IBM

e-business Process Automation

IBM MQSeries Workflow -
adaptive business middleware that helps
accelerate delivery, integration and change

e-business

Executive overview

The economics of the Internet are well-known, and compelling. Transaction costs are 10% of the same transaction processed through a branch office, just 20% through a call center. Almost any dimension of Internet growth has equally dramatic figures attached. Especially for customer services, the Internet is changing the way that we think about business. It's a win-win situation -- better service for the customer, lower costs for the business.

While the Internet has enormous potential for improving customer service, realizing the benefits can be challenging. Simply providing an Internet entry is not sufficient -- the underlying processes have to work at Internet speed, yet with the accuracy and assurance that the customer expects.

Visibility across supply and value chains, velocity of business processes are key to success. Success in this dynamic business environment demands robust end-to-end business process solutions that are flexible, scalable and adaptive. The critical success factor is Workflow.

MQSeries Workflow is the umbrella for defining and managing robust customer services from start to end. It makes business processes visible and well-understood. It automates and tracks progress and enables end-to-end process tuning based on documented experience. It minimizes work hand-off and cycle time, so you deliver quicker and invoice earlier. And it reduces errors by ensuring policies are consistently applied across the whole enterprise.

In short, MQSeries Workflow can help transform the efficiency of your business processes, and the way your customers view your organization. This is not a one-time effect -- with no need for technical skills, you can tune and update your workflow processes to keep ahead of change in your business.

e-business is changing the way we do business

e-business requires 'adaptive enterprises'. To be successful, companies are forced to deliver their services much faster and are looking for new ways to run their business. Interconnecting applications and business partners, making services accessible through new Web-based user interfaces, streamlining existing processes, and offering new ones, requires flexible and easy-to-change business processes. You need consistent process execution across multiple customer access channels and backend application systems. Today, it shouldn't make a difference how customers access a service: whether it's visiting a branch office, phoning in or using a company's Web site, the process started to help the customer should be just the same.

Business integration with MQSeries Workflow makes this a reality. It automates the processes behind new customer services, spanning just applications, or applications and people. It supports companies in their evolution to become an adaptive e-business, that leverages resources reliably and reacts quickly to changing needs.

The world is changing

Today the world is changing dramatically -- and companies are changing with it. Globalization, mergers and acquisitions, and rapidly growing e-business all shrink the world and remove the restrictions of time-zone and place from consumers and local businesses. Small companies on one side of the world sell their goods and services to customers on the other, courtesy of the Internet. Although competition is increasing, and consumers' power to switch with a simple point'n'click is a threat, businesses that can offer their services worldwide will win new customers and more profit.
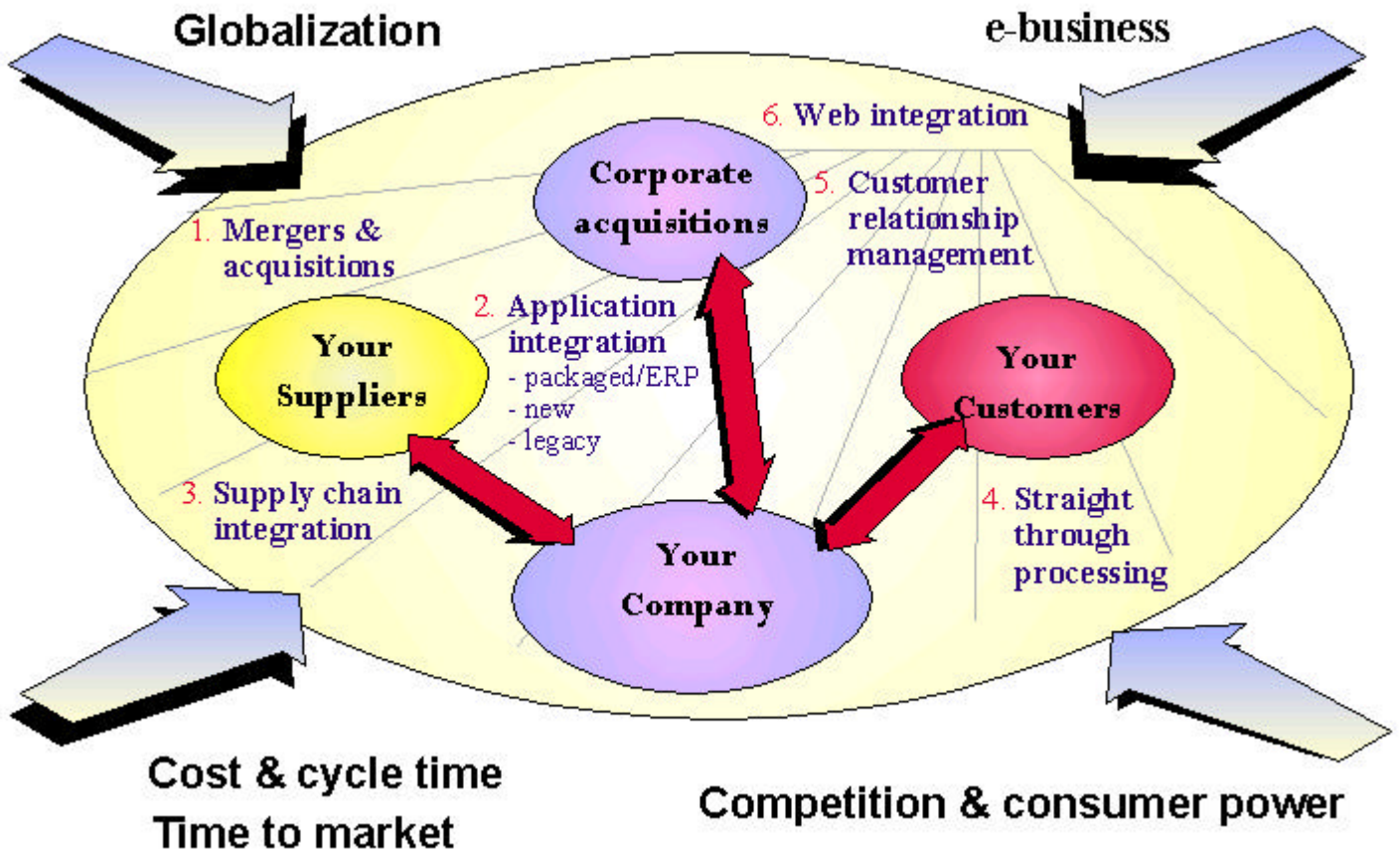

Figure 1 - New business drivers change the way companies run their business.

Not only is the world changing, companies themselves continuously evolve to stay successful. They are adopting several different strategies:

become an e-business to offer services and goods online, worldwide and round the clock

streamline business processes and execute them consistently even at high volumes

manage the customer relationship intensively

integrate their supply and value chains with their business partners

Typically, only parts of the whole business process are automated today. They are known as 'islands of automation' or 'organisation silos', because they are not yet integrated with each other. Programming these islands to exchange data is expensive and time consuming due to different computing platforms, different data formats, and the organizational boundaries the processes cross.

To speed up cycle times -- shorter time to market with new products or services -- companies need to integrate these applications. Investing in application integration will allow automation of their business processes, for example, to gain fast and automated performance needed for straight-through processing (STP). The MQSeries family of products provides complete Enterprise Application Integration (EAI). MQSeries Messaging connects virtually any computing platform in business today; MQSeries Integrator directs information to where it's needed, when it's needed; and MQSeries Workflow models and automates business processes.
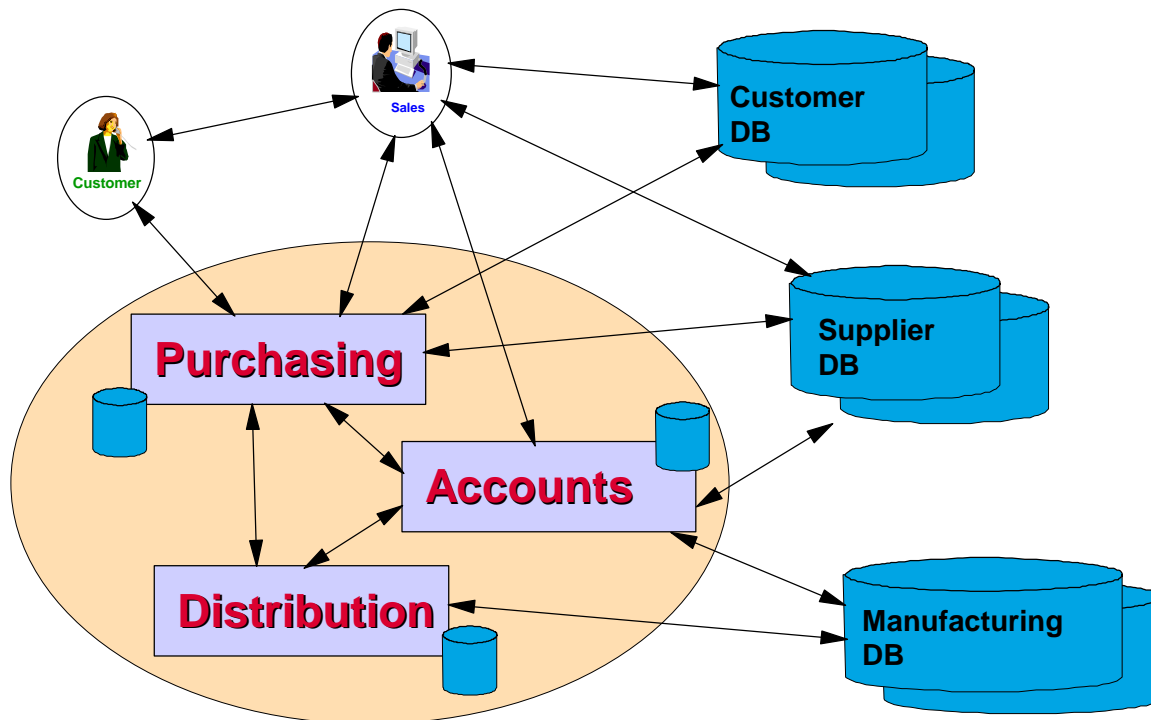

Figure 2 - Inter-application IT architecture today.

Other critical business issues, such as emerging competition and rising customer expectations are shared by different industries like Banking & Finance, Insurance, and TelCos. New and existing companies will tackle these issues in different ways. Existing companies need to leverage their existing business information (often buried in different IT systems) in new ways and offer new services and processes, so their customers can benefit from the size and experience of the enterprise. New businesses will build new IT systems and processes, buying pre-built application components (for example CRM software).

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Workflow can give both of them the flexibility to run their businesses the way they want it, rather than the way the applications want, and it helps them to adapt easily to changing business needs.

In summary, existing companies need to reduce costs to stay competitive; whereas the new NetGen companies typically create new specialized services. MQSeries Workflow can run their businesses more efficiently and flexibly to support future business change.

e-business processes

The e-business model transforms internal processes to easy-to-use online services, *using Internet technologies*. For instance, no one need talk to a bank's employee any more to open a new account -- customers request an account online, and the process is completed automatically. In outline, new frontend applications verify data from the customer's Web browser, and start the bank's business services. The new frontend Web applications and the existing backend applications that actually drive the business have to be tightly integrated. Using workflow technology, these business services are explicitly described in processes or, more precisely, in process models. Workflow makes the process and business logic highly visible and therefore easy to understand and to change. Compare this with process implementation today, where process logic is hidden in application code and cannot be changed fast and easily.

But why the emphasis on processes? To achieve their goals, companies optimize the use of resources. The traditional assets of the company are land, labor and capital but, recently, a new asset has assumed increasing importance: information. As well as data about its services, customers, partners and internal procedures, information also includes all the company's knowledge of how the business is run. To exploit this information, it has not only to be known to the company, but has to be structured and formatted.

Repeatable, precise and controlled processes

A process model is a powerful tool for structuring and formatting company information. One of the most valuable advantages of process models is the visibility of the business rules, showing what happens, when and why. In addition, understanding a process flow makes it easier to adapt it to new requirements. Business process models can be executed automatically by MQSeries Workflow, making sure that the processes are executed the way they should be. It reduces work hand-off, and thus cycle time. This guarantees not only shortened cycle times, but also that all process instances follow the same rules, and comply with the process definition.Changing business rules does not involve changes to application code anymore, so IT staff can focus on more technical matters. Business decision makers can change processes easily and fast, exploiting clear visibility of business rules and process models. Existing process models can be changed within minutes, or reused as templates for new processes. MQSeries Workflow navigates business processes, routing data automatically between connected applications, and leveraging data from human intervention, when necessary. Processes automated like this will have much faster cycle times.

It's clear that e-business needs workflow to define, execute and control business processes. Besides the separation of business logic from its execution, workflow coordinates the integration of all applications needed to run the process - the key requirement to automate e-business scenarios. A Gartner Group report pointed this out: "e-business infrastructure will need workflow technology despite challenges. e-business best practices will seek workflow's focus on process encapsulation, process portability and interoperability, focusing on the consistency of automated business logic."

Enterprise Application Integration

What is Enterprise Application Integration?

A Forrester report defines EAI as the "integration of multiple, independently developed, managed and maintained applications that may normally use incompatible technologies and platforms". EAI capabilities for integrating existing and new applications are fundamental for reacting to business change.

At its simplest, EAI enables transfer of information between applications. But EAI can offer so much more: It can automate the flow of data - and hence work - between the applications that make up the business process flow. The applications in the flow must be enabled to send, receive and work with this data, and to return appropriate results.

With this definition, EAI is transformed from the relatively simple coupling of applications to a global process implementation. Mission critical business processes like this not only comprise many applications combined into complex business tasks, they need to be up and running 24 hours a day, 7 days a week.

A major characteristic of EAI is automation. The integration of these applications - the business process - should run completely without human intervention. If, however, human intervention is required, MQSeries Workflow generates work items to allow a company's staff to participate in the business processes.

Application Integration at three levels

EAI is an important aspect of IBM's business integration strategy. The strategy positions the MQSeries family of products in three tiers that match the Forrester model of integration:

1. the lowest level of EAI is sending information directly from one application to another (using MQSeries messaging). Logic and formatting for data exchange is totally within the applications.

2. where there are many applications involved, information needs to be intelligently routed to where it's needed, and may have to be transformed or formatted, using MQSeries Integrator. The connected applications don't need to know about required data formats, but the business logic that starts the exchange is still inside the calling application.

3. at the highest level of integration, a business process is represented by applications started by specific business conditions (or business logic). Here, MQSeries Workflow supports sophisticated multi-step process flows and, besides working with applications, MQSeriesWorkflow allows human intervention, too. There is no need for the applications to know anything about the overall business process, which is defined in a business process model. The business process, controlled and executed by MQSeries Workflow, knows when each application has to be invoked and what data is required. The applications don't link to each other, they send results back to MQSeries Workflow, and MQSeries Workflow uses the business process definition to decide what happens next.

IBM's MQSeries family offers the unique advantage that all of these 3 levels may be easily combined within an overall solution, based on their common foundation on MQSeries messaging and XML.
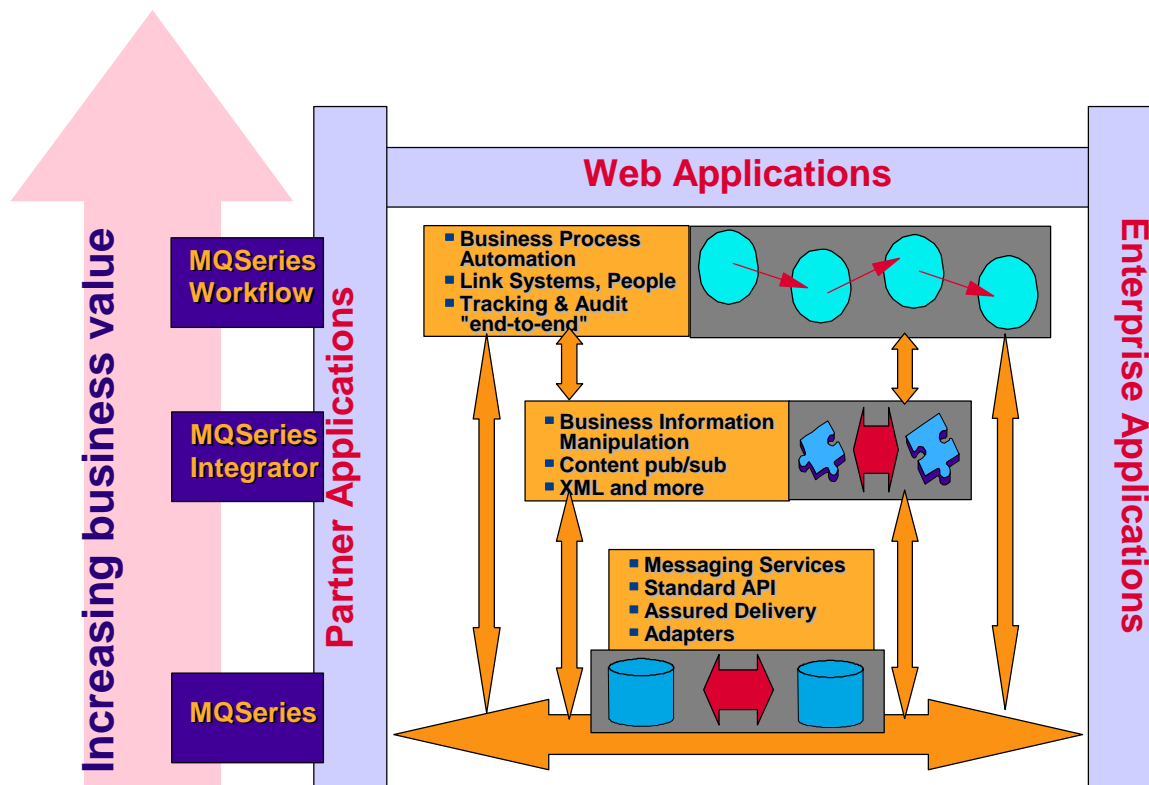
Figure 3 - Increasing the business value using the MQSeries family for Business Integration.

Internet Application Integration

There are two models of e-business conducted outside the enterprise:

Business-to-Business (B2B) is the close integration of business partners. B2B aims to connect two or more companies in order to speed up cycle times and reduce costs. In EAI terms, this means integrating applications running on a mix of systems made more complex by different computing strategies.

B2B encourages companies to work together more closely. For example, orders from a company are automatically sent to suppliers and the appropriate action is started and completed. This involves publishing services offered by the supplier to the companies that are supplied. Suddenly, all these companies have an automated relationship which is much closer and faster than today's way of doing business.

Business-to-Consumer (B2C) enables the business to deliver to consumers automatically on the transactions that, in the past, needed the initiation by a company's employees. For example, to open a new bank account directly from the Internet, all the steps required are being made available to the public, using easy-to-understand user interfaces (new frontend applications accessed from the Web), and the bank's backend applications that create the new account, plus all the associated tasks.

For both, B2B and B2C, it is vital that the boundaries of the business process are fully described, so that business partners and customers can work easily with the company, either interactively or with full automation. And even more important, the explicit flow also allows companies to change their processes as fast as the market changes -- and easily enough for decision makers to change the business rules, rather than IT people. The company itself can offer departmental services to the internal community allowing internal ordering, for example, across the company's intranet. This not only encourages companies to document their existing processes, but leads to reengineering and refining in order to automate and accelerate them.

Workflow across enterprise boundaries

In a B2B scenario, a business process spans applications located within the company and outside the company's boundaries, at business partners. The process model holds the rules and data to perform the task. Since a company wants to keep its own core business private, sub-processes will be defined privately, but the parent process is common to both - or several - partners.

Here, even different workflow systems can work together: there's no need for the supplier to have the same workflow system installed. The state of the entire process, which steps have already been completed, which decisions have been made based on what data -- all of this can be tracked and monitored. If customers call in and want to know what is happening to their orders, a look at the process model shows the current state of the process.
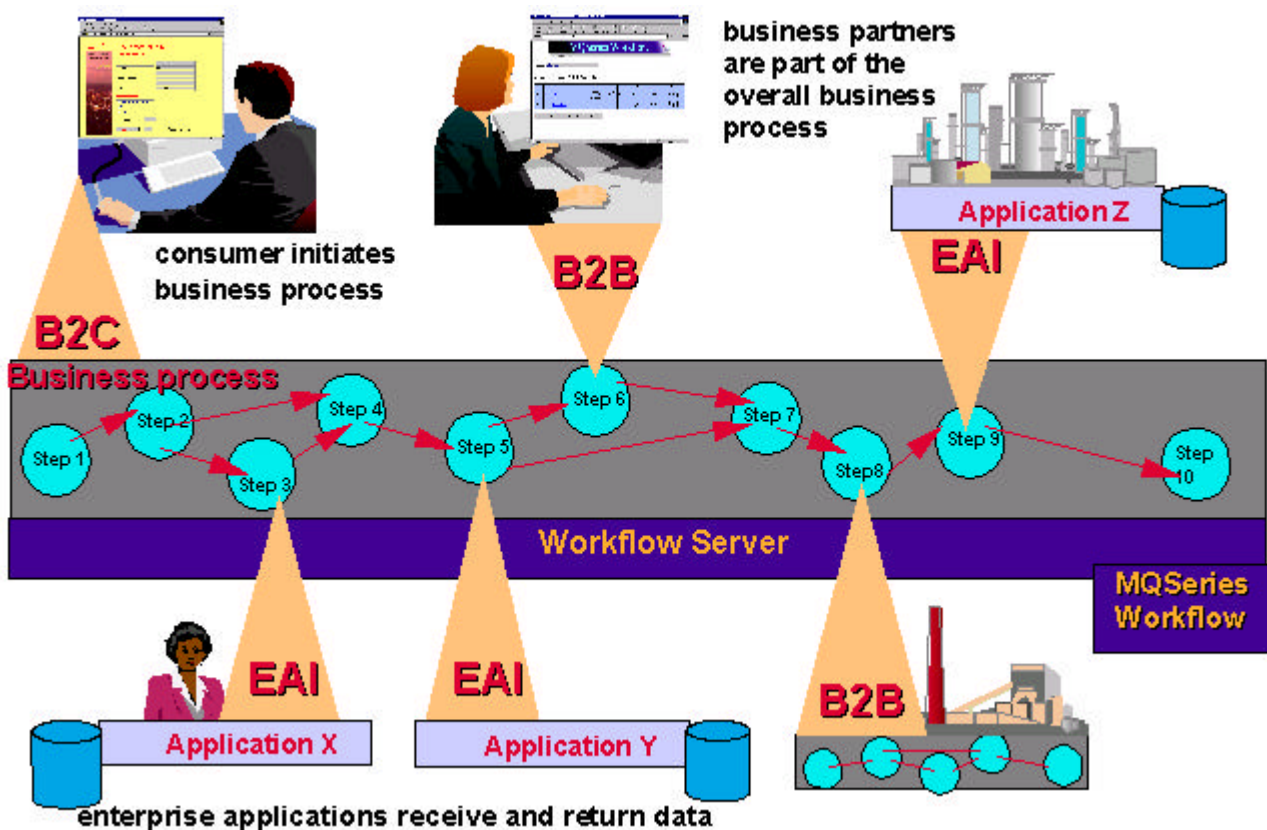

Figure 4 - The business process integrates all participating applications and organisations, as well as business partners and consumers.

Integration like this is very difficult to implement using direct messaging at the application level, or by using message brokering only, because the underlying business concepts would be hidden inside the applications. So business concepts would not be apparent, nor would they be easy to change. MQSeries Workflow is needed to run critical processes by integrating different enterprises with each other and their customers.

In the scenario shown in Figure 4, a business process is controlled and executed by MQSeries Workflow. An Internet customer starts a transaction by sending a request and MQSeries Workflow navigates the process, integrating and invoking applications within the enterprise. Business partners are part of the process and the data they need is sent to them. A partner might have just one application sufficient to run the task, or a complete workflow. Whichever it is, it's private to the partner and not visible to the calling business process. Only the interface needs to be defined to both sides.

e-business scenarios and customer samples

Business processes and workflow will be more and more important for companies considering how to run e-business successfully. IBM has a huge number of MQSeries messaging customers who are going to implement their business processes with MQSeries Workflow now, building on their existing MQSeries infrastructure.

The examples here are based on IBM customers already using MQSeries Workflow to control their business processes:
- Opening a bank account (check identity and income, approvals may be needed, cheques are made available, eventually a credit and a debit card, multiple steps to finally activate the service)
- Originating a mortgage loan
- Enrolling a new member into a bonus program, ordering cheques in advance for bonus club members
- Provisioning network services from a telecommunications company (configure switches and routers, apply appropriate service levels and rates, etc)
- Providing employees with the hardware and software they need
- Underwriting insurance and processing insurance claims

While processes like these focus on the automation of people-intensive work tasks, which all show great saving potential, the product is used more and more for automating process flows across backend systems, often using MQSeries messaging. One customer is using the product to automate its e-commerce and global business operations, integrating several ERP modules, like SAP. A similar solution, requiring very high activity rates, is installed for a set of Japanese banks as part of their next-generation IT infrastructure.

Straight-through processing (STP) aims at reducing total transaction time to nearly zero, which is a requirement in areas like investment banking. STP is the term used to describe transactions, that is, once entered into a system, a transaction passes through its entire life cycle without any manual intervention. Therefore it needs completely automated backend processing and significant performance, availability and messaging support. Workflow can be used in the front-office to validate the initial order, helping bank staff to avoid costly errors. MQSeries Workflow is also used for application communication flows across multiple units of work in the backend part of STP, where MQSeries Workflow has proven that it can support the extreme performance and high availability requirements while adding adaptability, status monitoring and automated error handling.

MQSeries Workflow for e-business integration

IBM MQSeries Workflow helps you run your business processes and control your e-business activities. MQSeries Workflow is used to design, document, execute, control, improve and optimize the business processes, so you can focus on the company's key objectives. After graphically specifying your process flows with MQSeries Workflow, the runtime system navigates the workflow models, triggers work to be performed, takes reply data and continues to the next step. It enables you to track progress while processes are running, and allows you to audit and analyse historic process behaviour after-the-fact.

The automation of business processes shortens cycle times, handling more workload with existing resources. It also improves customer service, accelerating your path to the invoice and increased consistency of process execution across different customer access channels.
The ease-of-change to process flows allows you to adopt your distributed IT system to changing business needs, without having to touch programming logic. Business flow logic is encapsulated, simple to follow and quick to change.

B2B and B2C are natural extensions to EAI and process automation. MQSeries Workflow automates business processes that span application and organisation boundaries. Whatever their IT systems, you can include partners, customers, and suppliers, using Internet technologies.

You win on:

Efficiency. When you automate your business processes with MQSeries Workflow, people and applications are automatically prompted with the relevant information for the next piece of work in the current process. Cycle times can be dramatically reduced**.**

Integration. MQSeries Workflow integrates organisations and IT resources, within and across enterprises. It leverages IT resources, data and knowledge so you gain maximum advantage from your investments.

Consistency. Process flows are executed again and again according to the same business rules. No matter who is involved, or whether it is a human or an application that performs a step. No matter which channel gives access, or which backend system is used. MQSeries Workflow ensures repeatable, precise and controlled business process execution.

Scalability. Many IT architectures break when workload increases. MQSeries Workflow is designed for highly parallel processing and ultra-reliable robustness and extendability. It scales in numbers of users, transactions and applications with the capacity of your server hardware.

Transparency. With MQSeries Workflow, business processes become clearer. Process encapsulation makes process flow logic explicit, well documented, and adaptable to changing needs. You can show end-to-end processes are understood, documented and followed.

Adaptability. Process logic can be changed without touching program code. Process changes can be made easily and fast to keep you competitive in a dynamic market.

Support. With competence centers all over the world, IBM offers support for MQSeries Workflow, business integration solutions and the MQSeries family to support your EAI, B2B and B2C solutions.

Management Summary

Workflow is the solution to the issues of EAI, and e-business scenarios including B2B and B2C. With its flexible and automatable business processes and accessible, explicit and easily-changed business logic, workflow has all the characteristics for an enterprise to evolve to an 'adaptive enterprise'. In an increasingly dynamic business world, adaptiveness becomes more and more vital for the survival of existing enterprises, as well as for the growth of new ones.

New e-business processes demand a new, totally flexible IT infrastructure in which a workflow system automates and rationalizes the way processes are run. This can result in transforming improvements to cycle times, throughput rates and cost structures.

The MQSeries family makes this vision real:
>   MQSeries messaging provides reliable and universal application connectivity
>   MQSeries Integrator simplifies application integration
>   MQSeries Workflow orchestrates business processes

MQSeries Workflow's automation of processes can involve just systems, or systems and people, while spanning application and organisation boundaries. It's exactly these abilities that are needed for new customer services. MQSeries Workflow processes run quickly and adapt readily -- you don't even need a programmer to make changes.

More information

More information on business integration, the MQSeries family of products and MQSeries Workflow is available from the Internet, starting from the MQSeries Workflow homepage at www.ibm.com/software/ts/mqseries/workflow/.

Be Assured ... be MQSeries ... and go with MQSeries Workflow

- It's adaptive middleware for a changing world
- It's how different systems do business together
- It works smarter, so your data works harder
- It turns mission-critical into mission-accomplished!

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The IBM home page can be found on the Internet at
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