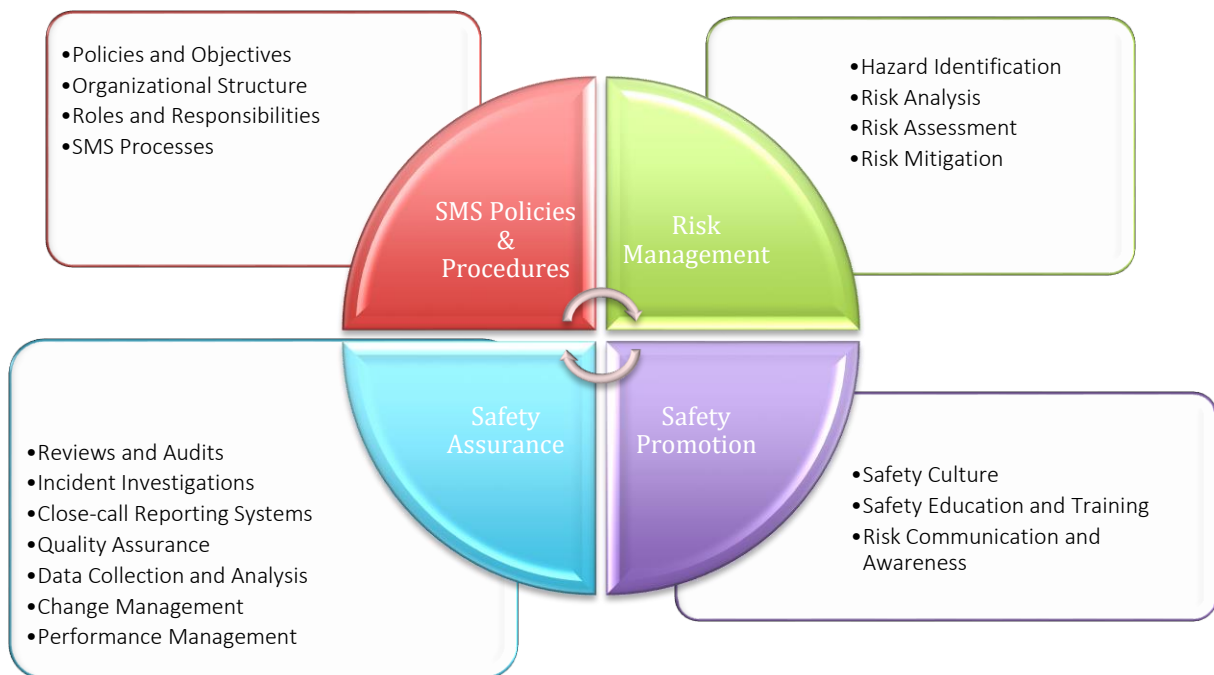


Safety, Security and Compliance

How Business Process Management “BPM” fits with your Safety Management System

In our prior paper, *The Power of Process Thinking*, we made the case for managing safety and security hazards with structured business processes, rather than a series of lists and spreadsheets. Business Process Management (BPM) is a business improvement practice used in many industries, but has not yet been broadly applied to Safety Management Plans in public transit. Here, we are going to dive more deeply into Safety Management Systems (SMS) and explain why it is such a natural fit for BPM; keeping in mind that our goal is not just to make our lives easier, but to make our agencies’ work safer, more efficient, more timely and by default, compliant.



You cannot talk about SMS without bringing up the four pillars, summarized above in a [March 2016 diagram from APTA](#). Our first white paper was mostly focused on the first pillar, Risk Management. We described how BPM is a natural fit for managing the identified hazards and risks throughout their life, from preliminary engineering through revenue operations. We further described the value of looking at these processes as connected and end to end rather than discreet disconnected events. We explained that with an explicitly managed business process, you can track who interacted with an item and when, as well as whether they deviated from a standard procedure and why; all very useful information to have at audit time. We showed how BPM also gives you the opportunity to store all the information and documents related to a hazard in one place, for easy quick reference as the process unfolds or months or even years later. For the balance of this white paper, we are going to review in a more detail how BPM supports the other three pillars of your SMS.

SMS Policies and Procedures

An explicitly managed process is almost always a better process, as APTA makes clear by including process management in their list of priorities for SMS procedures. The FTA also states explicitly that a good SMS is impossible without effective SMS processes that are enforced from the top down by executive leadership.

Both APTA and the FTA call out the effective communication of roles and responsibilities as a key prerequisite for a successful SMS. This need is baked into the heart of BPM, as one of the major tasks of designing a business process is figuring out in advance who should do what and when. With BPM, the organization decides in advance who the right people are to carry out each task, and then those decisions are modeled directly into the process itself so that looking at a process will let everyone clearly see their roles and responsibilities. When things do not go as planned, there are processes in place to reassign tasks and escalate work items in a way that gets tracked and documented. That way, regardless of whether or not everything is going perfectly and as planned, everybody has a clear understanding of what is happening, what needs to happen, and who is responsible for what.

Utilizing this method inherently promotes a safety culture. Instead of the Safety Analysts following along after the fact trying to keep the project in compliance, it is the construction manager, their designates, or the contractors themselves who are providing the necessary information at the time it is needed and collected. Delays in processes can be automatically escalated and resolved before they become problems or result in audit exceptions. When your processes automatically assign safety tasks to those who are actually responsible for them, and automatically holds them accountable, the result is an organization that cares about safety at all levels.

If SMS Policies and Procedures are the “who what, when, where and how” of your SMS, then the advantages of applying business process management principles become clear. Having a dedicated system to manage your processes ensures that the right people are doing the right tasks at the right time, providing pertinent information when it is fresh and timely, consistently throughout the organization.

Safety Assurance

Since the heart of safety assurance lies in effective communication and documentation of roles and responsibilities; and since BPM assigns and captures the “who, what, when, where, and how” of a process; let’s look at how this plays out in a typical transit project.

Table 1 outlines the standard tasks, roles, and responsibilities for the safety and security certification activities of a typical transit project as it moves through the project lifecycle. When using the BPM approach, you simply assign tasks to roles and/or individuals, escalate when they are over-due, and reassign them. And you can track these activities with a clear view of where an item is in the process, as well as where the project/contract is overall. Even better, when questions during audits such as, “Was Security consulted during Construction Conformance Verification?” are posed, a BPM system enables you to answer with confidence, “Yes, Joe Smith from Security signed off on that item on July 6, 2016. Here is the documentation.”

Table 1. Safety and Security Certification Plan Tasks & Responsibilities

Ref #	Tasks / Deliverables	Project Phase					Responsibility						
		PE	FD	CON/COMM	PRE REV	OPS	PED	SQA	SEC	DE	CM	OPS	MGT
1	Ensure that S/S Certification is referenced in all project contracts	✓	⇒	⇒	⇒	⇒	R	A		R	R		I
2	Choose to use Agency or Develop Project Specific S/S Management Plan	✓	⇒	⇒	⇒	⇒	R	A	C	R	R		I
3	Choose to use Agency or Develop Project Specific S/S Certification Plan	✓	⇒	⇒	⇒	⇒	R	A	C	R	R		I
4	Establish Project Specific S/S Committees	✓	⇒	⇒	⇒	⇒	R	A	C	R	R		
5	Identify Project Specific Certifiable Items List (CIL) and develop Verification Matrix (VM)	✓	⇒	⇒	⇒	⇒	R	A	A	R	R		
6	Perform PE PHA & TVA and update CIL and VM	✓					R	A	C				C
7	Perform PE - Design Conformance Verification	✓					R	A	C	R	R		
8	Perform FD PHA and TVA and update CIL and VM		✓					A	C	R	R		
9	Perform FD - Design Conformance Verification		✓					A	R				
10	Review of design deviations and change orders that affect the CIL		✓	⇒	⇒	⇒	A	C	R	R	C		
11	Operational Hazard Analysis (OHA)			✓	⇒	⇒	R	R					C
12	Construction Conformance Verification			✓	⇒	⇒	A	C	R	R			
13	Testing Conformance Verification including additional S/S test requirements			✓	⇒	⇒	A	C	R	R	C		
14	Integrated Testing			✓	⇒	⇒	A	C	R	R	C		
15	Obtain Certificates of Occupancy			✓	⇒	⇒	A	C	R	R	C		
16	Perform S/S Review of Preliminary Operations and Maintenance Procedures			✓	⇒	⇒	R	R	C	C	R		
17	Complete Operational Readiness Review				✓	⇒	C	C	C	C	C	R	
18	Issue Elemental S/S Certificates			✓	⇒	⇒	R	R	C	C	C	C	
19	Issue Contract S/S Certificates			✓	⇒	⇒	R	R	C	C	C	C	
20	Issue Final Project S/S Certification				✓	⇒	R	R	C	C	C	C	
21	Issue Final S/S Verification Report					✓	R	R	C	C	C	C	

<p>Phases PE = Preliminary Engineering FD = Final Design CON/COM = Construction & Commissioning PRE REV = Pre-Review Operations OPS = Operations</p>	<p>Checks (✓) = initiation of the activity Arrows (⇒) = on-going performance</p>	<p>Roles PED = Preliminary Engineering and Design SQA = Safety and Quality Assurance SEC = Security CM = Construction Management</p>	<p>DE = Design Engineering OPS = Operations MGT = Management</p>	<p>Responsibilities R = Responsible A = Accountable C = Consulted I = Informed</p>
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Reviews and Audits

Using BPM as a foundation, allows you to build, review, and audit processes right in your SMS. It is easy to capture data from anywhere in the process at any time, which makes it possible to build customized reports that actually provide meaningful information. Using data on who interacted with the process and when, you can build a robust audit trail without even having to think about it.

Incident Investigations, Close-call Reporting Systems, and QA

A standard process for investigating incidents and close-calls has many benefits. First, it is self-enforcing, meaning the way it is designed forces users to abide by the rules, but it also lets certain users create trackable exceptions when appropriate. You can use different processes to allow anyone to report an incident or close call, while customizing the way they do it based on their role and linking information and documents from the investigation to your assets and to your hazard mitigations.

Data Collection and Analysis

Combining and managing your business processes opens up a whole new world for data and analytics. It makes it possible to collect data from all systems and all places in the process and bring it together to analyze in one place, where you can interact with it and build reports and visualizations that cross functional lines. Good BPM also allows you to get real-time reports on how your processes are working and where bottlenecks are.

Change Management

So much of an organization's success depends on good change management that we should write an entire paper on just that. But good change management is not a secret. Change needs to be deliberate and come from the right people, it needs to be enforced in the face of status quo inertia, and it needs to

be analyzed objectively after the fact. BPM, by design, takes care of all that. Processes are designed from the top down, with the entire chain in mind. When a change happens, it happens automatically, without users being able to sidestep it or even having to remember the new system. Finally, new processes can be analyzed right away to see if they are flowing correctly or if there are holdups, and metrics can provide quick data to determine whether new processes are more effective or not.

Performance Management

Performance management is a process like any other, and it works better when it is designed explicitly. BPM allows you to build customized performance management processes that pull in data from outside sources and work with it in one system. It means that performance management does not have to be separate from risk management or safety/security certification processes. Information from one system can suddenly be used everywhere, with a process in place to make sure it is useful and timely.

In Summary

BPM is a huge concept, and while this was just a short summary of its benefits for SMS we hope it conveys a sense of what is possible. Forward thinking transit agencies are already implementing this approach, with great success. If you would like to see more concrete examples of how BPM helped a large transit agency achieve its goals, check out our case study of Sound Transit.

What's Next?

Wondering what's involved in actually implementing this approach? What changes will happen and what technologies can help? How can a system manage the entire lifecycle of a hazard, from preliminary identification through revenue operations? Stay tuned, our next white paper will cover all these topics.