BUSINESS PROCESS MANAGEMENT

and

BUSINESS INTELLIGENCE

Perhaps one of the most valuable enterprise technology "secrets" is a simple fact: Business Process Management (BPM) and Business Intelligence (BI) are natural born partners. A well-implemented BPM solution will provide make efficient use of BI resources, from the data warehouse to complex analytics and data mining. On the other hand, an enterprise BI solution can make excellent use of BPM resources, from dataflow and process definition and management to real-time monitoring of activities and key performance indicators (KPIs). When properly integrated, these technologies mutually enhance each other in a synergistic relationship. This research note provides an introduction to a number of ways to use BPM and BI technologies together.

As its name implies, BPM is focused on enabling the management of business processes. The critical elements of management imply that the system must involve a process modeling facility for definition, a process engine for process execution, process (and activity) monitoring to measure efficiency and quality, process analysis to determine how to tune the process, and process simulation and optimization facilities to close the control loop. Obviously, various infrastructure facilities such as database, integration, and interconnection are necessary as well.

A business process may be understood as an interconnected and ordered set of activities and decision points. The interconnection is usually understood as the routing of data, documents, or other objects between activities, which most modern BPM systems (BPMSs) implement with an asynchronous messaging subsystem. Activities (a.k.a. tasks or operations) may be manual, semi-automated, or automated, and are both consumers and producers of data. A common example of an automated activity in an operational business process is the processing of a transaction by an enterprise application. Although transactional data output is typically written to an operational database, a BPMS will also transfer it to the next activity in the business process as a message.

Administrative and strategic business processes may include activities with a simple transaction, or may not even have well-defined transaction semantics. These may be characterized as informational processes. Planning and reporting processes often fall into this group, and activities often involve data extraction, transformation, load, consolidation, validation, cleansing, normalization, analysis, and presentation services.

Alternative Technologies

Regardless of the type of business process, decisions are key to providing the responsiveness for which BPM is famous. In essence, decisions are implementations of business rules that can affect both the choice of subsequent activities and their operational parameters, including response to errors or critical conditions. Decisions that control processing alternatives are often implemented as so-called "conditioned" fan-out from an activity, in which output parameters are tested to determine whether or not the output message should be sent along a particular process path and trigger a subsequent activity on that path. Thus decisions involve data inputs and outputs, and act as a routing switch.

BI may be understood as a subset of the informational processes in a business. Whereas BPM is designed to accommodate near-real time events and the data associated with a single event or transaction (as well as batch and aggregate operations), BI has traditionally been concerned with summary or historical data associated with a batch of events or transactions. In recent years, continuous BI (sometimes called "real-time" or "trickle feed" BI) has led to products that provide BI services for extremely small or even transaction level units of processing. When these products are used to provide closed-loop decision support, they start to look very similar to BPM.

With this understanding, we identify five ways in which BI and BPM can be used together.

1. Storing and Analyzing Historical Business Process Data.

BPM generates massive amounts of data, well beyond that collected in a traditional OLTP database. This data includes activity and process performance data as well as messages. Analysis and data mining of performance and message data can be complex, but its value is often overlooked. BPMS products often provide or integrate with Business Activity Monitoring and balanced scorecard tools, but these are rarely capable of handling the scale of the problem historical process data represents. By contrast, data warehouses and some BI analytical tools are better designed for this purpose, and provide the scalability, performance, and data management that the local data stores often used by a BPMS cannot. Most BPMS products have standard interfaces to popular DBMS products. If analytical tools are deployable as distributed services (e.g., Web Services), it is usually easy to integrate them with a BPMS as well.

2. Process Centric Analysis

BI analytic tools and the data warehouses they access have long been capable of powerful trend and time series analysis. Unfortunately, traditional use of these tools most often assumes that the data follows a statistically uniform distribution in time, so that each time series bucket is of the same duration. The method of data warehouse data collection rarely makes it possible to do anything else. The uniform distribution assumption obscures important information and analytical results when applied to business process data because the events have a non-uniform time distribution, and a BPMS is fully capable of capturing the necessary detailed time-stamping and other correlations. Characterizing the actual distribution by frequency analysis can often be very revealing and is critical for proper root cause analysis of process latencies. In fact, accurate predictive trending of many key performance indicators requires an understanding of the non-uniform distribution of measurements. BPM analytical tools are rarely sophisticated enough to handle these problems. The marriage between a BPMS for control of data

Alternative Technologies

capture and BI for powerful analysis techniques can lead to a more rapid return than either technology is capable of independently.

3. Complex Extract, Load, Transform, Cleansing, Normalization, and Analysis

A BPMS with access to ELT and master data services can provide a powerful design, deployment, and optimization tool. Although BI tools are increasingly viewing these tasks as steps in an automated and configurable process, few if any have gone the extra step of providing simulation, automation, or more than rudimentary process performance data collection. Similarly, transaction management, journaling, and error recovery within the process is usually either cumbersome or trivial. By contrast, these facilities are often standard in a BPMS and can be used to significantly improve overall process scalability, reliability, and efficiency, enabling it to be distributed across multiple computing resources and integrated with operational points of data production or consumption. Furthermore, governance is built into many BPMS products and can reduce the cost of regulatory audits for BI processes.

4. BPM Metrics and BI

.KPIs and other metrics are critical to the success of BPM and BI. BI is more sophisticated in defining metrics, while BPM is more sophisticated in using metrics in a process context. BI tools can be used to create and manage metrics lineage and derivation, which are then aligned with the levels of process abstraction used in BPM. Such alignment makes rollups and aggregations possible, and makes it easier to correlate process data with data warehouse and OLAP data.

5. Integrating BPM and BI

The fundamental BPM value propositions are closed loop process monitoring and control, process agility, and lower cost integration that preserves the process context and achieves business objectives. By comparison, the fundamental BI value propositions are higher quality, more timely and accurate decision making, preferably in the context of business objectives. As discussed above, these value propositions are not only compatible, they are interdependent and synergistic when understood as aspects of the business management. BPM focuses on how best to perform those activities that will achieve a process objective, while BI focuses on enabling and fine-tuning the decisions that mediate activities in a process. It can be used to identify the business rules that have been used in the past, find better business rules, develop more accurate ways to compute the rule, and provide high quality data input to the rule. Taking advantage of each technologies' strengths to overcome the other's weaknesses requires select products that can be integrated via service orchestration or adapters, and the wisdom to choose reasonable problems to solve.

–   David McGoveran, Principal and Sr. Analyst

Alternative Technologies

About Alternative Technologies

Alternative Technologies is an industry research analyst and consulting firm founded in 1976. Over the last thirty years, we have been deeply involved in the development of several industries, technologies, and markets including relational database, OLTP, client/server, decision support, data warehouse, business intelligence, enterprise integration, and business process management. Alternative Technologies provides consulting, mentoring, education, research, and market development services to technology vendors, start-ups, and firms in a wide variety of product and service sectors worldwide. Our clients have included many Fortune 1000 class firms and every major database management system, business intelligence, and business process management vendor. Starting in late 1997 and working predominantly "behind the scenes", Alternative Technologies defined and established business process management as a new product category in conjunction with HP and IBM, and subsequently aided numerous companies in defining their BPMS product and marketing strategies.