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** *Mashups* ** for Business Process Transformation

This paper addresses how Business Mashups are an excellent tool for businesses that need additional strategic value and tactical operating productivity out of their internal and collaborative external business processes. In this context, what is being proposed as the "mashup", at a highly abstract level, is Web 2.0 + BPR + Workflow Management. An approach is recommended for conducting business process transformation using Business Mashups.

Over many years this author has performed numerous business process analyses as an IT executive, Business executive and Consultant. The results usually lead to the implementation of the latest, in-vogue killer application, whether it be stand alone or enterprise integrated. There was nothing wrong with this. The best solutions at the time were utilized. However, today businesses still find that data is in pockets, human processes are still inefficient and concurrent utilization of multiple IT applications seamlessly is not possible. Some of the major ERP vendors have been attempting for some time to correct this through integrated, common data repositories and more recently through specialized workflow routines built into their platforms. The question is whether a single enterprise system is ever possible, which exclusively manages and contains all data, IT applications and human work processes of an organization. This author thinks not. **We need a new and different way to make this business transformation!**

Need Statement

What is needed is an easy, quick, inexpensive, dynamic, user-owned method of integrating and managing business process design, process execution (workflow management), data/information utilization and institutionalization through an IT application.

The BPR Element

If your organization is like most, you have numerous business process diagrams of multiple types and iterations stored away in pockets across the enterprise which are the results of various BPR efforts. Some may even be in UML formats such as use-case, sequence diagrams or even activity diagrams. In the past, the intent was that these diagrams would provide the detail, which was gathered from users by a business analyst, for the developer to create useful, business productivity enhancing applications. The BPR artifacts are in themselves static. However, getting output or production from a business process is dynamic through the instances of executing the business process. A business process execution involves real people and things. This is one major reason BPR efforts have failed. The process was designed (static) but was not analyzed and instituted for the controlling or executing aspect (dynamic).

In line with the needs statement above, the efforts of BPR must provide for the dynamics of the

processes and the dynamics of change in the structure (design) of the process as well, in a quick, inexpensive way.

Workflow Management (WfM)

In light of the BPR effort short comings mentioned above, there has been a shift to study BPM (business process management) and BPMSs. BPM for all intent is equivalent to workflow management for the purpose of this paper.

BPR provides the static view of strategically, how an enterprise should reinvent itself to align its processes, and what processes should be conducted. Addressing how, who and when of the process execution, and the control and measurement of the efficiency of the processes is the domain of Workflow (Wf) and Workflow Management Systems (WfMS).

WfMSs takes care of delivering, through use of user defined triggers, the right piece of work to the right resource (e.g. person or computer) at the right time; and then execute (sometimes with conditions) the next piece of work in the process. The workflow definition to allow this to take place is set up in the design phase. It also incorporates the information on the type of resources that are available and required. People interact with the workflow by means of messages in a message queue, sort of like mail boxes. Users accept work, provide statuses of tasks and update other information as necessary, which aids in the control of the flow. Part of the workflow can include integration with other systems to initiate actions or get/post information. This may be done using web services in the newer approaches. This automates the human/system interface processes. The WfMS also tracks all actions and state changes that take place. This information becomes the basis for dashboard type reporting for management to evaluate the operating characteristics of the process, tasks, people and systems.

Unfortunately, many enterprises have never moved beyond BPR to really dig into these lower level aspects of their processes. One reason for this may be that workflow has been stuck in a theoretical debate for many years now about approaches and standards, making user understanding and the ability to easily execute (such as in an IT system) very confusing and difficult. Fortunately, this is changing.

In this author's research, most of what was found to be referenced regarding WfMSs was the implementations done by the major ERP vendors, (Oracle, SAP). Both of these vendors now have their own BPM or Workflow processes built into their products. Having worked in these systems and seen various implementations I believe the workflow to be very flexible, quite complicated to set up, geared to the product (although external extensions are possible), not inexpensive, and certainly not end-user friendly.

There are other efforts to build workflow into systems such as Project & Portfolio Management (PPM) systems. Some of these, for example, Changepoint, have a pretty sophisticated workflow module. These systems again, seem to concentrate on use of the workflow only for the objects held within their application (e.g. projects, candidates and requests in Changepoint).

Other, standalone workflow management systems do exist. In fact there are a large number of smaller startups in the arena. The issue here is what "standards horse" to pick. Much of the confusion in these and even the bigger vendors is what will the workflow standards end up being.

Two particular issues are runtime execution and design notation. Current WfMS architectures tend to be

made up of these two principal components. The workflow must first be designed using a notation (e.g. UML type diagram components) which are both easy and understandable for the business analyst to use, and standard enough to allow for automatic transformation to an execution engine. The OMG is supporting BPMN as the standard. To enable the runtime execution the design is transformed using a language which can interpret between the design elements and the code for an execution platform. BPEL is a major contender for this language. In addition, the execution platform of choice is in contention as well. This whole standards argument could be greatly lessened if there was not a two step transformation between design and execution. {Standby we are getting there}

Again, looking at the needs statement, current workflow implementation methods are not easy, not quick, aren't end user friendly and have complicated architectures and standards issues.

Business Mashups

Mashups are part of Web 2.0, the new breed of internet applications. From a technical standpoint they are consumers of web services from many existing sources, typically using the REST protocol and AJAX web application development model. OR, they utilize enterprise SOA architectures which have exposed the enterprise's web services.

From a user or managerial viewpoint, Mashups are an easy way to develop applications without having to understand any of the above technology jargon or perform any coding. Just as application developers today don't write in assembler, Mashups follow the same evolutionary pattern of greater abstraction in development tools; only this time to the level users can use. Mashups can be thought of as the new Excel macro for users, but much more powerful, especially in information integration. Mashup editors are the new tools which allow for combining of information from multiple websites resources or services, in a point-and-click paradigm useable by technical savvy end users. They can lead to a future of self-service business applications, with lower costs and less demand on IT. The concept of Mashups, the combining of information from many different sources, has been around for many years. However the capability for the end-user to easily 'drag-drop' and put together an application very quickly is what makes this revolutionary.

There are two classifications of mashups, consumer-based which are more focused on entertainment and general information gathering (e.g. a real estate application mashed with Google maps to display house locations). Business mashups address business process driven issues. Business mashups can combine visual and data information from multiple sources within a process-driven framework; they can keep the state of the process which is in progress, while integrating the data and visual elements as needed into the process. Business mashups are legacy integration, process and productivity focused. Both types present their information in a rich, user desirable format which can be self-managed and developed.

Because Business Mashup editors are process driven, they usually include a flow charting type of visual means to link process elements or tasks together, and logic elements which can direct the flow and act on the process objects as necessary. This makes workflow design easy. And, the initial definition or objects and attributes are done in a fill-in-the-form paradigm, where vocabulary and knowledge of object oriented design is not needed.

Being a new software technology, mashup editors and software have not standardized on a common architecture. However, what is very promising in some of the new entrants is that they are single step, in

that there is not a separate design and runtime. It is all transparent to the user. Also, some are runtime free. The code is generated to run without the need of a proprietary platform or intermediate interpretation.

So how do mashups fit with the needs statement?

- Easy, quick, inexpensive – Yes, yes, maybe. While the first two are why mashups are gaining popularity, the cost of IT involvement will certainly be less, but the TCO is yet to be proven
- Dynamic and user-owned – mashups are created by users and can be changed at any time by a user (e.g. as a process may change)
- BP Design – With built in notation such as BPMN, processes can easily be modeled
- BP Execution – Instant runtime evaluation of the process execution is possible to allow for iterative development and changes
- Data/information utilization – Processes can be set up visually which call legacy applications for the right data at the appropriate time in the process
- Institutionalized via IT application – Full runtime applications can be created, web-accessed, distributed quickly after completion of the analysis process

Putting it all together

Business Mashups can be the glue which binds together process design, process execution & control, and access to enterprise data/information. A typical scenario which the author encounters frequently in his consulting business will be used to illustrate this approach. A C-level executive of a client organization will say "I don't need new *IT* systems, what I need is lean processes, executed correctly, repeatedly, to get efficiency in the business and with our partners/customers. I need you to help us with business process reengineering." From an experienced consultants perspective however what is most times meant, from that statement or what is discovered is the following.

- BPR is not what is wanted. It is workflow that needs to be addressed
- Systems are in fact a major part of the process and hence the problem
- Lack of repeatability is due to both process variances and data inaccuracies (or access difficulty)
- Spending any money on new IT systems is not to be considered
- Short term solutions are needed

Fortunately, it has been possible to provide some immediate solutions, or at least prototypes of solutions in a very short time using a mashup editor. After the static business processes are briefly verified to ascertain no major strategic deficiencies, the major workflow streams are documented using visual notation in the mashup tool. Emphasis on human to system interfaces are made, from both an internal and external interface perspective. Where web services or APIs exist they are hooked into the flow, otherwise the first pass links with a dummy connector. The data passing for ease of utilization is thus modeled. State tracking for the objects of the business flows are set up and reporting on this and other metrics are set up. Then the magic takes place – a working prototype of a process instance, which shows people, process and system interacting and being monitored and controlled, is available instantly. This is where the C-level person is wowed that an application is all ready working (in their mind) which looks to solve the process efficiency problems. And, for extra wow factor, dashboard type metrics can be set up with a portal access look and feel.

Obviously this scenario only leads to a prototype. But with little additional effort what has really been accomplished in short time frame is a new IT application An application that acts as an integrating,

controlling and monitoring system over human and system communications and data exchange across system boundaries both internal and external to the organization. It meets the needs for process design, process execution, data access and integration, within a codeless development environment and without restriction on where the data, process or information resides. It is a business mashup for process transformation.