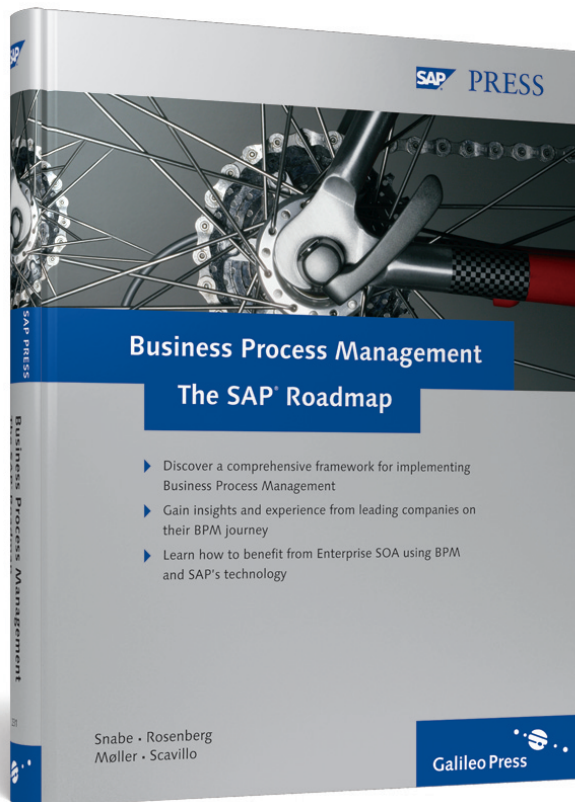


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Business Process Management — the SAP® Roadmap




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*"Any process is better than no process!
A good process is better than a bad process.
Even a good process can be made better!"
– Michael Hammer*

2 The Evolution of Process Management

Charles Møller

Business Process Management (BPM) may be a new label, but the ideas leading to business process management are old. They have been elaborated on and extended upon based on current business issues and available technology for some time. To understand the BPM concept and make projections about the future of process management, it is important to analyze the origin and evolution of the concept of process management. In this chapter we will provide a review and an analysis of the theoretical foundation leading to BPM.

The foundation for process management can be traced back to Adam Smith (1723–1790), who wrote the groundbreaking book: "An Inquiry into the Nature and Causes of the Wealth of Nations (1776)". In this book, he uses the famous example of a pin factory to argue that "division of labor" is the key to increased productivity. Today this point seems obvious, but at that time, the prevalent thinking was the physiocratic school's emphasis on *importance* as the source of productivity.

2.1 Scientific Management

The next stage in the evolution is the scientific management movement, initiated by Frederick Winslow Taylor (1856–1915) in the 1880s and 1890s. The important contribution of Taylor is that "rules of thumb" Taylor

should be replaced with scientific methods. At that time, the mathematical tools we are familiar with today were created and applied in an industrial context.

Taylor worked at Bethlehem Steel in Pennsylvania, PA, but had the most impact on Ford's mass production principles.

Ford Ford's mass production factory represented a revolution in the sense that the application of these principles significantly improved productivity by organizing manufacturing processes differently. This was done by way of new technologies such as the introduction of the conveyor to organize an assembly line.

Other principles, such as standardization of methods and tools, were applied systematically to decrease variation and cost.

Today we associate the images of Charlie Chaplin in "Modern Times" with "Taylorism;" however, Taylor's ideas founded the field of *industrial engineering*. Industrial engineering is a scientific field concerning methods and tools for organizing and managing processes, and is the reason for most of the increase in wealth in the last century.

2.2 The Toyota Production System

The poverty in the post World War II era in Japan was the main trigger of the next major industrial engineering paradigm. The scarcity of resources and technology forced Japanese companies to focus on customer requirements. A number of cultural practices were important with regard to this, but the idea of continuous process improvement and the understanding of development rooted in Buddhist thinking was the most important. The idea of continuous process improvement is often embodied in the classic model called the "Shewhart cycle" or "Deming wheel". This model, shown in Figure 2.1, identifies, in essence, the fundamental process management lifecycle.

These new principles are also part of the background of the most successful business case of all times, Toyota. Toyota has consistently improved their processes, and in the first quarter of 2007, Toyota sales exceeded General Motors (GM) sales for the first time.

The Toyota Production System is based on principles that were initially called *just-in-time production*, where activities were deferred until needed by the customer. The Toyota Production System was designed and developed primarily by Taiichi Ohno, Shigeo Shingo, and Eiji Toyoda, between 1948 and 1975. Taiichi Ohno (1912–1990) redesigned and improved the processes at Toyota using scientific management thinking, and he involved the workers on the factory floor in the implementation process. Ohno also engineered a set of simple principles explaining his theories for process improvement. Concepts such as *Just-in-time*, *Jidoka* (automation), *Kaizen* (continuous improvement), *Poka-Yoke* (fail-safeing), and *Muda* (waste) are all process design principles that have become part of everyday business language.

It is interesting to note that even though Toyota has shared their methods and tools for many years, they are still considered to be the benchmark for process effectiveness. Process excellence seems to be difficult to copy.

2.3 Total Quality Management

Perhaps the most pervasive business concept of all times is *Total Quality Management (TQM)*. TQM is a management strategy aimed at embedding awareness of quality in all organizational processes. The field is usually considered to have been founded by W. Edwards Deming, Joseph Juran, Philip B. Crosby, and Kaoru Ishikawa, known as “the big four”. (Deming was actually a consultant at Toyota.)

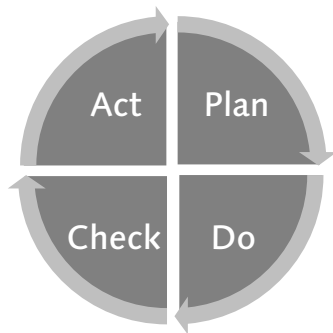


Figure 2.1 The “Shewhart Cycle” or “Deming Wheel” in Quality

The difference between TQM and the Toyota Production System is quite subtle, because they share the same underlying concepts. However, TQM has become more institutionalized and has spawned numerous concepts.

SIPOC The *SIPOC model* is the shared fundamental conceptualization of a process. The SIPOC-diagram, shown in Figure 2.2, is a high-level process map. The supplier (S) provide inputs (I) to the process (P) resulting in outputs (O) that meets or exceeds customer (C) expectations.

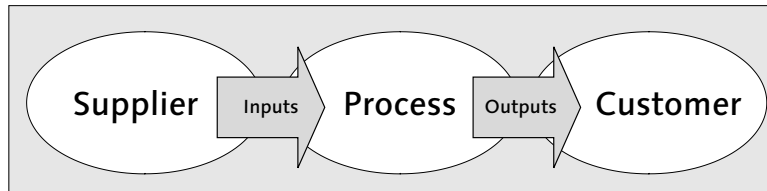


Figure 2.2 The SIPOC-Diagram

2.3.1 Lean Manufacturing

The most important TQM clone is *Lean Manufacturing*, which was established based on a study of the difference between the US, Japanese, and European automotive industries (Womac et al., 1991). Lean Manufacturing is a generic process management philosophy widely applied; however, it in essence equals the principles from TQM and the Toyota Production System.

Identifying the process

A prerequisite for managing the process is identifying the process. One of the tools developed specifically for this purpose is *value stream mapping* (VSM) or *learning to see* (Rother, 1999), as illustrated in Figure 2.3.

2.3.2 Business Excellence

Business excellence is the use of total quality management principles and tools in business improvement and management.

It is the systematic improvement of business performance based on the principles of customer focus, stakeholder value, and process management.

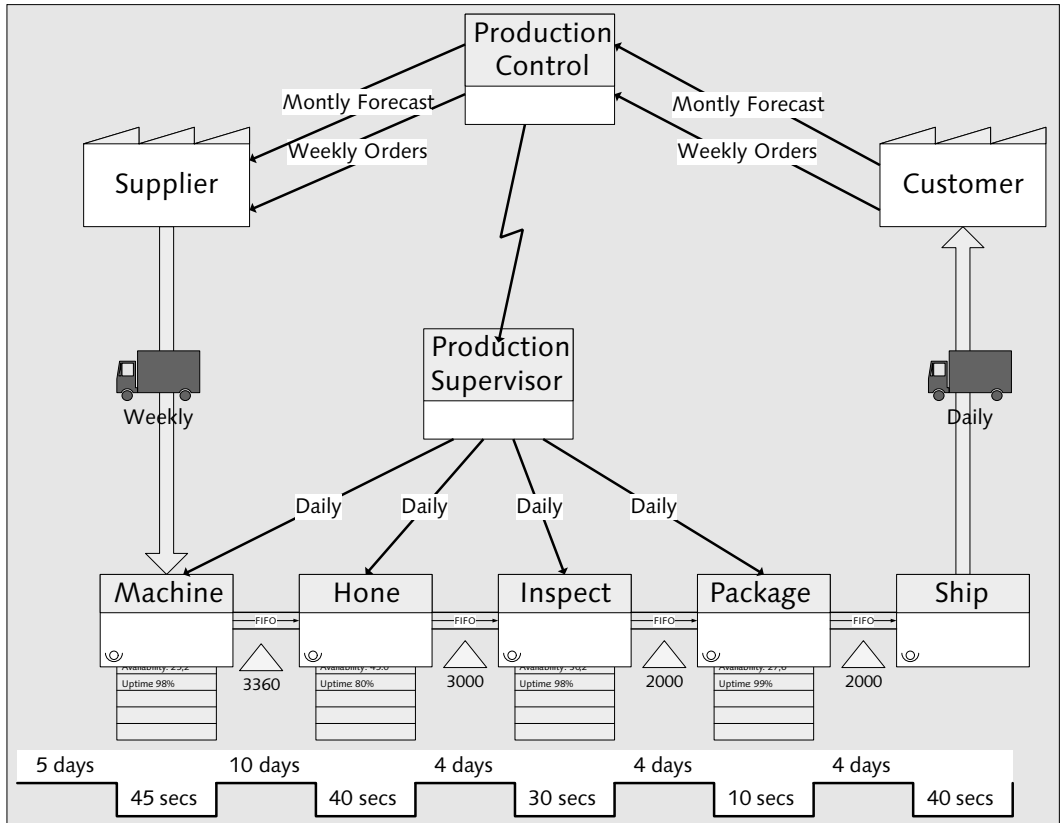


Figure 2.3 Example of Value Stream Mapping and Learning to See

One of the important business excellence models is the European Foundation for Quality Management (EFQM) Excellence Model.

EFQM, a not-for-profit membership foundation, is the primary source for organizations in Europe looking to excel in their market and in their business.

The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award. It is now the most widely-used organizational framework in Europe and has become the basis for the majority of national and regional quality awards (www.efqm.org).

EFQM Excellence Model This model is a practical tool that can be used for self-assessments, benchmarking, and as a management system for improving business performance.

The EFQM Excellence Model, as illustrated in Figure 2.4, is a non-prescriptive framework that is based on nine criteria. Five of these are “Enablers” and four are “Results”. The “Enabler” criteria cover what an organization does, and the “Results” criteria cover what an organization achieves. “Results” are caused by “Enablers” and “Enablers” are improved using feedback from “Results” (www.efqm.org).

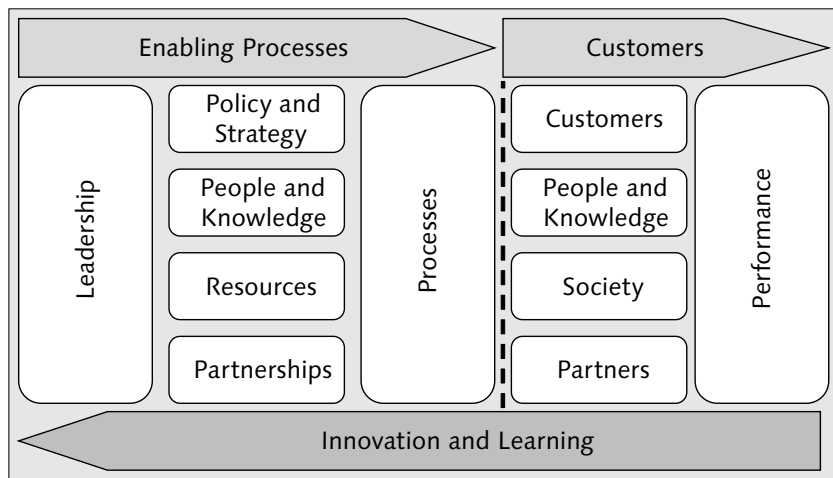


Figure 2.4 The EFQM Excellence Model

The role of the business process in the EFQM model is to link management efforts with business results.

2.3.3 Six Sigma

TQM spawned another approach, called *Six Sigma*. Six Sigma is a set of practices developed by Motorola in the mid 1980s. It is a quality-focused process management concept based on statistics.

The term *Six Sigma* refers to the variation of a standard deviation of a process. The aim of Six Sigma is to improve process quality to a level below 3.4 defects per one million opportunities.

The process management process in Six Sigma is explained using the two key methodologies of Six Sigma: DMAIC and DMADV (see Figure 2.5 and Figure 2.6 respectively). According to Wikipedia (www.wikipedia.org), these activities cover the management of existing processes and the introduction of new processes.

The DMAIC approach is intended to be used to improve existing processes. The basic methodology consists of the following five steps:

DMAIC approach

1. Define the process improvement goals that are consistent with customer demands and the enterprise strategy.
2. Measure the current process and collect relevant data for future comparison.
3. Analyze to verify the relationship and causality of factors. Determine what the relationship is, and attempt to ensure that all factors have been considered.
4. Improve or optimize the process based on the analysis, using techniques such as design of experiments.
5. Ensure that any variances are corrected before they result in defects. Set up pilot runs to establish process capability, and transition to production. Thereafter, continuously measure the process and institute control mechanisms.

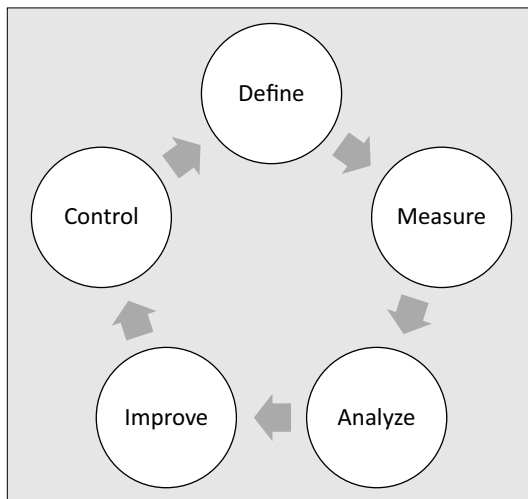


Figure 2.5 The DMAIC methodology

DMADV approach The DMADV approach is intended for designing new high performance processes. The basic methodology consists of the following five steps:

1. Define the goals of the design activity that are consistent with customer demands and the enterprise strategy.
2. Measure and identify *critical to qualities* (CTQs), product capabilities, production process capability, and risk assessments.
3. Analyze to develop and design alternatives, create a high-level design, and evaluate design capability to select the best design.
4. Design details, optimize the design, and plan for design verification. This phase may require simulations.
5. Verify the design, set up pilot runs, implement the production process, and hand over to process owners.

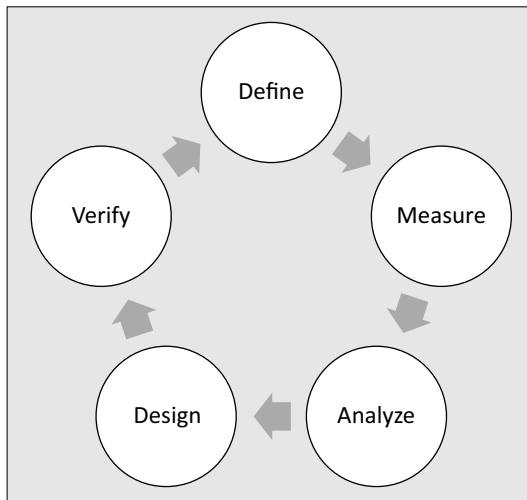


Figure 2.6 The DMADV methodology

Six Sigma thus makes a clear distinction between designing or re-engineering a process, and managing a process. Even though the activities are similar, this distinction is important.

Competence development Six Sigma is characterized by an institutionalized competence development program. Practitioners are graduated, like in Judo or Karate, with colored belts indicating their proficiency and the role they play in a project. Six Sigma is thus a concept that is aware of the roles and compe-

tencies of people involved in process management. In Part 2 of this book, we show how SAP has worked with Six Sigma as an element in BPM.

2.4 Business Process Reengineering

Business process reengineering (BPR) is a process management concept born in the early 1990s. The BPR concept (see Figure 2.7) is usually attributed to Michael Hammer and James A. Champy and their blockbuster book: "Re-engineering the corporation: A manifesto for business revolution" (Hammer and Champy, 1991). The catch line from this book was the title of Hammer's Harvard Business Review (HBR) article from 1990: "Re-engineering Work: Don't Automate, Obliterate" (Hammer, 1990). Hammer's claim was that companies did not obtain productivity gains from their IT investments because all they did was automate old, inefficient processes. What was needed instead was a complete redesign of the processes based on the task and available technology.

This new idea about radical change was rapidly disseminated in business. However, towards the end of the 1990s, BPR got a bad reputation, partly because it was used in large downsizing projects leading to layoffs, and partly because many of these high risk projects lead to large-scale disaster for many companies. Often these projects also involved implementing complex global ERP systems and several cases of implementation failures happened.

Radical change

One month before Hammer's HBR paper was published, Thomas Davenport published a similar paper in the Sloan Management Review entitled "The New Industrial Engineering: Information Technology and Business Process Redesign" (Davenport and Short, 1990) and later the book: "Process Innovation: Reengineering Work Through Information Technology" (Davenport, 1992). This was a profound book, but the concept of process innovation was forgotten in the BPR hype.

The BPR ideas are still valid. However, Hammer deemphasized the re-engineering dimension and focused on the importance of the customer-oriented business process in his more recent book: "The Agenda" (Hammer, 2001).

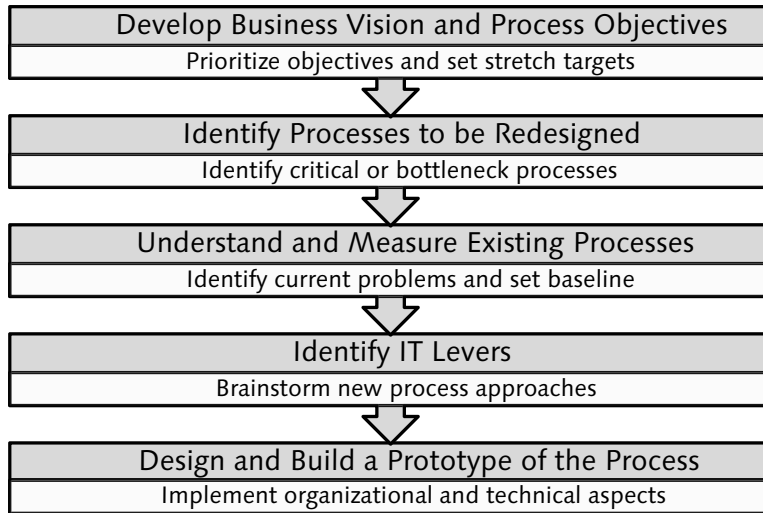


Figure 2.7 Five Steps in Process Redesign (Davenport and Short, 1990)

2.5 Business Process Management

As we previously mentioned, the concept of BPM as it is known today has been referred to as the third wave of process management by Howard Smith and Peter Fingar (Smith and Fingar, 2003). As we also mentioned, the first wave of process management has its origin in Taylor's theories on scientific management from the 1920s, where the business process was implicit in the work practices, and processes were standardized but not automated. The second wave of process management began in the 1990s, where business processes were automated using *enterprise resource planning* (ERP) and other standard systems. In the third wave of process management, the business process is freed from its concrete castings and is made the central focus and building block of automation and business. The ability to change processes is the primary goal because adaptability is much preferred over optimal process design. The entire value chain is continuously improved and optimized using agile BPM.

Although BPM has focused on automation and technology in the past, the concept is gradually becoming more and more of a management-oriented concept.

As the technology becomes more mature, the management aspects of BPM become of major importance. According to Gartner: "BPM refers to a set of management disciplines that accelerate effective business process improvement by blending incremental and transformative methods. BPM's *management practices* provide for *governance* of a *business process environment* toward the goal of improving agility and operational performance. BPM is a *structured* approach that employs methods, policies, metrics, management practices and software tools to manage and *continuously optimize* an organization's activities and processes" (Gartner: Cantara & Hill, 2008).

From this perspective, good process management uses an iterative process revision cycle, beginning with the business case for improvement (see Figure 2.8).

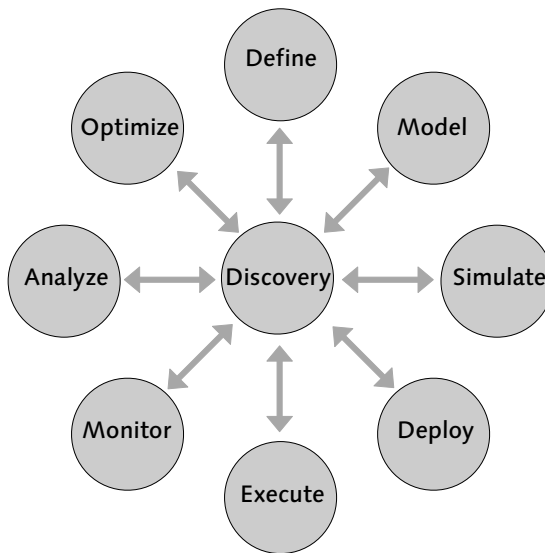


Figure 2.8 Gartner's BPM Model (Hill & Cantara 2008)

The business process lifecycle enables continuous improvement of business processes while supporting evolving business conditions. The model uses eight distinct process improvement phases. Although the figure depicts these phases in a cycle, BPM initiatives can begin in any phase and can progress through any of the other phases in any order. The steps shown in Figure 2.8 include:

- ▶ *Discovery* identifies the intricacies of how a process executes. The value of the discovery methodology comes from how quickly and accurately an organization can establish consensus among process stakeholders as to how work is accomplished and how to measure success.
- ▶ *Modeling* is valuable because it shows easy improvement opportunities, or at least the scale of the problem. Modeling helps business leaders collaborate regarding how the process improvements will help achieve corporate goals, irrespective of organizational boundaries.
- ▶ *Simulation* reveals bottlenecks that are not obvious during static modeling. Making adjustments to workflows or decision points provides fine-tuning in the process model before moving to the next phase of real-time process execution.
- ▶ *Deployment* then creates detailed process execution scripts and makes the required changes in systems. Training and facility changes that are needed for the new process to work must be coordinated. System changes include integration with applications and databases and may include the conversion of application systems into sets of reusable web services components.
- ▶ *Execution* is where the main value of BPM is realized, because it's where the actual improvement in the process is first seen.
- ▶ *Monitoring* collects information from the executing process in real time. Because the BPM suite supports manual and automated activities, monitoring is more complete than what was previously available. Because it is collected in real time, it allows immediate corrections to take place.

This model can be seen as a natural refinement of legacy process management models.

2.5.1 The Concept of Reference Models

Because process models have become embedded in the BPM approach, the idea of a *reference model* or *best-practice* has emerged into BPM.

Templates Reference models can be thought of as templates from which process models may be developed. Reference models are often developed by

associations of professionals. Therefore, they are quite knowledge-intensive. Examples of reference models include the APQC Process Classification Framework (PCF), the Information Technology Infrastructure Library (ITIL), or the Supply Chain Operations Reference model (SCOR) (see Figure 2.9).

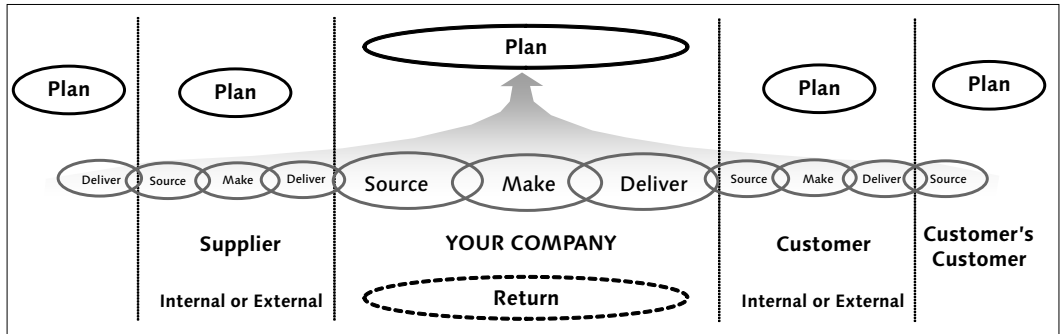


Figure 2.9 The SCOR Model (www.supply-chain.org)

Most of the reference models, for example the SCOR model, also include standardized key performance indicators (KPIs) for the processes, and possibly also benchmark opportunities. SCOR

2.5.2 The Concept of Process Maturity

The idea of *process maturity* goes back to Phil Crosby, one of the fathers of the TQM movement. One of the early maturity models was developed at the Carnegie Mellon Software Engineering Institute and was called *Capability Maturity Model (CMM)*. CMM was originally intended as a tool to assess contractors' ability to deliver a contracted software project. This model was later generalized into the most widespread maturity model: the *Capability Maturity Model Integration (CMMI)*. CMMI is a process improvement approach that provides organizations with the essential elements of effective processes.

The five CMMI maturity levels are the most basic measure of process maturity (see Figure 2.10). CMMI

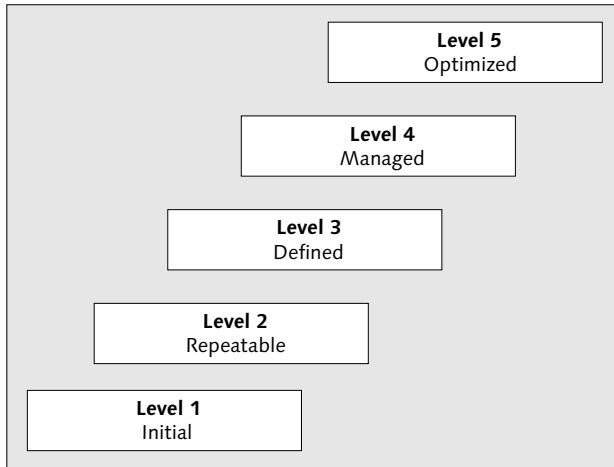


Figure 2.10 The Five Maturity Levels of the Capability Maturity Model

Today, literally hundreds of different maturity models exist. Examples include: Hammer's Process and Enterprise Maturity Model (Hammer, 2007), Michael Roseman's Business Process Management Maturity (Jeston and Nelis, 2006), and Gartner's Maturity Model in Figure 2.11.

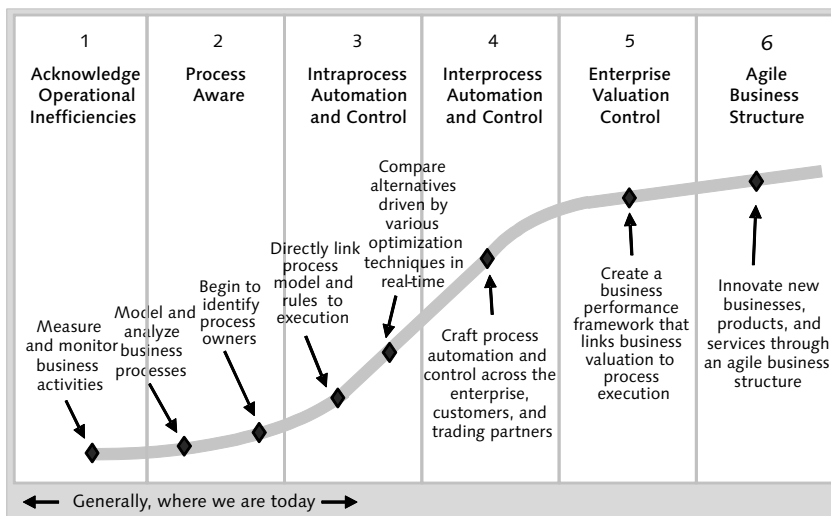


Figure 2.11 The Six Phases of BPM Maturity (Gartner: Olding, 2008)

The model identifies six phases of BPM maturity. According to Gartner: "An important message of the maturity model is that it is highly impractical to jump ahead in maturity or to essentially skip phases to reach an advanced stage for better results. Generally this fails, and if attempted, usually damages the ability to go back to a sound effective sequence and gain the required participant support yet again, to do the right. Following the pragmatic pattern is smart" (Gartner: Olding, 2008).

2.5.3 Process Management Systems

If we want the processes to be executed, we also need a management framework for executing the strategies. One of the most widespread management frameworks has been developed by Kaplan and Norton, and models include the Balanced Scorecard and Strategy Maps.

Management
framework

In a recent article in the Harvard Business Review, Kaplan and Norton (2008) propose a comprehensive framework for the management process related to executing a strategy. Their framework consists of the following five steps:

1. Develop the strategy

Define mission, vision and values; conduct strategic analysis; formulate strategy

2. Translate the strategy

Define strategic objectives and themes; select measures and targets; select strategic initiatives

3. Plan operations

Improve key processes; develop sales plan; plan resource capacity; prepare budgets

4. Monitor and learn

Hold strategy reviews; hold operational reviews

5. Test and adapt the strategy

Conduct profitability analysis; conduct strategy correlation analysis; examine emerging strategies

This model, shown in illustrated form in Figure 2.12, helps keep operations linked to strategy and thus defines the context of business process management.



Figure 2.12 How the Closed-Loop Management System Link Strategy and Operations Work (adapted from Kaplan and Norton, 2008)

2.6 The Future of Process Management

What you have seen so far is the history of process management. With this perspective in mind, it is obvious to think that BPM will have its 15 minutes of fame, and then be gone in a sea of oblivion. It is certainly clear that BPM will be replaced by new process management concepts in the future. What will they look like, and will the achievements be jeopardized?

Business Process Intelligence

As processes are becoming more and more automated, the management of processes will become automated as well. Business Process Intelligence is one of the emerging areas of research with tremendous potential. Research in business process intelligence will eventually enable the evolution of technology to support autonomous processes, and, in the end, we will be looking at intelligent business processes.

When companies get to the point of developing intelligent business processes, the value chain will consist of loosely coupled business processes, and the role of humans will be to strategize and develop and manage relationships with other human players in this value chain.

Will this evolution jeopardize the work done on BPM? No — the maturity and the progress made will be the foundation for advancing even further. The technology and the problems may change, but the principles will be the same.

*"Strive for continuous improvement instead of perfection."
– Kim Collins*

10 Continuous Improvement

Dirk Neudert, Mark Scavillo

The continuous improvement phase is described as a fourth step because this phase embodies the entire concept that is BPM — as described in Chapter 7, The BPM Strategy, as the *continuous analysis, design, implementation, execution, and monitoring of business processes*. The continuous improvement phase highlights the principle that BPM is not a one-time project initiative but rather a philosophy that must be embedded in an organization to be successful.

A company is ready to start with the continuous improvement phase after one cycle of the transition has been successfully completed and any necessary adjustments to the BPM approach have been made. In this phase, all of the steps described in the previous chapters (strategy, set-up, and transition) are adjusted and repeated regularly, ensuring that BPM becomes institutionalized. This is similar to the approach defined by Norton and Kaplan and discussed in Chapter 2, Section 2.5.3, Process Management Systems.

BPM is not a one-time project initiative but a philosophy

The continuous improvement phase (see Figure 10.1), like any business process, can also include improvements to the overall BPM approach. This chapter will briefly describe four possible building blocks that can be added to those already introduced:

- ▶ Process-based rewards
- ▶ Expanded corporate process reporting
- ▶ Process-based budget and cost allocations
- ▶ Process audits

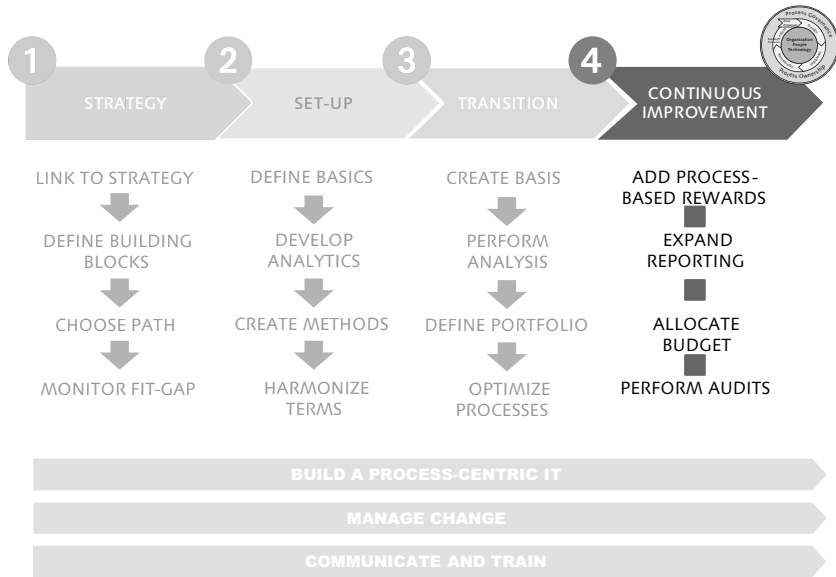


Figure 10.1 The BPM Roadmap, Step 4: Continuous Improvement

These building blocks do not necessarily have to be included in the continuous improvement phase. Based on the building blocks chosen at a specific company, and the fit-gap analysis performed, some of the building blocks discussed in this chapter may have already been implemented in the organization during earlier phases. Or, some may not be wanted or seen as necessary.

10.1 Process-Based Rewards

As mentioned in Chapter 7, The BPM Strategy, linking BPM to the corporate strategy increases awareness and understanding of the benefits of BPM. In a similar fashion, linking BPM activities to performance objectives provides employees with a much better picture of how their individual performance supports process performance and, therefore, the corporate strategy.

Process-based
rewards reinforce
BPM

This link also reinforces the importance of BPM to the organization. For example, a process owner with a dual role as head of a business unit will be able to prioritize annual activities more clearly with rewards targets

that include process performance goals. Without this reinforcement, employees may find themselves with annual rewards targets that conflict with process management goals, damaging the progress a company is making towards becoming process-oriented.

A number of process-based goals exist that can be included in an individual's performance objectives. The most common is meeting specific annual process performance targets, for example a defined customer satisfaction result. However, process improvement project targets or process maturity targets are also possible.

It is important to ensure that the agreed upon individual performance objectives clearly tie into the process performance objectives and the corporate strategy.

10.2 Expand Corporate Business Reporting

Even if a company has completed a successful BPM transformation, the biggest advantage comes afterwards when the monitoring and reporting of these processes proves their performance.

This data is the basis to detecting and deciding on further improvement potentials or needs. It proves the successful design and implementation of processes by matching the expected results with the AS-IS performance. This information is relevant for business and IT. IT will be able to optimize the supporting IT-architecture, systems, and services, and business is able to continuously improve the business process, organizational structures, and skills of process executors. All of these aspects should be covered by a good BPM methodology (see Chapter 8, Section 8.3.1, BPM Methodology).

Use monitoring to detect further improvement potentials

To get into a real lifecycle, it is necessary to continuously monitor the process at specific measurement points (see the RUN/MONITOR phase in Figure 10.2). These were already defined and implemented during the design and implement phases. Now this performance data can be analyzed by using appropriate tools available on the market. During this analysis, it is possible to detect bottlenecks and cost drivers, or to derive improvement potentials for processing time and quality aspects of the

Continuous monitoring

process. This information can be used at different levels of granularity and can be reported to decision makers.

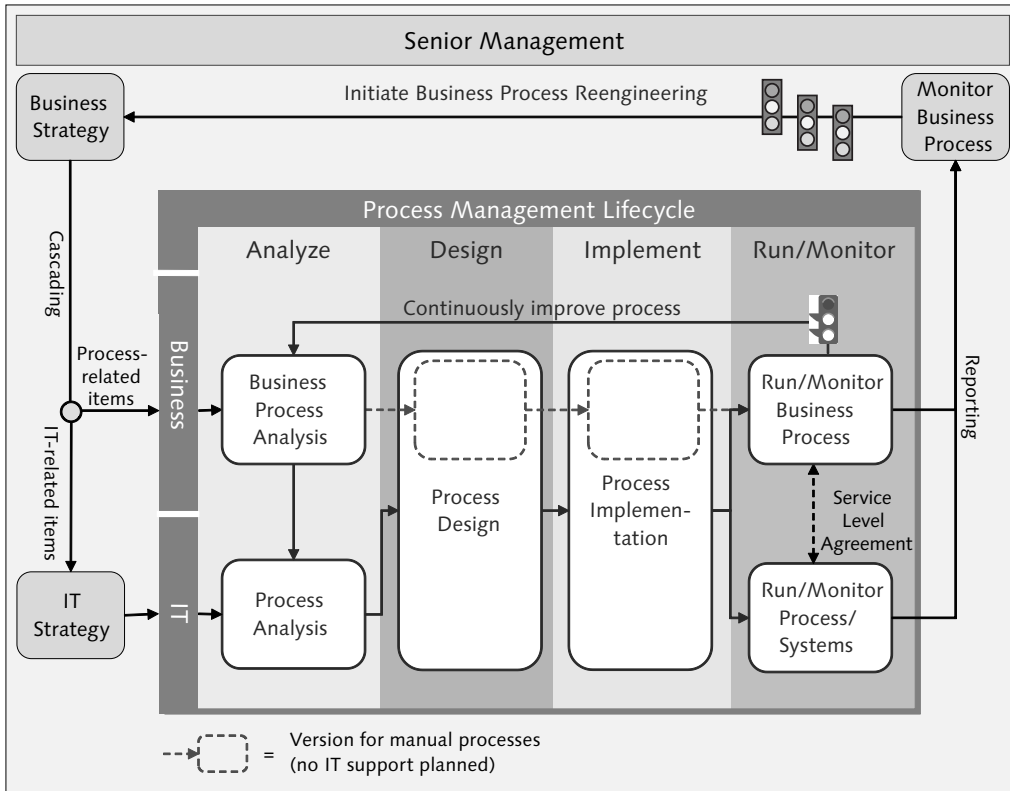


Figure 10.2 Interaction View of SAP's PML

Following this procedure model, processes can be continuously improved based on the needs of the company (depending on the level of change, it can initiate a full reengineering lifecycle – see Figure 10.2).

10.3 Process-Based Budget and Cost Allocations

Process-based budget and cost allocation focuses on the end-to-end processes and not on functional units. Depending on the size and history of an organization, this may be one of the more difficult building blocks to implement.

Two types of budget and cost allocations are possible:

- ▶ Centralized allocation to process projects
- ▶ Allocation to the business processes themselves

The centralized allocation of budgets to process projects relates to the funding of process activities. Because project budgets are sometimes distributed among various business units in a company, with each unit defining its own project priorities, the risk of redundant or competing process improvement projects might exist.

**Centralized
allocation**

By centralizing the funding of these process activities, a company can ensure a more coordinated effort in improving processes and reduce the likelihood of duplicate efforts significantly. In addition, centralized budget allocation ensures that only process activities take place that align with the company's goals.

This centralized allocation can be performed by a specific decision-making body, for example the process steering committee, based on the strategic process plan. The funds can then be provided to the designated process owners or process centers of excellence that have the task of executing on the process activity. In this case, the funding can always be tracked centrally, ensuring that company resources are used properly and aligned within the organization.

The method for allocating budget and costs to business processes depends on the type of organization you have (see Chapter 9, Section 9.1.2, Assign Process Ownership). In the influencing process organization, this type of allocation would be too difficult to implement because the processes are not owned end-to-end, but instead parts are owned by each of the organization's functions. In the pure process organization, functions are more or less non-existent, so an allocation to the processes is required. This type of organization already has costs allocated to the processes and has process owners that have full responsibility for the budgets of their respective processes.

**Allocation to busi-
ness processes**

A matrix-process-organization has a mix of budget and cost allocation. Functions will require their own budgets because they will continue to generate costs, for example employee salaries. However, processes and

their process owners will also need budgets. In this type of organization, a “balance of power” has to be ensured so that functional heads and process owners are allocated the appropriate amount of budget to complete their tasks, without competing with one another for more funding.

10.4 Process Audits

One type of audit has already been introduced in this BPM Roadmap — the process maturity analysis. The purpose of this audit is to determine whether processes on which the organization is focusing are reaching a higher level of maturity than planned. The results of this audit are included as one criterion for determining the process project portfolio.

Transparency on an
enterprise level

Although the process maturity analysis can be conducted by a process center of excellence, a process-oriented organization can also implement other audits that can be performed by the company's internal audit department. The audits can be broken down into two types:

- ▶ Process improvement project audits
- ▶ Process compliance audits

The first type of audit involves the assessment of process improvement projects to ensure that they follow standard BPM guidelines and methodologies established by the company. The second type of audit has a much broader scope. Process compliance audits can include assessing the use of standardized processes in an organization's subsidiaries, or testing standard process controls as required by the SOX Act, Section 404.

Both types of audits should provide comparable results and transparency on an enterprise level. And as with the other building blocks mentioned in this chapter, audits also underscore the importance of processes and process-thinking in an organization. They help support the process governance structure that is vital in ensuring a uniform business process management approach.

10.5 Summary and Key Points

The four main steps for transforming a company from functional to process-oriented have now been described. During continuous improvement, the steps are continuously reviewed and adjusted to ensure that BPM continues to support the overall corporate strategy.

The following key points should be remembered:

Key points

- ▶ Because continuous improvement is a repetition and improvement of the previous BPM tasks discussed in Part 2, the fit-gap analysis (discussed in Chapter 7, The BPM Strategy) should be continued to determine what building blocks to adjust and what new building blocks to add.
- ▶ Process-based rewards will only work if they are directly linked to the overall corporate strategy.
- ▶ The best way to allocate budget and costs depends on the company's organizational structure (influencing process, matrix-process, or pure process).
- ▶ Process audits should enhance existing audit activities, such as the process maturity analysis, rather than replace them.

We've now discussed the four "core" steps of the BPM Roadmap. In addition, a few key "supporting activities" have to be completed during the overall BPM transformation. These activities will be discussed in the next chapter.

15 SAP's View on Business Process Management

Wolfgang Hilpert, Ann Rosenberg, Thomas Volmering

We will now explore SAP's view on BPM and the next architecture stage. This chapter will include an explanation of the value of SAP Business Suite and BPM for business network transformation, including SAP's customer process innovation approach. The view is provided from a vendor perspective.

15.1 Innovation Without Disruption

The goal for SAP Business Suite is to deliver a holistic, integrated, business-user focused software suite that enables customers to advance from the enterprise architecture maturity stages of business silos, standardized technology, and optimized core to business modularity, where strategic agility is enabled.

With the SAP Business Suite 7.0, a new model is used for developing and shipping innovations. This new model is based on a stable core release and innovation via enhancement packages that, in addition, are facilitated by delivery of enterprise services and process components as business content of the Enterprise Services Repository (ESR), the central place for SOA design governance. SAP ships all new functionality for SAP ERP as optional enhancement packages. The Switch and Enhancement Framework is the backbone of SAP ERP enhancement packages and SAP's industry solutions. Goal of this new technology is to reduce upgrade and test effort by using modification-free and "switchable" enhancements to leverage SAP's enhancements or build your own enhancement package. Support packages for the stable core are shipped in addition and are strictly separated from the enhancement packages.

Enhancement packages facilitating innovation

The value of this delivery model is to make innovations accessible more quickly, and to be able to implement them more quickly, while minimizing the risk of affecting existing functionality. This lets you benefit from new functionality without being forced to apply a release update. In addition, you can select only those new functions that are required for your business.

SAP Business Suite 7.0 supports enterprise SOA This new model also supports the move from the *traditional architecture* to an *enterprise services-oriented architecture*, as illustrated in Figure 15.1.

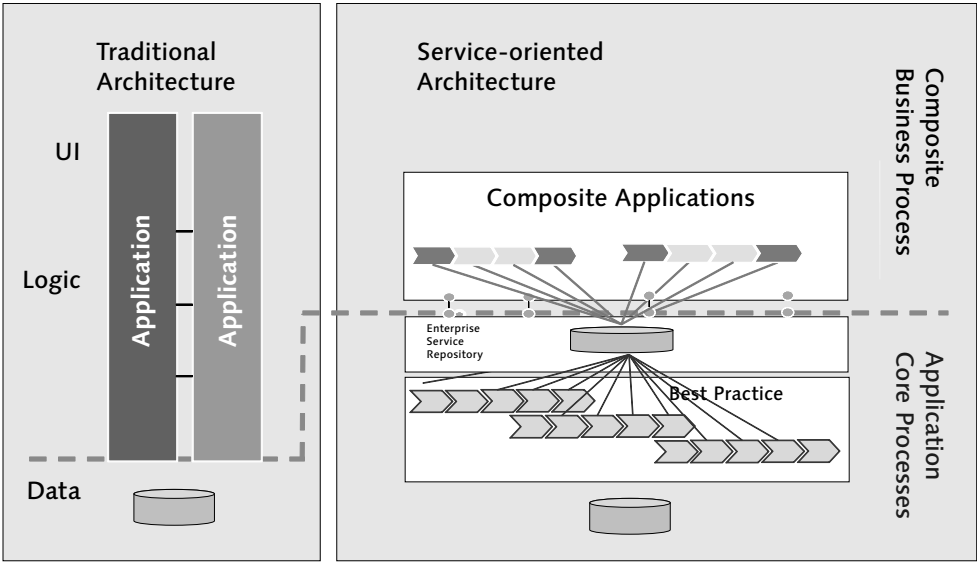


Figure 15.1 The Target Architecture for Innovation

This new enterprise service-oriented architecture is divided into two parts:

- | | |
|------------------------------------|--|
| <p>Stability and reliability</p> | <p>1. The first part, <i>Application Core Processes</i>, represent the core part of the application that support processes that are stable, not frequently changed, and for which reliability is a key. This will, depending on the company type, cover 70 % to 80 % of the company's processes.</p> |
| <p>Agility and speed to market</p> | <p>2. The second part, <i>Composite Business Processes</i>, corresponds to the processes that support strategic agility and speed to market, which comprises 20 % to 30 % of the company's processes. That means that pro-</p> |

cesses that use enterprise SOA are of substantial value because the goal of enterprise SOA is to enable the implementation of innovative business processes spanning multiple SAP Business Suite applications in an efficient and consistent way, via composition or integration of processes based on enterprise services and events.

This new software model supports the shift from standardized technology and a business-optimized core to business modularity, which will support speed to market and strategic agility, and prepares us for the next phase of *dynamic venturing*. A key factor for achieving this goal is a business scenario-oriented approach to application development.

With the business scenario-oriented approach, end-to-end scenarios have to be identified and defined before architecture is defined and development starts. This applies both to new development and to harmonization of existing solutions supporting the company processes.

Business scenario-oriented approach for dynamic venturing

First, the business scenarios must be modeled at a customer-oriented level of abstraction. Then, the business scenarios must be mapped to components in a system landscape. The results of this step are *deployment scenarios*. Finally, the architecture is defined based on the business and deployment scenarios.

For application architects and developers, scenario orientation means first of all that they have to know and understand the scenarios to which their application components contribute. This is required to ensure an outside-in approach.

15.2 Business Network Transformation

This section will help you understand the strategic direction for BPM from an IT point of view. SAP has been a facilitator of business for more than 35 years by helping streamline IT for companies worldwide. However, business success and company growth today are not limited to implementing standardized software, but to achieving competitive differentiation in business. The latter requires speed in putting innovative business models to work. As technology and business converge, IT has to enable and anticipate new types of business model innovation.

The next big challenge for IT

Getting IT to support business model innovation is the next big challenge for IT. One way to get there is business network transformation. Just what the transformation is — and its relationship to business model innovation and enterprise SOA — is worth considering.

The high-functioning and flexible business network will be the new source of competitive advantage. Companies can grow their markets and compete more powerfully by innovating their business models and off-loading tasks not core to their business to other members in the network — and vice versa.

Enterprise SOA is the evolutionary way to make IT work for business network transformation with the lowest risk to the business. It is the perfect basis for business model innovation and network transformation, especially in heterogeneous IT environments.

It is also the architectural enabler of business network transformation, the way both the members and the processes in the network communicate with each other — through services.

Enterprise SOA is an enabler of BPM, and at the same time, BPM provides sustainable value on top of a service-enabled platform:

- ▶ Business process transparency (content)
- ▶ Business process flexibility (applications and composition tools)
- ▶ Business transformation (methodology) with SOA as technology enabler

15.2.1 The Evolution of BPM

Traditionally, BPM has been perceived as divided into two distinct “functions”: BPM as a management discipline that helps business organizations standardize and continuously optimize operational processes that have the largest impact on achieving corporate performance goals, and BPM as a technology (or software product) that provides IT organizations with a framework of tools to model, deploy, and execute processes that include human and system tasks (e.g. workflows) or that span across different business applications and require a broad set of integra-

tion capabilities (e.g. messaging, transformation, and adapter technology) known as Enterprise Application Integration (EAI).

In today's business world, innovation and strategic business transformation require new methods and software products to differentiate organizations from their competition. The next generation of business best practices thus require an integrated, holistic perspective on BPM ("BPM 2.0 and beyond").

New methods and tools

Resulting needs include the following:

- ▶ Establish an "end-to-end view" of business processes across the value chain.
- ▶ Standardize the core business functions that are stable rather than dynamic. At the same time, enable flexible composition of differentiating process behavior that is dynamic rather than stable.
- ▶ Act agile and flexible on business changes, leveraging business services (enterprise services) from the platform.
- ▶ Involve business users in processes in a visible and controlled fashion (preventing "shadow IT" and departmental solutions that are not integrated and controlled).
- ▶ Extend the business process context from transactions to holistic business process scenarios including processes, tasks, and events, as well as end-to-end process monitoring and analysis functions.

From a market perspective, the evolution of BPM in the context of enterprise SOA requires the following:

The evolution of BPM in the context of enterprise SOA

- ▶ Comprehensive support for model-driven process execution for all process dimensions (whether they are human- or system-centric, established supply chain procedure or agile business practice, or business or IT driven).
- ▶ Standardized business content at all levels of process abstraction and for multiple personas in a company.
- ▶ Advanced process management tools from enterprise modeling (conceptual planning of business, IT, and information architecture) to process governance and implementation.

- Support of business process analytics comprising business process monitoring (single instance), simulation and optimization capabilities, as well as business activity monitoring (business process and event driven on multiple process instances, end-to-end).

15.2.2 Challenges From an IT Perspective

On their way to prepare for the next wave of business transformation, most organizations face different challenges in adopting new business and IT principles. First and foremost any shift in a company's IT and business architecture (as enterprise SOA) requires an in-depth understanding of the core processes that have been standardized in the past or that need to be further standardized in current or future global and local markets.

New IT and business roles

Process analysis therefore helps to understand how far business processes are fragmented in disparate silos of heterogeneous application landscapes, how many departmental solutions exist, and how often homegrown workarounds in IT (*shadow IT*) or inaudible individual business solutions are implemented. To free up all potential forces that might be leveraged, organizations have to get process-oriented, including a mind shift in the understanding of business and IT roles and functions. A new breed of business and IT professionals — the business analyst and business process expert — is concerned with working jointly on overcoming these challenges.

Example

For a long time, companies have been running their business by a set of policies, responsibilities, and regulations that are maintained in unrelated systems or tools. Growing a business, as well as growing competition requires a shift of gears in innovation. Fragmented business processes and their control mechanisms lead to prohibitive factors for implementing a culture of "change". These factors are:

- Lack of transparency
- Lack of productivity, automation, and efficiency
- Lack of process flexibility

By "lack of transparency", we mean the following issues and questions:

- ▶ Business and IT departments are unaware of the bigger picture — no common process repository exists.
- ▶ No process governance exists that allows the alignment of business requirements (written or modeled functional specifications) and IT tasks (technical and architectural papers).
- ▶ Which business services can be mapped to technical "enterprise services"?
- ▶ Which tools can be used to cover processes that are driven and owned by business users in conjunction with a technical infrastructure that is capable of being a backbone for process automation?

Lack of transparency

By "lack of productivity, automation, and efficiency" we mean the following:

- ▶ Information workers lose time by manually working on tasks (e.g., escalating issues).
- ▶ No automated way exists to execute and track process parts; instead non-integrated, uncontrolled departmental solutions that cause prohibitive costs and in transparency are used.
- ▶ Meaningful data about processes, business activities and events are hidden in disconnected silos of applications or in single IT workarounds.

Lack of productivity, automation and efficiency

Finally, "lack of process flexibility" refers to these issues:

- ▶ No means exist to innovate business processes without disruption of the core business processes.
- ▶ No technical environment exists to extend standardized core processes at defined points of extensions (before, after or in-between a core process).
- ▶ No collaborative modeling environment is available to drive process changes flexibly from business to IT via comprehensive change management.

Lack of process flexibility

To break the boundaries of prohibitive costs and gaps to become more process agile, "company X" will need to address key questions in a cross-functional team:

- ▶ What is a definition of "business process" that is accepted corporate-wide?
- ▶ What are the core business processes that run the company and that can be standardized with packaged applications?
- ▶ How can the needs to integrate and automate processes across the value chain be addressed from a technical standpoint?
- ▶ How should you design innovative processes that enable collaboration between information workers to lower the cost of processes (standard and exceptions)?

Key questions

15.2.3 What Is a Business Process — A Definition

From a technical perspective, a business process is defined as “a set of linked activities that creates value by transforming an input into a more valuable output,” SAP differentiates a business process further into two basic subprocess types:

- ▶ Application core processes
- ▶ Composite business processes

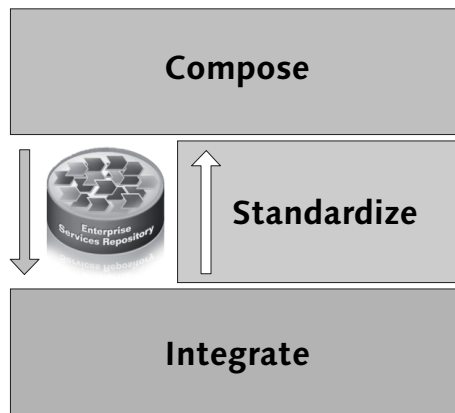


Figure 15.2 Application Core and Composite Business Processes

Application core processes

Application core processes are delivered via SAP's business application as part of the SAP Business Suite. These processes are pre-defined and packaged, and can be customized in applications such as SAP ERP, SAP PLM, SAP SCM, SAP CRM or SAP SRM. By nature, these processes represent the core business functionality that “run the business” operations from financials, controlling, and human resources to materials management, procurement, and sales order management to supply chain and customer relationship management. These packaged processes are exposed as reference content in ESR and SAP Solution Manager to provide process insight and transparency into what is covered within business applications (discover and design) and how this can be used to extend the core set of highly standardized business operations for reasons of process efficiency, innovation, and differentiation (extensibility). Embedded collaborative process steps are usually implemented in SAP Business Workflow and therefore seamlessly integrated.

Striving towards a certain degree of process standardization, most organizations face the need to do the following:

- ▶ Integrate the core processes with their legacy data sources, third-party applications and business partners (B2B) and within the setting of distributed SAP application landscapes with each other (A2A).
- ▶ Compose new innovative business processes at the edge of the application core that are dynamic rather than stable and that deliver a high degree of competitive advantage at the departmental level or in local or global markets.

Application core processes represent business process best practices. Composite business processes are practices that can, over time, also evolve into the application core. *Composite business processes* are either human-centric (collaborative) or system-centric (integration process).

Composite business processes provide added business value, speed, and agility

The nature of composite business processes is to *enable business process composition* at the edge of the application core. They are driven by functional business requirements and specifications, and their goal is first and foremost to provide added business value, speed and quality of exception handling, and delivery on the promise of innovative business ideas to improve efficiency and have a sustainable process improvement impact.

Technical processes supporting system-to-system (S2S) and system-to-human (S2H) type of interactions are defined as *system-centric*. System-centric composite processes are implemented to define, control, and monitor complex integration scenarios that reach beyond application systems or enterprise boundaries. An integration process is an executable cross-system process for processing messages and automating the message flow within the context of a service orchestration. In an integration process, the process steps and step types are either message flow-oriented (e.g., send, receive) or control flow-oriented (e.g., fork, switch, wait).

System-centric composite processes

Typical patterns of integration processes (e.g., collect, split, merge) or technical communication patterns (sync/async bridge) are delivered as templates to support efficient implementation.

As the very nature of integration processes is to *enable message-flow automation*, human interaction (apart from alerting administrative attention caused by exception handlers and modeled compensations) unsurprisingly takes place as human call-outs in the sense of generic user decisions (decide on the state of the process: yes-or-no decision gateways) or leveraging fully implemented application workflows or tasks as (business) services via defined service interfaces.

Human-centric composite processes

Human-centric composite business processes focus primarily on cross-system and cross-organization types of processes. Today's business requires information worker enablement with flexible business processes that span organizational and system boundaries and involve people in distributed, heterogeneous environments. Although these processes are primarily driven by business users and business activities, they combine user activities (with UIs, or via tasks in a task list) and automated activities (either single service-enabled activities or modeled integration processes for mediation purposes such as, for example, automated data consolidation).

The latter kind provides further flexibility with respect to spanning processes across multiple systems and organizational boundaries. They can be combined with integration processes to trigger system-related activities. Composite business processes need to provide ad-hoc capabilities to react quickly and flexibly to changes in the business or critical business events in out-of-bound situations.

Applied business process flexibility with support of process debugging, simulation, embedded change management, and the principle of "process design as a process" is the higher art of process management that this capability needs to supply.

Which Business Problems Can You Solve Today?

The need to manage business tasks from automated business processes – whether they stem from standard application core processes or workflows extending the application – caused the development of central task lists that enable business users to work on their daily tasks and receive notifications and alerts in one unified task environment. Extensibility towards other systems, for example, home grown or third-party

solutions, needs to be supported to manage not only SAP application tasks but also other task types.

Integrating and automating the message flow between business applications in A2A and B2B scenarios is the basic requirement that led to extensions of standard middleware products in the application integration realm to support process integration. Standards like Business Process Execution Language (BPEL) evolved to support message-based web service orchestration to automate how different business systems could be integrated with the help of an executable flow model. Because only a limited number of business processes can be completely automated without any human interaction before, after, or in-between, basic human interaction patterns (e.g., approve, alert, or compensate) need to be supported even in these system-centric integration processes.

Message flow

Therefore, *manage by exception* is the requirement to involve business users in automated processes. The human interaction is primarily focused on technical or business alerting of critical process exceptions. The next pattern is concerned with human approval of the state of business data in an automated process instance (e.g., approve the merged data of sales orders in a multiple sales order management scenario, or approve the new supplier that has automatically been identified in a compensation action). Companies who have implemented supply chain production workflows embedded in their applications might also want to leverage this investment by combining automated message flow handling with triggering tasks or workflows as services.

Manage by exception

Workflow automation in the context of business applications (embedded workflow management) requires strong integration of production workflows with the core objects delivered with the application (e.g., the sales order business object). SAP applications deliver a rich set of workflow templates that can be implemented as part of the customizing activities in the implementation project.

How Do We Solve These Business Problems Today?

Cross-component BPM (delivered with SAP NetWeaver PI) handles processes where the message flow between different business applications is dependent on several messages, or on time and business actions or re-

Cross-component BPM

actions. Interdependencies can be defined using an internal state derived from content of incoming messages. Messages belonging to one process instance are identified by correlations as common denominators on the basis of message content (e.g. a purchase order, an ASN, a confirmation, and an invoice in a procurement process via the order ID in combination with the business partner ID or company code). Cross-component BPM also supports handling of system exceptions and alerting.

SAP Business Workflow *SAP Business Workflow* has been embedded in the heart of the SAP solutions, so that SAP applications (including SAP CRM, SAP SRM, and SAP ERP) are built on it to incorporate workflow features directly in their application. Integration with organizational management and standard SAP reporting tools allows reusing the investment that companies have made in SAP solutions.

Universal Work List *Universal Work List's* (UWL) work-item inbox or task list is the watering hole where users access their workflow "to-do" lists. Work items that appear in these inboxes can span a range of business activities, from administrative processes such as a vacation request to more in-depth processes such as the evaluation of a sales opportunity.

A task list must be simple enough for an employee who periodically uses it to, for example, approve a vacation request. But specialist users have very different needs: their inboxes must be able to handle perhaps 100 work items a day for a particular business process. They need advanced capabilities, such as viewing the process audit trail (showing who did what, and when), creating attachments (explaining why a particular decision was made), or adding information for participants downstream. Sorting, resubmitting, and grouping work items also helps in prioritizing processes for faster information flow.

You can deploy different inboxes for these different types of users for each business process. But given the number of processes in which casual users might participate, this could mean a proliferation of inboxes, each requiring training and support. The UWL helps to reduce the number of inbox types (and training for those inboxes) without cramping the user's style or compromising the supplemental information specialists require. It provides central access to tasks.

As mentioned previously, the layers of integration process, embedded workflow, and task list can be seamlessly integrated to cover process automation with human call-outs, as well as application-embedded workflow automation.

End-to-end business processes are seamless combinations of different types of processes, including:

Combinations of
types of processes

► **Core application or platform processes**

Provide proven standard business practices and are delivered by SAP's applications. These packaged processes are built to satisfy a high demand for integration, integrity, and legal compliance, and are typically mission-critical. They are designed as an integral part of a business process platform.

► **System-centric integration processes**

Include A2A and B2B interactions, legacy systems, or third part system integration. These processes are delivered technically through SAP NetWeaver PI.

► **Human-centric composite processes**

Focus on human interaction and process collaboration, decoupling tasks, user interface definitions, rules, events and services from an executable business process model to facilitate a high degree of flexibility and transparency. These processes are delivered through a new building block of BPM capabilities as part of SAP NetWeaver Composition Environment: SAP NetWeaver Business Process Management (BPM).

All of these types of business processes interact seamlessly through *services and events*.

15.2.4 Building Blocks of SAP NetWeaver BPM Capabilities

Figure 15.3 shows the building blocks of SAP NetWeaver BPM capabilities.

SAP NetWeaver CE will support a standards-based modeling environment (Business Process Modeling Notation [BPMN]), process design collaboration, semantic integration with SAP's application core processes, human interaction management that provides task management, rule and responsibility assignments, and business event resolution mechanisms.

SAP NetWeaver
Composition
Environment

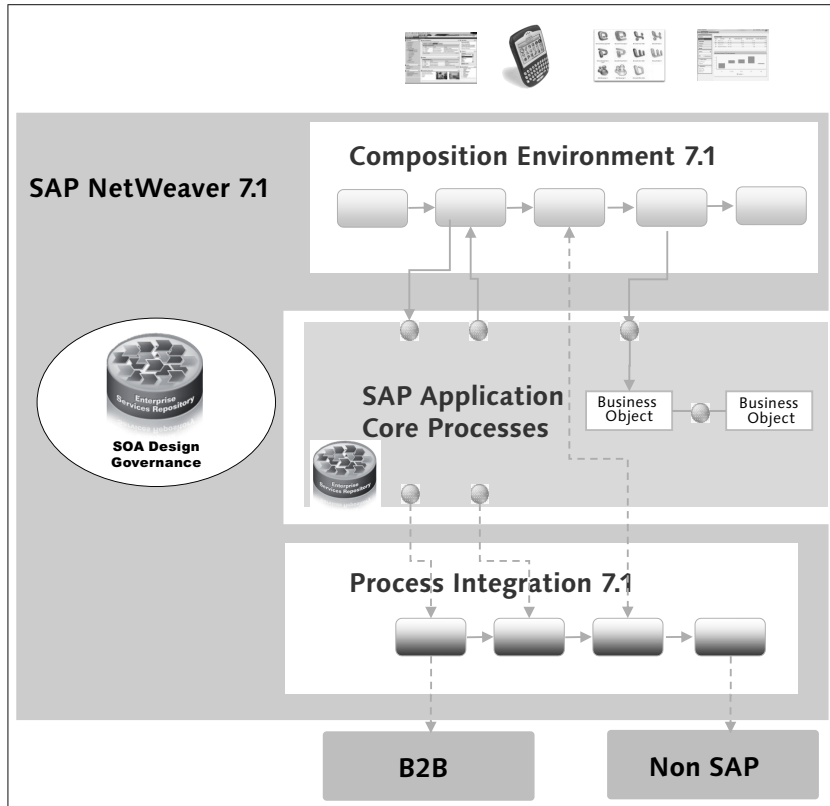


Figure 15.3 Model-Based BPM on a Business Process Platform

Enterprise Services Repository (ESR)

The *Enterprise Services Repository* (ESR) is shipped with SAP NetWeaver PI 7.1 and SAP NetWeaver CE 7.1. As an evolution of the SAP NetWeaver XI Integration Builder, it does not only contain enterprise services (service interfaces, service operations) and data types, but also tools to cover the integration needs of a SOA middleware (e.g., a mapping editor, or a BPEL integration process editor) Apart from this, the ESR is used as the central place for *process component architecture* modeling with SAP modeling methods and content for enterprise SOA.

SAP Enterprise Modeling Applications by IDS Scheer

As an optional building block, companies using SAP software can leverage *SAP Enterprise Modeling Applications by IDS Scheer* (see Figure 15.4) to sustain large scale enterprise modeling projects. Enterprise modeling moves beyond conceptual business process analysis towards planning

and governance of the corporate business architecture (business architecture, enterprise IT architecture, and information architecture; see definitions in the text that follows).

Business Architecture (ARIS Business Architect) includes planning and documentation of processes with several levels of detail. It supports governance of business processes and promotes their standardization across organizations. Furthermore, process simulation and optimization on a conceptual KPI level is facilitated, as well as process performance management on application transactional data.

Business
Architecture

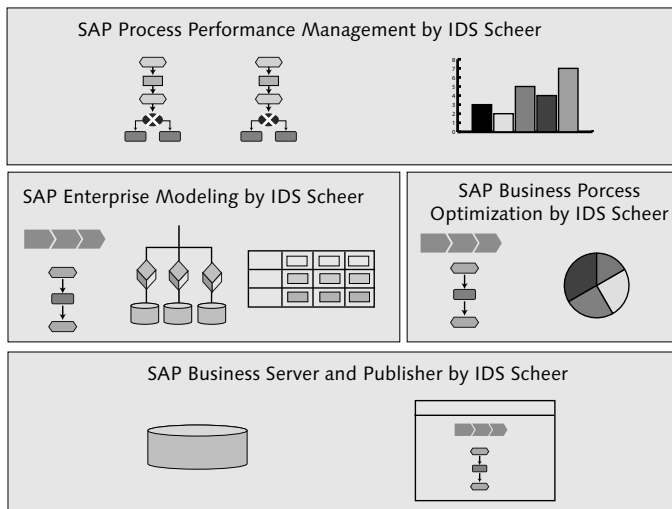


Figure 15.4 SAP Enterprise Modeling Applications by IDS Scheer

Enterprise Architecture (ARIS IT Architect) enables customers to plan their IT and enterprise architecture with the help of standardized architecture frameworks, for example TOGAF. Aligned with process models of the Business Architecture, an integrated overview of processes and IT landscapes (down to software components and applications systems) can be achieved.

Enterprise
Architecture

Information Architecture (ARIS BI Modeler) contains the re-documentation of information structures of SAP NetWeaver BI. SAP NetWeaver BI data structures and data flow can be connected to business process models in one central ARIS repository.

Information
Architecture

The following basic integration and interaction points are offered from and to the SAP domain: *Transactions*, which are reference content of process configuration variants delivered with SAP Solution Manager.

SAP Solution Manager

The transactional view of business scenarios, business processes, and process steps supports the configuration and implementation of SAP solutions based on best practices. SAP implementation content can be synchronized with ARIS for model alignment to the business architecture of the company (value chains and below) and, furthermore, to drive upgrade or initial implementation projects with the help of business process models.

In addition, future integration with ESR-based process components and enterprise service definitions will be achieved via standards and APIs.

15.2.5 Changing Value Proposition of Reference Models

During the 1990s, SAP developed a set of reference models for SAP R/3 based on ARIS event-driven process chains (EPC). By nature, these models were graphical process flows describing process scenarios, processes, and SAP transactions as functions in informal modeling to enrich the documentation and to enable business engineering. These models (around 9,000 in number) served as the foundation for implementation methodologies such as, for example, accelerated SAP (ASAP) and tools such as the SAP Business Explorer to visualize processes in an SAP environment.

As the complexity of process modeling projects at companies was increasing, SAP retired the SAP reference model as of SAP R/3 release 4.6 and invested in simplification of the modeling method to build reference models.

Process-driven implementation projects

Today, SAP Business Suite implementation content delivers a set of configuration variants that enable process-driven implementation projects with SAP Solution Manager. Although the swim lane diagrams look different, they were developed as ARIS EPCs in column display to enable a seamless integration with business process analysis tools such as, for example, ARIS for SAP NetWeaver. SAP implementation content represents a semi-formal modeling approach, because modeling entities are bound to transactions and Customizing objects in SAP solutions.

The next generation of reference models will be delivered with the ESR. Process component architecture models enable SOA governance and model-based design of service-enabled business applications. These models represent a formalized modeling approach, because the modeling entities (process components, enterprise services, service operations, and global data types) are deployed based on the models in the application platform.

Reference models
in the ESR

Upcoming releases of the SAP NetWeaver CE will be able to leverage a business process model representation of process components to facilitate modeled process composition and extension of the application core via defined extension points of a packaged service-enabled business process.

15.2.6 Composite Business Processes

SAP NetWeaver Business Process Management (SAP NetWeaver BPM) is a new component of SAP NetWeaver CE. As of enhancement package 1 of SAP NetWeaver CE 7.1, the integrated composition environment will contain capabilities to model, connect, compile, deploy, and maintain composite business processes. These capabilities will be split into main building blocks (see Figure 15.5):

SAP NetWeaver
Business Process
Management

- ▶ Process Composer
- ▶ Process Server
- ▶ Process Desk

The *Process Composer* will be seamlessly integrated into SAP NetWeaver Developer Studio as a separate perspective and provides BPMN-based process modeling capabilities. BPMN is based on the specification adopted by the Object Management Group (OMG). This notation allows easy and intuitive process modeling for both business analyst type of users and developers in one common environment. The Process Composer will support all stages of process modeling from high-level definitions of the process down to the enrichment for the actual development into deployment and execution. Lifecycle aspects (versioning, transport, etc.) are fully supported through SAP NetWeaver CE. SAP's BPM notation differentiates activities into human and automated activities. Those

Process Composer

activities can be structured within nested processes (subprocesses). Human activities normally trigger tasks that are executed through end users, whereas automated activities allow executing web services and therefore provide full integration into SAP's enterprise SOA-enabled business applications.

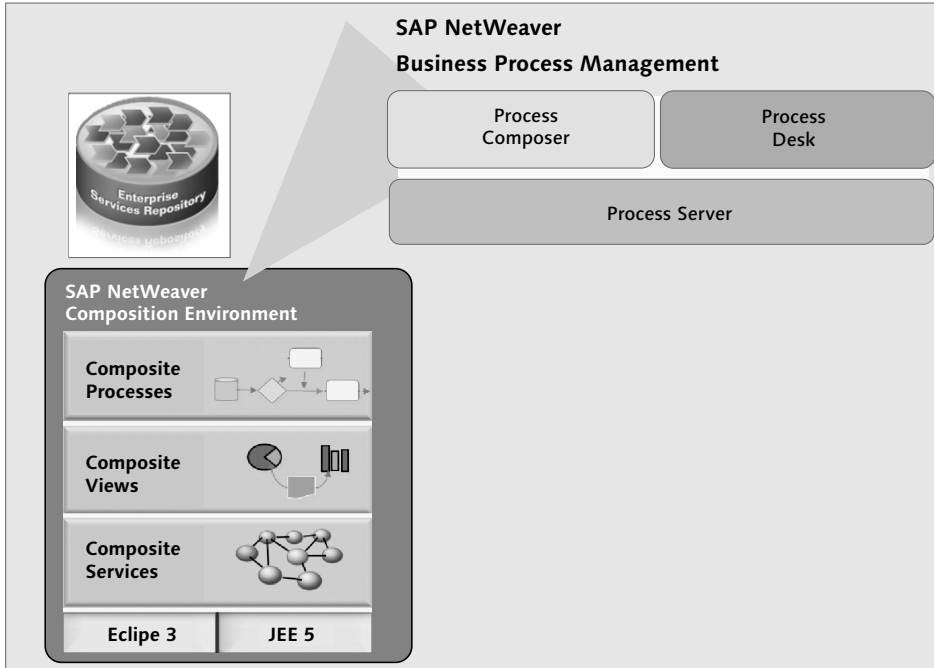


Figure 15.5 SAP NetWeaver Business Process Management (SAP NetWeaver BPM)

Process Desk The *Process Desk* represents a building block for task management, UI and forms integration, rule definition, and event resolution. Task management provides capabilities for end users to access, investigate, and execute on tasks assigned to them. Task management will also be integrated into existing assets such as UWL, which is already successfully deployed. SAP's UI technologies, such as Web Dynpro and Interactive Forms, can be integrated for the end user interaction within the modeled processes. Rapid UI prototyping capabilities will enhance and speed up the design and specification of process interaction components. These UIs can be generated out of the modeling artifacts of the process (process context).

15.2.7 Embedded Business Rules Management

BPM and business rules management have co-existed for many years, but there is no single vendor who offers a process modeling and management experience that delivers automated decision making and business rules management as an integrated experience.

The Situation Today

Rule engines and Business Process Management Technology can be integrated, in a very loose fashion, through service calls or direct java method call integration.

Business rules are organizational assets that will need to be managed and reused in a coherent fashion, like any other asset such as process models, organizational models, and so on. However, because no standards exist in the rules space, BPM tools will have to rely on third-party rule management tools, increasing administration and governance costs.

No comprehensive SOA technology vendor is in a better position than SAP to deliver an integrated experience when it comes to managing processes and decisions in a logical, coherent, and unified fashion under the same platform.

Moving Towards an Integrated Business Process And Rules Management Suite

For SAP, the acquisition of YASU Technologies offered a perfect fit for SAP NetWeaver CE and the new BPM solution. As of SAP NetWeaver CE 7.1, enhancement package 1, SAP NetWeaver Business Rules Management is introduced as a new component.

SAP is planning on a staged approach to integrate business process with business rule composition, execution, and management and plans:

1. Native integration of business rules (decision tables) into process composition.
2. Additional rule sets and business user functionality.
3. Full business rules management, that is, a seamless path from composition to process to rule.

SAP NetWeaver
Business Rules
Management

As an evolution of multiple process layers catering to different needs, a common design- and runtime layer for business processes will emerge. In our understanding, a common business process layer fulfills the following criteria:

- ▶ It offers a dynamic business process representation that can be sketched and understood by business people (BPMN). This design time representation goes across all types of business processes and their specific characteristics and supports design collaboration.
- ▶ A more detailed view of the same dynamic business process representation can be implemented by a developer persona, without the need for model translation or conversion. Execution is done by application runtime or a business process engine, depending on the nature of the respective process fragment.
- ▶ Common monitoring, lifecycle management, and process performance management (e.g., based on KPIs) is possible along the end-to-end process.

For the application core processes, the common process layer uses ESR SOA artifacts that provide *deep semantic integration* based on process models. Here, process component models are exposed as BPMN-based processes with defined extension points for enhancing the core process; in that sense, the common process layer provides process-oriented "business add-ins" for process composition, without touching the business application logic itself.

Harmonizing design and runtime, the common process layer will enable companies to leverage common runtime services and a central design time in BPMN both for human-centric and system-centric process modeling in a homogenous environment.

Multiple Views on a Single Version of the Truth — the Process Domain Model

From concept to
code

The ultimate goal of process collaboration is to provide a smooth up-and-down ride between the various layers of abstraction. Structural requirements that are defined by functional specifications need to be seamlessly integrated with technical implementations. This requires the

enablement of multiple types of user roles ("personas") concerned with business processes, driving process definitions towards an executable model.

Provide Views to Collaborate with Other Stakeholders in the Process Lifecycle

Instead of transforming business-level models for execution and working in different repositories catering to different skill sets concerned with the process definition, multiple users — who perform different tasks in process modeling — work in one environment with different views (perspectives) of the domain model (that is, the physical process model stored in the database).

The focus of the correct procedural model to align business requirements with IT implementations is to define the correct "pins through the IT sandbox" as a contract between business and IT.

Thus, by providing a common "dictionary", IT can decorate metadata so that business can discover existing IT assets in a library of the modeling workbench. Business analysts or business process experts can then start modeling processes based on IT reality by discovering, reasoning over, and leveraging existing IT assets, to produce structured requirements for IT to "fill in the blanks".

15.2.8 Business Process Management Standards

To support portability and interoperability of business process definitions, SAP embraces, contributes to, and implements industry standards that have been widely adopted. The selection of standards is motivated primarily by the additional value for the respective use cases.

Business Process Execution Language (BPEL) is one of the most widely adopted standards for design and execution of system-centric business processes. SAP has been supporting and implementing this standard since 2003, as version BPEL 1.1, and shipped it with ccBPM as part of SAP NetWeaver XI/PI and will continue to do so. This standard has recently been upgraded to WS-BPEL 2.0 and is provided through ccBPM as a preview version. Shortcomings of WS-BPEL 1.1 and WS-BPEL 2.0 are missing built-in artifacts for the integration of human interaction.

**Business Process
Execution
Language**

- BPEL4People** Another upcoming and recently released and published standard is *BPEL4People*. SAP has jointly defined this standard with our partner IBM to support the human interaction gap for system-centric processes. As part of this definition activities, SAP has also defined WS-HumanTask for a unified human interactions model through service enablement, and plans to ship this functionality as part of the new BPM capabilities.
- BPMN** To overcome and bridge the shortcomings between system-centric and human-centric process definitions, SAP embraced and will deliver *BPMN* as a process modeling notation that is agnostic of execution language artifacts (that is, it doesn't know about the artifacts). This approach will provide a more system-independent modeling paradigm, allowing elevating modeling activities into the business domain. Because SAP has adopted BPMN as its modeling notation for future collaborative business processes, also it also plans to contribute to the shaping of this standard for the next version.

15.2.9 The Value Proposition of Enterprise BPM

SAP believes that the highest value of BPM will be achieved via semantic integration into service-based business applications.

This paradigm starts with leveraging the ESR for SOA design governance that goes hand-in-hand with a process-oriented approach towards companies' business architecture. Business process composition with collaborative process design elevates single aspects of process management towards holistic process management, facilitating business innovation via composition. The highest art of process management includes human interaction management to explicitly manage business tasks in a process context, and actionable process analysis to drive business process optimization based on real time process data.

For this purpose, BPM is solving the most pressing challenges:

- Business process transparency, fragmentation, and flexibility**
- ▶ Provide an integrated toolset for all types and dimensions of business processes.
 - ▶ Enable process flexibility through ESR and semantic integration into applications.
 - ▶ Enable business experts to drive innovation and process optimization.

15.2.10 Roadmap Highlights

The BPM Roadmap will be brought to the market in a staged approach, extending the functional capabilities and providing additional value for our customers. By 2010, we plan to provide BPM capabilities in three stages, as follows:

► Further SOA provisioning

Stage 1

- The ESR and Services Registry are integral parts of SAP NetWeaver PI 7.1 and SAP NetWeaver CE 7.1. The ESR provides out-of-the-box access to business semantics (process components and enterprise service definitions).
- Enhanced integration processes (ccBPM with SAP NetWeaver PI 7.1) for continuous performance improvements, modeling enhancements, and support for human interaction (generic user decisions).
- First Business Activity Monitoring (BAM) infrastructure, including event provisioning and correlation mechanisms.
- Continuous support for SAP Business Workflow and Guided Procedures.
- Continuous application adoption of the UWL.

► Accelerating composition

Stage 2

In stage 2, SAP plans to deliver new BPM capabilities with SAP NetWeaver CE.

- Orchestrating enterprise services and human activities with composite business processes.
- Supporting the entire process lifecycle, from model, dry-run, and deploy, to execute and monitor.
- Providing an integrated composite developer experience, including workflow, event, business rule, user interface, services, and connectivity.
- Leveraging application process flow models for reference and extensions.
- Including human interaction management (HIM) as an evolution of business task management and the UWL.

- ▶ Integrating business rules (decision tables) into process composition.

Stage 3 ▶ Built-in process flexibility

In stage 3, SAP plans to deliver a common process layer for all process types, both for design and runtime. Deep process changes on defined extension points based on SOA by design principles will be available. Other highlights include the following:

- ▶ Actionable process analysis with drill-down capabilities into running process instances and change management capabilities (from monitoring to change request handling).
- ▶ BAM support for observed activities.
- ▶ BPM-powered situational composites.
- ▶ Full business analyst enablement, from conceptual model to execution and monitoring.
- ▶ Advanced process collaboration (horizontal and vertical persona collaboration).
- ▶ Full business process and rules management suite; that is, a seamless path from composition to process to rule.

15.3 SAP's New BPM Methodology

BPM Methodology SAP has introduced a new process analysis and optimization methodology called *BPM Methodology*. The approach covers the analysis of existing business processes, the identification of process weaknesses, and the definition of optimized TO-BE processes, as well as the transformation of automated process steps into an SAP software solution.

This approach does not focus solely on automated business processes, but also covers the analysis and optimization of all manual process steps.

The methodology comprises four phases and can — or even should — be adapted according to the project needs and goals. It has to be regarded as a guideline of how to define the optimal business processes derived from the current situation (see Figure 15.6).

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