, solving this challenge involves improving the collaboration between people who do the information work and those who do structured task work. For instance, it means enabling more productive alignment of sales and marketing with the management of vendors, customers, and orders.

Information work is essentially collaborative and unstructured, while structured task work has been fairly regimented, with a focus on efficient and precise management of key business relationships. Information workers use productivity tools and collaboration solutions, such as online team workspaces, while structured task work is performed on relational line-of-business (LOB) applications. In many cases, the relational LOB application grows out of a core customer relationship management (CRM) application, with the goal of extending customer management functions or managing customer-like relationships, such as vendors or partners.

As the two types of work are increasingly blended in business processes that combine structured and unstructured steps, there is a need for a blended "relational productivity application" (RPA) that spans these two essential modes of work and brings out the best business results from the combination. The RPA combines the process-oriented, structured line-of-business application with collaborative, socially-based information work tools. The RPA enables information workers to have awareness of transactions and detailed specifics of operations that have an impact on their work. Conversely, the RPA gives structured task workers exposure to the subjective, document-based information that the information workers use to manage accounts and the business overall.

As an architecture, the RPA is an integration between the relational LOB application and the collaboration environment, with standards-based messaging connecting the two. The respective data sets of the two applications are connected through metadata, aligning structured business data with unstructured documents and collaboration data.

In the Microsoft environment, the RPA is best realized by integrating the xRM application framework of Microsoft Dynamics CRM, which is used to build relational LOB applications for structured task work, and Office SharePoint Server, the collaboration and document management platform used in information work. Microsoft Dynamics CRM and Microsoft Office SharePoint Server merge into a "better together" scenario, where the complete spectrum of workers involved in a business can access the information they need to work more productively and intelligently.

The Microsoft-based RPA can be realized in several different modes depending on the specific needs of a business. In an information-work-intensive environment, it may be optimal to present the RPA through Web parts in a SharePoint portal interface, through the Microsoft Office Outlook® messaging and collaboration client, or in a combination. Microsoft Dynamics CRM ASPX is preferable to create the RPA interface in situations where task work is more dominant.

It is possible to assess a business and determine the impact that an RPA will have on its operations. Not every business needs an RPA. This paper highlights some approaches to evaluating the level of pressure the business faces to blend information and task work through an RPA.

Introduction

The motto of any successful business manager has always been, "Do more with less." Today, though, the pressure to do even more, with fewer resources, has never been greater. Not only are business conditions challenging in virtually every local economy in the world, but also a surge of new global enterprises are shaking up the marketplace status quo on every level. For example, China has surpassed Germany as the world's second largest export economy[1], and Brazil's Embraer has overtaken Canada's Bombardier as the world leader in small jets[2]. The title of a recent book on economics and management says it all: *Globality: Competing with Everyone from Everywhere for Everything*.[3]

On a business unit level, these intensified performance pressures are forcing businesses to be innovative and customer-centric, with shorter product lifecycles and customer-driven adaptations while operating increasingly lean supply chains and back-office processes. A key success factor in tackling this tricky mandate will be to simplify the ability of workers to be productive in performing both information work and structured task work.

Information work involves managing the business entity, product development, contracts, marketing, and sales. Information work's technology environment is relatively unstructured and built around ad-hoc collaborative systems and socially based, flexible teaming.

In contrast, structured task work is fairly regimented, with a focus on efficiency and precision in back-office processing. Technologically, structured task work is usually done on line-of-business (LOB) applications with carefully designed process flows and interfaces for the capture of high integrity transactional information and records.

There are many different types of LOB applications, ranging from finance, to logistics, to customer relationship management (CRM). Given the stress that the economy is now placing on enhancing customer experience, however, this paper will focus on those relational LOB applications that affect customer engagement, such as solutions for CRM, vendor management, and partner management.

Although the technology toolsets for information work and structured task work are different, by design and necessity, and will likely remain separate in the future for many good reasons, today's reality is driving a convergence between these two types of systems. This paper is about approaches to integrating collaborative, information work systems and relational LOB applications with the goal of creating blended "relational productivity applications" (RPAs) that span the two essential modes of work and bring out the best business results from the combination. For the realization of the target solution in a real world setting, the paper will describe how Microsoft Dynamics CRM and Office SharePoint Server offerings can be brought together to form an integrated relational productivity application.

Responding to Evolving Pressures in the Business Environment

The electronics industry provides a useful example of the new "do more with less, but compete creatively" high wire act that businesses must pull off to remain competitive and profitable. The recession has forced a long-term reset in the industry. Industry growth is projected at just 1.3 percent in 2009, compared to 10.1 percent in 2006. Major industry categories such as semi-conductors are projected to fall by as much as 14% worldwide.[4]

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[1] China Economic Review, January 2010

[2] China Economic Review, January 2010

[3] Sirkin, Hemerling, and Bhattacharya. Globality: Competing with Everyone from Everywhere for Everything. Business Plus Press, 2008.

[4] Custer, Walt – "Global Electronics Industry Outlook" Electronics Manufacturing Asia Magazine, January 2009

Negative growth has resulted in widespread cost cutting, even as pressure has increased to offer better products and greater customer experience. Research and development spending has been slashed 30 percent (U.S. $8 billion) industry-wide[5], though product development costs are actually on the rise. As Joseph DeBiase, Senior Vice President and General Manager of Henkel Adhesives Electronics Assembly, aptly stated in a 2009 interview, "In times like these, the challenge is to implement tight cost controls to weather the short-term storm without significantly impacting longer-term customer programs. Customer needs for new, innovative materials solutions don't evaporate during a slowdown."[6] The requirement to be increasingly customer focused, despite cutbacks and slow growth, is also well-summarized by Alisha Mowbray, Senior VP of Marketing for Newark, a catalog distributor. "More and more we are being called upon to be a solutions provider. Customers are looking for our ability to provide technical support and other information—not only are we getting 'you have to have the product in stock,' we are getting 'what can you do for me to help me do my job better?'"[7]

Today's business environment is forcing managers to rethink the traditional tradeoff between transaction costs and customer experience. Figure 1 illustrates this new reality. In practical terms, the mandate for high customer experience and low transaction costs is forcing a number of operational changes in the way companies do business, how they manage their employees, and how they equip people with information technology.

For example, in the traditional low transaction cost / low customer experience approach to business, an electronics manufacturer might require customers to order a large minimum quantity of a standard item from a catalog. These large orders would be processed in a fairly straight, step-by-step choreography of a work process flow using an underlying LOB system. In this way, the manufacturer could earn a good profit from the product because the costs associated with closing the transaction were relatively
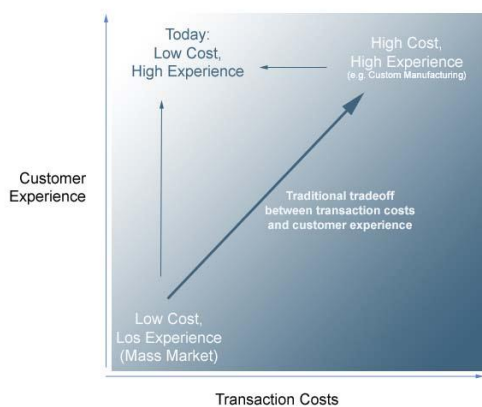
Figure 1. The pressures of today's market are changing the traditional trade-off between transaction costs and customer experience.

low. The information systems needed to support the transaction could be more or less rigid, with highly structured transaction records in databases, because the need for modifications to order details and customer interactions are also limited.

In contrast, a high-touch customer experience is enabled through a different mode of operation and information system tools. In the high-touch environment, customer-facing personnel, such as account managers, might be collaborating with product design teams, manufacturing managers, and senior management on customized orders. It's a collaborative, iterative information work process to generate a customer order at a manufacturer that is aiming for a higher level of customer experience. The development of a sales proposal, for example, requires multiple iterative loops of discussion, review, and revision amongst the sales team, manufacturing, and senior management. At each stage, the stakeholders in the process manage documents and related notes in a semi-structured collaborative solution. The process is inherently social and cross-team, with social networks entering in the workflow. It is not routine or predictable, and the results vary each time the teams run through it. The workers in this process collaborate in loose, socially-based groupings that change frequently. Their data is usually unstructured and housed in the collaboration solution, not in database tables.

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[5] Rinnen, Klaus. "Key Issues for Semiconductor and Electronics Manufacturing 2009." Gartner, 2009.

[6] Custer, Walt. "Global Electronics Industry Outlook." *Electronics Manufacturing Asia Magazine*, January 2009.

[7] Electronics Design and Strategy News (EDN), 11/6/2009

The transaction costs for supporting the high-touch, high customer experience mode of business are typically higher than those of a business that only supports a low customer experience, little customization, and little specialized attention to the customer. There are more people involved in the sales process, and more steps in the sales and order fulfillment process. The lack of predictability reduces the efficiency of the process, and the productivity of individual workers in the process lags as well.
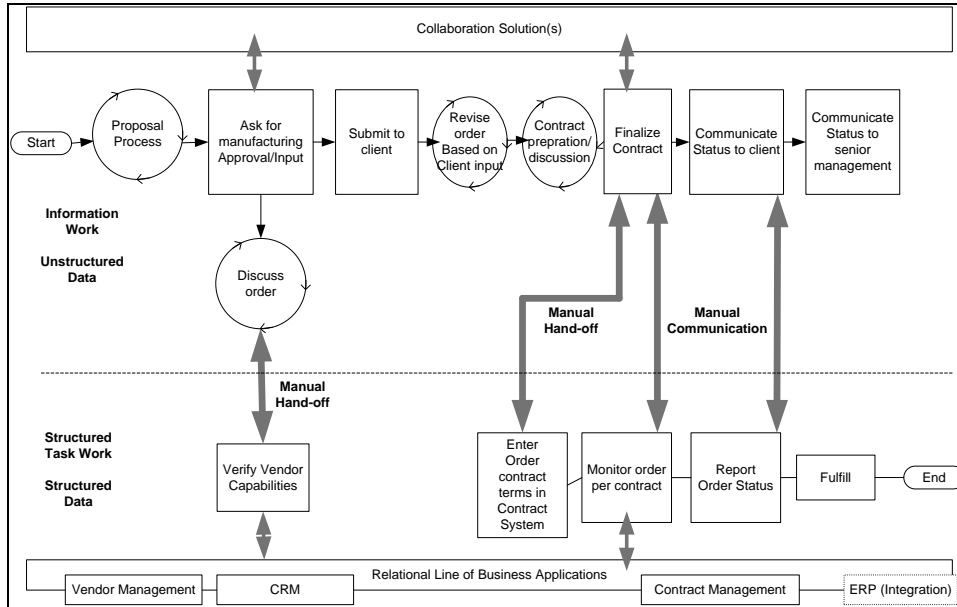

Figure 2. When the iterative, collaborative processes of the high customer experience sales process, shown at the top, have to interact with relational LOB applications, shown at the bottom, the result is a set of inefficient hand-offs of information that drive up transaction costs.

As an order moves from proposal to fulfillment in the high-touch business, the collaborative, unstructured sales process conflicts with the straightforward, relational LOB applications used to process the order, as shown in Figure 2. For example, the company may want the customer to be aware of order status and be able to discuss the order as it progresses through manufacturing and delivery. As a result, in this mode of working, there is a greater expectation that order managers will be in regular communication with sales and manufacturing stakeholders. However, much of the time, the working routines of the respective groups and their supporting technologies are not compatible or designed to enable effective communication. Interactions between the two groups are often manual and inefficient. With each order requiring a custom, contract-based approach, the order processing and management stakeholders cannot work as productively as business conditions might demand. This drives up transaction costs for order management even further.

Though the electronics industry provides a good example of the need to improve coordination and situational awareness between information workers and structured task workers, the challenge is affecting many industries and business scenarios beyond manufacturing. Whether it's a matter of survival, competing, or realizing a more profitable future, virtually every business is trying to improve its quality, service, and customer experience while simultaneously driving down operating costs. In financial services, for example, it's about building relationships with the most lucrative clients while pushing down costs of account management and trading operations. In healthcare, the challenge manifests itself in improving patient care while improving provider profitability. In retail, it's about decision-making executives sharing point-of-sale business intelligence while trimming back-office overhead, and so on.

Virtually every business needs to improve its return on assets, people, and capital. They must improve profitability of their distribution channels and the management of their vendors. The realization of these objectives depends on improving the alignment of information workers, who typically oversee operations and set direction, and structured task workers, who are responsible for the execution of operating plans.

Solution Approach: The Relational Productivity Application

The challenge facing business leaders today is to figure out how to enable a productive blending of structured tasks with unstructured data across the business process flow. The cross-overs and interactions between people doing information work and structured task work need to be more efficient, and personal productivity needs to be higher throughout the process. For instance, information work has processes and collaborative information tools that cut across teams, while structured task work is usually more focused on intra-team dynamics as a process and data management issues. The respective approaches to teamwork need to be unified into a coherent, more productive whole.

Though there are many interpersonal and management aspects to solving these problems, the information technology answer to is to envision, design, and implement solutions that facilitate productive interplay between clear-cut workflows and subjective collaborative processes—and between the workers who conduct them. Such a solution, which brings the combined power of both relational LOB applications and collaboration solutions to bear on the business, is known as a relational productivity application (RPA). The RPA merges the best aspects of the collaboration toolsets used for information work and the relational LOB applications used for structured task work.

The RPA must deliver a way to manage both unstructured data, such as documents, and structured relational data, such as that found in order processing databases. The RPA must enable both social engagement and task-based interactions across the complete spectrum of workers involved—many of whom overlap roles and must use both types of systems. It must enable knowledge-based information evolution as well as analytics and structured data generation. An RPA needs to handle both informal rules and tightly structured business processes. And, it must offer both unstructured enterprise search as well as data query and filtering for structured data.

In terms of high level requirements, an RPA needs to give all the workers involved in a business a high degree of awareness of one another and the work they are doing. The RPA should enable everyone to know who is who, who is doing what, and where to find specific information in either structured or unstructured form. Figure 3 shows a reference architecture for an RPA that takes these core requirements into account. In the RPA shown in Figure 3,
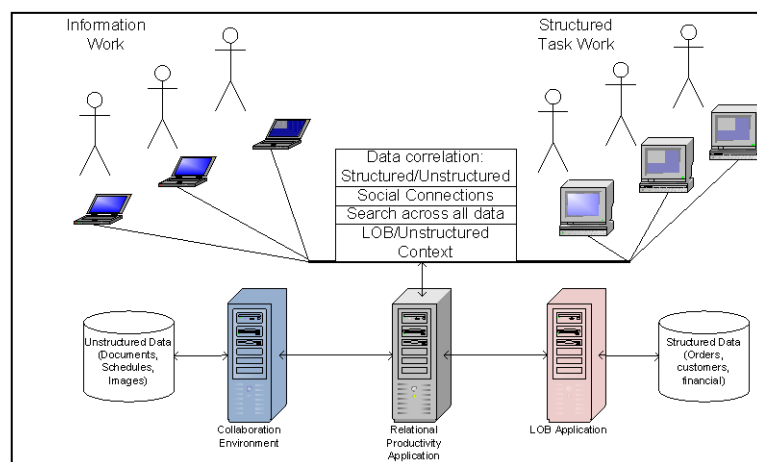

Figure 3. Reference architecture for the relational productivity application

workers can have social awareness of one another across the organization. For example, a structured task worker, such as a customer service representative, can search the social network for expertise or knowledge held by others in the organization. Everyone should be able to see who works for whom, and how teams are structured. The social connection capability can streamline the handling of complex orders and drive down the transaction costs of the business.

The RPA has to provide for searching across all of the data contained in the two component systems. Thus, both information workers and structured task workers must have access to an enterprise search function that spans both the unstructured documents as well as the structured business data in the relational LOB application. Any RPA user must be able to find and open any document or data set in the system, access controls notwithstanding.

Aware, Aligned Workflows

The RPA should provide all users, whether they are involved in information work or structured tasks, with awareness of the information's context. For instance, an account manager viewing a sales proposal document should be able to have efficient visibility into the complete account picture for the client in question. Conversely, a customer service representative should have a simple view into the sales proposals pending for a given account. The business value of this improved awareness is the ability to align the treatment of clients with their real-time status. If a client is chronically past due in its receivables and rejects every order as unsatisfactory—data that is going to reside in relational line of business applications—the account team should be aware of this as they prepare new sales proposals.

Though this awareness can always be achieved through manual interactions, such as picking up the phone, sending an e-mail message, or looking up an account on the relational LOB system, the overhead associated with checking the account status is unnecessarily high. And, the action might get overlooked if it is not automated. Aligning the information systems involved so that awareness of the full account situation is presented holistically at the interface level makes it far easier, and more efficient, for all stakeholders to act more intelligently about each client.
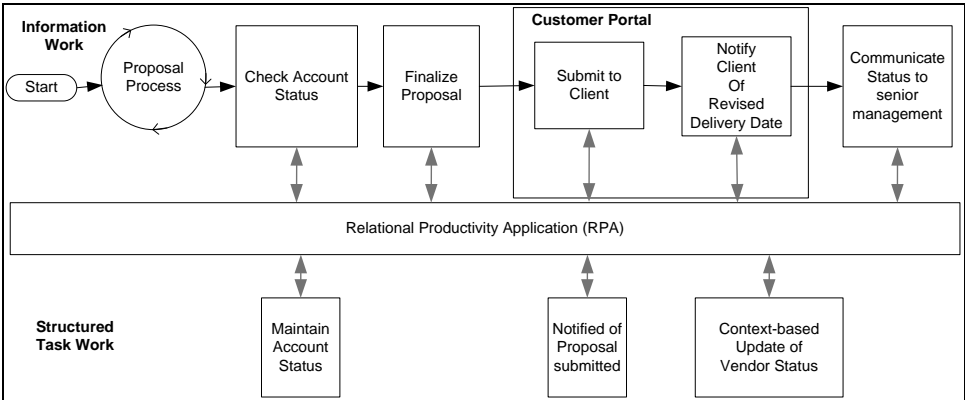

***Figure 4.** Potential business process flow for proposal creation and order management when both information workers (including the client) and structured task workers can experience improved awareness of relevant information through a Relational Productivity Application.*

Figure 4 shows what the better-aligned sales proposal workflow could look like with an RPA. In this scenario, the account team has automatic, real-time awareness of the account status presented in the collaboration interface that they use to prepare the sales proposal. As the order goes into production, the back office workers get alerted automatically of a pending order that will be affected by an inventory issue. The client itself, connected to the RPA through a customer portal, is efficiently updated on the order status. Senior management, linked to the entire process through its own dedicated RPA interface, has awareness of the account situation and can react if necessary by redirecting resources or assigning priority to the customer order. The net effect of the RPA in this situation is to elevate the engagement with the customer without a commensurate expenditure of effort on managing the transaction.

Interfaces that Present Multiple Views of Data

To make this work, each group of stakeholders needs to have a different view of the core data involved. Figure 5 offers a portlet-based approach to RPA user interfaces that provides a relevant experience of the underlying data for the information worker and structured task worker. The left side of the figure shows a view attuned to information work, which includes projects and files that are linked to associated accounts and order information. The right side of the figure is the structured task view, which places emphasis on the day-to-day order processing and account management tasks, but which also provides links to documents that are associated with specific accounts.
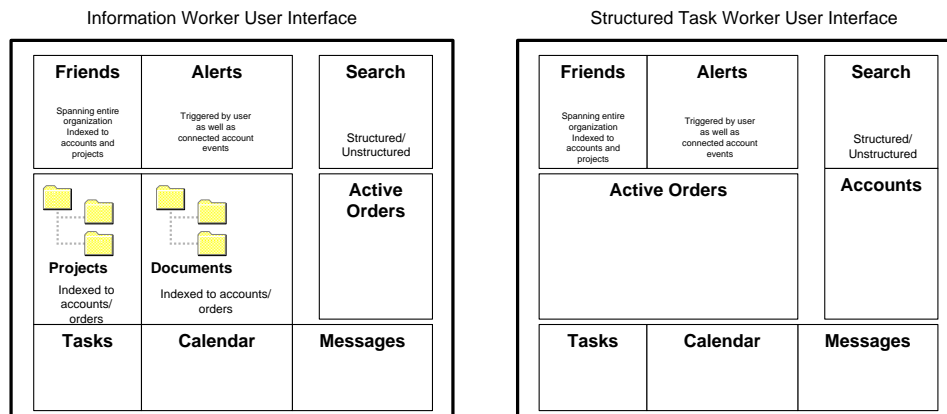
Figure 5. Interface design for the RPA, showing the information work view on the left, and the structured task view on the right.

Both interfaces expose data about orders and accounts, though in different ways. For the worker involved in structured tasks, the order and account information is rich and detailed. For information work, the view is based on projects and documents that are indexed to accounts and orders. Giving everyone a view into the relevant sides of both structured and unstructured data can improve operational effectiveness. For example, if an order being managed through an ERP system runs into supply chain problems, the workers handling the proposal for the next project with that client can have real-time awareness of the problem. In this way, the RPA automatically brings people together to focus on account and order issues that arise during the course of business. With a "friends" type of view in the interfaces, there is the potential for social networking in the context of work—people can see who is connected to whom, who works for whom, who is expert in specific subjects, and so on. This can accelerate the solving of problems and the creation of productive connections between people, no matter where they work in the organization.
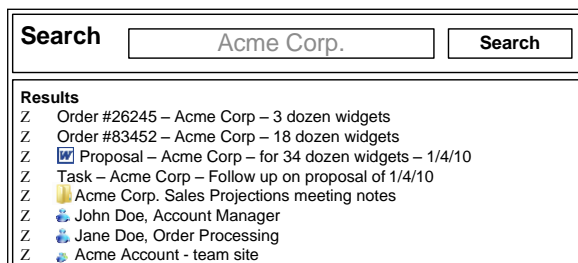
Enterprise Search and Data Structure

Figure 6. Search interface for the RPA, which returns results from both structured order and account data as well as associated unstructured documents from the collaboration environment

Each interface contains a search function, which gives both information workers and structured task workers the ability to find information or documents connected to projects, accounts, or orders. Figure 6 shows a mock-up of a typical search for Acme Corp that returns a federated set of results that includes orders, proposals, tasks, project folders, people, and team sites. The ability to search across the different data types is one of the key drivers of productivity in the RPA. The quick capacity to find information associated with clients, regardless of whether

the data is structured, unstructured, or social, enables highly efficient interaction between information workers and structured task workers. This is especially critical as unstructured information comprises about 80% of the data in most businesses.

Getting the enterprise search feature in an RPA to index and search this varied set of data is part of the design challenge in creating this type of hybrid application. Though there are several approaches to achieving this design objective, a best practice is to create metadata that links different data types across the multiple databases and file repositories that comprise the RPA. Figure 7 shows how the data fields for a file stored in an unstructured file repository in the RPA's collaboration suite area are linked to associated structured databases. For the enterprise search to work, the search engine needs to index all of the databases and repositories and correlate the linked file and data results.
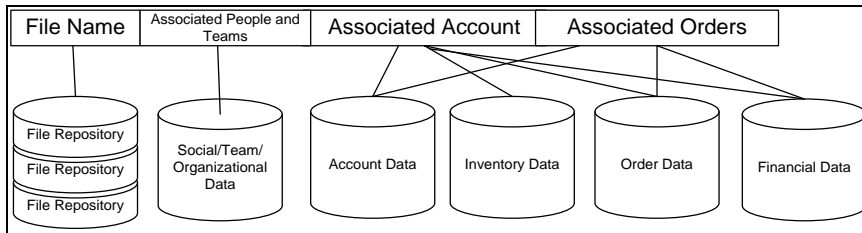
Figure 7. The data and metadata that links unstructured files with structured transaction data

Assessing the Business Value of the RPA

The business value of an RPA will be based, to a great extent, on the way that it is implemented. Assuming that the organizational and human factors are well managed, though, an RPA should be able to create return on investment (ROI) on tangible as well as intangible levels. On a tangible, hard dollar basis, the RPA generates ROI by reducing order processing cycle times and lessening the time required for structured task workers to fulfill orders. This increase in productivity translates into lower transaction costs and overhead. The greater awareness of events, projects, and ideas emanating from the information worker side of the business should also drive up alignment between operations and sales. For example, inventory and supply chain planning can be more efficient if the responsible structured task workers have improved insight into client needs and business strategies. As Table 1 shows, if an RPA can drive down task times for order processing challenges by streamlining communication and collaboration, the cost of handling transactions goes down by a measurable dollar amount.

Process Step	Task Time: Status Quo	Cost	Task Time: With RPA	Cost	Delta
Receive order information from account manager	3.00	$ 2.70	3.00	$ 2.70	$ -
Check on inventory/supply chain aspects of order	2.00	$ 1.80	1.00	$ 0.90	$ 0.90
Discuss fulfillment given customer needs	4.00	$ 3.60	3.00	$ 2.70	$ 0.90
Enter order in system	2.00	$ 1.80	2.00	$ 1.80	$ -
Manage order through system	5.00	$ 4.50	5.00	$ 4.50	$ -
Report fulfillment issues to account team	3.00	$ 2.70	1.00	$ 0.90	$ 1.80
Discuss fulfillment issues with account team	4.00	$ 3.60	1.00	$ 0.90	$ 2.70
Resolve fulfillment issues	4.00	$ 3.60	4.00	$ 3.60	$ -
Complete order and invoice	4.00	$ 3.60	4.00	$ 3.60	$ -
Total time to process order	31.00	$ 27.90	24.00	$ 21.60	$ 6.30
Structured task worker cost per minute	$ 0.90		Savings	23%	

Table 1. Comparison of productivity in order handling between conventional, status quo operations, and RPA

On an intangible level, a well-implemented RPA can enable a business to operate more intelligently. When those involved in information work, such as account representatives, managers, and senior executives, have a relevant, real-time view of key operational factors as they collaborate, the business can become more agile and client-focused. The RPA makes this agility and intelligent operation possible by streamlining the connections between front and back office operations. It has always been possible, of course, for managers to have awareness of transaction details and supply chain specifics. The breakthrough of the RPA, however, is its ability to bring the relevant data and documents to the forefront of the user's attention in an automated process. The results include gains in personal productivity at all levels, with a commensurate gain in organizational productivity and profitability.

The xRM/SharePoint Realization of the RPA

The Microsoft Dynamics CRM xRM (xRM) application framework for task work can be integrated with Office SharePoint Server, a complementary technology, to render a relational productivity application. Office SharePoint Server and xRM embody the built-in functionality and development potential to realize the business objectives of each half of the RPA. Dynamics CRM, whose XRM framework capabilities are depicted in Figure 8, can be used to develop relational LOB applications that take advantage of the platform's process automation and orchestration services, data and metadata services, and integration features.

xRM enables the development of business applications that feature forms-based data entry, process modeling, highly scalable information stores, and sources for relational data. Designed for structured task use, xRM-based LOB applications feature hierarchical, role-based security. xRM-based applications are built using Web services, so they are relatively simple to integrate with other applications, such as Office SharePoint Server, in an RPA.

xRM offers a number of advantages in the development of relational LOB applications. xRM offers developers a declarative, model-driven, business application framework that harnesses the full power of the Microsoft application platform and accelerates the development and delivery of enterprise-class applications. It enables rapid application development with point-and-click customization, drag-and-drop design, and integrated role-based security.

xRM features business application modeling that includes business processes and relational data modeling, features that empower non-IT people to design effective workflows in LOB applications. xRM has integrated business services including e-mail, task, and activity management. xRM-based applications integrate with Office Outlook and other Office applications, and offer "Web-scale" user experiences. The xRM architecture provides a high level of scalability and availability at the relatively low costs through a choice of on-premises or online service delivery modes. With Microsoft Visual Studio® development tools and the Microsoft .NET Framework, xRM can be extended even further.

By enabling application developers to make use of a single framework for many applications, xRM can help IT departments realize savings in solution development and implementation costs. Because xRM contains pre-built functionality, such as asset management, supplier management, and access controls on a flexible service-oriented architecture, it is relatively simple for developers to use and re-use its extensible building blocks. In financial terms, the xRM-powered in-house development capability can result in striking cost savings through the reductions in expenses for packaged software and specialized outside service providers. Mitsubishi Caterpillar Forklift Europe, for example, which used xRM to develop relational business applications, reduced development costs by 60 percent compared with similar projects developed on other technologies.[8] Similarly, ENSTO, a Finnish industrial

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[8] Microsoft Case Study: http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?casestudyid=4000004607

company, was able to develop custom applications with xRM in under six months.[9] Prior to adopting the xRM framework, the same work would have taken a full year.

Office SharePoint Server is designed for collaboration and information work. Office SharePoint Server features document collaboration, file libraries, and shared version management. Built for information discovery, Office SharePoint Server offers rich enterprise search capabilities. Office SharePoint Server is also a portal, and has the ability to surface numerous applications, including custom-developed SharePoint Web parts, to the end user in a personalized portal interface. In contrast to xRM, which is typically centrally managed, Office SharePoint Server can be essentially user-managed, allowing for customization at the individual, team, or business unit levels.

Office SharePoint Server enhances Microsoft Dynamics CRM and xRM. Office SharePoint Server is an integrated suite of collaboration and content management capabilities for information sharing across organizational boundaries. Many organizations are already familiar with Office SharePoint Server in its role as supporting a variety of collaborative business applications. Office SharePoint Server provides complementary capabilities to xRM for organizations seeking to manage customers and other customer-like relationships. As highlighted in Figure 9, Office SharePoint Server provides capabilities that Microsoft Dynamics CRM does not have, which helps enrich the Microsoft Dynamics CRM customer and customer-like scenarios.
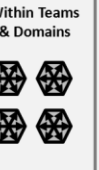
Figure 9. Office SharePoint Server and xRM provide capabilities that support the RPA

The RPA brings together the best potentialities of Microsoft Dynamics CRM and Office SharePoint Server for collaborative use between structured task workers and information workers. Figure 10 shows a reference architecture for one approach to bringing xRM and Office SharePoint Server together to form an RPA. In this case, the suggested architecture involves having the SharePoint portal serve as the user interface for the RPA, with custom-developed SharePoint Web parts surfacing the RPA functionality to the end user.

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[9] Microsoft Case Study: http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?casestudyid=4000004397
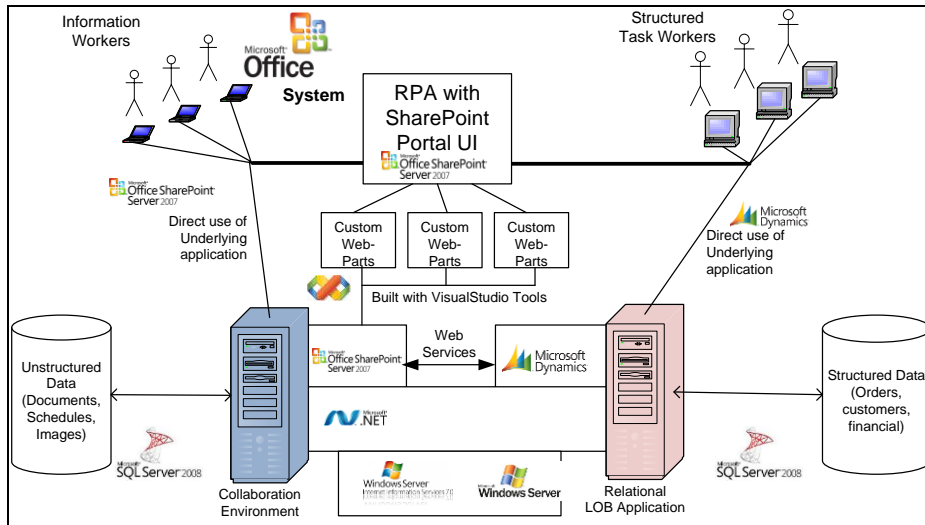
Figure 10. Reference architecture for an RPA created by integrating xRM and Office SharePoint Server. In this case, the Dynamics functionality surfaces to the end user through custom-developed SharePoint Web Parts that are presented through the SharePoint portal interface.

As Figure 10 shows, both Office SharePoint Server and Microsoft Dynamics CRM operate on a similar stack, with their respective platforms running on top of the Microsoft Windows Server® operating system, Windows Server Internet Information Services, and the .NET Framework. Data in each application resides in Microsoft SQL Server® databases. The SharePoint Business Data Catalog (BDC) enables the structured data in Microsoft Dynamics CRM to be filtered and searched by the SharePoint enterprise search function. The RPA functionality that blends the structured and unstructured information is implemented through Web service calls that invoke procedures from Microsoft Dynamics CRM. The results of the Web service calls and enterprise search queries flow through to the end user in a custom SharePoint Web part.
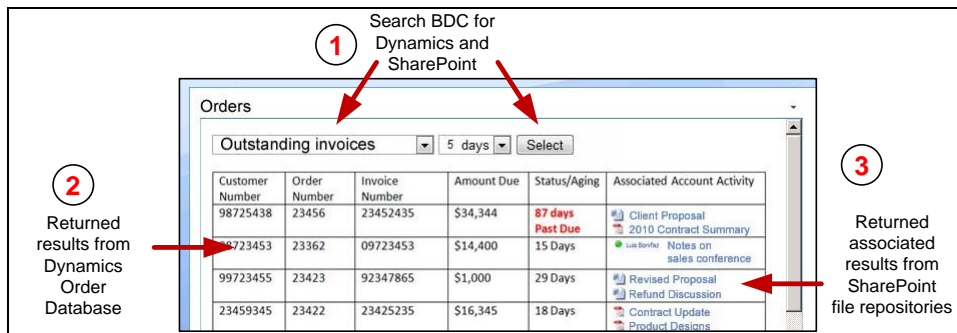

Figure 11. Sample custom-developed SharePoint Web part for an RPA. In this case, a drop-down menu initiates an enterprise search query that runs against the Business Data Catalogue (BDC). The search returns invoice and order data from Dynamics and pairs it with associated documents and people-related links from the SharePoint file repositories.

Illustrating what such a Web part might actually do, Figure 11 shows an example Web part that presents the user with order and invoice information drawn from the Microsoft Dynamics CRM database, paired with associated files from SharePoint repositories. The drop-down menu initiates an enterprise search query that requests the order and invoice data from the Microsoft Dynamics CRM database as well as associated file and people-related links from Office SharePoint Server. The query runs against the BDC, which manages the search into the structured data tables. The query searches SharePoint repositories at the same time. The results in the table show orders and invoices matched with sales proposals, contracts, and a SharePoint site with meeting notes. The SharePoint content has been linked with the orders and invoices through metadata fields.

From a business perspective, this Web part enables the user to see the context of orders and invoices in a streamlined way. For instance, for the invoice that is past due, the user might be able to see some explanatory

information in a related document that would forestall turning the account over for collection. Taking that action might damage the account relationship if there is a valid business reason for allowing the account to go past due. The Web part's ability to blend structured and unstructured data can save the time required to turn the account over to collection. And the time needed for the user to make the judgment call about collection is reduced from what it would be if the user had to look up the unstructured information about the account separately. The results are higher productivity and better account management.

It is also possible to render an RPA using the xRM front end, which is built on ASPX. The choice will depend on the projected use case scenarios for the RPA. A preponderance of structured task work uses for the RPA favors the ASPX approach, while an emphasis on information work will make the SharePoint portal approach more effective for users. For example, if the majority of users of the RPA are dedicated primarily to structured task work, as might be found with customer service professionals or call center representatives, the ASPX interface will work better. An RPA built with the xRM ASPX interface components, with embedded links to unstructured data in Office SharePoint Server, will look and feel more like a relational LOB application and enable faster processing of repetitive transactions. For the use case, this is a better scenario.

Microsoft customers are beginning to build RPAs. For example the Board of Pensions of the Evangelical Lutheran Church in America (ELCA) took advantage of the rapid development potential of xRM and produced a prototype LOB application as an unfunded side project without an external consultant in just four months.[10] ELCA was then able to integrate their application with Office SharePoint Server and provide a consistent look and feel for all users of the application. The resulting central application portal could then easily be integrated with other applications, including non-Microsoft solutions.

An added productivity factor in the RPA is the ability of the end user, especially the information worker, to access the RPA while working within the Microsoft Office system. While working on a proposal in Microsoft Office Word, for example, an information worker could easily execute a "save as" command to add the proposal file to the appropriate SharePoint site that was linked to the RPA. In Microsoft Office 2010, these capabilities are enhanced beyond what is currently available in Office 2007. Similarly, the ability for an Outlook user to create e-mail folders that are automatically linked to customer accounts, projects, or orders in Microsoft Dynamics CRM makes it easy for a relevant e-mail to be shared across the spectrum of information workers and structured task workers connected to the account in question.

Going beyond the RPA, the broader Microsoft application platform and service-oriented architecture functionality found in Microsoft BizTalk® Server 2009 gives the RPA the ability to connect with virtually any application in the world. Any application that is Web-service-enabled could connect to the RPA for data exchange or procedure calls. For example, an RPA connected to BizTalk Server could request data from mainframe systems or vendors' ERP applications. The result is even further enhanced productivity as both information workers and structured task workers gain increased insight into information throughout the business ecosystem.

When to Go with an RPA

When should a company go with an RPA? When is it better off concentrating on pure relational LOB applications or emphasizing collaboration solutions? There are myriad factors, for sure, but a recommended approach to resolving the issue is to assess the frequency and importance of both information and task work and determine whether an RPA is advisable.

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[10] Microsoft Case Study: http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?casestudyid=4000006266

Figure 12 shows how a group of businesses might chart their levels of task and information work. The curve on the left shows information work. For a business that charted itself on the far left, where most of the work is information work and all of the most important work is in that mode, a pure collaboration solution is in order, at least from an investment perspective. Such a business might have an LOB application, but the most effective use of IT resources would be to enhance the information work capabilities. Examples of this type of business might include professional services firms and creative agencies.
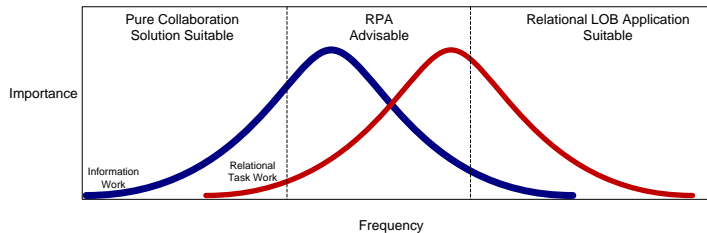

Figure 12. Understanding when an RPA is advisable involves evaluating the importance and frequency of the mix of task work and information work. The two curves represent these measures for a collection of businesses. In the middle zone, where a company has a high volume of both information and task work that is relevant to the business, an RPA is warranted.

The right side of Figure 12 captures companies that are primarily transaction-based, and would be best off investing in new and better LOB applications. The middle ground, which is where many businesses today are heading, is RPA territory. In this zone, a business needs to be productive and synergistic in both the information work and structured task work disciplines. The RPA gives workers access to both types of information and processes for a higher level of business effectiveness.

A rule of thumb for deciding if a situation warrants an RPA is to assess the solution needs from a "CRM-out" perspective. With Microsoft Dynamics CRM as the core of the xRM application framework, the best candidates for RPA development are solutions that either contain CRM itself or adjacent application functionality that supports customer-like relationships. CRM out solutions include those that are already closely related to CRM, such as a property management application that supports customers leasing properties. Alternatively, CRM-out also implies a solution that supports customer-like relationships, such as vendor or partner management.

Figure 13. Defining "CRM-out" solutions as ones that extend CRM, relate to CRM, or support customer-like relationships

Table 2 summarizes this spectrum of work and includes the suggested solutions. For traditional information work, Office SharePoint Server and the Microsoft Office system are suitable. The trend on this end of the work spectrum is away from the information work silo and towards the blended RPA. On the right side of the table, traditional task work is best served by xRM LOB applications, though the trend is also toward the blend. Microsoft has sometimes

referred to the blended, RPA approach to work as "the New World of Work," a concept which was first identified in an essay by Bill Gates in 2005.[11]

Traditional Information Work	Blended "New World of Work"	Traditional Task Work
Office SharePoint Server and the Office system	Office SharePoint Server, Office, and xRM for RPAs	xRM for relational LOB applications
Trend: Shift from information work "silo" apps to blended RPA →	Future goal: shift to a common platform for both information work and task work apps (benefits = cost, scale, training, tools, etc.)	← Trend: Shift from task work "silo" apps to blended RPA

Table 2. The spectrum from traditional information and task work to the blended "New World of Work" RPA

To make a recommendation about when to use an RPA and when not to, one possible solution is to conduct a scoring exercise. The purpose of the exercise is to place a company on a matrix of customer experience and transaction cost demands that will indicate the value of an investment in an RPA. Table 3 offers a self-assessment quiz for an RPA prospect. Table 3 is designed to show how a company ranks itself on two scales: 1) price sensitivity and related cost-cutting mandates; and 2) the level of customer experience they are expected to deliver.

	On a scale of 1 to 5, with 1 being "not at all important" or "I don't agree" and 5 being "extremely important" or "I totally agree," please evaluate your company for the following characteristics:	X Axis	Y Axis
1	Our customers demand a high level of personal service.	■	
2	We are only successful with customers when we can deliver customized service offerings or small quantities of custom manufactured goods.	■	
3	The success of the company is based on flexible, agile account management; when we can make a proposal that fits our customer's needs, we win.	■	
4	Our customers, and our industry in general, do not accept that the prices we charge reflect the level of service and customization we provide.		■
5	We have to be the low price bidder to get business.		■
6	For our workers who handle orders, about 25 percent or less of their time is spent on routine transactional processing. The rest of the time is spent on working on proposals and communicating with people involved in customer-facing roles.	■	
7	Our competitors are offering better service, smaller order quantities at lower prices, and greater customization than we are.		■
8	Our industry has seen across-the board internal cost cutting that affects every aspects of a business.		■
	Column average		

Table 3. Suggested self-assessment quiz to determine a company's level of need for an RPA. The average for the "X Axis" column should be plotted on the X axis of the graph shown in Figure 14. The "Y Axis" column average should be plotted on the Y axis of Figure 14. Overall, these two scores plotted in Figure 14 should show the client's level of suitability for an RPA.

A company's needs to meet customer experience demands and cost reductions can be plotted on a matrix as shown in Figure 14. From the scoring of the quiz in Table 3, the average for the X Axis column should be plotted on

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[11] Bill Gates. The New World of Work. May, 2005.

the X axis of the graph shown in Figure 14. The Y Axis column average should be plotted on the Y axis of Figure 14. Overall, these two scores plotted in Figure 14 should show the client's level of suitability for an RPA. An organization that must provide high customer experience but which is not under tremendous cost cutting pressure would be well served by a collaboration solution, such as Office SharePoint Server, and does not necessarily need an RPA. This type of prospect falls in the upper-left quadrant of Figure 14. Conversely, a business with low customer experience expectations but high cost-cutting mandates is suited for a relational LOB application, such as Microsoft Dynamics CRM, and falls in the lower-right quadrant. Companies with a high requirement for customer experience and a high price sensitivity and cost-cutting mandate are good candidates for an RPA, as shown in the upper-right quadrant of Figure 14.
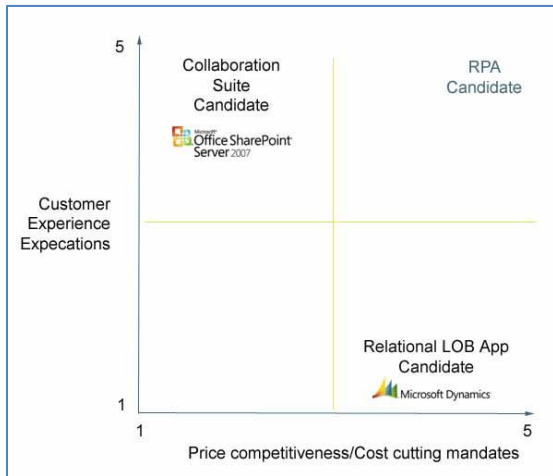

Figure 14. Plotting the results of Table 3's suggested self-assessment quiz results, the average for the "X Axis" column should be plotted on the X axis shown above. The "Y Axis" column average should be plotted on the Y axis. Overall, these two scores to show the client's level of suitability for an RPA

Conclusion

Whether it's about responding to today's intense business pressures or just trying to improve the productivity of an operation, information technology can play a key role in enabling better alignment and collaboration amongst information workers and structured task workers. Though each group of workers uses technologies that have been developed specifically for their unique uses, it is possible to bring together the best of their respective systems. The result is a new type of software hybrid known as the relational productivity application, or RPA. The RPA combines the process-oriented, structured line-of-business application with collaborative, socially-based information worker tools.

In the Microsoft environment, the RPA is best realized by integrating Microsoft Dynamics CRM, which is used to build line-of-business applications for structured task workers, and Office SharePoint Server, the collaboration and document management toolset used by information workers. Microsoft Dynamics CRM and Office SharePoint Server, which both have extensive platform functionality, merge into a "better together" scenario, in which the different types of workers involved in a business can access the information they need to work more productively and intelligently. The RPA, as realized by the combination of Microsoft Dynamics CRM and Office SharePoint Server, can be a powerful tool for managers in today's world of business challenges.