

Workflow and Process Management

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It has been quite an interesting year for those monitoring the activities of the Workflow Management Coalition (WfMC).

This past year saw the release of Version 1.1 of the Wf-XML interoperability binding, an XML-based standard facilitating consistent data transfer between workflow engines, after substantial collaborative testing and discussion. The WfMC and Business Process Management Initiative (BPMI is a non-profit corporation which aims to promote and develop the use of business process management), met in London to discuss the possibility of a joint initiative. Later in the year, Version 1.0 of the Workflow Process Definition Interface (XPDL) was released. It comprises a specification supporting process definition import and export, a common meta-model for describing the process definition and an XML schema specifying the XML Process Definition Language (XPDL). (XPDL samples are available to view or download from the WfMC website.)

More recently, there has been a great deal of discussion on the existing interfaces for workflow client and invoked applications and possible improvements to the specification.

But what does all this mean to the user and business community?

In previous releases of the WfMC Workflow Handbook, Rob Allen and Charles Plesums have provided excellent introductory and detailed information on the many facets of workflow and workflow management. This paper seeks instead to look at the impact of current workflow trends and the practical benefits of WfMC efforts.

INTRODUCTION

This has been a particularly difficult time for business in most countries, with economies experiencing depressed markets and recession, collapse of large corporations and increased concerns over corporate performance. Corporate executives are under pressure to ensure they coordinate their resources, disparate applications and business activities as well managed processes, with full accountability and auditing within those processes, improved performance metrics and reporting.

In the 1990s workflow was often used as part of a business process reengineering exercise to automate 'reengineered' business processes. The emphasis was on technology, i.e. applications and systems, with less thought towards human interaction within the process and, as a result, workflow developed a poor reputation. However, with the ability for business processes to be modelled and monitored in real time, and for those processes to be more easily changed in response to volatile market trends and technology, interest is again growing in business process management.

Business process management (BPM) requires a strong workflow component but extends this to include configurable integration adapters to enable

process automation and integration independent of the process model itself and flexible, configurable user interfaces for human interaction.

“Collaborative Business Process Management (BPM) is the convergence of Workflow, Enterprise Application Integration (EAI), and unstructured or ad-hoc processes. BPM is currently revolutionising businesses by providing enterprise infrastructure that manages and automates processes that have both human and system related tasks. BPM is one of the few technologies seeing growth because it can show real value and ROI in the highly competitive environment caused by a down turn in the world economy.” Linus Chow¹

The WfMC has always acknowledged workflow to be the interpretation of a process model, management of automated and manual tasks and of business rules, exception and escalation procedures. Its recent cooperation with the BPMI has strengthened this concept.

The WfMC and BPMI share a common vendor base and a sharing of ideas, which can only be of benefit to the user community. “As BPM matures, look for new capabilities of handling unstructured, evolving, and intelligent processes. The development and convergence of technological standards in areas such as Web Services and Process Logic will make this possible. Meanwhile, increasing demand for faster and easier configuration by business users will drive vendors toward adding these new capabilities,” states Linus Chow.

The benefit to business is that this working relationship offers an opportunity for a new approach to process management and application integration, with a move towards enabling business users, rather than a team of programmers, to integrate and manage disparate enterprise applications within their business processes.

IMPACT ON THE USER COMMUNITY

Governments around the world are driving the initiative to assist the business community with electronic business transactions. One such initiative is the high priority placed on preparation and passing of digital signature bills granting electronic contracts the same legal status as handwritten signatures.

The Australian Commonwealth is also moving to an “E-government” phase that will involve the transformation of government service delivery through the appropriate use of new technologies such as BPM. The technologies, together with transformation of business processes within and across government departments and agencies, have potential to deliver *“better customer focus and access, greater availability of information, improved business processes and efficiencies ... by delivering better government and better services to citizens and businesses.”*²

Discussions with Chris Ware, Government Consultant, indicated that workflow management of government processes could have an impact on the community at large. Chris believes the ability to include non-government

¹ Linus Chow: Regional Director Asia-Pacific and Six Sigma Champion, HandySoft Corporation.

² The Australian National Office of Information Economy

organisations (NGOs) within workflowed processes would greatly reduce current administrative overheads and improve the quality of service provided by NGOs. *“Managing the activities of processes would free qualified service providers from mundane clerical responsibilities to concentrate on what they do best – assisting people within the community.”* He went on to praise the efforts of organisations such as the Workflow Management Coalition in encouraging collaboration between vendors and continued improvements in the technology.

PROCESS MANAGEMENT IN GOVERNMENT

Grants administration within the Australia Council is a good example of process management within government.

The Australia Council is the Australian federal government's principal arts funding and advisory body. The Arts Development Division of the Australia Council fosters excellence and diversity of practice in the arts by providing support to allow artists, arts organisations and communities to create new work, to develop their artistic potential and to make the arts accessible to wider audiences. It is responsible for managing the Australia Council's grant categories for artform development and arts activities. Council also undertakes many other activities to support and promote the arts including the administration of non-grant files and Council projects, (strategic and international activities, audience development, and event management). In addition, Council provides information to other agencies, artists, art organisations, the public, the media, and Government.

The NUGGET solution (named after ‘Nugget’ Coombes, Australia Council's first Chairperson) supports Council business in relation to the formulation of funding programs and grant categories, application and proposal registration, and administration of the grant and project lifecycle. The solution also allows for reporting to Government and other stakeholders and management reporting to support the continuous improvement of funding policy and program administration.

One of its main goals set to meet its responsibilities is to ensure the highest standards in public accountability and service.

The core components of the NUGGET solution include:

- Grant processing: i.e. support for the administration of grants, projects and programs throughout the grant or project lifecycle.
- Contact and client management (the administration of internal and external contacts and their relationship with the Council).
- Records management, (involving the storage, retrieval, archive and sentencing of files and records).

The core components interface with the existing financial system through workflow, and modules are integrated using standard interfacing and reporting tools across all modules.

The image is a composite of four parts illustrating a grants management system:

- Top Right:** A horizontal flowchart with five steps: 'Process applications and proposals', 'Make decision', 'Process approvals and rejects', 'Manage finances', and 'Manage grant and project activities'. Below 'Manage finances' are four sub-steps: 'Commitments', 'Payments', 'CFR increases and fee decisions', and 'Refunds'.
- Top Left:** A photograph of a man in a blue shirt looking at a computer monitor.
- Bottom Left:** A screenshot of a software application window titled 'Maintain Application'. It contains various input fields for 'Application ID', 'Client ID', 'Fund', 'Transit Category', 'Applicant Title', 'Long Description', 'Revenue Code', 'Amount Requested', 'Start Date', and 'End Date'. There are also buttons for 'Search', 'Print', and 'Cancel'.
- Bottom Right:** A screenshot of a data table with columns for 'Application ID', 'Year/Fiscal', 'Budget Category', 'WELFARE AND ASSISTANCE PROGRAMS', 'DESCRIPTION', 'Status', 'Amount', and 'Budget'. It contains multiple rows of data.

Text overlays on the right side of the image list key objectives and benefits:

- Grants and Project Management
- Workflow (process management)
- Records Management
- Financials
- Management Reporting

The solution has provided the following key objectives and benefits:

- Implementing a system capable of responding to current and future business requirements.
- Capacity to produce data and reports to meet Council and government requirements in an outputs/outcomes environment.
- Facilitating an organisational shift in focus to outcomes and assessing outputs, away from a focus on processing grants.
- Improved ability to monitor, analyse and assess funding programs.
- Significant reduction in administrative costs in processing applications and grants.
- Improved decision-making by Board managers and Directors through wider and timelier access to accurate, accessible, current data.
- Restoring the Council to best practice in grants processing and management.

Council believes the implementation of an integrated Grants Management System provides the best opportunity for Council to meet emerging and/or wider program activities and reporting within existing staff resources; and to maintain and consolidate Council's key asset in retaining its competitive edge.

WORKFLOW MANAGEMENT

Workflow management of processes requires a process definition tool, a process execution engine, user and application interfaces to access and action work requests, monitoring and management tools, and reporting capabilities. Some workflow vendors also offer configurable adaptors and inte-

gration tools to more easily extend the flexibility of workflow integration within the business process.

Process Modelling

Process modelling tools allow business users to coordinate business activities, people and applications, and to model routing of work requests within a process and across processes. The model can depict various aspects of a process, including automated and manual process activities, decision points and business rules, parallel and sequential work routes, and how to manage exceptions to the normal business process.

Many workflow management systems cater for more complex process modelling requirements such as ad hoc routing in and across process activities for process flexibility, work collection or “rendezvous” points to manage pending work and calls to external business processes or sub processes. The latter capability facilitates reusability within the design. For example, a common underwriting sub process could be utilised across a number of insurance processes.

The WfMC has recognised the advantages of separating the design component from the run-time component and has developed and published an XML Process Definition Language (XPDL). This interface supports independence of the design and the import/export of the design across different workflow products, or from specialist modelling tools. In this way, business users can utilise specialist tools to model and report upon different simulation scenarios within a process and then use the model to transfer process entities and attributes to a workflow definition.

An example of one organisation interested in the possible benefits to be gained from utilising an external modelling and simulation tool to support workflow management is the Australian Taxation Office (ATO).

In a paper entitled “The Meta Modeller and Simulator as a Predictive Management Tool”³, Harry Bath of the ATO describes a project for investigating use of such a tool to determine the costs of establishing different work queue configurations in a workflow application, and whether it could be used as a management tool to apply predictive management practices to a workflow system. The investigation stemmed from the understanding that workflow technology *“improves the level of understanding of a business process and assists to limit the amount of variation in a business process”*⁴.

The Workflow Engine and its Interfaces

Once designed, process definitions can be “applied” to the process engine. Although programmers may be required to assist with development of integration code to external applications and systems, applying and updating the process design itself should be able to be achieved by business users.

It is the process engine that executes the facets of the process design, such as rules based routing and work assignment, prioritisation and time rules

³ Harry Bath: The Meta Modeller and Simulator as a Predictive Management Tool, November 2002.

⁴ The Meta Modeller and Simulator as a Predictive Management Tool, Page 3

for management of deadlines and responses. Throughout a work item's life-cycle, people, systems and applications within the business environment interact with the process engine.

The WfMC has defined a set of functions in the Workflow Application Programming Interface (WAPI) that support interaction by client and invoked applications with workflow management products. These calls can be used to develop user interfaces to and from business systems and applications.

Whereas previously many workflow projects required development of a user interface most, though not all, workflow management systems now provide a user interface to facilitate human interaction in the workflowed process. The interface can range from a simple inbox to allow for work browsing, selection and completion, to more complex interfaces that provide a flexible environment through user configuration and forms definition. Many also provide for simple configuration of integration to standard email and word processing applications.

Use of an existing user interface greatly reduces a workflow project's implementation effort, and that of ongoing maintenance effort and cost. But there are times when an existing interface does not meet a client's requirements. Where a client requires a customised interface or wishes to extend workflow capabilities to line of business applications, most vendors provide an extensive application programming interface (API) for developers to code additional functionality or build custom interfaces.

However, a workflow project does not always require a large development effort. In line with business process management initiatives to move the emphasis away from technology, some vendors have sought to extend the flexibility and scalability of their offerings through adaptors and agents for Enterprise Application Integration (EAI) to existing systems and applications. Availability of suitable adaptors greatly reduce the effort and risk in a workflow project.

As the capabilities of workflow management solutions become more sophisticated, so too do the nature of internal mission critical and B2B business processes. It may be that business processes themselves span sections, departments and even organisations, and within this scenario multiple workflow engines may be involved. To support these extended processes, the WfMC has also defined an interoperability abstract specification (Wf-XML) for interaction and data transfer between like and disparate workflow process engines.

A vendor's adherence to standards such as those of the WfMC for application integration and interoperability means that a workflow project can be more easily supported and maintained, and becomes more extensible in that the integration effort is independent of a particular workflow product.

Monitoring and Reporting

A major advantage of electronic management of business processes is the degree of monitoring available in the process. At the micro level, it provides the ability to track and monitor individual work requests and at the macro level, review resource productivity and work volume analysis. The ability to quickly search for and identify a work request within the process allows a

business user to quickly respond to customer enquiries, and to possibly extend this functionality to customers for online status query.

Workflow management and reporting tools utilise the audit history tracked by workflow engines to provide feedback on performance issues. Analysis of this information can indicate bottlenecks in the process. Bottlenecks, or performance issues, can be due to any number of reasons such as an ineffective design, a technical architecture issue, perhaps a lack of resources or staff education issues. Analysis of the problem can then be used to implement changes to the workflow process itself or external initiatives, such as training programs or allocation of additional staff to action certain activities.

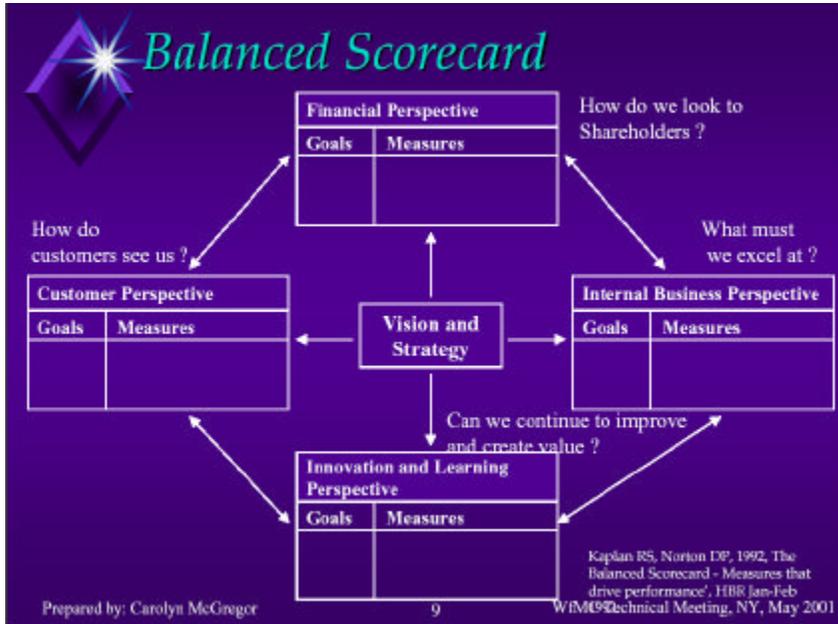
Some organisations, such as Australia Council, have taken advantage of the workflow audit information to enhance their recordkeeping practices. The process history is extracted at the end of the work request's workflow to a text file and this information stored as an audit record in their records management system. In this way, pertinent process audit information against the grant applications (for example, what activities were carried out, by whom and when) is retained as a permanent record, even after "aged" workflow requests are purged from the workflow database.

ROOM FOR IMPROVEMENT

One area where workflow technology falls a little short is in management reporting. Although the technology provides process metrics and monitoring based on audit history, management require a richer set of information.

As stated by Dr. Carolyn McGregor⁵, most workflow (and business process) management solutions provide auditing information and use this information to support process activity metrics and reports. Dr. McGregor examined the data flow requirements *"that would allow workflow process definition and workflow audit data to be captured in a decision support system that effectively supports business performance monitoring."* Her paper discusses the opportunity to capture not only statistical information on the process, but information utilised within the process to provide more informed management reporting and performance monitoring. In effect, the workflow management system (process definition and workflow audit data) can be used to create a link between the balanced scorecard, workflow management and decision support principles.

⁵ Dr Carolyn McGregor, Senior Lecturer and Research Fellow, Centre for Advanced Systems Engineering (CASE), University of Western Sydney (UWS).



The WfMC is not alone in recognising the need to provide improved reporting capabilities. Gartner, who coined the phrase Business Activity Monitoring or “BAM”, has further explored this aspect of business performance monitoring. In Gartner’s “Real-Time BAM Needs Models and Frameworks” (November 2001), McCoy and Rayner predict that by 2004 business activity monitoring will be one of the top four initiatives for IT investment and strategy for organisations required to quickly react to changes in business trends and issues.

Business activity monitoring relates to the analysis and presentation of relevant and timely information gathered from multiple sources within the organisation (e.g. workflow and customer relationship management systems) to provide real-time visibility and historical analysis of operations and transactional information.

The WfMC is well positioned to assess this aspect of management reporting and the possibility of extending its specification to incorporate additional data capture to support this requirement.

CONCLUSION

W. Edwards Deming’s “Theory of Knowledge”⁶ stated that management of a system should focus on managing the present and the future.

Without workflow, organisations are occupied tracking the status of work efforts that have taken place. In other words they “*still manage based on the results of the last periods work. Little or no attempt is made to actively manage tomorrow*”⁷.

⁶ Four Days with Dr Deming, Latzko & Saunders, Addison Wesley Publishing 1995

⁷ Harry Bath: The Meta Modeller and Simulator as a Predictive Management Tool, November 2002.

Workflow technology assists management of today's business processes, and management of tomorrow's processes.

ACKNOWLEDGMENTS

Alphawest - www.alphawest.com.au

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Dr Carolyn McGregor, University of Western Sydney (UWS)

Handysoft Corporation - www.handysoft.com

Harry Bath, Australian Taxation Office

TIBCO Software Inc. - www.tibco.com

Workflow Management Coalition - www.wfmc.org