From Process Analysis to Employee Job Aids

Jim Boots and Paul Harmon

Like many corporations, Chevron began a broad-based process journey in the 1980's when several of its divisions launched Total Quality Management (TQM) programs. In the Nineties, process efforts continued and focused on large process management investments, made at operating company level, in ERP and Supply Chain Management implementations. With the introduction of Chevron's Operational Excellence (OE) initiative in 2001, a process management perspective began to focus on enterprise-wide process challenges. The spread of OE gradually led to the development of a corporate-wide BPM foundation that currently embraces process governance, methodologies, and process management technologies.

This paper describes a specific approach that Chevron has developed to make it possible to transition efficiently from running process improvement projects to supporting day-to-day employee performance with on-line job aids. In essence, a process is modeled, analyzed and improved. Then, using the same process model in the same software tool, the redesign team extends the process model to include step-by-step advice for employees who are expected to perform the process. In many cases, detailed business rules are added to define exactly how decisions should be made and what actions should be taken. The extended process model – now called a "Storyboard" [1] – is made available, online, for any employee who needs to use the process, and is maintained and improved by the organization which owns the process.

Analyzing Processes

Chevron personnel routinely analyze processes by documenting their understanding in a graphical process flow model. Chevron's goal is to keep the process content as simple as possible so that the same model is as easily understood by employees as it is by process analysts. Figure 1 provides a look at a process that has been modeled in Nimbus Control [2], a modeling tool that Chevron has adopted and branded as "ProChart."

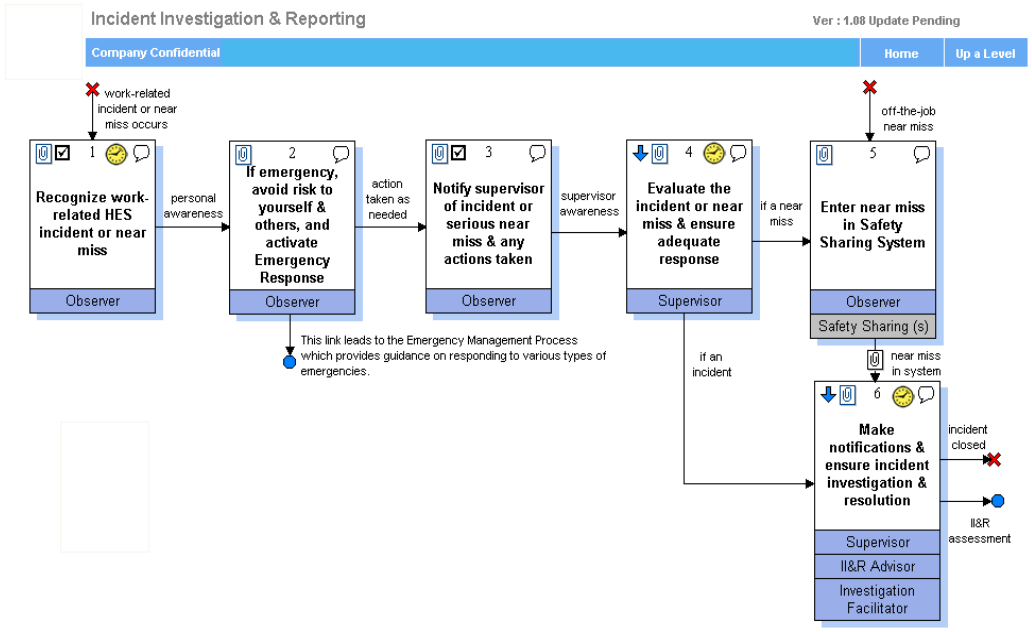

Figure 1. A high-level model of a process for managing an incident

The flow model is relatively simple. Each activity is described succinctly in an activity box using a verb and noun. All input and output arrows are labeled to show how the activity has modified the flow and added value. The roles involved in each activity are listed beneath each activity box. Icons on the boxes indicate that there are attachments or additional supporting information which can be accessed. Activity boxes with a "drill-down arrow" allow users to navigate to subordinate diagrams which explode the activity in greater detail using the same notational style.

Chevron has found ProChart useful because it allows the entire workforce to examine a process model. Process improvement practitioners, business analysts, and accountable employees and managers are better able to communicate about processes. ProChart is used at many Chevron locations throughout the world, and it has received favorable reviews from managers and employees. All types of business processes have been modeled – from strategic planning to equipment release for maintenance to ship chartering.

ProChart content is created by process authors using the ProChart Authoring client (a Windows application). Content is stored in a central database which acts as a web-enabled business process content management system. All end users (or "consumers") simply access the content through a web-based portal. Personalization and keyword search make it easy for employees to find the content relevant to their roles, and they can be automatically notified when content is updated. The portal includes the collaboration, review and workflow capabilities needed to not only approve content, but also to improve and maintain it over time with appropriate governance.

A special feature of ProChart is its ability to generate "Storyboards." A "Storyboard," as the term is used here, is a guided tour through a particular process scenario, which is presented to end users as an intuitive step-by-step guide, with additional guidance notes that can be tailored for each step. Think of this as process-oriented "e-learning." Each Storyboard is derived from a controlled process model and personalized perspectives can be easily created to guide employees through the steps in the process. It does not duplicate content across the process modeling and training domains, and it eliminates the waste which is typically associated with process education efforts. Figure 2 shows the Storyboard user interface, with a particular step highlighted and explained. It is the same process content as shown in Figure 1, but it features those steps associated with a particular role – in this case, the supervisor's role in managing an incident.

The additional text in the Storyboard explains each step to whatever level of detail is required and can include guidance, business rules, evaluation criteria and so forth. Additionally, from the diagram, the user can access process-related files or links to systems, web pages, forms or SAP transactions. The user can also see where he or she is in the process, where he or she will be going next, and what outcome is ultimately desired.

Employees are trained so they understand how to access ProChart and how to search for the content relevant to their roles. (Training requires less than one hour in the form of self-paced computer-based modules.) From that moment on, provided there are adequate resources to sustain the process model and adequate management reinforcement for its use, ProChart becomes an effective performance support tool which can be accessed on a moment of need basis. Content tagging and reporting capabilities also make the software a useful process analysis platform. Because the process repository is accessible globally, collaboration is enabled among process analysts, BPM practitioners, and process owners. Depending on governance standards, managers or process analysts can change the underlying process model, and employees, when they access the model on the Web, will always find themselves using the latest version. When changes are made, change management content can be added to Storyboards, and online employee "acknowledgements of understanding" can be collected, if desired.

While no organization in Chevron yet can be considered mature in all these capabilities, best practices are emerging and being shared.

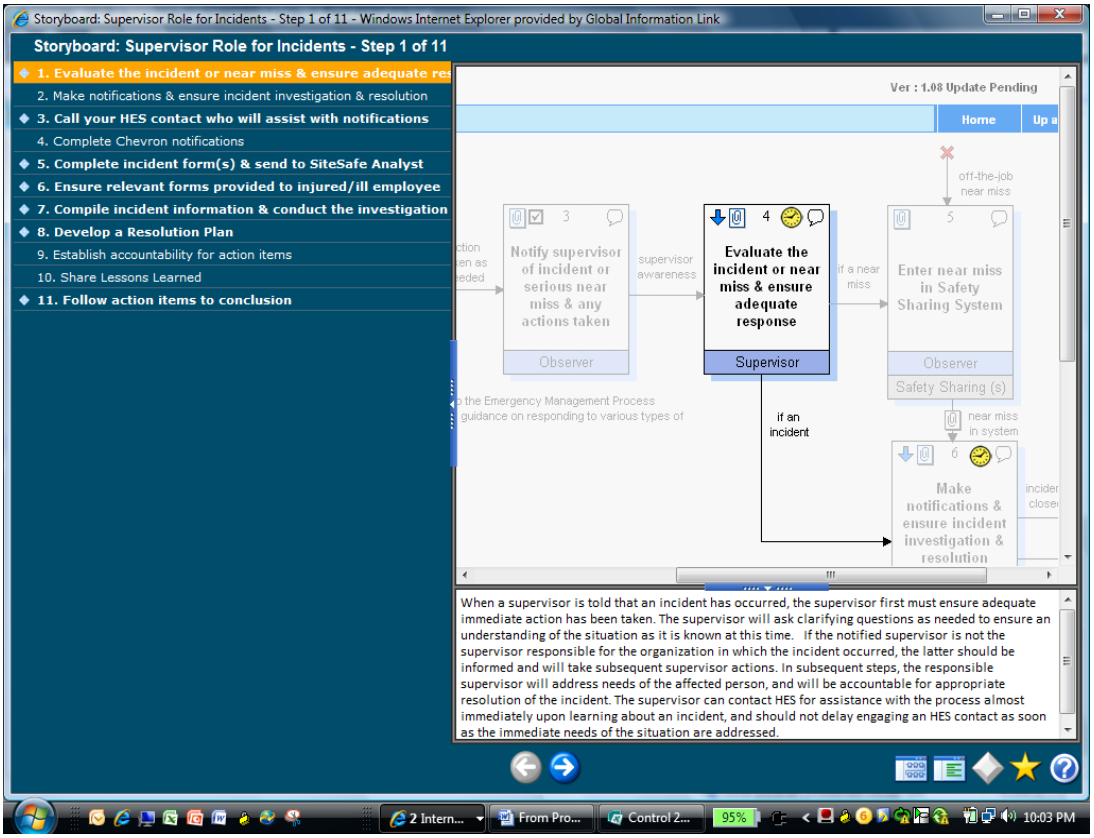

Figure 2. A "Storyboard" that helps a supervisor manage an incident

Altering Employee Performance: A Little Theory

There are a number of different approaches to analyzing and changing employee performance. One organization that is particularly focused on the problems associated with changing employee performance is the International Society for Performance Improvement (ISPI). Over the course of the past 50 years, ISPI has developed a generic approach for the analysis and modification of employee performance, which they term Human Performance Technology (HPT).[3] This paper is not the place to go into HPT in detail, but one insight from HPT might prove useful.

Psychologists have explored human learning extensively. From this research, HPT derives a key distinction between training and the use of job aids. In too many situations, companies think that the way to handle a knowledge defect is to provide training. In most cases, this means that the employees should attend a class. What they hope is that students, having attended the class, will now know how to perform in a given situation.

In essence, the training approach implies that, during the course of the instruction, the students will memorize and then remember the correct response to a given situation. Thus, before the class, the student does not know what to do when presented with a specific situation. After the class, the company imagines that the student will encounter the specific situation, recognize it, then proceed to execute a set of activities to resolve the situation. In other words, the company hopes that the student will have learned to identify the stimulus situation and will have memorized the steps needed to respond correctly.

The problem with this approach is that fifty years of experimentation in human learning suggests that it is very hard to memorize complex sequences of behavior. Moreover, once a procedure is memorized, the knowledge is quickly forgotten, unless the memorized task is frequently practiced. In other words, memorization is hard, it takes quite a bit of time, it's very expensive to do right, and it's usually not worth the effort as it is quickly forgotten.

The best solution to this dilemma is to limit the memorization effort to the identification of the stimulus situation that calls for a response, and to simply teach that there is a job aid available to guide performance. That can easily be taught in a class, or on the job. In this case, the student takes a course and learns to identify problems and use a job aid. Then, when a particular situation is presented, the employee accesses the job aid and follows the steps outlined in the job aid. This may sound like a trivial insight, but it has lead to profound changes in the way professional education is structured and in the way employees perform various types of tasks.

The Federal Aviation Agency (FAA), for example, requires that pilots use a job aid (a checklist) to do pre-flight checks. Research shows that if the pilots do not use the job aid, they are much more likely to skip one of the over 100 items they are expected to check. On the other hand, by simply working through a checklist and checking each item as it comes up, pilots routinely turn in perfect performance.

In the Sixties and Seventies, ISPI theorists who focused on learning problems primarily thought of job aids as paper artifacts: Books that listed needed information, checklists, cards that would fit in a wallet, forms or worksheets, or even procedural instructions that could be pasted on machines. Today, most job aids are presented on computers.

The Chevron "Storyboards" are excellent examples of job aids and provide a good illustration of how process analysis and job aids can be combined to achieve outstanding results.

Summary

BPTrends has often used the pyramid shown in Figure 3 to illustrate how companies analyze processes at the business process level, and then create changes needed to support the newly revised processes at the implementation level. Most of the examples cited on the BPTrends website are examples of processes that are automated by means of software applications. In cases involving automation, the process is redesigned, then the process is either described as a set of software requirements, or, in the case of BPMN, the process diagram may be extended to the point at which the detailed BPMN diagram can be used to automatically generate BPEL code. In either case, a software application is created that will implement the new process, in whole or in part.

The examples discussed in this paper provide illustrations of an alternative strategy. In many circumstances, the processes being revised are inappropriate for software automation; the revised processes will be implemented by human performers. Thus, the challenge, once the process is redesigned, is to train or otherwise enable employees to implement the revised process. This case study illustrates how Chevron, using their ProChart process modeling tool, can move from process analysis and redesign, to documenting the steps and decisions required in the process, to the creation of a job aid, which they then make available to the employees who need it, via the web.

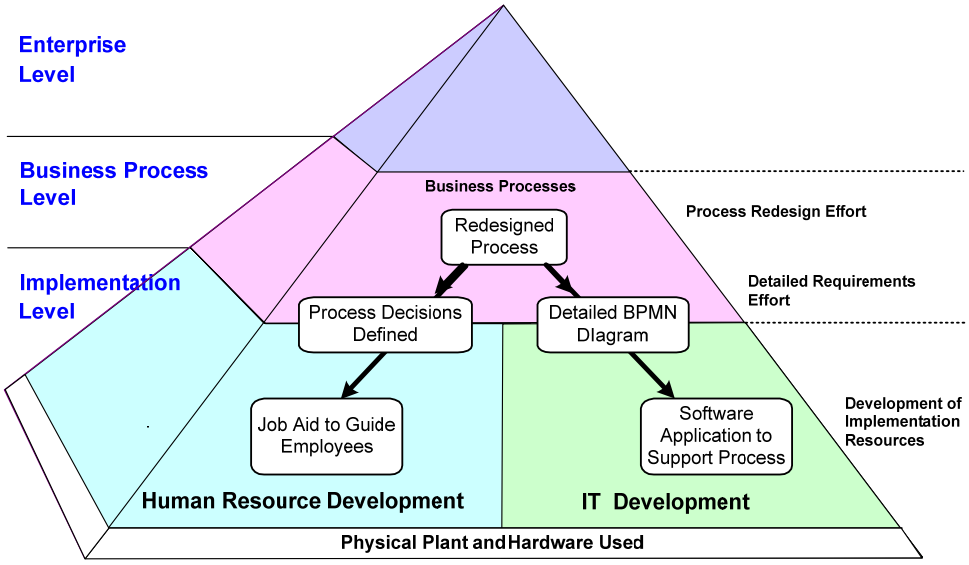

Figure 3. The two major options for process implementation

Chevron is interested in assuring that employees can respond correctly to complex situations. They define the correct response, use the ProChart tool to document the overall nature of the correct procedure (the flow chart steps), and then extend the flow chart to incorporate specific guidance at each step to assure that employees will know what they need to know to perform their responsibilities. In essence they provide more specific steps, information about necessary discriminations, and business rules that employees will need to perform tasks or make decisions.

Much has been written about the role of business rules and business processes. The examples discussed here provide one way of thinking about processes and business rules. The process flow provides an overview for the employees – the set of steps to be taken in a given situation. The business rules are more specific and come into play as the employee decides exactly how to take each specific step. They structure the decisions when they are required.

There are other approaches to changing employee performance. Other modeling tools, for example, support the automatic generation of small websites that serve employee teams that need to work together to make complex decisions. The Chevron approach, however, illustrates a job aid strategy that has allowed Chevron process improvement teams to quickly improve a number of key processes and then rapidly implement the new processes by providing employees all the information they need in the form of easily accessible job aids. Moreover, they provide the process owner with an ongoing ability to update the processes as changes become necessary.

Overall, the Chevron approach makes the process of process change itself much more efficient and effective. And that, after all, is one of the key goals of Business Process Management.

Author

Jim Boots is Senior BPM Advisor in Chevron's IT Company and has primary responsibility for Chevron's enterprise-level BPM Consulting Practice. He can be reached by e-mail at: jboo@chevron.com.

Paul Harmon is the executive editor of BPTrends website, the chief methodologist of BPTrends Associates, and the author of *Business Process Change*.

References

[1] "Storyboard" is often used by Six Sigma practitioners to describe a high level presentation that describes the steps in a project. Chevron is using "storyboard" in a slightly different way to describe a job aid, available on the Web, which employees can use to respond to a specific situation.

[2] You can find out more about the software "Nimbus Control" at www.nimbuspartners.com.

[3] The International Society on Performance Improvement (ISPI) has described the job aids approach in several articles in their *Handbook of Human Performance Technology* (3rd Ed.) which was edited by J.A. Pershing (John Wiley, 2006). Another good introduction to this topic is Alson Rossett and Lisa Schafer's book *Job Aids and Performance Support* (Pfeiffer, 2006). In a similar way, Joe Willmore, has published *Job Aids Basics* in the American Society of Training and Development's Training Basics Series (ASTA Press, 2006). For more information, check www.ispi.org

