INTRODUCTION: INTERESTING TIMES FOR WORKFLOW TECHNOLOGY

MORDECHAI BEIZER
CHAIR, AIIM[1] ACCREDITATION WORKFLOW SUBCOMMITTEE

These are most interesting times to be involved with workflow technology, whether as user, vendor, integrator or consultant. The concept behind workflow technology is simple. It is an effort to leverage automation to improve the way an organization works by making it "better, faster, cheaper." It is the *execution* that is challenging, which is why these are most interesting times, and why the winners of the 1997 Giga Excellence Awards are so deserving of recognition.

Workflow as a separate technology dates back to the late 1980s when imaging began to be used in a few pioneering organizations in support of basic business processes. It is not surprising that many of these early large-scale imaging efforts were in the insurance industry. Companies such as USAA, Prudential Insurance, and Empire Blue Cross and Blue Shield are (or at least were in the late 1980s) enormous paper factories receiving hundreds of thousands of pieces of paper per day for claims, customer service, and policy servicing.

Imaging technology promised to reduce the tremendous effort involved in controlling, distributing, and managing the daily intake of paper. The obvious question was how to allow customers to redefine and change their business processes *on an ongoing basis* once the transition was made to imaging technology. Not surprisingly, the first workflow products were introduced by imaging companies. FileNet, which introduced the first script-based workflow product, was followed by Sigma Imaging Systems, which introduced the first graphical workflow product at the 1989 AIIM Expo. And so began the workflow industry (although no one called it that at the time).

If workflow technology has been around for 10 years, why does Giga give awards for innovation and excellence? There should be so many examples of how organizations have transformed themselves through applying the technology, that it should be impossible to select a set of winners. The answer explains why these winners are exceptional, why these are most interesting times, and why we can expect many more examples of such transformation in the near future.

---

[1] AIIM: Association for Imaging and Information Management

EXCELLENCE IN PRACTICE

CROSSING THE CHASM

Several years ago Geoffrey Moore popularized his *Crossing the Chasm* concept by explaining why certain high-tech products reach the mainstream market while others fail. Briefly, there are phases of the Technology Adoption Life Cycle that lead to a chasm or *gap* between what visionaries and early adopters consider an acceptable product and the kind of product that the pragmatists in the mainstream consider acceptable. During this gap period, high-tech products either mature so that they are easier to deploy, easier to use, pose less implementation risk, cost less, have enough success stories, and so forth, so that they appeal to the pragmatists, otherwise the products languish.

Workflow technology today is at the threshold of mainstream adoption. There are infrastructure changes taking place that address the deployment, ease of use, cost and other factors that characterize mainstream products. Anybody that wants to leverage workflow technology to make their organization work "better, faster, cheaper," needs to understand these changes. And, with the examples of the success stories represented by the 1997 (as well as the 1996) winners of the Giga Excellence Awards, the pragmatists among us should feel comfortable that real transformation is achievable.

THE SUCCESS STORIES

All the case studies in this book are examples of organizations that have managed to do things "better, faster, cheaper." Whether it be Sanlam that leveraged technology to increase its telemarketing closure rate by 150 percent, or the Tennessee Valley Authority (TVA) that achieved significant cost reductions in processing maintenance work orders, or the University of Alberta providing far better service in processing interlibrary loans; these are all traditional examples of why organizations choose to deploy imaging and workflow technology. What is also interesting is the added dimension to these stories showing that this technology is at the threshold of mainstream adoption.

Sanlam has a homegrown solution. Using off-the-shelf tools and technologies such as Microsoft Access, Visual Basic, MQ Series messaging, SQL Server, Internet Explorer, HTML, and so forth, Sanlam succeeded in a systems integration project that would have been considered high-risk just a few years ago. Sanlam's custom workflow system has enabled its telemarketing operation to increase revenue and be more effective in direct sales.

The University of Alberta deployed an imaging and workflow solution to improve its ability to process interlibrary loans and document delivery. With web-based entry of document requests and on-line electronic document delivery, the time to access many documents has gone down from six weeks to 48 hours while the associated effort has been reduced by seventy percent. What is intriguing about the University of Alberta system is that it illustrates how the reduction in cost of imaging and workflow technology can expand the envelope of applications of such technology.

INTRODUCTION

Baylor Health Care Systems (BHCS) is a regional network of healthcare providers. It has implemented a workflow system for reviewing and negotiating pharmaceutical contracts. The participants in the contract review process are senior staff at separate sites. By coordinating the activities of people at remote sites, BHCS has been able to reduce the time needed to put new pharmaceutical contracts in place by an average of two months. This leads to hard-cost savings by permitting BHCS to take advantage of negotiated price reductions much earlier than otherwise. A key enabler of the BHCS system was the ability to leverage the Internet infrastructure for linking all the participants.

The German Federal Central Register used workflow technology as a catalyst to change the way they do business. They were able to change significantly the nature and scope of the job in a large civil service organization, so that individual clerks are now responsible for the overall process and not just for separate tasks within the process. This success story in which workflow technology has been introduced into a very tradition-bound culture can provide an object lesson in how to accomplish similar change in other entrenched organizations.

Both TVA and Hypo-Bank are using workflow for traditional purposes. The TVA has implemented workflow for maintenance work order processing and for controlling procedural changes, while Hypo-Bank has used workflow for applications such as an electronic loan file and for problem resolution related to payment transactions. The distinguishing aspects of these implementations are the scope. At the TVA, there are over 1,100 users of the workflow system. At Hypo-Bank, the workflow technology has been implemented as a basic infrastructure service that existing and future applications are expected to leverage.

The Swiss Bank Corporation (SBC) implementation shows that workflow technology is ready for the mainstream. The SBC system is used for back-office processing of security transactions. It handles up to 50,000 security transactions per day with a value in excess of one billion dollars, corresponding to about 20,000 workflow cases per day. The system is a "bet-your-business" application in which speed, accuracy, and reliability are critical. The bank has realized very impressive benefits including a 30 percent reduction in staff at the same time as a 50 percent increase in order volume, processing time reductions of 30 percent, and many millions of dollars annual savings. If workflow technology was not ready for the mainstream then, even with benefits such as these, the business risk of implementing such a system would be too great.

THE INEVITABILITY OF MESSAGING-BASED WORKFLOW

Having seen that there are success stories for the most demanding pragmatist, the other factor that will lead to the widespread adoption of workflow technology is the inevitability of messaging-based workflow. During the next two to three years, the most significant development in workflow technology will be the shift from client/server workflow to messaging-based workflow. The building blocks of any workflow system are robust and scalable queuing, universal connectivity, workitem transport, user definition, security, administration,

and a repository for work-in-process. Rolling out and maintaining this infrastructure occupies a large part of the effort involved in any client/server workflow implementation. However, these are the same building blocks required for a useful messaging system. And, organizations are deploying messaging on a grand scale.

Various estimates of the number of messaging clients deployed by the end of 1997 are all in the tens of millions! By the year 2000 the number of messaging clients is expected to be well over a hundred million. These numbers dwarf the number of workflow clients that have been deployed. Delivering workflow technology on top of this ready-made infrastructure would significantly boost the ease and reduce the cost and risks of deploying workflow technology.

Interestingly, messaging technology languished in the high-tech chasm for much longer than workflow technology has even existed. For years there were no widely accepted messaging standards, no common architectures, no critical mass that would lead to widespread adoption. It is only in the last two to three years with the advent of the Internet and the acceptance of Internet-based messaging standards such as SMTP, MIME, POP3, and now IMAP4, that messaging technology has moved into the mainstream. Grabbing on to messaging is a fast path to the mainstream for workflow technology.

Messaging also addresses an issue that workflow has barely touched. One of the most significant hardware developments of the last two years is that the majority of new machines purchased by large organizations are laptops. Supporting mobile intermittently-connected users will be one of the challenges for workflow technology in the years ahead. While messaging systems do not completely solve this problem, they at least provide a good deal of the infrastructure needed to support such users.

THE IMPLICATIONS OF MESSAGING-BASED WORKFLOW

The shift to messaging-based workflow has interesting implications for the evolution of workflow products. They can be expected to evolve into products that address routing and those that address workitem containment. This fits naturally with a messaging paradigm where the addressing and delivery (routing) of a message is distinct from the structure and definition of the message. Electronic forms products are examples of products that focus on the definition of the message as opposed to the routing of the message.

Traditionally, workflow technology has been focused on the flow of work and not on the definition and content of the workitem itself. Most workflow products provide rich functionality for routing workitems from workstep to workstep, either for ad hoc, administrative, or production processing, but they provide significantly less richness for the definition of the workitem objects themselves. Workitems are often no more than general-purpose containers with properties and attachments. Creating complex workitems requires a customized workflow-enabled application that "understands" proprietary workitem elements stored within a general-purpose container.

INTRODUCTION

What's Missing?

Routing is just one aspect of workflow, not necessarily the most important one to automate in many situations. A business process consists of a set of tasks and the collection and assembly of supporting content. When the workitem content is relatively simple, and the order of tasks is fixed with each performed by a different person, a "map" and workflow routing engine are important. When the workitem is more complex, either because there is a large amount of content, or because the order of the tasks or the person performing the tasks may not be fixed, then other aspects of workflow become more important than routing. The ability to ensure that all workitems contain consistent content, that the content is consistently processed, and that tasks are completed in a timely manner, is critical. In such applications, management of the workitem content is *more* important than workitem routing.

A Rich Containment Model for Work

A rich containment model for work is at least as important as routing automation. Complex workitems have similarities from which one can abstract the elements of a rich object model for workitems, which should include:

• a representation for existing *and* anticipated content,

• a means of including content using embedded files, linked files, URLs, and links to managed documents,

• the ability to group content into logically related sections,

• a representation for tasks that can be either dependent or independent of the workitem content,

• the ability to define a set of application-specific properties,

• automatic tracking of changes to the workitem,

• the ability to record comments and free-form notes, and

• the ability to set status, deadlines, and assignment, at the content, task, and workitem level.

Workflow Product Evolution

With the shift to messaging-based workflow, one should expect to see a decoupling of routing and containment workflow products. A workflow routing product should be able to route any message, whether it is a simple e-mail message or a complex workitem created by a workflow client. Similarly, a containment product should provide a rich object model for workitems that lets users easily define and manage complex workitems.

EXCELLENCE IN PRACTICE

Working through the common medium of the messaging infrastructure such products will allow users to mix and match the right product for the right application. Workflow routing products will route any message. Containment products will create workitems that can be routed by any technology including a simple mail send, scripting, ad-hoc routing, and structured workflow routing.

The shift to messaging-based workflow will also address the interoperability issues that have been a major concern of the industry. By representing workitems as messages that adhere to Internet-messaging standards and by being able to route any such message the goals of the Workflow Management Coalition will be achieved, albeit perhaps not in the way that was originally envisioned.

CONCLUSION

Workflow technology is on the threshold of mainstream adoption. There is a major shift taking place in the infrastructure upon which the technology is based, from client/server to messaging. This will address many of the environmental factors that have prevented more widespread deployment and leveraging of workflow technology. In the meantime, the lessons of these success stories are valuable in showing what can be achieved by those organizations that choose to embrace workflow to transform the way they do business. These case studies also encourage people to think about opportunities within their own organizations for real change that will arise as the barriers to technology deployment are lowered.