



Business Process Design

This paper, based on a webinar by BPM analyst and blogger Sandy Kemsley, provides an overview of business process design. Topics include:

- BPM standards
- BPM and architecture
- BPM design patterns and principles
- Integrating business intelligence and BPM
- Integrating business rules and BPM



About the Presenter

Sandy Kemsley is an independent BPM architect and blogger specializing in BPM design, enterprise architecture, and business intelligence. In addition to her technical background, she has significant knowledge about business operations and is often involved in BPM projects from business requirements and analysis through technology design and deployment. During her career of more than twenty years, she has started and run successful product and service companies, including a desktop workflow and document management product company and a 40-person services firm specializing in BPM and e-Commerce. She worked for FileNet as Director of eBusiness Evangelism and was a featured speaker on BPM and its impact on business at conferences and customer sites in fourteen countries during that time. Since 2001, Sandy has returned to private consulting practice as a BPM architect, performing engagements for financial services and insurance organizations across North America. She also writes the popular Column 2 blog.

BPM Standards

Let's start out by taking a look at some BPM standards.

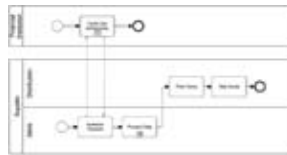
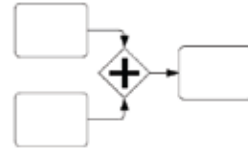
BPM NOTATION STANDARDS

In the last webinar we looked at BPMN, the notation for standard BPM. The focus here is to have a standard that's a shared communication between everybody involved in the process. Somebody who is modeling a process can show it to business users, they can show it to management, they can show it to IT. Everybody has the same understanding of what a particular style of box or diamond or arrow means because it uses a standard notation, and it always means the same thing if it looks the same. It also provides an easy way to move between tools. You will need to learn to use the different tools but the graphical notation will be exactly the same.

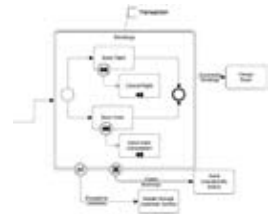


Figure 1. BPM Notation Standards

- Shared vision and communication between stakeholders
- Easy transition between tools for users
- BPMN (Business Process Modeling Notation)



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BPM INTERCHANGE STANDARDS

Let's look at some of the more technical standards – the BPM interchange standards. We're not just drawing pretty pictures anymore. We actually need to save those process models, possibly import and export them out of different systems. So we might just be doing modeling in one system and execution in another system, or we might be doing modeling in one system and want to do some other advanced kind of simulation and optimization in another analysis package. So we need to have a way to take a process model that we've drawn using BPMN and save it out to a file format that's easily understood by more than one application. There are a number of different standards that are emerging here. The challenge, obviously, is the standards that are coming out and the fact that there's more than one of them. So I will look briefly at these. There is a lot of information on these standards on the web. There's quite a bit that I've covered on the BPM Think Tank, organized by OMG, one of the standards bodies. You can find that on my blog. We're going to take a look at three standards in particular and how they interact



XPDL (WfMC)

XPDL was developed by the Workflow Management Coalition (WfMC). The XML Process Definition Language has a long history. It goes back to the Workflow Process Definition Language in 1998. Then it was overhauled and retrofitted with XML and all kinds of fancy things. It's one of the most mature standards that we have and that's why there are more than 40 different products that support it in some way. It's currently the defacto standard for exchanging process models between applications, particularly when you're dealing with workflow-like or human-facing components. It's really about saving things – taking that BPMN, saving it into a file format. The big thing with XPDL is it supports anything you can do in BPMN. Anything you can draw in BPMN you can save in XPDL. It also retains graphical spatial information. If you draw it with one particular box up in the left and another one on the right, that information gets saved to the file. When you open it up in a new tool, that organization on the screen will look the same, which is not true for all of the different process standards. One of the nice things about XPDL, as well, is that it supports vendor-specific extensions. A properly XPDL-compliant tool will be smart enough to ignore any of those extensions within a file if it doesn't understand it. So you can move something from one environment to another and still have the extra extension information that goes along with the process model.

BPDM (OMG)

The next standard I want to discuss is BPDM or Business Process Definition Metamodel. This is now released by OMG. It falls under the Object Management Group. BPDM is a process definition standard that may, and I really emphasize may, eventually replace XPDL and interchange format. Like XPDL it acts as a serialization format for BPMN diagrams. It supports everything you can do with BPMN, but it has a larger scope than XPDL. It supports things like choreography as well as orchestration. So it does the orchestration of web systems, but it also covers choreography between, for example, two business organizations. It has different metamodels, so it includes a lot that can't be represented in BPMN. It will support other views of a process, other views of a business model. So it's bigger than XPDL, but if it's just a way to serialize the file, if it's just a way to serialize the BPMN and save it to a file, you may not see a lot of advantages between XPDL and BPDM. I think BPDM is the future of where standards are going, but I think XPDL is going to be around for a long time because of the number of systems that support it now.



BPEL (OASIS)

The third standard I want to discuss is BPEL, which is the Business Process Execution Language. This is coming out of OASIS, which is a key business standards group. This started to add the web services orchestration language and that's fundamentally what it is. With SOA-related products, it may indicate that there's an execution language. In other words it actually executes in the process engine. But with BPM it's used just as an interchange format, so the process model can import and export BPEL but they don't execute natively in BPEL. One of the reasons for that is that there is more in BPMN. If you have a process for the drawing BPMN, not everything can be represented in BPEL. So there are still certain areas, there are still some types of processes that if you're modeling them you can't fit them into BPEL because BPEL doesn't directly translate all of those BPMN instructions. One of the big criticisms of BPEL in the past is that there's no provision for human-facing tasks. You could do it in a little bit of a kludgy way. But now there's been a new proposed specification for an extension called BPEL for People, which I know makes everybody laugh, but that's being proposed by some of the big vendors who are behind the BPEL specification – as a way to be able to add on human-facing tasks and some of the other things that are missing from the BPEL specification, to allow it to become a full serialization format for our BPM process model.

Big software vendors like IBM, Microsoft, Oracle, and so on are really behind BPEL. In some cases they're using it as an execution language. They're definitely supporting it in the marketplace. It's becoming one of those things that everybody has on an RFP – even if they have no idea what it brings to them. So I think there's still a lot of misinformation and misunderstanding about BPEL in the marketplace that needs to get sorted out.

RELATED STANDARDS

There are a whole host of other standards. My blog (column2.com/category/bpmthinktank) covers all of what was discussed at the BPM Think Tank and links back to their website for more coverage. If you're interested in more about those standards, you can read it there.

There are two other ones that are particularly important, especially because we're going to be talking a little bit about business rules and business intelligence later in this presentation. One is BPRI, the Business Process Runtime Interface. This is important to be able to provide some feedback on what's happening in an executing process and feed that out to a business intelligence or a BAM type of engine. The second is the SVBR which is for business rules. These are both published by OMG and are available now, but we're still not seeing a lot of these factors in the marketplace yet. They're not quite there yet, but these are ones that you're going to want to be watching in the future.



BPM AND ENTERPRISE ARCHITECTURE

Let's move on and take a look at BPM in architecture before we get into actual design patterns and design principles. So look at enterprise architecture. The first generation of enterprise architecture that we saw in the '80s and '90s was about classification schema. We were collecting all these different artifacts that fit in through a model that we had typically done with a framework of some sort, and it was really about the modeling and organization of business and information systems. Some of the approaches of the enterprise architecture focused purely on classifying IP resources for the purposes of reusability. But that turns a lot of enterprise architecture efforts into IT architecture efforts without taking advantage of some of the things that you can model such as business goals or strategy and some of the business models at that higher layer within these enterprise architecture models. The idea here is that enterprise architecture is a framework and methodology for describing your enterprise, all the components, all of the relationships, your topology, your principles, guidelines, and it really is meant to start from the top down. Start to look at the objectives and then the path that you take to reach those objectives.

With the second generation of enterprise architecture, we are looking at business processes and using those processes as a cornerstone in the whole enterprise architecture strategy. The enterprise architecture starts with the business strategy, then looks at what goals have to be met in order to implement that strategy, then focuses on the business processes that it requires to meet those goals. After that it gets into identifying resources to implement those processes – where resources are IT resources, people, anything else that you might need in order to implement the processes. You might want to think of those as implementation details. They're obviously a very important part of it, but they're only there to support the business processes that are required to meet the goals which, in turn, implement the business strategies.

What you want to look at with enterprise architecture, if you have an enterprise architecture initiative in your organization, you want to look at a few people in particular. First, a designer, somebody at one of the higher levels, whether it's business design or technical design, might want to be looking at where a business process management system would be used within the enterprise architecture to help you implement those business processes. People at lower levels obviously would be interested in how to make that work in order to implement the processes. People at a very high level, the owners of those business processes, the business people themselves, would be looking at what their view is of the business processes as seen through the business process management system. So there are a lot of different places where BPM and enterprise architecture touch each other.



ZACHMAN FRAMEWORK

The diagram below shows one of the original enterprise architecture frameworks. This is the actual framework. There are a lot of newer ones, but this was kind of a granddaddy of the enterprise architecture framework. If you look at the rows, the rows are not levels of details, but the levels of viewpoint, really the viewpoint into the organization. Looking at the entire scope of the organization such as goals, looking at business models, going down into system models, and then into technology and the components below that.

Figure 2.
Zachman Framework

	Data (What)	Function (How)	Network (Where)	People (Who)	Time (When)	Motivation (Why)
Scope	List of Things	List of Processes	List of Locations	List of Organizations	List of Cycles	List of Goals
Business Model	Business Entity Model	Business Process Model	Business Network Model	Business Workflow Model	Business Event Model	Business Strategy Model
System Model	Logical Data Model	System Process Model	System Network Model	Human Interface Architecture	System Event Diagram	Business Rule Model
Technology Model	Physical Data Model	Application Structure Chart	Network Technology Model	Presentation Architecture	Technology Event Diagram	Rule Design Model
Components	Data Components	Program Components	Network Components	Interface Components	Event Components	Rule Specifications

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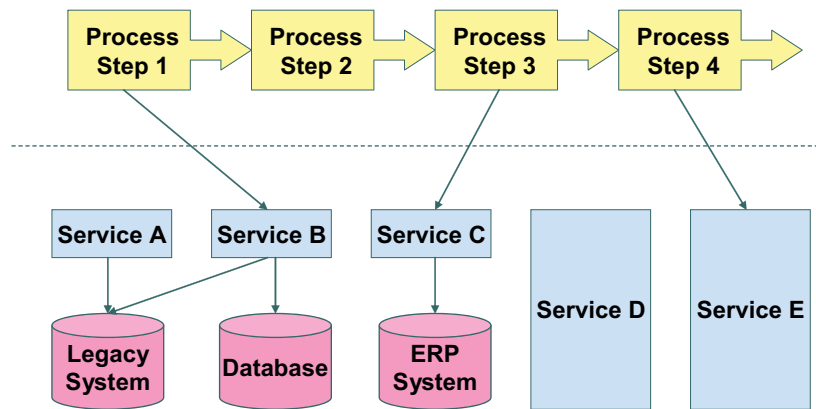
What's interesting though is looking at the columns. In the first column there are the data models. In the second column are functional models, which is where a lot of the process information lies. If you look in column 2, row 2 we have the business process model that you can think of as its BPMN model, its business process model. In other words, the kind of artifact you would define in row 2 of column 2 framework. It also tells you where the name of my blog Column 2 comes from.



BPM AND SOA

We looked at this briefly in a previous webinar, but I want to cover it for those people who didn't have a chance to be at the last one. The relationship between BPM and the service oriented architecture

Figure 3. BPM and SOA



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Service oriented architecture is actually not really an architecture, it's a design philosophy for how you design reusable services within your organization. As to how BPM and SOA work together, if we typically have BPM as the tool for automating the processes and for orchestrating services, that's what you see above the dotted line, the yellow process steps, step 1 through step 4. Below the line you see the services that are built as part of the service oriented architecture initiative that might be called by the process at any given step. In process step 1 it's calling Service B, which is a wrapper around both a legacy system and a database. Process step 2 is doing something else, perhaps interacting with a new person at that point. Process step 3 is calling Service C, which is making a call through the ERP system. Process step 4 is calling Service E, which is some sort of functionality directly from the web services. So we have a basic relationship between BPM and SOA that you can see in this sort of diagram.



SOA AND BPM TOGETHER

SOA by itself lets you design and build a set of services, but that set of services doesn't do you a lot of good unless you have something that uses those services. That's where BPM comes in. You can use BPM without SOA, but then you're doing custom integration for each point that you have to integrate in your system. You really want SOA to help you build your business processes faster in your BPM system. SOA on its own won't give you that much return on investment. You need to have BPM there to consume those services and provide you with the ROI on your SOA initiative. So this is why you really want to have BPM and SOA together. You don't want to think of them as completely separate things. It's really about bringing people and services together to create your entire business processes.

SOA IN PROCESS DESIGN

When we start looking at processes designed from that, which is really the point of this whole webinar, we want to look at what happens with process design and SOA and what we need to consider in SOA when we're doing business process design. There will be a lot of existing services that we might need to call from a business process, but there might also be new services. You might be looking at acquiring services. You might actually be able to buy some services. For example, if you need wrappers around a certain legacy system, you might be able to buy those web services instead of having to create them yourself. You want to look at what kind of functions have to be wrapped in services, look at what other services you might need to either write internally or acquire, and that's going to help you to complete the design and those automated steps in the process that need to call a web service.

BPM Design Patterns

INITIATING PROCESSES

Let's take a look at some of the design patterns around BPM. In other words, your categorization of applications to which you apply BPM and how you need to think about things in your business process as you're going through the design process. One place to start this is at the beginning of the process, and we'll look at how the process is going to initiate. You need to understand from a design standpoint what kicks off a process instance in your system. Does a person manually kick it off or is somebody going to say, "I want one of these processes now." Is it going to be some external event that might include things like a document being scanned and added to a content repository? Or is the process going to be called as a web service potentially from another process or from another system



altogether? You need to look at the types of ways in which processes get started in your system and consider that from a design standpoint.

HUMAN-FACING STEPS

Take a look at the human-facing steps you have in your process. What type of work are you doing at each step? Is it a transactional heads-down type of work? Is it collaborative work? Are people going to be occasional users or are they going to be working all the time at the system? This is going to help you determine things like user interface design and how work is allocated in the system. You need to have some understanding of what happens at those human-facing steps, what the work volumes are, and so on. You also want to consider if you have purchased things outside the firewall because you might have some technical considerations about how that could behave. You'll certainly have some security considerations as well. Although it's not a particular step, you're going to have some human participants that are doing monitoring and governance of the process, so you need to consider those things as well. All the different usage types that you might have within your processes.

SYSTEM STEPS

Then you need to look at the system steps. What type of automation are you doing at any given step? You could be doing web services orchestration or integration with a legacy application through some sort of adapter or through a web service wrapper – any place where you might be calling out to do synchronized data between the BPM system and another system through a web service or some other sort of integration point. You might also be looking at orchestration of sub-processes. You could be calling a sub-process in another system and then waiting for it to return or continuing on and synchronizing with it asynchronously. You need to understand what systems you're going to be calling and whether they're asynchronous or synchronous calls, and what data needs to get passed back and forth between them. Those are the key points in terms of how things get integrated at any point in a BPM system.

The other type of system stuff you could have is integration with a content management system. Content management is becoming higher and higher profile within BPM systems. I was at a presentation recently by Forrester and they were talking about content management becoming not exactly a core capability of a business process management system, but something where the BPM vendors need to be pretty closely aligned and have some pretty close integration with content management, because documents are still a very big part of many of our business processes. So you need to consider what sort of integration



you need to have with any sort of content management system to exchange data or to a single event that might occur there.

ROLE OF CONTENT

Just to drill down a bit on the role of content, there are a couple of different categorizations you want to look at for your processes in general. If they do involve content, the content might be in a content repository or it might be stored in the BPMS themselves. Is the process document-focused or document-driven? Is this for the purpose of creating, reviewing and approving the contents of the document? In document-focused processes, the content itself doesn't impact the process flow; it's a create-review-approve and possibly publish cycle. It's usually collaborative in that you may not know who's involved ahead of time and you might want to include other people in the review and approval of documents. But it's really about getting that document created, reviewed, approved and published. Document-driven processes, on the other hand, are ones where you're completing a transaction that's based on the document content. I see a lot of this in financial services, where you receive a paper form that has information on it. It gets pushed into the business process management system and somebody is going to key some of the information in from that document, which will cause the process flow to change, depending on what's in that document, and potentially push those values through to do another system, potentially a legacy system. It's really making a distinction between creating a document or creating a transaction based on the content of a document that's being received. There are going to be slightly different types of considerations for both of those.

VOLUME OF WORK

The next thing we want to look at is the volume of work that will be going through a business process. You need to consider this for a number of reasons. From a design standpoint, if you're handling a million process instances a day, it's fundamentally different from handling a hundred process instances a day. For larger volumes you need to have different methods of work distribution or work assignments at a technical level. It's going to come down to things like queue design and so on. You need to have different ways for people to select their work – maybe they don't take from the queue anymore, they don't go through their inbox to decide which one they want to do. Things like the monitoring of what's going on within a process and being able to reassign work between people. It becomes more important when you're dealing with very high volume applications. Volume of work is definitely something you want to look at as you're establishing what the basic requirements are in the process design.



PROCESS COMPLEXITY

Then we look at process complexity. This is a grab-bag of things. One is how frequently does the process change or how often do the business rules change that might impact the process. If you're in an environment that is regulated and those regulations change very often, or if you're in a very volatile market space where you want to be able to change your business rules to support the new business models, that's something you'd want to look at. You'd want to have the capability to change your processes more easily. You might want to look at how many of the sub-processes you're designing or how the parts of the processes that you're designing might be reusable as part of other business processes. If you have, for example, a credit check functionality and you turn that into a reusable sub-process, it can be called from any number of different processes. As you get more complex processes you'll want to break them down into more sub-processes just to make it easier to visualize what the process looks like and to handle those different components and develop the different components that are required. You also need to look at, as I mentioned previously, automated steps when you're making web service calls and when you're making other external calls.

So these are all things that we look at as we're trying to establish the pattern of what the BPM applications really look like. We've covered the human-facing tasks, the system-facing tasks, the volume of work. These are different things you want to dig into as you're getting into the process design so you understand what the requirements are as you move into the actual design.

BPM Design Principles

AREAS OF PROCESS INNOVATION

Before we look at design principles and tips and techniques, I just wanted to go back to a slide from my previous webinar on process modeling.



Figure 4.
Areas of process innovation

- Automational
- Informational
- Sequential
- Tracking
- Analytical
- Geographical
- Integrative
- Intellectual
- Disintermediating

Source: Process Innovation, Thomas H. Davenport, 1992

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This is from Tom Davenport's book. It's 15 years old, but it still has a lot of value in terms of looking at the areas of process innovation. These are where you'll get the improvements. The three key ones that we can address from a design standpoint are the automational, the geographical, and the disintermedial.

REDESIGNING FOR AUTOMATION

If we're looking at redesigning a business process in terms of automation we want to look, obviously, at automation – automating manual work steps as much as possible. For example, if you could use BPM to extract data from one system to pass onto another system, or if you could pass through the data originally in the BPM system and distribute it to the multiple systems that might require access to it that would be a benefit. However it's done, data integration is one of the key things you're getting from process automation. Of course there are also data integrity benefits – instead of people keying it in twice, they key it in once. There's much less opportunity for integration errors that might occur as the data flows through the system. You also can get better monitoring of the processes as you automate them. If it's automated in a BPM system you can see where things are, you can control what work goes where. It's much tighter process governance. Monitoring also allows you to gather statistics on what's happening with the process. Especially if you have some high volume transactional types of functionality within your organization. Think of the time that



people spend just logging their own activities because the systems don't do that for them. They have to keep count of how many of this particular type of transaction they process in a day. You're wasting time doing something the system could do for you. If you automate systems you're able to gather that information automatically.

REDESIGNING FOR DISINTERMEDIATION

Disintermediation is really cutting out the middle man and allowing for things like customer self-service. If you want a customer to be able to kickoff, for example, a loan application, you want them to go onto your website, fill out a form, and have that pass directly through into your BPM system for the loan approval. Instead of them having to go into your office and fill out a form for the person who then keys in the data, you're allowing them to go directly to initiating the process itself. It also provides a lot of satisfaction for the type of customer who likes to do self-service. Not all customers are going to do that, of course, but a lot of them really like self-service because they feel they're in better control of things. It also provides you with big productivity advantages because now you have your customer doing your data entry for you. First of all, it's likely to be more accurate because they're not going to spell their name wrong, and it's also going to save you time from a data entry standpoint. The second thing you want to do in terms of disintermediation is provide some sort of visibility to what's happening in the process to your customer. In the loan approval example, if the customer has some sort of view into where their loan approval is and what is happening with it they're less likely to be calling in and bugging your customer service reps to see what's happening with their loan. Providing that process visibility really disintermediates your customer service rep, it cuts them out of the loop, which means they can spend more time doing value-added things rather than just answering some kind of dumb questions about where is this loan in the approval cycle when that information can be provided directly to the customer online.

REDESIGNING FOR LOCATION INDEPENDENCE

Redesigning for location independence involves such things as looking at how you can share redundant processes between business units. If you're doing a credit check in three of your different business units, why not consolidate that functionality into a single process and have it done by a single group of people? Look for redundant processes. Look at steps that can be completed in isolation so that somebody doesn't have to be physically present with another part of the team in order to complete that step, which means it could be done, for example, in an offshore environment. It could be done in a work-at-home environment as well. There are a lot of places where you can optimize the data processes and also find ways to execute parts of your process in places where it's less expensive to have your workers,



either in their own home or in a less expensive geographic location. Being able to do things like automating escalation and hand-off is pretty important.

You don't want somebody to be working away at a process and have a problem with it and not have that problem visible to their management or to somebody who might be able to handle problems that might occur. Obviously there's more to this as we get better and better ways to interact with instant messaging and other technologies. There are ways for people to have some sort of virtual presence without being in the same room at the same time. More and more of this location independence is enabled by business process management.

STEPS IN MODELING/DESIGN

Let's look at what the steps are. We looked at some of the modeling steps in the previous webinar, but let's go through the whole process again. We're going to define the graphical process flow, then define the parameters of each step. You'll have some human-facing steps and you'll have some automated steps. You then define the routing between the steps in the process. Then you identify what gets the process kicked-off. What's the start process? Those are the basic things you're going to do from a process design standpoint. It doesn't matter what kind of process it is. You always need to deal with the process flow and the parameters of the different steps, the routing and the triggers. Let's take a look at what those look like.

DEFINE PROCESS FLOW

We covered the process flow in a previous webinar. This is where you're going to do a graphical map of the process, define which steps are done by a user versus which steps will be automated. You'll drive some general routes between the steps so you can have two steps happen in parallel, for example, or they have to be done in a certain order, sequential order. All of that, the basic path and flow information has to be in the process. This is where you'd like to have a business analyst or a business modeler to confirm the model with the end users, with the business users in the business management before it gets any further. And that's where you're going to use tools and standards to draw out that graphical map and represent all of these things such as the steps and the routes between these steps.

DEFINE STEP PARAMETERS

The next phase is to look at what happens at each of those steps in the process. If you think of this from a flowchart standpoint, these are the boxes in the flowchart. One thing that is often overlooked by the people who do the original modeling of the process are the data fields. There has to be some data that flows through the process. You're going to have some



data that's used to control the process. When you get to a certain point in the process and you need to go down one path or the other, you need to have some sort of data field that will help you determine which path to go. You might also be carrying data fields from one step to the other for the purposes of orchestrating a set of web services. So you might be making a call out to a legacy system, making a call out to an ERP system and so on. If you need to pass data between them, that data will come in as a data field into the BPM system.

At some point you're going to have to do a data model for your BPM system. Most of the BPM vendors provide you with some really easy ways of defining data fields within the BPM. But you probably want to go back to more basic modeling techniques and tools and really define a proper data model that you're going to have in this BPMN, to know what fields are being used, how they're being used, so you're using appropriate names for them, and so on. Really defining anything that is going to get carried along and possibly made visible at any step in the process. There are the human-facing steps. The things we typically have to define there are who your participant is, who's going to actually handle that step. It might be assigned to a specific individual, it might be handled by a role, in other words, a group of individuals that act together. It might be predefined or it could be something that's defined on the fly, perhaps by previous participants or some other relationship that might be defined in your system. There are ways to say who's going to do that stuff. You usually have an opportunity to say what user interface they are going to see. There are forms that are going to show them the parameters or data fields, for example, and allow them to interact with those parameters, that particular step in the process. All of the BPM vendors provide you with some sort of out-of-the-box user interface but in some of the more complex interfaces you may need to do some customization around the form they see.

When we start with the system steps, there are a number of things that can happen. We can do our web services call, we can do a sub-process call, we can define some reusable sub-processes. We might be calling a system or automated step, or there might be some other custom action, like a custom integration to the legacy system. It could be sending an e-mail out, or a number of other custom actions might occur at this point. Those are the things you would specify at any given step in the process as you're going through the design process.

DEFINE CONDITIONAL ROUTING

Next we need to look at the routing between the different steps. This is only relevant when we're looking at conditional routing. In other words, we have to make a decision. That's one of the diamonds in the process – in the flowchart, if you will. For example, if you have a split that goes two different ways, is it mutually exclusive or is it an "and" split? What are the conditions of that split? When you bring those paths back together, what are the merge



conditions? It's looking at the types and the conditions. Again, the BPM vendor will provide tools for defining things like the split and merge types and the merge conditions, but you may have to do things to make sure the proper data parameters support the splits and the merges based on the conditions that are required.

IDENTIFY PROCESS LAUNCH TRIGGERS

The last thing is how a process gets launched. You might have a manual launch. You could have some sort of external event, such as content being added to a content repository, or the process could be invoked as a web service from another process. These are all basic things you need to look at as you're going through and designing the process. Obviously, how those get implemented is going to depend on the BPM tool you're working with. But in all cases you're going to do all of these things within the design of the processes.

DESIGNING WORK SELECTION

Let's look at a few things that might require some amount of customization or might require a little bit more design effort, like work selection. One thing that affects work selection is the volume of work. If you have millions of transactions coming in a day, you're not going to let people pick through the queue and decide which one they want to work on. In those cases, you're going to have a push-type work selection where you can decide what pieces of work goes next and just give users that piece of work without ever showing them what's waiting in the queue. That's something that you might want to consider at any given point in the process. It may not be the same at all points in the process, because you could have some high volume steps in your transaction processing and then you might have some exception for some steps where you need to have people be able to pick and choose which one they need. It's not going to be an all or nothing thing throughout the entire business process. You might even look at how to do some sort of work assignment based up on a skills matrix. It might not be purely this is a beginner user versus this is an advanced user. It might be more complex, for example, businesses that know how to do these three activities. Making sure they've got the right kind of work assigned to them. There could be some complex picking in terms of managing the workforce and how that relates to managing what work they're able to select in the BPM system. There are also cases where people might want to be able to search for work in the system. They might know that a particular piece of work exists somewhere, possibly in response to a customer calling in, and they need to be able to find it within the system wherever it is, pull it out and work on it right away. That's a little bit of an exceptional handling case. There are a lot of ways in which you can present the work selection. Many systems allow you to e-mail work to people. It's in their BPM inbox, and you send an email to their email inbox so they can interact through email instead of having to



deal with the BPM inbox directly. So there are a lot of different things you want to consider about how people actually find a piece of work that they're going to be working with in the system. And it will vary according to which step you're at in the system.

DESIGNING THE USER INTERFACE

The next thing to consider is designing the actual user interface they'll use at a particular step in the process. This will depend in part on what kind of function you're doing and in part on what type of application or what type of data has to be displayed at that point. If you're, for example, gathering data from a user which will then be pushed through into a legacy system or some other system through a web services call, you might want to do some sort of validation of the data. You know, check that the dates are correct, possibly validate a customer number to make sure it's in the system, ask for a customer number and so on. There are all kinds of things you might want to do using some sort of customized user interface. You might be creating a customized user interface or customized form using tools that are provided by your BPM vendor, and many of the BPM vendors provide you with tools for building up the forms that you would use. If you're customizing it, it's not an out-of-the-box default user interface. That's something you would want to consider – what you have to do at that point to make your task as easy as possible. It might be launched in other applications that they need for help completing that step. Or there could be some complex rules that have to be executed on exit from that. So there could be some other logic built into the form that you may not be able to see directly in the BPMS, but you can build it into the form itself.

DESIGNING PROCESS MANAGEMENT

Next we'll look at process management and things you want to consider for managing processes. For example, a line manager, a supervisor might need to reallocate work, so you might need to change that skills matrix we've talked about. You may need to reset the rules for how the work is assigned between different users and sometimes even change working programs. If you have a particular piece of work and you need to escalate it right now based on a call that comes from a customer, you might need a way to change the actual process map for that particular process at a point in time. So you want to look at what things you want a process manager to know, typically a supervisor or a manager for your business areas. What things do you want them to be able to change? Are the tools available out-of-the-box, or do you need to build this kind of functionality on top of what's available from your BPM vendor? These are types of things where you're going to do a basic integration with other systems in your organization. In some cases they have to be custom because it will include some integration with your internal systems.



INTEGRATION WITH LEGACY SYSTEMS

Obviously, integration with legacy systems is still a big thing for a lot of organizations. You might want to look up data in an external system and then pull back the data for data synchronization. You could be tracking data, you could be gathering data from the user at the point of purchase and then using a web service to push that through to a legacy system. You could be doing synchronous synchronization, if you will. You could also consider a batch upload/download there. What I've seen in many cases is that you collect information about process systems throughout the day and then synchronize that information with your legacy system. You want to look at what synchronization does need to occur and does it need to happen right at the point that the user enters the information or can it wait and be done in a batch mode.

From the process integration standpoint, this is where we're looking at more of an orchestration situation. Just as you can use BPM for web services orchestration, think of those legacy processes as services to be orchestrated, processes to be orchestrated. You might be invoking a process in your legacy system through a web services call or some other sort of customized call. And then either wait for it to return in a synchronous state or allow for some sort of asynchronous rendezvous later in the process. So there are really two types of integration that you might have. It's data synchronization and then calling processes that occur in the legacy system, as well. So you need to understand what types of integration are going to occur, whether web services already exist within this type of integration, and what you might have to do in terms of data upload and so on. A lot of different considerations here. This is typically one of the most complex pieces of a BPM design.

INCREMENTAL IMPLEMENTATION

What you don't want to do is a big-bang approach. The big-bang approach is often a recipe for disaster because you try to do too much at once, you spend a long time implementing your first process, and by the time you get it out, the requirements change. You really want to try to do something incremental, as much out-of-the-box as possible. Every time I talk to the customer about how to do a BPM integration and every time we embark on a BPM integration with a customer, this is what I recommend to them. First of all, start out with something that's non-integrated unless you really need to have integrated legacy systems. Look at a minimal, minimal amount of customization. Use some sort of out-of-the-box dashboard for doing process monitoring. This gives you some basic process governance, this gives you some basic process automation. It lets you get a handle on your processes. It allows people to become familiar with the tools because for the users and the modelers and the designers, it's all basically new to them. You want to give people a chance to get used to



using the BPM tools and get something out there and up and running as quickly as possible. So I always recommend a simple implementation first. I can't stress that one enough.

The second thing is to look at integrating those critical data synchronization interfaces. The reason I included this section is that this is the place where most of the data entry errors occur – when you're reaching data from one system to another. This is also a big productivity hit. If you can all of sudden eliminate one entire data entry step, you could improve the processing incredibly. So that's one of the things that we look at for the second step in an incremental implementation. We've already done that minimal amount of customization. We now look at what are the places where you can synchronize the data between the BPM system and some of the other systems that you might be calling from there in order to really get that benefit from reducing the data entry. Then the third step is starting to look at process governance – overall process governance – the external processes that might be happening within web services, that might be happening in legacy systems, start to pull those in and look at that overall process governance. So these are just general guidelines for how you can do an incremental implementation. I realize that we've gone through the entire process of designing and implementing a system in three minutes, which is a little fast, but I think you're getting some of the ideas here.

BPM and Business Intelligence

I just want to finish with a couple of things. One is business intelligence and the other is business rules

WHAT IS BUSINESS INTELLIGENCE?

Business intelligence, which most of you are familiar with, is presenting information to allow the business to make better decisions. It might be pulling from all sorts of different data sources, everything from your operational data stores through to the enterprise data warehouse. And it typically involves a number of different tools. It might have historical reporting, you could have live dashboards. All this stuff would fall under business intelligence. So everything from business activity monitoring right through to things like data mining and predictive modeling is all part of business intelligence as I'm defining it here.

BI IN BPM

Now what does this have to do with BPM? One of the things that came up at the recent BPM Think Tank, and you can read more about this on my blog, is that there are some basic use cases for how business intelligence is used in BPM. First of all, you could have business intelligence about processes, so that's the monitoring kind of thing. Here's what's



happening with our processes and so on. You could use business intelligence about other events to trigger or change a process – there's something that is happening that is detected by your business intelligence systems, and that in turn evokes some sort of change in your business process. You can have business intelligence inside a process to help automate the process. So at one of those automated steps in your process, have some sort of business intelligence that analyzes a number of different factors, not just through the data fields that you have in your BPM system, but a number of other things that might be going on in your organization and look at automating decisions based on that aggregation of information. A little bit simpler version of that is to use BI, not as a way to automate the decisions, but to present to a user who's making a decision – a human decision at that point in the process to better inform them about what kind of decision to make. And then, lastly, predictive business intelligence can really help to drive process work as well. So, if we look at the predictive BI, it tells us something about where the business is going, where we should be looking at process improvement, and what particular processes we should be focusing on. So there are a number of different ways that business intelligence and BPM are really coming together.

I mentioned standards earlier. BPRI is one of the places where BI and BPM really come together, or will come together. Unfortunately, BPM vendors often have a really incomplete understanding of business intelligence. They don't understand all the capabilities in business intelligence. They see their view of things, usually the dashboards and some of the historical reporting, but they don't necessarily see the bigger picture. So BPRI is going to help in terms of being able to drive the process information, the process execution information, out of the BPM system and into the BI system to provide better interaction between these types of functionality.

OPERATIONAL BI

From an operational standpoint, the thing you want to look at, again, is how to integrate business intelligence with BPMS. Look at work in progress, the BAM type dashboards that are typically out-of-the-box with your business process management system. You might also want to look at some other types of reporting functionality – your performance indicators. These are typically historical reports – what happened today, what happened this week or this month or whatever. How do we compare it with what happened last month? It might require some interaction with other data marts, so with your data warehouse, it may end up pushed out to an external business intelligence system so that you can do that joining with other data marts as opposed to just looking at data that's from your BPM system.



STRATEGIC BI

You can also look at some other key business intelligence functionality. I mentioned data mining and predictive analytics. If you use scorecards in your industry, being able to generate that scorecard information directly from your BPM data as well as other business intelligence data that might exist in your organization to really let you get to that continuous cycle of process improvement. You want to be able to look at your current processes, do some optimization, some planning, some forecasting, and then bring that back again to keep aligning your business processes with your strategic objectives. It's all about continuous improvement throughout your organization. That's what the strategic BI focus is.

BPM and Business Rules

We'll just wrap up by taking a look at business rules and when you want to be looking at business rules. I think you're all pretty familiar with business rules. Many business process management systems have some sort of rule capability built in.

WHEN TO USE BUSINESS RULES

There are a lot of places where you want to start looking at when you want to use business rules instead of just the process logic that we might find within the business process management system. If you have, from an operational standpoint, things like complex routing rules and work selection, things that are fairly complex, rules about how a business operates, it might be becoming clear that you're going to want to be considering business rules at this point in the process. Also, if you want to be able to change work while it's in-flight, in other words you want to change your process without changing the process map, you want to be able to change, for example, the routing within a particular process, that might be an indicator for having the business rule define which way you go out of one step instead of, for example, having only a predefined one-way-or-the-other type of environment. So there are a lot of things that apply for when business rules come into play from an operational standpoint. From a design standpoint, you want to be looking at business rules where the rules are changing more frequently within the process. If your business is in an industry where the rules change a lot, if you require highly agile processes, then definitely you want to be looking at bringing business rules to bear on this process as well. If you have an existing rules infrastructure or if you have some sort of mandate to separate the business rules from the logic, then definitely you want to be looking at how you can integrate business rules in your environment as well.



BPM/BR USE CASES

Let me give you a few typical use cases. The first is something I mentioned earlier – where the business rules determine work selection criteria based on some sort of workforce skills matrix that you have. The second is if you have very complex routing conditions, you've got a particular step in your workflow where you want to be able to define the routing conditions using business rules instead of just having that embedded within the business process management system itself.

WORDS OF ADVICE

To sum up, just some key things. First of all, and I know all the vendors say this as well, you really want to start small. You want to look to having a quick return on investment, minimize the complexity up front. Do simpler things sooner, get something into production sooner, and you're going to see a much better ROI within your first BPM initiative.

The second thing, and I didn't really cover this that much in this session, it was more in the previous two webinars, is to let the process specialists drive the process design. If you let the users drive the process design, they tend to just create a business process that looks exactly like the manual design, so they're just paving the cow path. You don't get a lot of process improvement that way. If you let the technologists drive the process design, they tend to look at things that are business requirements and just say, oh, it's kind of hard to do that one. Let's just ignore that one. So you end up with a process design that doesn't actually meet the business requirements. You really need a process analyst in the middle, a process specialist who can understand both sides of things, who can bring some analytical skills to the table in order to drive that processes design while still understanding the underlying technology and also understanding the business requirements. You need to have somebody in the middle who can do a lot of the process design work. And, as much as possible as you're designing, think about how much control you can put in the hands of the business manager or the business users. If you could have them do their own report, do their analytics, make changes to the processes as they're in progress, then definitely do that because there will be a lot less of them coming back to IT and asking for changes to the business process later.

There are a lot of things that are happening in the business process management world from a technology standpoint that you want to be looking at. There was a whole session that I ran at the BPM Think Tank about lightweight integration and BPM mashups. You can take a look at that on my blog. There are things like collaborative process discovery and collaborative modeling. There's a lot of new technology that's coming out now that's really going to



impact how process design is done and you need to be aware of what's happening there so you can take advantage of the new functionalities and wherever possible push that further and further up the food chain so this is easier, so the analysts can do as much of this as possible without having to come back to IT to make changes to the business process.



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