Business Process Management

Terminology and definition

- BPM – Business Process Management: A way to analyze, describe, build, manage and run information flows and process steps where we separate the orchestration of processes from process execution. Sometimes summarized as: "Separating the know from the flow".

- BPA – Business Process Analysis: A subset of BPM focusing on the discovery, design and modelling of business processes.

- BPI – Business Process Improvement: Identification and continuous improvement of business processes supported by methodologies like Lean, and Six Sigma.

- BPMT – Business Process Management Technology: An automated solution that supports BPM in one or more ways. Where BPM focuses on the logical way of modeling, analyszing, describing, managing, and running processes, BPMT can be regarded as the technological implementation of BPM.

Trends in BPM / BPMS in the last 10 years

The roots of current BPM lie in two different areas that have evolved over more than 20 years.

The first area is workflow, the person-to-person routing of scanned documents through a pre-determined process map. Most workflow systems were document-oriented. They involved circulating a scanned paper document from one person to another to enable them to perform some action, usually data entry. These systems were very document/folder-centric and are also referred to as Document Management Systems.

The second area is referred to as enterprise application integration (EAI). The basic goal of EAI was to automate the near-real-time exchange of data between systems, typically mainframe-based transaction processing systems or server-based relational databases. The main advantages of EAI were to avoid re-keying of data, thus reducing errors and effort, and advancing from batch-oriented processing towards near-real-time, or Straight Through Processing.[1]

In the past ten years, these areas have developed in different ways. Workflow developed lightweight EAI capabilities, but more importantly focused on:

- Business Activity Monitoring (BAM) for management to understand the current status of the process, now that it was taken out of the direct sight of management
- Process Governance supporting quality programs like Six Sigma
- Simulation to understand and to enable optimisation of processes

EAI products developed *lightweight* workflow capabilities, but more importantly EAI developed to look outside the organization and extended to business-to-business integration (B2B), allowing these organizations to implement loosely coupled processes

Figure 1: Workflow & EAI developments
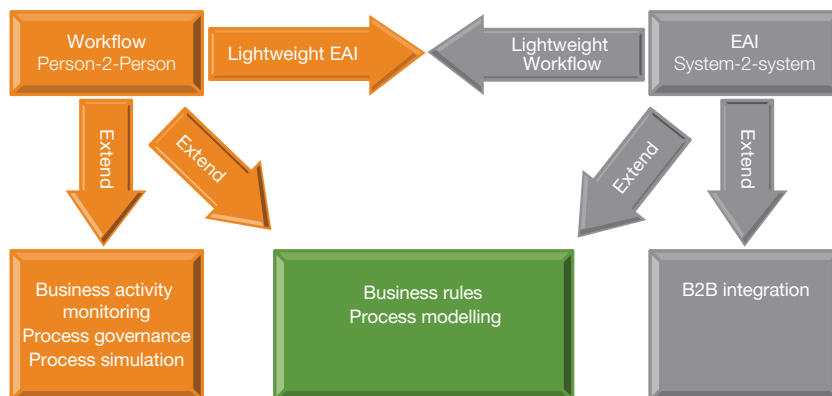
with those of their customers and trading partners.

In the later part of the ten years, the workflow and EAI markets started to converge. Both workflow and EAI products extended to include functionality that was useful in both spheres such as business rules engines that gave a finer control over process flow/integration, and process modeling to support the design of workflow or EAI configuration. The following picture illustrates what developments have taken place in the workflow/EAI sphere.

And now enter the *BPM suites*, which is basically a renaming of the combined space, putting the words

workflow and EAI out of fashion (see for instance Gartner Research Note, "A BPM Taxonomy: Creating Clarity in a Confusing Market", T-18-9669, 29 May 2003.)

The BPM suites were further broken down into five categories with the emphasis on the categories "Pure-play BPM" and "Integration focused BPM" as follows:

Onwards from this point in time a lot has happened that has strongly influenced the BPM market. To name a few:
- The introduction of web-services and service oriented architectures providing a challenge to the existing integration focused BPMs in providing ESB type services.

Figure 2: BPM Suite
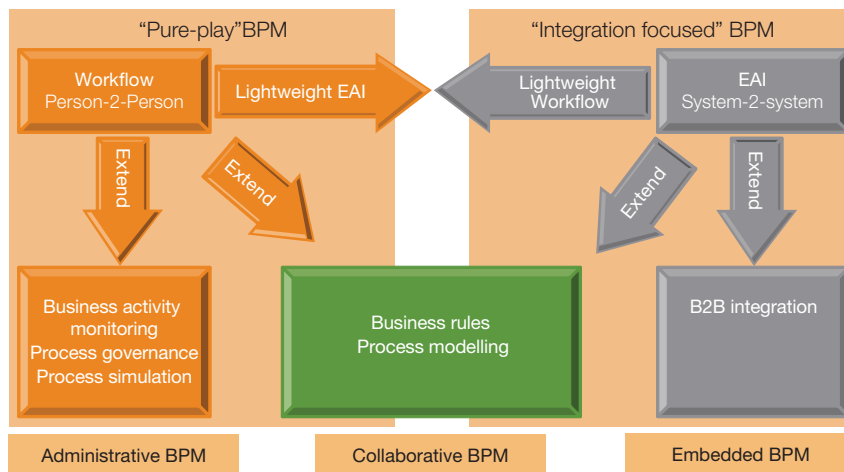
- BPM vendors that are not "complete" according to the above taxonomy, looked for acquisitions that would make their offering (more) complete. A number of acquisitions of large players took place in particular integration-focused BPM vendors that have purchased pure-play BPM vendors.
- The quick growth of interest in Business Analysis and in third-party Business Process Analysis tools gave organizations the chance to do process modeling and process design in a way similar to the way that Lotus 1-2-3 gave business users the opportunity to do data analysis without the intervention of the IT department. This is where BPM puts the pressure on BPMT to show both rigor of execution and ease of modification. BPM has generated interest among various stakeholders, and not just the IT market, where it is still seen in the area of IT infrastructure products. From our experience we have learned that in various engagements BPM is not considered to be IT–driven, but rather business-driven.

Apart from these observations there are also the following relevant facts:
- Despite the difficult times in the IT market, the growth figures for BPM(T) and related products were estimated to be around 15% for 2009 and probably higher for 2010. BPM is seen as one of the fastest growing areas in the Business Technology market.
- BPM(T) used to be particularly relevant for the larger "bureaucracies" in the Public Sector, Insurance, Banking sector, etc. Now, BPM(T) is also on the radar of companies that pursue a multi-channel strategy, as well as companies that seek for agility in their supply or delivery chain.
- Many of our partners (ORACLE, SAP, and IBM) are investing heavily in the tooling. Also, there are many new and emerging players, like PEGA, IDS-Scheer, and

Be-Informed, each approaching the BPM market from different angles.

Vision on the development of BPM and BPMT

The basic question in BPM and BPMT is: How and where does it fit with my business and where can I gain competitive advantages from BPM/BPMT?

To answer this question, we first try to answer the question on where to position BPM and BPMT in the overall change agenda. We use part of the Structured Expert Method for Business Analysis (SEMBA) model of Capgemini to determine a position for BPM(T). SEMBA is Capgemini's standardized and structured approach for defining, designing, and planning business change and/or business process change and/or changes in IT facilities in a coordinated fashion. Part of SEMBA is the SEMBA framework / BA framework that defines the Analysis and Design perspectives to be addressed during a Business Analysis engagement. The following picture illustrates the SEMBA framework.

The framework is normally used to understand and define business initiatives and shape BA engagements that Capgemini envisages to undertake. We can also use the

framework to get an understanding of where BPM and BPMT should be positioned.

Let's first give an outline of what these perspectives mean:
- The Business model perspective describes the way the organization exchanges value with its environment including markets, customers, external business partners and stakeholders. The model focuses on how the organization functions as a black box within its context.
- The Business Process model describes the processes and organization that enable product/service delivery. The model is a white box model in the sense that it looks within the organization boundaries.
- The Information model perspective describes how the information functions required to manage and control the processes are structured and organized.
- The Application model or application landscape describes how the information functions have been implemented in terms of applications and interfaces, i.e. internal and external implementation.

Figure 3: The SEMBA or BA Framework

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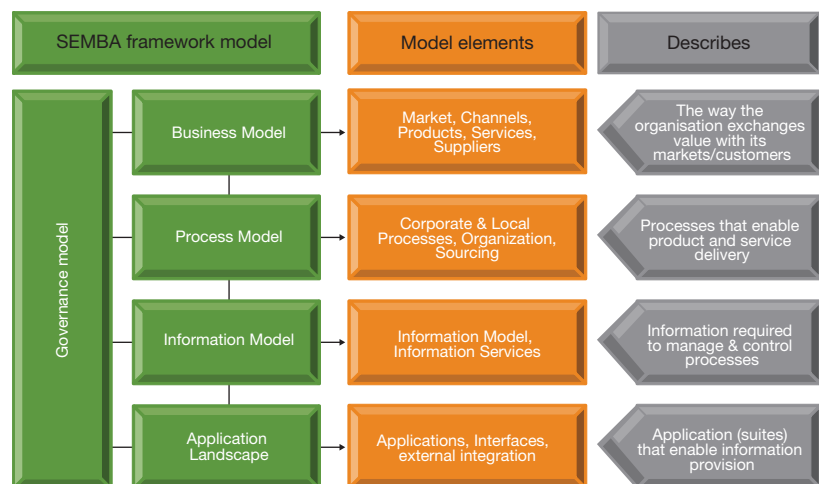
Note that the BA model does not directly map business processes onto IT facilities. We believe there is still an abundance of choice on how to support business processes with IT facilities. IT providers often try to cut corners towards business processes. Business users should be more careful of tightly connecting their processes with IT facilities when there is no need to do so.

The governance column describes who in the organization is responsible for or has control over which model and, in particular, with regards to changing a model.

Essential in the SEMBA thinking is that the above mentioned models are not isolated or stand-alone but are connected through an elastic coupling. A intended or unintended change in any of the models will have or may have an effect on the model layers above and beneath it.

The above is a first pass positioning of BPM and BPMT capabilities on the areas where organizations may seek to improve in terms of effectiveness or efficiency. Note that the list given below is not intended to be complete or exhaustive.
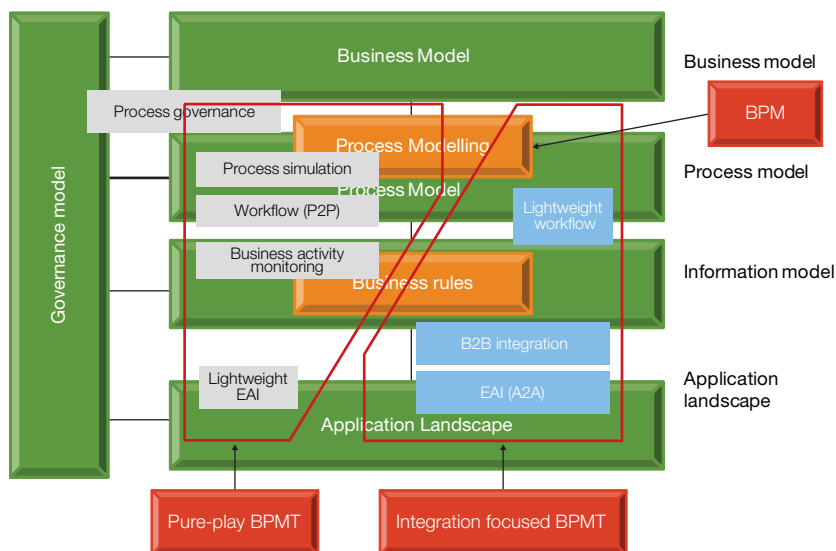
	Application	Drivers for change - examples
BPM	Rethinking and redesigning business processes (with or without IT support); not yet dealing with implementation.	Significant changes in the business model or external factors forcing compliance
Pure-play BPMT	Optimising and rationalising business processes with the emphasis of business ownership of process models	Improvements in efficiencies; merger or acquisition; Business Process Outsourcing
Integration focused BPMT	Re-shaping the application landscape; reducing IT complexities; overcoming IT impediments	Overcoming business – IT discontinuities; technology re-platforming or renewal; IT outsourcing

A common theme, particularly in the BPM arena, is convergence. From a broad perspective, one of the ultimate aims of BPM is to enable efficient and effective cooperation between business and IT stakeholders: the convergence of business and IT factors lies at the very heart of business process management. Looking more closely at the evolution of the BPMT market and of the individual competing products, convergence has become visible. The differentiating classification between human-centric or Pure-play BPM, which emphasizes business ownership of process models, workforce collaboration, and process model execution; and integration-focused BPM, which relates to EAI and focuses on service/system collaboration and process model transformation, has become less meaningful in the last couple of years.

Today, central issues of human-centric BPM are the defining topics of the market arena, and BPM Suites are expected to add value through description, execution, and continuous improvement of an enterprise's business processes. Application and IT integration are the means rather than the end. Even within the human-centric BPM space, the distinction between a strictly model-prescribed production workflow and a more ad-hoc case management working style is becoming increasingly blurred.

The next question we will try to answer is: What business capability will a BPM/BPMT solution bring? The business capability of BPM largely depends on the skills of the user and the quality of the process model that results from BPM. For the question on the business capability, we will limit ourselves to BPMT and come back to question of BPA tools in conjunction with BPMT later.

The usefulness of BPMT lies in the requirement of an organization for process orchestration and the dynamics or flexibility in process orchestration. BPMT is a logical step in moving away from static ERP and workflow orchestration towards

Figure 4: Positioning BPM and BPMT in the SEMBA framework.

Figure 5: Evolution of proces orchestration

Classic ERP Orchestration	Workflow	BPMT	Event Driven Architecture	Agent Based Technologies
■ Integrated single way of working; ■ Very difficult to change (configure once) ■ IT provides no explicit process orchestration	■ Integration across multiple activities / systems ■ Adaptation is possible but expensive ■ Options for process control/ optimisation	■ Integration across multiple activities / systems ■ Focus op efficiency / optimisation ■ Separation of process control and business application	■ Collection of independent processes / services ■ No explicit process orchestration because it is too complex ■ Control based on events and process outcome	■ Collection of highly independent autonomous services ■ No explicit process orchestration ■ Based on goal oriented services focusing on what to achieve rather than how to achieve

BPMT, and further on towards Event Driven Architecture and agent-based technologies.

The following picture illustrates where we think that BPMT lies compared to, on one end, fixed orchestration, such as in a classic ERP environments; and on the other end, orchestration (or lack thereof) through agent-based technologies.

Although it may appear that the degree of process orchestration increases as we go from left to right, this is not entirely true. Let's take a look at how orchestration is done is the various types depicted above.

Classic ERP orchestration:
In the traditional ERP implementation process, orchestration is embedded in the way the ERP is configured. A popular way to configure ERPs is to use EDPC (Event Driven Process Chains) which is nothing but a static workflow configuration, which is often firmly embedded in the ERP configuration.

The configuration is normally not flexible. Revising the embedded workflow usually means re-configuring the ERP, a task many of us do not look forward to. A successful ERP implementation requires that the business process execution is highly predictable and can be fit into the capabilities of the

ERP solution, and that the business processes are highly repeatable and not subject to significant change.

Workflow:
Workflow is the first step in trying to separate the process flow from process execution. One of the difficult things in workflow implementation is to separate the process flow from execution and at the same time keep process execution integrated with the workflow. Often one of the two sides is compromised: either the work flow is completely separated and insufficiently drives the work in the systems that support process execution, or the workflow is too closely connected to process execution systems and becomes a nightmare to maintain as the two become intertwined.

Workflow can be successful however, as long as the separation between process flow and execution is clear. Workflow can support a number of different flows and force process orchestration but there are constraints in terms of process predictability and repeatability. It does not make sense to configure workflow for processes that are not often executed. Configuring workflow requires a substantial amount of work both in terms of IT configuration, as well as manual effort which involves process descriptions and working instructions. Typically in workflow, is the workflow that instructs the employee

on action points while attaching a minimum of data concerning the object, an order or a customer, that is the subject of the work to be performed.

BPMT
BPMT, compared to workflow, has a more sharp distinction between process flow and process execution. Objects being passed around in a BPMT environment have a process aspect, that tells something about where we are in the process or what needs to be done, and the payload aspect of the object that contains information about the data, an order or a customer, that is subject to process execution. This makes it possible to separate the process flow or orchestration from process execution even allowing for replacement of execution components without disrupting the process flow. Given that we have a set of process execution services, we can theoretically orchestrate as many flows as we like. The number of things that can be orchestrated has its limits. The same reasoning that applies to workflow also applies to BPMT, in the sense that we need a reasonably high level of process predictability and repeatability in order to make this work. It does not make sense to configure workflow for processes that are not often executed. And also, it does not make sense to orchestrate thousands or millions of process flows when the process flow complexity becomes too large to handle.

Event Driven Architecture:
In Event Driven Architectures or EDA, we step away from the centralized orchestration idea, simply because orchestration becomes too complex. It is impossible in some situations to oversee all possible process combinations that an event, e.g. an order, a customer complaint, or a payment, may cause or require. We leave the notion of overseeing every possible flow behind and build the intelligence to handle events in the process execution layer. This has two major conse-

quences: first, the requirement to orchestrate everything in detail upfront becomes less dominant; second, we require a lot more intelligence in the components that deal with process execution. The outline of the flow of events is still handled through a high level design of event processing. On a detailed level we leave it up to the execution components to deal with those lower level event processing.

Also, in a proper EDA design, the processing components have no direct knowledge of each other — loose coupling is the standard. Components react on the receipt of events they are aware of, or have subscribed to, and produce events as a result of an incoming event. This requires a much more complex and intelligent design of components than one required in BPMT, where we could rely on a composition of standard off-the-shelf components.

Agent Based Technologies:

The notion of predicting, processing and orchestrating events at a central level is even further released as we enter the Agent Based Technology (ABT) space. Decision-making and producing a result is pushed down further into the process execution components. Instead of instructing the components as in BPMT, the components themselves find solutions based on goal orientation. Compared to other forms of orchestration, ABT is no longer transaction-based, but more knowledge-based. Compare it to a football game: The coach may want to instruct each individual player on how to play on his team position in a BPMT style of orchestration, ABT is more about training players to understand the game and, based on the position of other players, determine what the best possible move is given the objective is to score goals.

A more detailed discussion of Agent Based Technologies is not attempted here. We know there are some business applications of ABT but the

examples are few and far between. In terms of where do we think that your business can benefit from ABT, we estimate that currently ABT is for the (very) early adopters and that ABT has to mature in order to be viable for most businesses.

Vision on the application of BPM and BPMT

Given the taxonomy of different styles of BPMT, we still need to answer questions on how and where it fits with my business, where it can give me competitive advantages and whether there is a business case for BPM/BPMT in my situation.

To answer this question, we have to look at both the internal operations of the organization as well as the market the organization operates in.

Using the SEMBA process approach, we break this question down into two distinguished parts.

- As-Is analysis
  The first thing the organization should do is to do an As-is analysis / assessment on where their capabilities lie in terms of Business Process Management and where they are currently positioned in terms of process orchestration. Describing how things are currently organized is not an easy exercise. In distinguishing how things should be organized from how things are practically organized, we may come across a substantial gap. Getting a clear picture on the current state should involve the business model – what products and services do we deliver to our customers, the process model – what processes are used to deliver these products and services, the information we use to drive these processes, and the applications we use to deliver this information. The analysis or assessment does not need to give a single value or position as an answer, but may show a picture that is differentiated across different business models and process areas. In one area, the organization may

rely on the classic ERP style process orchestration; in another area, workflow supporting case management may be prevalent.

In parallel to this exercise, organizations should also indicate where they think they can improve given their current business model. Essential in this exercise is to find out how costs are structured and how they may be restructured and to find ways on how to improve process efficiency while at the same time defend revenues and cash flow.

Organizations may have already done some or a lot of work in this area. The use of a BPM tool may prove to be beneficial in describing processes, information needs and application facilities used. Not only does it give a good insight into how things are organized and structured, but it also gives an opportunity to develop and assign Key Performance Indicators and make costs associated with the various parts in the process chain explicit.

Organizations also need to focus on the areas where they feel change is likely to bring benefits. The starting point is usually the key business areas where organizations have a significant role in the value chain and in the primary business processes.

- Change driver analysis
  In a recent article, "Making the Case for Business Process Management in a Time of Crisis", Gartner Symposium ITxpo November 2009 analysts from Gartner outline where they see opportunities in applying BPM/BPMT in organizations that want to re-invent themselves in the light of the recent economic downturn. Gartner expects the return in business growth in almost every sector and urges their clients to re-consider, re-analyze and restructure their business models as markets and customers are likely to have changed significantly.

The outcome of how this "re-consider, re-analyze and restructure" looks like for each individual business may be quite different. Organizations should perform change driver analysis for their own business: what changes are expected in the business model based on customer demands and what changes do we want to make ourselves to our business model. A second step is to repeat the change driver analysis for the business process model: what changes do we need to make based on the business model change drivers and what changes do we want to make ourselves to our business process model. So the first set of drivers comes from business model change and the second set of drivers comes from the ambition to address and master change in the process model without requiring any business model change.

Gartner gives a list of potential change drivers for the business process model that may apply:

- Increase in process efficiency by replacing work-around processes and providing support for highly skilled workers
- The focus to restructure process costs and defend revenue
- Focus on management of processes rather than process control to increase value delivered. This applies in particular to processes that are susceptible to external disruptions. Implementing a non-deterministic workflow or more or less unstructured process to make these more manageable through visibility rather than trying to strictly control the process. This principle also applies to external facing processes whose success depends on human interactions and collaboration. These are often the most impactful processes either due to their high costs or high revenue potential. Therefore, better management instead of rigid control of these processes delivers high value.
- Model-driven business processes: Models represent the future of how businesses will be managed in

particular models of process and simulations. In some years' time, business managers will rely on interactive models to manage their operational reality rather than relying on reports on completed transaction data.
- Closing the gap between design and execution: The connection between BPM tools/model and BPM execution should be a persistent. Standard transformational methods cannot properly achieve model-driven BPM.

In more general terms we see a number of generic drivers for applying BPM and BPMT.

- The capability of BPM and BPMT products has made a rapid development in the past years supported by technology developments like web services and XML. This development has passed a critical boundary enabling application interoperability and strongly reducing dependencies between applications. Here we see opportunities for the more professional "bureaucracies" like banking, insurance, utilities, and government in separating the "know from the flow" and allowing them to make changes in the business process model without causing large disruptions in their core business applications.

- Organizations that want to move out of the production mode towards an outsourced model and still keep the director function of their business: A trend in high-tech industry is to move to a flab-less company structure where the basic manufacturing capability has been outsourced. This leads to a collaborative supply model where the customer-facing organization needs to coordinate between its customers and the manufacturing units. Here we see opportunities for BPM and BPMT in particular in the B2B orchestration.

- Organizations that offer a stack of capabilities to their customers may benefit from BPMT capabilities in not only offering the complete stack but also parts of that stack. For instance, a logistics service provider offers integrated contract logistics to customers. BPMT may enable this company to provide a single capability, e.g. warehousing as a service offering.

Contacts

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