

## 9 Integrating RISK-BASED THINKING and executing H&OP

Most attempts at error management are piecemeal rather than planned, reactive rather than proactive, **event**-driven rather than principle-driven.

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*Integration*: an act of combining into a whole; organizing the constituent elements of a system into a coordinated, synchronized whole; alignment.

*Execution*: a disciplined and systematic process of getting things done.

In this chapter I attempt to provide guidance on the implementation of H&OP in your organization. Essentially, you are attempting to manage two things. First and more practically, you want to manage the risk human error poses to your **assets** during operations. Avoiding harm to **assets** is really a control problem—regulating the transfers of energy, movements of mass, and transmissions of information in a manner that adds values instead of extracting value. This is what execution is about—a systems approach to managing risk. Second and more elusive, you must manage meaning. Do people possess a deep-rooted respect for the operation's technology? Do they perceive the risk potential of their moment-by-moment choices? In their work, do they anticipate the creation of **pathways** between intrinsic **hazards** and important **assets**? Are they mindful of impending transfers of energy, mass, and information? Is learning highly valued and rewarded? Do people humbly accept their humanity—in light of their fallibility and innate limitations? Is the dignity of persons preserved? This is what integration is all about—creating meaning through vocabulary and principle.

### Remember the seven principles of managing H&OP

I assume that if you have read this far, you will likely want to make some changes in the way you do business regarding **Hu**. However, before making any substantial modifications to your operation, I suggest you and your management team revisit the seven principles of managing H&OP described in the Introduction. As you read through the following principles, you will likely recognize that these concepts were emphasized throughout this book.

- 1 People have dignity and inherent value as human beings.
- 2 People are fallible.
- 3 People do not come to work to fail.
- 4 Errors are predictable and manageable.
- 5 Risk is an inherent, dynamic feature in the way an organization operates.
- 6 Organizations are perfectly tuned to get the results they are getting.
- 7 The causes of tomorrow's **events** exist today.

By now, the credence of these principles to H&OP should be clear. But what if people who work for you only give lip service to these truths? What happens if they don't really believe them? If so, it is likely there are some deeply held beliefs that conflict with these principles. People act only on what they truly believe. As various operational situations and questions arise, these core beliefs, if adopted into the way you think and do business, will produce consistency in your decision-making and sustain constancy of your responses to **Hu** risks going forward. Without them, your attempts to integrate RISK-BASED THINKING into your operation will be short-lived, and efforts to manage CRITICAL STEPS and SYSTEMS LEARNING will be an expensive waste of time, effort, and money. You and/or members of your management team will tend to work at cross-purposes. Therefore, full acceptance of these principles is essential to sustained success. If you or your organization's management team does not collectively acknowledge these principles, don't start. Building a business case will ensure these preceding principles are mindfully considered before committing your organization to H&OP and RISK-BASED THINKING.

### **Build a business case**

Most efforts to influence business culture fail because those efforts do not link values, beliefs, and new practices directly to the business. People have to see and understand the business case for changing how they work. A sound business case requires that the benefits, costs, and risks, be stated in clear terms, be tangible, and be realistic.<sup>2</sup> People will do what they believe leads to success in their particular part of the organization. Behavior is belief turned into action. If their team, unit, department, or even division is not connected to the business, then they will tend to do their own thing the way they envision success for them, not the organization. Culture change gets real when behaviors and their outcomes are tied directly to accomplishing the business purpose.

The process of developing a business case provides you and your management team with a disciplined method that helps assess the justification and options for pursuing H&OP and RISK-BASED THINKING. An effective business case concisely describes the following:

- 1 *Current state of human and organizational performance.* This involves the identification of the organization's strengths, weaknesses, opportunities, and threats (SWOT analysis). Appendix 5 provides a basis for conducting a self-assessment.

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- 2 *Objectives and scope.* Relative to the significance (risk) of the issues identified in the self-assessment, clarify the purposes intended to be achieved through the implementation of H&OP and the integration of RISK-BASED THINKING. Pinpoint stakeholders and expected long-term outcomes relative to the business. You may want to conduct a “proof-of-concept” pilot project with a particular workgroup to test the fit and effectiveness of H&OP and RISK-BASED THINKING.
- 3 *Alignment.* Strategically, how well do H&OP and RISK-BASED THINKING fit the strategic direction of the organization? Conceptually, how do they conflict or support current corporate and organizational initiatives?
- 4 *Alternatives.* Identify other means of addressing the risk of human error in your high-hazard or high-risk operations; other options that would better fit your technologies, values, and ways of doing business.
- 5 *Risk analysis:*
  - i *benefits*—safety and financial incentives; potential reduction in “cost of non-quality”; expected outcomes in savings; personal safety, productivity, on-time delivery, and waste; improved analyses of **events**;
  - ii *costs*—the expenses of implementing H&OP and RISK-BASED THINKING, such as training and related opportunity costs (personnel and financial resources required);
  - iii *risks*—downside risks of deploying and *not* deploying H&OP and RISK-BASED THINKING; factors that might jeopardize the anticipated benefits or increase costs, including potential unintended consequences.
- 6 *Recommendations.* Specific suggestions for proceeding with the selected alternative in the near term (next two or three months), mid-term (within the year), and long term (future years); may recommend such things as responsible executive sponsor, project manager, pilot groups, and implementation strategy.

Approval of the business case signifies management’s commitment to H&OP, RISK-BASED THINKING, the underlying principles, and their willingness to account for its implementation and effectiveness. Implementation of H&OP and the integration of RISK-BASED THINKING into operations are considered mandatory for all members of the organization—it is not optional.

## **A playbook**

The majority of this chapter provides general guidelines for deploying H&OP’s functions within an organization. There is no secret recipe or formula—all work situations and related organizations are different—having different functions, products, people, processes, values, etc. Therefore, I encourage you to adapt the guidance in this chapter in a springboard fashion to creatively address your organization’s unique realities, cultures, and constraints.

In various team sports, coaches develop a playbook for each contest—a strategic plan—that contains the team’s strategic goals, plans, and contingencies for achieving victory based on the collective and individual strengths and weaknesses of its players. Coaches develop playbooks to optimize their offensive and defensive capabilities against their opponents. Similarly, H&OP includes both offensive and defensive features. Of the three core functions of H&OP, one is offensive in nature while the other two tend to be defensive. First, CRITICAL STEPS focus on making sure the right things go right first time, every time—an offensive feature. Second, SYSTEMS LEARNING emphasizes defense by identifying and correcting weak or missing defenses that protect **assets** from harm. And last, RISK-BASED THINKING contains both offensive and defensive practices through enhancing flexible responses to changing workplace risks. Your playbook will guide the deployment of H&OP’s functions consistent with your organization’s unique needs.

To develop your playbook, I encourage you to first conduct a self-assessment of your organization’s current practices and operational conditions using the criteria listed in Appendix 5. A self-assessment helps identify strengths, weaknesses, opportunities, and threats associated with your current operations. A SWOT analysis, using Table 9.1, will help you organize the results of the self-assessment—the starting point of your playbook. Additionally, you could expand the self-assessment to conduct a SWOT analysis for each of the seven principles of managing H&OP.

### **Integration—enabling RISK-BASED THINKING**

What if every person in your organization was a risk analyst? What if everyone performed a “source inspection” of their work before he or she passed it on to their customer?<sup>3</sup> RISK-BASED THINKING involves a fundamental transformation in the way people think about and do their work, the way supervisors supervise, the way engineers design their products, the way managers manage, and the way executives plan and direct—all choices made from a deep-rooted respect

*Table 9.1* A simple structure for recording the key insights gained from a careful self-assessment of current practices and conditions associated with H&OP

	<i>Strengths</i>	<i>Weaknesses</i>	<i>Opportunities</i>	<i>Threats</i>
1. RISK-BASED THINKING				
2. CRITICAL STEPS				
3. SYSTEMS LEARNING				
4. Observation and feedback				
5. Training and expertise				
6. Integration and execution				

for the operation's technologies. When RISK-BASED THINKING is successfully integrated into the way people do their work, a fundamental change in the company's DNA ultimately occurs (*changing behavior from the inside out—from the heart*). You can change a behavior overnight with wise management of the work environment's *local factors*, but it tends to take years to change a belief—the heart of a person. Take a long-term perspective—there is no rush. Eventually, with your commitment, engagement, leadership, and follow-through, RISK-BASED THINKING will become the foundation for the way you do work and business, despite what you do with H&OP overall.

I suggest you take a decentralized approach to RISK-BASED THINKING, incorporating the four habits of thought (anticipate, monitor, respond, and learn) into key organizational functions. Safety is sustained by enabling anticipation, monitoring, responsiveness, and learning into all facets of operations, and will manifest itself eventually by a reduction in the frequency and severity of **Hu events**. In practical terms, integration merges the four cornerstone habits of thought into all organizational functions and related management systems to:

- 1 Enable the ability to *adapt* to changing risk conditions in the workplace—to adjust to unanticipated conditions and emergent **pathways** and **touchpoints**.
- 2 Enable front-line personnel at the sharp end to *control* CRITICAL STEPS during expected and surprise transfers of energy, mass, and information—to add value and avoid injury, damage, and loss.
- 3 Enable the organization to *learn* about its pitfalls and systems every day—to detect and correct system weaknesses that inhibit the effectiveness of defenses (controls, barriers, and safeguards).

The word *enable* means the organization is aligned to encourage new, desired behaviors founded on the cornerstone practices of RISK-BASED THINKING and to discourage at-risk, unsafe, and reckless behaviors. You'll know when RISK-BASED THINKING has been successfully integrated into your operations when people practice the four habits of thought in various venues as a matter of preference—whether at the sharp or blunt ends of the organization. Everyone becomes a real-time risk analyst.

The integration of RISK-BASED THINKING cannot be accomplished in siloes. It takes teamwork, cooperation, and systems thinking. Integration demands hard work and patience, and requires intensive and ongoing engagement<sup>4</sup> with stakeholders, especially with those who do the work at the sharp end. Engaging front-line workers and their supervisors to encourage RISK-BASED THINKING cannot be overemphasized. The information summarized in this chapter should be a useful springboard for creativity and serve as an informative guide for executives and line managers at all echelons of the organization as they work toward integrating RISK-BASED THINKING into their organizations.

*Warning!* Do not necessarily expect transformational leaders to emerge from the senior management ranks alone. Champions of H&OP can emerge from any level of the organization and form the basis of viral change. Leadership and passion in H&OP may come from mid-level managers, supervisors, and front-line employees. These individuals serve as the sparks for transformational (viral) change within the organization.

There is no intent to create a H&OP program, though you may need such guidance—for consistency—in executing it in the near term. What is intended is to integrate the four cornerstone habits of thought into the existing management systems. Table 9.2 illustrates a structure for reasoning how to incorporate anticipate, monitor, respond, and learn into the various functions of existing management systems and operational processes. Asking yourself how to enable each cornerstone in each function of a process does this.

If there are no intrinsic risks associated with a particular function, then this mental exercise may be neglected or abbreviated. The process of integration is not intended to create an administrative burden for managers and their staff. The process simply provides managers with a systematic way of considering how to facilitate the organized application of RISK-BASED THINKING in a work process or a management system.

As a brief example, I probed the *work execution process* (introduced in Chapter 6) as to how I could weave RISK-BASED THINKING into the performance of workplace jobs. I simply asked, “How can I enable ‘anticipate’ in the preparation

*Table 9.2* A structure for reasoning about how to integrate RISK-BASED THINKING into operational processes

<i>Integration</i>	<i>Operational process</i>		
<i>How do I enable:</i>	<i>Function 1</i>	<i>Function 2</i>	<i>Function 3</i>
Anticipate? (know what to expect)			
Monitor? (know what to pay attention to)			
Respond? (know what to do)			
Learn? (know what happened, what is happening, what to change)			

Table 9.3 An example of how RISK-BASED THINKING can be integrated into the work execution process

Integration	Work execution process		
How do I enable:	1. Preparation	2. Execution	3. Learning
<b>Anticipate?</b> (know what to expect)	<p><b>Review</b> the task to identify what is to be accomplished (outputs) and what to avoid (harm)</p> <p><b>Ask</b> “What if...?” and how you could be surprised</p>	<p><b>Look ahead</b> to all <b>pathways</b>:</p> <ul style="list-style-type: none"> <li>• Transfers of energy</li> <li>• Movements of mass</li> <li>• Transmissions of information</li> </ul>	<p><b>Foresee</b> impact on safety and reliability of future tasks, if nothing changes</p>
<b>Monitor?</b> (know what to pay attention to)	<p><b>Review</b> work procedures that describe the desired accomplishments and expectations</p> <p><b>Identify</b> CRITICAL STEPS and related RIAs</p> <p><b>Identify</b> uncertainty around CRITICAL STEPS</p>	<p><b>Concentrate</b> on:</p> <ul style="list-style-type: none"> <li>• <b>Pathways</b> and <b>TOUCHPOINTS</b>— changes in state of assets, hazards, and their controls</li> <li>• Error traps at CRITICAL STEPS and RIAs</li> <li>• CRITICAL STEPS / RIAs</li> <li>• Critical parameters and limits</li> </ul>	<p><b>Identify</b>:</p> <ul style="list-style-type: none"> <li>• Differences between <i>work-as-done</i> and <i>work-as-planned</i></li> <li>• Surprises, errors, and recurring adjustments</li> </ul>
<b>Respond?</b> (know what to do)	<p><b>Conduct</b> pre-job briefing just prior to commencing work</p> <p><b>Decide</b> how to exercise positive control of accomplishments and avoid losses of control</p> <p><b>Stage</b> resources</p> <p><b>Identify</b> sources of expertise and communication channels</p>	<p><b>Apply</b> as needed:</p> <ul style="list-style-type: none"> <li>• <b>Hu</b> tools</li> <li>• Hold points</li> <li>• Contingencies</li> <li>• <b>STOP</b>-work criteria / timeouts</li> <li>• Conservative decisions</li> <li>• Adjustments</li> </ul>	<p><b>Conduct</b> a post-job review</p> <p><b>Report</b> serious differences between <i>work-as-done</i> and <i>work-as-planned</i></p>
<b>Learn?</b> (know what happened, what is happening, what to change)	<p><b>Recall</b> relevant operating and personal experience</p> <p><b>Ask</b> “What if ...?”</p>	<p><b>Be mindful</b>:</p> <ul style="list-style-type: none"> <li>• Chronic uneasiness</li> <li>• <b>Ask</b> “What if...?”</li> <li>• Observation and feedback</li> </ul>	<p><b>Identify</b> needed changes at:</p> <ul style="list-style-type: none"> <li>• System level</li> <li>• Personal level</li> </ul>

stage of the *work execution process*?” I followed that question by asking, “How can I enable ‘monitor’ in the preparation stage of the *work execution process*?” (see Table 9.3). You don’t have to complete one function before addressing the next function. You don’t have to review one cornerstone before tackling the next cornerstone. There are no rules as to the sequence. The table structure simply gives you a way to keep track of what has or has not been considered.

Do not think of RISK-BASED THINKING as a program or checklist to be added to your current repertoire of management systems, procedures, and business processes. It’s not a project or initiative with starting and stopping points. A program is like a security blanket—it creates a warm, fuzzy feeling, which tends to promote complacency. When people think they are in compliance with all the requirements of a checklist, they tend to stop thinking about safety and shift their focus to the “real business of the organization.” Managers are particularly susceptible to this error, and they tend to shift their attention almost exclusively to production activities when the most recently completed audit reports that everything is “in compliance.” Managers think “we’re safe,” and safety drops from the forefront of their thinking, forgetting that safety and resilience must be performed in concert with production activities. Instead, consider RISK-BASED THINKING as a way of thinking and doing business that overlays your current commercial processes and systems.

## Execution—deploying H&OP

Execution is about managing—getting from here to there. You have to know where you are and where you want to be in relation to the desired endpoint. Then you develop a plan that will close the gap, followed by execution of the plan. You monitor the plan’s execution on a regular periodicity to identify adjustments along the way.

H&OP is *all* about managing risk—this is the vision of the future of H&OP when it is fully deployed. At the peril of seeming overly simplistic, in essence, H&OP involves three essential risk-management processes:

- Front-line workers and supervisors mindfully and rigorously exercise positive control of CRITICAL STEPS and related RIAs during operations.
- Executives and managers relentlessly pursue SYSTEMS LEARNING and follow through with an effective CA/PA process to ensure robust and resilient defenses are in place.
- Everyone adapts to changing risk conditions as needed to protect **assets** from harm—possessing a chronic uneasiness toward all facets of operation and practicing RISK-BASED THINKING.

These three elements—the first three building blocks of H&OP—form the vision of the change—where you want to be. See Figure 9.1. Taken separately, each of the six building blocks are insufficient. But, collectively, these strategies are effective at realizing a reduction in both the frequency and severity of **Hu events**.

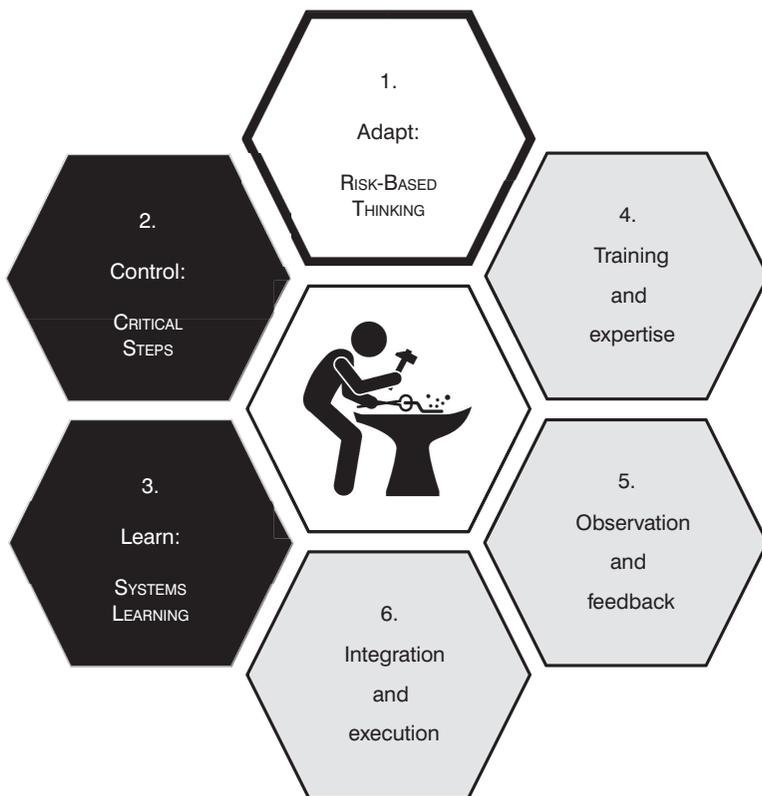


Figure 9.1 The building blocks of H&OP. This model of human and organizational performance accentuates the more important points of leverage in managing the risk of human error in operations

*Warning!* Do not set out to change the culture. Culture change is not the goal, though it is a desirable outcome.<sup>5</sup> The real emphasis is on managing the risk—behavior choices at **touchpoints** and **pathways** between **assets** and their **hazards**—the application of RISK-BASED THINKING, and verifying the presence and integrity of necessary defenses. Changes in values, beliefs, assumptions, and norms will emerge as people experience success with H&OP and RISK-BASED THINKING. Focus on people's recognition and responses—behavior choices—to high-risk work situations (anticipate, monitor, respond, and learn).

Deploying or executing H&OP involves four stages where the last one is really ongoing:

- 1 *Exploration.* The organization assesses its needs—it identifies the most important and most frequent operational and **Hu** risks it faces, including a review of its **event** history, and considers adopting specific practices and tools relevant to the specific **Hu** risks. As mentioned earlier, building a business case for H&OP will help clarify your business needs related to human performance. Again, if you cannot buy into the principles of H&OP, I suggest you stop at this point and cut your costs. H&OP is not for you.
- 2 *Preparation.* Plan–do–check–adjust. Clarify the future state. In light of the desired business results, the organization pinpoints the new behaviors (and unwanted behaviors) and the relevant *local factors* and their related *organizational factors* to sustain the new behaviors. Managers set aside resources necessary to support needed organizational changes that change *local factors* and enable the new behaviors, such as staffing, training, space, equipment, organizational supports, and new operating policies and procedures (organizational changes). Conduct initial training on H&OP for managers and supervisors, followed by training for front-line workers.
- 3 *Pilot implementation.* Conduct a relatively small-scale, “proof of concept” pilot project where a specific organizational unit at an operations level commits to implement H&OP and integrates RISK-BASED THINKING into its operation. This minimizes your investment risk. Implementation (all six building blocks) should follow the execution activities described below. Implementation should target the most significant and most frequently occurring operational risks. Achieve small wins early. This stage is characterized by frequent feedback and problem-solving at both the sharp and blunt ends of the organization.
- 4 *Full implementation.* Following the execution activities described below, the organization institutionalizes H&OP into its overall management system and verifies they are functioning effectively to achieve desired business outcomes. The organization matures in its understanding and application of H&OP and its principles. Managers become relentless in identifying and resolving problems, and the organization internalizes RISK-BASED THINKING as the expected way of doing work and business. Eventually, executives expand the use of H&OP and RISK-BASED THINKING to other high-risk operational units of the organization.

### ***Ballpark sequence of execution activities***

In light of the preceding section, the following activities will be helpful in the development of your playbook. It is not intended that the sequence be deployed in a literal and linear fashion, but it should be rolled out flexibly and,

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sometimes, iteratively. Which activities precede others should be apparent. Almost any sequence keeps your effort in the “ballpark.” Based on unique operational and organizational circumstances, some of the following items may be performed earlier or later, depending on need or urgency. Additionally, minimize bureaucracy (creating programs), which tends to promote a compliance mentality toward something that is dynamic and uncertain—human performance.

- 1 *Gain sponsorship from the board and senior management*, if not already done. Develop and review the business case for implementing the building blocks of H&OP.
- 2 *Familiarize the organization’s senior management team with H&OP’s strategic approach, building blocks, and core principles*. Ensure the business case for and the risks of **Hu** are clearly understood, that senior leaders commit to H&OP’s first principles, systems thinking, and the four habits of thought espoused by RISK-BASED THINKING, and that they recognize the need for resources before embarking on the initiative.
- 3 *Develop a positive vision of H&OP and RISK-BASED THINKING when it is fully integrated into operations*. Something from each building block is occurring. What would be happening daily? It may be helpful to communicate the initiative in a formal policy statement about the management of **Hu**.
- 4 *Familiarize line managers and supervisors on the principles and practices of RISK-BASED THINKING and H&OP*. Similar to the introductory seminar conducted for the senior management team, the introductory sessions clearly pinpoint the new ways of thinking and new espoused values to protect **assets**. Verify they understand that H&OP is part of daily core business (cannot be delegated) and what their role is in integrating and executing H&OP operationally.
- 5 *Conduct an assessment of current practices* (to know where you are). Compare current practices and conditions against the self-assessment benchmarks listed in Appendix 5. A SWOT analysis is very helpful in this effort. Develop action plans to address the more serious vulnerabilities.
- 6 *Develop a change management playbook*. The playbook should be oriented toward institutionalizing the core building blocks of H&OP. Coordinate the elements of the H&OP initiative with other change initiatives. Resolve cross-purposes, vocabulary, and duplication of effort.
- 7 *Identify and control the most important, most frequent operational risks*. Identify high-risk, high-frequency work activities, relevant to key **assets** of the organization, and identify their recurring CRITICAL STEPS, related RIAs, and needed controls (CRITICAL STEP MAPPING). Start small and go slowly. It may be worthwhile in the near term to focus only on the “product” as the key **asset** to protect. Also, run a pilot, restricting the scope of the initiative to one or two specific operational units to create “run time” and early wins.
- 8 *Pinpoint new behaviors* (non-negotiable expectations). Develop these in collaboration with populations expected to adopt the new behaviors. Conduct a *local factor analysis* for each new behavior and work group. For

example, pre-job briefings (new behavior) by supervisors and front-line workers (work groups) or field observations for managers.

- 9 *Conduct H&OP training.* Use a systematic approach to training. Develop and conduct training on expectations and **Hu** fundamentals for line managers, first-line managers or supervisors, and front-line workers. Everyone needs to understand the basic principles and concepts of H&OP and RISK-BASED THINKING to turn around old ideas about human error.
- 10 *Conduct field observations and feedback.* Using a systematic approach to training, develop and conduct observation and feedback training. Use paired observations regularly to give managers and supervisors feedback on their effectiveness in conducting observations and feedback. Managers and supervisors must be able to reinforce, coach, correct, and console people when appropriate.
- 11 *Revise the **event** analysis processes* (“root cause analysis”). Eliminate blame. Consider incorporating “local rationality analysis,” “local factors analysis,” and “behavior choice assessment” tools. Coach analysts and managers as needed to assist them in understanding and applying systems thinking to **event** analysis.
- 12 *Develop H&OP subject-matter experts.* SMEs serve as facilitators and mentors for line managers and the rest of the organization until line managers develop proficiency and confidence in managing **Hu**.
- 13 *Optimize SYSTEMS LEARNING.* Assess the effectiveness of SYSTEMS LEARNING methods already in place, and incorporate additional methods (as needed) to address weaknesses in learning. Incorporate leading and proactive safety indicators as well as the lagging, reactive measures. Institute a CA/PA management system of review and accountability for promptly identifying and resolving system weaknesses that could affect the integrity and robustness of defenses associated with high-risk, high-frequency work activities (noted above). SYSTEMS LEARNING should not be perceived as optional. Insist on managerial accountability to encourage follow-through. Reviews of individual managers should occur at least every month for the first six months of the initiative, relaxing the periodic reviews to every 90 days thereafter.
- 14 *Identify and develop relevant **Hu** tools.* If needed develop methods of positive control of CRITICAL STEPS and related Risk-Important Actions (see items 8 and 10). Solicit input from the target population on the **Hu** tools (what, when, where, and how). Again, using a systematic approach to training, develop and conduct hands-on training on specific **Hu** tools. Training on **Hu** tools incorporates multiple opportunities to practice them and to receive feedback. Integrate **Hu** tools into technical training activities.
- 15 *Develop a robust reporting system.* Regularly collect and resolve feedback from front-line workers about serious and repetitive differences between *work-as-done* and *work-as-imagined*. Make it fast, simple, and easy to use. Consider confidentiality and anonymity features to encourage reporting.

**Success factors**

Executing H&OP and integrating RISK-BASED THINKING takes time and resources. If you want to get it right the first time with minimal sidetracks, incorporate the factors listed below into your rollout plan. People must clearly recognize that safety goals as well as business results will not be met with old ways of thinking and acting. Again, managers must (1) clearly define the business case, the operational problem with safety and resilience (the Why), and (2) specify new behaviors—expectations (the What). People must understand the value of the change to the business and to them personally (What's in it for me?).

My experience bears out the fact that front-line workers readily accept H&OP and RISK-BASED THINKING. The greatest hindrance to change traditionally has been at the management level because H&OP and RISK-BASED THINKING involves (1) spending more time on the shop floor, (2) giving up some amount of control to those at the sharp end, and (3) increasing their accountability for improvements in safety and resilience. Managers need to conduct field observations, seek and give feedback, be accountable for SYSTEMS LEARNING, commit the resources to technical training, and be willing to treat front-line workers as agents of the organization—allowing them to make conservative decisions in the workplace. Until enlightened by systems thinking, line managers tend to assume that the changes associated with H&OP focus on the front-line worker because of all the talk around human error. Here are the more important success factors managers and leaders should consider when rolling out H&OP:

- 1 *Assign a senior executive champion for H&OP.* This is more than resource sponsorship. A senior manager puts on the mantle and guardianship of the operating philosophy until it is thoroughly embedded in the culture. As a first step in transformational leadership, the executive champion believes in the credibility of H&OP and RISK-BASED THINKING acting as their cheerleader.
- 2 *Communicate a compelling vision.* Clarify the business case—the Why. Characterize the operational problem to be solved, preferably supported with data (safety, economic, political, social, and personal reasons). Accentuate survival anxiety—pinpoint dissatisfaction with current practices and conditions. Describe H&OP's costs, its benefits, and, of course, the risks of not doing it.
- 3 *Use a communication plan.* A communication plan should not only consider formal methods and forums, but also provide guidance for the frequent informal interactions between managers and subordinates. Decide on and emphasize the vocabulary you want to use for corporate-wide consistency. For terminology ideas, refer to the Glossary.
- 4 *Start small.* The how-do-you-eat-an-elephant principle applies to changing a corporate lifestyle. Conduct a pilot, “proof of concept” project with a

- specific operational organizational unit. Focus on bite-sized but critical changes first and celebrate—even your small successes. Start with a small set of non-negotiable behaviors (expectations)—not optional.
- 5 *Start where you are.* Assess (1) current H&OP management practices, (2) approaches to individual **Hu**, training, **event** analyses, (3) current workplace practices and conditions, (4) recurring high-risk operations, and (5) current SYSTEMS LEARNING processes. Then, you'll know where to target limited resources for initial changes going forward.
  - 6 *Go slowly.* This is a journey. Behaviors can be changed overnight, but changes from the heart can possibly take years.
  - 7 *Target high-risk operations.* Identify CRITICAL STEPS and related RIAs for high-risk operations. Consider using CRITICAL STEP MAPPING for your frequent, high-risk operations. As with isolating CRITICAL STEPS, determine which operations and activities are your most hazardous work processes and then begin managing the risk there.
  - 8 *Identify internal champions of H&OP.* Identify volunteers, who are held in high regard by their peers, to serve as subject matter experts (SMEs) positive role models of H&OP and RISK-BASED THINKING. Create communication networks/forums for internal champions to facilitate discussion of issues and the exchange of ideas.
  - 9 *Incorporate RISK-BASED THINKING at all levels.* H&OP should be reflected in business plans, and RISK-BASED THINKING should be consistently applied from the shop floor to the executive boardroom and across divisional boundaries.
  - 10 *Spend time in the workplace.* Managers must see, firsthand, how work is actually done and how their management systems, policies, plans, etc. support or inhibit work.
  - 11 *Collaborate with the sharp end.* Integration requires intensive and ongoing engagement with stakeholders—especially with those who do the work. Encourage viral change through formal as well as informal leaders. Clarify the role of front-line workers as agents for the organization as protectors of **assets**. Give workers input into the means of addressing operational issues and in developing new behaviors (expectations). Buy-in is achieved more quickly when the target populations have a sense of control of their work.
  - 12 *Develop and communicate clear expectations and create feedback opportunities.* Communicate clearly and frequently about the new expectations—new behaviors and work outputs. Two-way feedback occurs quickly and often. Open channels of communication are readily available, preferably through face-to-face interactions in the workplace. Managers must be able to model new expectations—to reinforce, coach, and correct. Always follow through on feedback from front-line workers.
  - 13 *Use a rewards and reinforcement plan.* Reinforce behaviors and reward results. Create reinforcement plans for those associated with the control of CRITICAL STEPS and RIAs. People tend to repeat what is reinforced. Managers should

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- refer to these plans during field observations. Regularly celebrate wins and accomplishments, pinpointing the behaviors that achieved the safe outcomes.
- 14 *Schedule break-in periods for new behaviors.* Give the target populations time to practice new expectations and **Hu** tools in the workplace. Solicit feedback from users on the expectations to ensure they are doable and effective, and then set a “go-live” date.
  - 15 *Align the organization.* Align the organization’s management systems and leadership practices to support new expectations—desired behaviors—by adapting *local factors*, consistent with the organization’s business goals.
  - 16 *Adjust schedules—be flexible.* H&OP and RISK-BASED THINKING take time. Create time and capacity in the organization’s work schedule for pre-job briefings, for use of **Hu** tools, for post-job reviews, and for continuous improvement.
  - 17 *Make H&OP mandatory, NOT optional.* H&OP requires a commitment by company leadership and management at all levels. Hold managers accountable through regular checks (every 60 to 90 days) to the plan and for consistency with H&OP principles and RISK-BASED THINKING cornerstones.
  - 18 *Manage H&OP.* As with any business operation, implement H&OP and RISK-BASED THINKING using some form of plan–do–check–adjust. Verify that CRITICAL STEPS and related RIAs are identified and controlled. Verify that SYSTEMS LEARNING is occurring and time-at-risk is minimized.
  - 19 *Emphasize the use of positive leading indicators.* Identify leading indicators that increase when safety and resilience improve, such as the number of and time conducting observations. Don’t rely solely on negative indicators, such as the number of events or number of operator work-arounds. Managers should determine what needs to be measured in order to evaluate progress and effectiveness of H&OP—e.g., trending, leading, and lagging indicators.
  - 20 *Create and sustain healthy relationships.* Espouse the dignity of persons. This is key to making changes that last.
  - 21 Embrace the vocal skeptic—a converted skeptic is worth 100 disciplined followers!!!

### **Promoting RISK-BASED THINKING and chronic uneasiness**

A strong safety culture requires leaders to actively encourage and reward uneasiness and promote safety behavior choices. A “strong” safety culture is one in which people throughout the organization—not just a few individuals—make safe choices that protect assets from harm. Most of the time harm is avoided by following procedures, policies, and expectations—the rules. But sometimes, following the letter of the law may not be the safe thing to do. A strong safety culture allows a well-trained and qualified workforce to adjust when and where necessary.

Creating a strong safety culture is not the goal. It is behavior choices. Changing behavior requires persistence on the part of every manager and

supervisor. It means spending time in the workplace on a regular basis to see firsthand the practices of RISK-BASED THINKING. Safety and resilience demand knowledgeable and energetic leaders ever insistent on high standards. Success in learning and promoting a conservative approach to work requires managers to engage their workers. But to be successful, leaders, from the boardroom to the shop floor, must model anticipation, monitoring, responsiveness, and learning with their immediate subordinates. Together, RISK-BASED THINKING and chronic uneasiness serve as important ways of thinking and feeling about intrinsically risky operations, enhancing people's adaptive capacity to ensure what absolutely has to go right indeed goes right.

If you want to transform the way people think, consider your vocabulary. Karl Weick, co-author of *Managing the Unexpected*, said, "If you want to change the way you think, change the words you use." This is the quote that precedes the Glossary. For RISK-BASED THINKING to become habits of thought for the organization, managers will necessarily have to talk about these practices and H&OP concepts explicitly, as often as possible, and in as many venues as possible. I strongly suggest that executives, managers, as well as line supervisors understand and use the language of H&OP and RISK-BASED THINKING regularly, especially during field observations and operational meetings. To aid this transition, I suggest line managers serve as the training instructors for the H&OP training of their subordinate personnel. That way you and your colleagues will be forced to become more than one question deep in your understanding of H&OP and RISK-BASED THINKING.

### *Communication plan—for management*

When safety and production goals conflict, what choice will people on the shop floor make? Safety should be the default response. But this is not always the case. Why? The answer is related to the answers to the following questions:<sup>6</sup>

- What do the supervisors, managers, and executives talk about the most?
- What do bosses get mad about?
- What gets measured?
- What do managers pay attention to regularly?
- What actions and outcomes are praised and rewarded?
- What criteria are used to calculate bonuses?

In a high-reliability, resilient organization, the choice to make is always clear, especially when safety boundaries of key **assets** are approached or exceeded. However, for some, less-mature organizations the choice may not be so apparent.

Effective communication doesn't just happen—it follows a plan, not just good wishes that people will talk openly about safety problems. Implementing H&OP and RISK-BASED THINKING requires frequent communication of the desired end state, its principles, and expectations, using the vocabulary. Executives and managers must be sensitive to informal interactions where a careless, unthinking

word or action could convey an unintended message. Neglecting to express an appropriate comment when needed may even offer tacit approval of a work practice or condition that should not be endorsed. Through a combination of formal and informal media channels and forums, a communication plan should generally adhere to the following structure and practices:

- 1 *Purpose.* Clarify the business case, problem(s) to be solved, and goals of the message(s).
- 2 *Message.* Summarize the key points of the message(s). Think about what *not* to say and how to react to **events**. Incorporate the vocabulary of H&OP (see the Glossary).
- 3 *Audience.* Identify target audiences (work groups). Focus on influencing key role models—informal leaders—rather than those who habitually complain.
- 4 *Forums.* Identify a variety of settings in which managers, supervisors, and workers interact, such as production meetings, shop meetings, classrooms, field observations, pre-job briefings, and post-job reviews, even passageways.
- 5 *Media.* Develop diverse communication media such as newsletters, weekly bulletins, intranet, e-mail messages, closed-circuit television, and posters.
- 6 *Delivery.* Take frequent opportunities to convey the message(s) when situations present themselves, both planned and extemporaneously.
- 7 *Checks.* Validate that the right message is being received and understood by the target audience. Ask questions to confirm people’s agreement with principles and practices.

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“...what I ask questions about sends clear signals to my audience about my priorities, values, and beliefs.”

—Edgar Schein

Author: *Organizational Culture and Leadership* (2004)

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Your communication plan is essentially an internal marketing plan through which management promotes RISK-BASED THINKING and H&OP. The plan helps you take advantage of both formal and informal occasions to regularly promote H&OP’s business case—its vision for safety, its values, priorities, principles, and expectations.

Consistent, clear, and honest messages are important for trusting relationships. It is a vital *local factor* for open reporting of issues, surprises, and mistakes on the job. If people do not understand what you want—what success looks like—the transition to RISK-BASED THINKING will falter.

### ***Finally***

There are no silver bullets, but what I have attempted to do is to sharpen your focus on what is to be managed. All work situations and related organizational

units are different—with different functions, products, people, processes, values, etc. Therefore, I encourage you to adapt the guidance contained in this chapter (as well as the entire book) in a springboard fashion to address the unique realities, cultures, and constraints of your particular organization. Tailor it to make it work for you and your organization.

Progress will be bumpy in the first year or so as people learn new ways of thinking and doing work. Resistance is likely—as people experience some forms of anxiety in adopting new behaviors that conflict with old habits that are still positively reinforced. This is why positive reinforcement early and often by managers is so important, especially during the first six months or so.<sup>7</sup> Learning to think differently is always difficult. Consider the progress in H&OP and RISK-BASED THINKING as continuous and evolutionary—a journey, not a destination.

### **Things you can do tomorrow**

Actually, many of the following items will likely take some time to do. Don't hurry.

- 1 Conduct a self-assessment of current H&OP management practices using the criteria listed in Appendix 5.
- 2 Using your organization's business planning process, develop a first draft business case for H&OP. Talk through it with your management team, identifying needed revisions. Solicit praise, doubts, and reservations about H&OP.
- 3 Discuss with your colleagues or management team what success would look like in two to three years. What new behaviors would you see happening among front-line workers / supervisors / line managers / executives? (See Table 8.1).
- 4 Using the building blocks of H&OP, discuss with your colleagues or management team what you are currently doing well and not doing well in each building block. What do you need to do differently?
- 5 In collaboration with your management colleagues or management team, prepare a playbook to guide your implementation of H&OP for the high-hazard operations of your organization. Identify other initiatives that H&OP may work at cross-purposes with. Consider inviting senior front-line personnel to participate.
- 6 Include frequent, brief articles in company newsletters that draw attention to successful applications of RISK-BASED THINKING and H&OP. Highlight high-performing persons, especially at the sharp end, who would serve as H&OP SMEs and RISK-BASED THINKING champions and role models.
- 7 Develop a communication plan that not only addresses formal organization-wide messaging, but also informal one-on-one or small group interactions.
- 8 Develop a reward and reinforcement plan for targeted work groups and new behaviors.
- 9 Extend the emphasis on RISK-BASED THINKING and H&OP to other sectors or units of the company.

## Notes

- 1 Reason, J. (1998). *Managing the Risks of Organizational Accidents*. Aldershot: Ashgate (p.126).
- 2 Center for Chemical Process Safety (2007). *Guidelines for Risk Based Process Safety*. Hoboken, NJ: John Wiley (p.651).
- 3 Traditionally, a source inspection is an examination of the finished product's conformance to quality requirements *before* shipment to a customer. A worker can similarly check that 100% of his/her work meets specifications—improving their ability to detect mistakes and enable corrections before nonconformities are generated.
- 4 Engagement focuses on two-way learning. It involves face-to-face communication between leader and subordinate, supervisor and operator, manager and supervisor, director and manager, executive and director, CEO and executive. Engagement does not happen until at least two people (in a one-on-one interaction) learn.
- 5 Schein, E. (2004). *Organizational Culture and Leadership*. San Francisco, CA: Wiley (p.319).
- 6 Schein, E. (2004). *Organizational Culture and Leadership* (3rd edn). San Francisco, CA: Jossey-Bass (p.246).
- 7 See *Performance Management* (5th edn) (2014) by Dr. Aubrey Daniels and Jon Bailey.