



A Practitioner's Perspective

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Models, not Modules – Keeping your Process Models “Human-readable”

I expected my last Column, [“Weighing in on BPMN – What it’s Good For, What it’s Not,”](#) to generate some negative commentary from some of BPMN’s more vocal supporters. I was a bit surprised, but certainly not disappointed, that all of the comments I received were favorable. I especially liked the Tweet from one of our Australian readers who agreed with the Column because he was “more interested in communicating with people than with machines.” That might not be his precise wording, but I loved the idea, which provides a good starting point for this Column – how can we ensure that our models communicate with the people involved in process change before we transition to models that support process automation? After all, process models are one of the primary lenses by which we determine what’s right and wrong with existing processes, and how our future processes will behave. As such, they simply must be relevant and understandable to process participants, stewards, and other stakeholders, not just process analysts, designers, and implementers. This Column (brief, I hope) will look at some of the common barriers to relevant and understandable process models, and provide a few tips and principles for overcoming those barriers.

What’s the Problem?

Working with various organizations – public or private, larger or smaller, in every conceivable sector – I see the same issues cropping up regularly in the application of process modeling techniques. I’m focusing on what I see in the use of “process workflow models” or “swimlane diagrams,” with BPMN being one variant. However, the same sorts of problems arise in other techniques as well, such as the ARIS EPC (Event-response Process Chain) that is commonly associated with SAP implementation.

Whether I’ve observed them directly, or I’m relying on client reports of what’s gone wrong, three interrelated problems are especially common, all of them traceable to viewing process modeling as a step towards automation, not a step in support of understanding:

1. *There is no end-to-end view showing the flow of the process through its many participants, whether human or automated, from initial trigger through to final results.* Please note that I’m not looking for an end-to-end model showing the details of every actor’s involvement right down to granular tasks and processing rules, just the overall flow. In virtually every single case where we help a client construct this end-to-end view, it yields insights that simply were not evident before. (Actually, we generally produce multiple end-to-end views – more on that later.) So, in the absence of this end-to-end view, what do we find? Usually, multiple “narrow” models, each depicting a fragment of the process at a very detailed level. One client at a global financial services company recently described models like this at his organisation as being “at the level of lines of code.” That’s an especially apt description, because it reveals the thinking behind these models – they’re like subroutines or modules of code containing executable logic. If there is an end-to-end “mainline” showing how these “modules” are “called,” it typically

omits many manual steps, and even systems or machinery that isn't seen as part of the target system.

2. *Only activities that are entirely automated, or involve the automated facilities of the target system, are shown.* The corollary is that other actors and activities, possibly a great number, are not shown. I think this reflects a bias towards automation, but perhaps it's simply misunderstanding the purpose of as-is and to-be modeling. Only when the *complete* process and *all* of its participants can be visualized will the process, warts and all, be understood.
3. *And, of course, the problem we looked at last time – the use of graphical elements (“widgets”) that require training to interpret, clutter up the diagram, and otherwise interfere with conveying what's actually happening in the process and how it flows.* These can include gateways and various kinds of “thrown” and “caught” events in a BPMN diagram, or the ubiquitous hexagonal event in an Event driven Process Chain diagram. As discussed last month, these are essential at the implementation level, but typically get in the way when our business partners are

As noted, these problems are interrelated, forming a sort of “Negative Modeling Syndrome” – it's rare to find just one of these issues. Likewise, the elements of a solution go together – let's take a look at some specific ways you can make your process models more relevant and understandable.

Tips and Principles

This can't be a full tutorial on modeling – I wrote a book on that, and teach two and three day workshops on the subject – but I think we can provide some useful ideas within a couple of pages. Three pieces of advice, taken together, address the problems I just reviewed.

1. Produce multiple, end-to-end views

To illustrate an entire end-to-end process naturally involves a trade-off. Specifically, it's our old friend the “scope vs. detail” trade-off. More scope (end-to-end) requires less detail, unless you really want a workflow model that's over 100 feet long. Don't laugh, I've seen it. The question is, “How can we accomplish the necessary simplification without producing a model that misleads rather than illuminates?” One obvious answer is to only show the core, “value-adding” participants in the process, which simplifies the model on the Y-axis by reducing the number of swimlanes. The problem is that this can be a highly misleading diagram that conceals participants and handoffs, and makes the overall flow look cleaner than it really is. Years of trial and error led me to create what I call a “handoff diagram,” which does *no simplification at all* on the Y-axis – every single actor is shown – opting instead to simplify along the X-axis. I touched on this type of diagram in my first BP Trends Column back in June of 2009, and a partial example from that Column is in Figure 1, below.

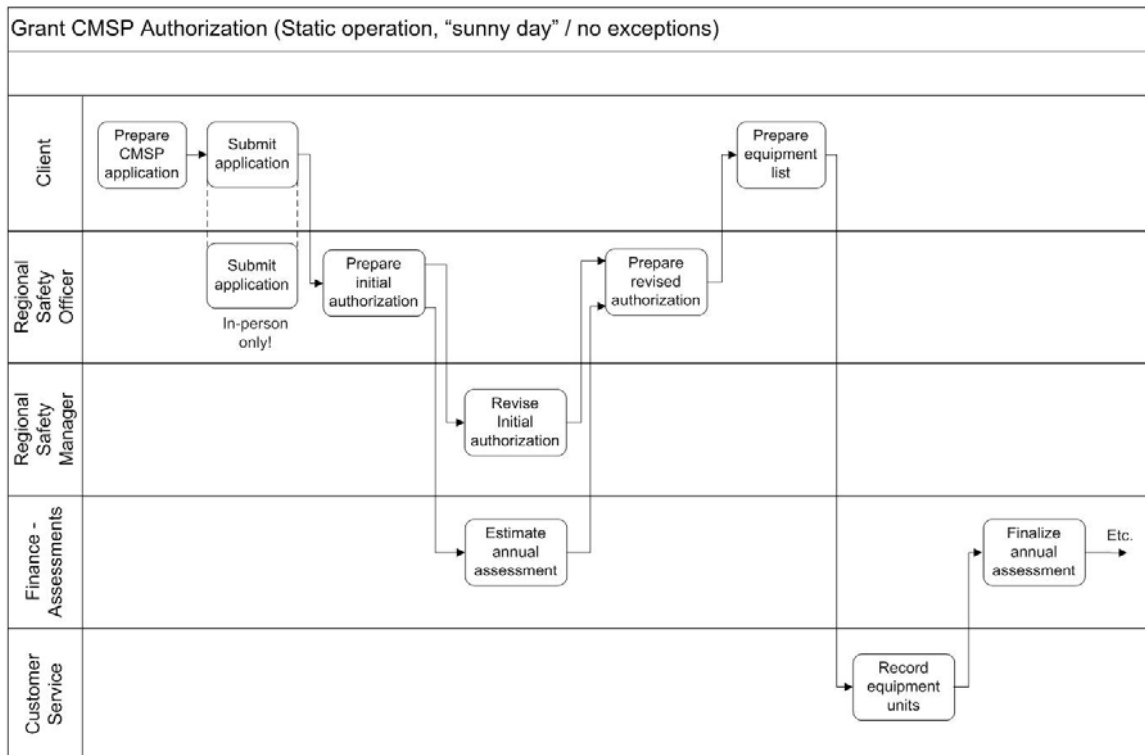


Figure 1: A fragment of a “Handoff Diagram”

In a “handoff diagram,” each actor’s involvement in the process at any point is reduced to a single step, no matter how much or how little they do. Even if at one point an actor completes a dozen significant activities one after another, they are reduced to a single step – one box. At the other extreme, when an actor is involved in even a trivial way, this is also shown as a single step. One of my clients refers to it as an “involvement diagram” because the emphasis is on showing the points in the process at which each actor (human, automated, or mechanical) is involved. You can certainly argue that this diagram misleads by failing to show the relative magnitude of each actor’s contribution, although it certainly shows the frequency of their involvement. However, this type of diagram is extremely popular in practice because it makes visible the overall flow for a particular case and so helps everyone understand some of the strengths or weaknesses of the process. Every handoff is a potential source of delay, error, expense, or plain old irritation, and so they must be illustrated.

Note the use of the phrase “a particular case.” A related and important technique is to use multiple diagrams to illustrate a process, each illustrating the end-to-end flow for a specific case. (This is *not* the same as carving the model into fragments as described in problem 1.) The example in Figure 1 illustrates the case when the application is for a “static operation,” which in this example means a permanent set of structures like a factory. Other cases of the same process are for a “temporary operation” such as a seasonal mining or forestry work camp, or for a mobile operation, such as a drilling rig on a trailer that is constantly being moved. When multiple cases are included in a single diagram (as they may need to be later on if the process is to be automated) the result is a diagram that confuses because of the difficulty of following a single, typical case. One reason is that the diagram can become a maze of decisions that aren’t really there in the business (“If this is a mobile operation then...”) because people *know* what case they’re working on.

I’ll often go even further, and develop models showing specific *scenarios*. The sample showed a “sunny day” scenario, which is the one we wish all process *instances* were like, but there could

also have been a scenario that showed a problematic application, rejection, and the subsequent appeal.

Finally, in rare cases (although I expect to do more of this) I'll show the flow of individual instances of a process. The information used can come from direct observation of the process, although process mining technologies can provide compelling visual "simulations" (except that they're *real!*) at the level of individual instances of a process. The downside is that these can typically only show events that have been captured in automated system logs, but they can still be highly revealing.

2. Show all participants

As noted before, every handoff is important, and so every actor in the process must be shown. I have a simple guideline – "Show every actor that holds the work, whether they add value, move the work along, or introduce delay." That means that in addition to the actors who are performing activities that are vital to the process you should at least consider including:

- the actors who somehow manage to *subtract* value through their involvement;
- the mailroom, external courier, or system that moves the work between steps;
- the inbox, shelf, filing cabinet, or other storage location where work awaits action;
- overnight batch systems (yes, they still exist) that perform process steps (and move the work and introduce delay);
- the manager who insists on "reviewing" all inbound work, and the admin assistant who saw it first;
- any other person, role, holding area, system, or device that "holds the work" for a meaningful period of time (i.e., not the telephone network) and therefore has an impact on the process.

You might think this makes the diagram more complex, but not any more complex than the underlying process actually is. That is, we haven't invented complexity by showing all participants, we've just illustrated reality. Besides, any potential concern about complexity is always outweighed by the increased *relevance* of a model that shows every actor. The reaction to models that show all participants is almost always positive (even among C-level executives!) because it shows reality, usually in a way that is new and revealing.

I joked earlier about the 100 foot long process model, but make no mistake, when you apply the guidelines I've covered so far your models can get large. I've had workflow models that were 8 or 10 feet tall, and up to 40 feet long. (Big flatbed plotters are a nice-to-have.) The objection I've heard is "we can't see this all at once on a monitor" but so what – there are lots of important things that can't be seen on a computer monitor. Some of my clients post these large workflow models in public areas (e.g. in an atrium or adjacent to the cafeteria) so everyone can have a look. And look they do! Some clients also put pens and Post-its out so comments can be added. This is a great source of buy-in because it demonstrates that the people studying the process haven't sugar-coated it – they've depicted the reality of the situation.

2. Avoid graphic widgets

I pointed out in that June 2009 Column that for a long time I didn't understand why some people felt they *had* to use so many of BPMN's symbols. (By the way, most users of BPMN *don't* actually use all the widgets – Michael Zur Muehlen of the Stevens Institute of Technology published an interesting study showing that a high percentage of users rely on a very small fraction of the available symbols. You can probably locate the information at Michael's SlideShare site.) Anyway, the "aha moment" came when I realized that these folks were typically working at the implementation level where all cases and scenarios have to be brought together, which is naturally going to involve more complex logic in the flow. So, if you follow guidelines I've reviewed so far, and focus on depicting flow rather than capturing logic, you'll be able to get by with a minimal set of symbols.

That said, you might be able to make your diagrams even more visually uncomplicated. I've always advocated that diagrams that are meant to communicate with a business audience should be made up of, primarily, boxes and lines. Beyond a few very basic symbols, every additional symbol, which a technically-minded person might think *adds* information, in fact reduces it. Effectively, it worsens the Signal to Noise Ratio by adding noise but no relevant additional signal. So, I literally use "boxes and lines" and avoid the use of additional symbols like our old friend the decision diamond, repurposed in BPMN as the general purpose "gateway" via the addition of a symbol within the diamond. The key here is using some conventions I learned many years ago – I can't remember where – that provide a simple way to illustrate parallel ("AND") and mutually exclusive ("XOR" – a decision) flows without additional symbols. Parallel and mutually exclusive gateways are among the most common symbols that are added to an otherwise dead simple BPMN diagram, so if we can eliminate these from our business-oriented models that is a major improvement in visual simplicity. Most of the diagrams I draw using the guidelines we've covered so far don't require anything more complex than this.

Figure 2 shows, on the left side, how to illustrate parallel flows without additional symbols – simply add parallel lines to the inbound (left) or outbound (right) edge of the step, one for each flow from or to a different point in the process. The BPMN version, which requires more symbols and line segments, is shown on the right. *One more time* – I'm not disputing the value of gateways etc. for implementation level modeling, but for the most part, business communication is improved without them.

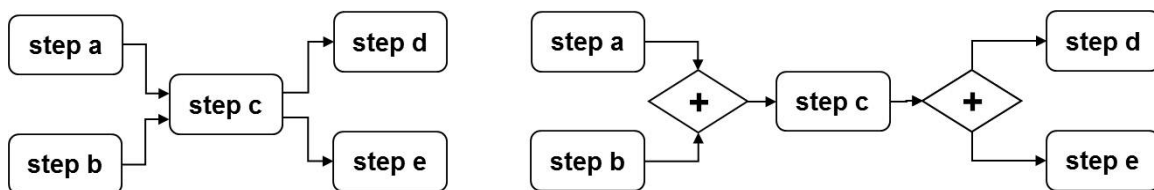


Figure 2: Alternatives for showing parallel ("AND") flows

Figure 3 shows, on the left side, how to illustrate parallel flows without additional symbols. Because only a single inbound (left) or outbound (right) flow is required, that's all that enters or leaves the step. The different alternative flows then converge into this single line, or diverge from it. The technical terms are "conjunction" and "bifurcation" which seem like words that shouldn't be used in polite company. The fact that a decision is involved is made even more clear by the use of a verb such as "decide" in the step name, and the labeling of the alternate flows. The BPMN version is shown on the right.

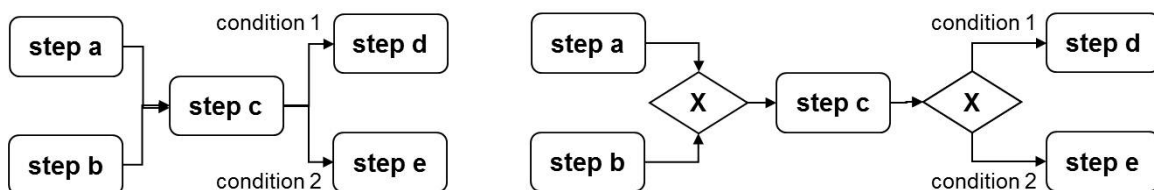


Figure 3: Alternatives for showing mutually exclusive ("XOR") flows

I realize that some notations such as UML have adopted different interpretations which could cause some confusion for those used to that notation. However, I've never had a business audience that didn't understand these conventions as soon as they were introduced to them.

Over and Out

I hope you've found some ideas in here that will help you produce models that communicate to and involve your business partners. Perhaps we'll continue on this theme in the next Column by

looking at some techniques for running modeling sessions that help keep people focused on the flow and out of the weeds.

Workshop announcement

A special note for our European readers – in partnership with IRMUK, I'll be delivering a public offering of our popular "Working with Business Processes" workshop in London on March 04-05, 2011. We ran this class on four continents last year, and it always gets a great response. Details and registration information are at <http://www.irmuk.co.uk/events/92.cfm>. Register by February 4th and receive a copy of my book "Workflow Modeling" - <http://amzn.to/dHun1o>.

From the Trenches
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