In September 1998, two workers were killed and eight were injured in an explosion at Esso’s natural gas plant in Longford, Australia. The explosion also disrupted the gas supply to some five million customers for two weeks. The event was started by a brittle fracture in a heat exchanger in the site’s Gas Plant 1. Normally operating at a temperature of 100°C (212°F), the pump that regulated the flow of lean oil, which heated the exchanger, had stopped working for several hours. During that time condensate continued to flow through the exchanger, dropping the vessel’s temperature to as low as -48°C (-54°F). When the pump was restarted, lean oil rushed back in at a scorching 230°C (446°F), causing the stress and resulting in a vapor cloud that was ignited shortly afterward. The fire burned for two days.¹

The Royal Commission investigating the accident found a number of failures in the safety systems of the site. Among the most notable were the transfer of the engineers who had overseen safety operations to Melbourne, more than two hours away. The operators who remained had taken on a greater role in running the plant, but lacked sufficient knowledge or training in operating procedures for hazardous processes, even to the extent that warning and alarm systems routinely went off, further desensitizing employees to possible hazards. Data that would have alerted management to the potential for a catastrophic event were either unevenly distributed or never collected. A HAZOP (HAZard and OPerability) analysis of the plant that would likely

have identified the risk was never carried out, and the site’s reporting system did not allow information about exposures to this type of event (including similar conditions that had occurred only a month earlier) to reach the appropriate people.

Ultimately, the Royal Commission concluded that the causes of the event “amounted to a failure to provide and maintain so far as practicable a working environment that was safe and without risks to health.”

Safety performance is immediately a function of the processes and systems that control exposure to injury. The four Safety disciplines drive safety functioning:

- **Structure** refers to the formal framework that supports safety decision making, accountability, and action. A robust governance structure—and the rigor and constancy it provides—is a hallmark of organizations with Zero Index safety performance.

- **Expertise** refers to the position, function, and contribution of the safety professional. This discipline is indicative of safety’s status on the organizational agenda. It determines depth of safety expertise available and is a variable in how well safety drives others performance areas.

- **Scorecard** refers to the way in which the organization seeks and processes information about safety. The state of safety measurement affects the quality of safety management and is a source of natural antecedents and consequences that shape the culture. In higher performing organizations, this discipline extends beyond the traditional injury metrics that all organizations use today.

- **Safety-Enabling Systems** are the specific mechanisms used to manage and improve safety. This discipline is responsible for ensuring that people have the skills, competence, knowledge, processes, and procedures they need to work safely. The systems that enable the organization to execute in a way that manages exposure and risk have to not only be the right ones but also must be implemented in a way that truly captures the attention of all employees at all levels in the organization and addresses existing exposures.

At first, these disciplines seem relatively straightforward, but they can be deceptively complex to master. For instance, the configuration of an organization’s metrics—part of the Scorecard discipline—can mask the true level of
exposure in the workplace. The frequency of safety meetings and trainings—an aspect of an organization’s Safety-Enabling Systems—doesn’t necessarily correlate to actual skill levels or reductions in exposure. The existence of a safety decision-making framework—part of the Structure discipline—doesn’t protect safety from continual conflicts with other business processes and initiatives. Regardless of the industry, under performance in the four Safety disciplines is the surest direct path to injuries. Let’s take a look at each one.

**THE STRUCTURE DISCIPLINE**

As an organization sets out to achieve a goal, it naturally begins to define roles, responsibilities, and lines of accountability. Structure, sometimes called governance or management, defines how the goal will be met and is the formal means for supporting decision making, accountability, and action. Structure matters to safety in particular because it connects the stated goals of the organization to execution. Creating an organization in which “Safety is who we are” requires people who define the organization (chiefly leaders, but also others who influence what happens and how) to be involved in the line-of-sight governance of safety execution. The more inclusive a structure is of all the roles and levels that influence safety activities, the more effective the governance will be at driving consistent outcomes.

**Providing the Framework for Safety Execution**

The structure of safety determines ultimately how, or whether, outcomes are achieved. Effective governance enables the organization and its leaders to influence safety in a very meaningful and powerful way. It can also create a strong personal connection between employees and the organization and its leaders—a connection pivotal to improving behavioral reliability in today’s flatter, leaner organizations, where employees have more latitude and less oversight than ever before.

Structure is also the discipline that trips up many organizations before they even get started. Safety structure is far upstream of safety outcomes, which means that a flawed system for managing accountabilities and decision making can go undetected, sometimes for years.

Recently, we worked with an oil company that was struggling with a long-running plateau. Although the activities and practices they were using were
sound, we discovered that they had trouble allocating resources needed for many safety activities. Digging into the issue, we came to find out that there was a parallel cost-containment effort driven by the organization’s finance department. Yet none of the financial personnel were aligned within the safety governance structure. As a result, safety needs were frequently trumped by the drive to contain costs.

Achieving Zero Index performance requires that every person in the organization understands what their roles are and what behaviors fulfill those roles. How those parameters are defined is illustrated in the various stages of this discipline (Table 6–1). Rudimentary governance structures tend to favor a single person or group having ownership of safety, whereas more effective organizations include topmost leaders, safety professionals, and even non-safety functions in the oversight of safety activities.
**TABLE 6–1. The Structure Discipline.**
The formal structure that supports safety decision making, accountability, and action.

<table>
<thead>
<tr>
<th>Facet</th>
<th>Defined as</th>
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</thead>
<tbody>
<tr>
<td>Vacant</td>
<td>Safety is not formally owned by anyone.</td>
</tr>
<tr>
<td>Orphaned</td>
<td>Oversight for safety is held solely within an individual person.</td>
</tr>
<tr>
<td>Relegated</td>
<td>Goal-setting and oversight is assigned solely to a department or function.</td>
</tr>
<tr>
<td>Supported</td>
<td>Goal setting and oversight is supported by senior safety leaders.</td>
</tr>
<tr>
<td>Sponsored</td>
<td>Senior operations leadership sponsors and oversees safety in conjunction with senior safety professionals.</td>
</tr>
<tr>
<td>Integrated</td>
<td>Executive management, board members, senior leaders, and safety professionals work together to sponsor safety in a highly effective way.</td>
</tr>
</tbody>
</table>
What you might see or hear

There is no formal structure for safety oversight. This stage is typically characterized by an “every man for himself” mindset. Safety decisions are made only when there is a clear need or a serious problem. Safety practices tend to be based on precedent (what was decided before) without consideration of current business realities.

Safety has a formal owner whose work is largely focused on basic requirements. Safety performance is generally isolated from other organizational activities. Lacking broad oversight, individual supervisors or managers will tend to make safety decisions at their own discretion, with high degrees of variability in quality and results.

Safety decision making and direction is limited to the members of the department or function with formal ownership of it. Decision making is done in small groups, typically at the site level, and isolated from corporate initiatives. Safety activities here often compete with other initiatives and business needs for resources.

Safety tends to be recognized formally at the corporate level and has a designated sponsor there. Safety roles and responsibilities are defined for levels throughout the organization. Safety needs begin to hold equal weight with other business needs as the organization recognizes the business benefits of safety.

The rationale for safety activities is expressed in terms of the business’s wider objectives, rather than just the business benefits. Safety has “a seat at the table” in senior leadership discussions. Operational leaders throughout the organization have a defined role in safety.

Safe work is treated as synonymous with good performance. Operational and senior leaders participate in safety decision making, planning, and action and routinely weigh the impact of their decisions on safety. Safety has a formal and visible presence in the organization’s highest objectives and holds a significant position on the Board’s agenda.
Evaluating the Structure Discipline

To assess your organization’s performance with respect to safety governance, or structure, ask yourself:

• Who owns safety in the organization? Who needs to own safety here?

• Does the ownership include operational leaders? Senior leaders?

• How are safety goals defined for employees at different levels? What do the goals focus on?

• Who reviews safety data and reports?

• Is the decision-making process related to safety clear? Unclear?

• How does the ownership of safety manifest itself at different levels? If you asked people in the field what triggers the halting of a job for safety reasons, what would they say?

• How do safety decision making and action integrate with other business initiatives and processes?
CASE IN POINT: STRUCTURE

Mapping Out Safety at ExxonMobil

In 2006, ExxonMobil walked away from what would have been the world’s deepest offshore well in the Gulf of Mexico’s Blackbeard West formation. The company had already invested $180 million and drilled 30,000 of the planned 32,000 feet below the seabed. Despite the advanced stage of the project, company engineers deemed the well too risky to proceed any further.

Abandoning the project provoked harsh criticism from industry analysts. Some said the company “lacked the guts” to finish the well and was too risk averse. Despite the flak, ExxonMobil executives stood firm. Four years later, the decision would prove downright prescient. The Deepwater Horizon, a similar project in many ways to Blackbeard West, would end up costing rival BP billions of dollars in cleanup costs alone. In Congressional testimony shortly following the Deepwater disaster, Exxon chief executive Rex Tillerson explained the difference between the two outcomes simply: “We would not have drilled the well they did.”

The decision to abandon the Blackbeard West well was a result of ExxonMobil’s Operations Integrity Management System (OIMS). And it was just the kind of thing OIMS was designed for. Initially developed following the 1989 Exxon Valdez disaster, OIMS is a safety framework made up of 11 distinct focus areas that measure and mitigate safety, security, health, and environmental risk at ExxonMobil. The organization uses OIMS as a roadmap for safety management and decisions as the 11 elements dictate everything from how risk is assessed and managed to how local business units handle relationships with the communities in which they operate.

The first OIMS element, management leadership, commitment, and accountability, is also considered the driver of all the other elements. This element defines both how management establishes safety policy and expectations as well as how leaders are to show visible commitment to safety.

THE EXPERTISE DISCIPLINE

Whatever the area of expertise, whether as an industrial hygienist, safety engineer, loss prevention engineer, or any of a myriad of other titles, the safety professional’s core duty is guiding the organization in the prevention of exposures that cause harm to people, property, and the environment. Traditionally, the safety professional has executed that role in a very limited way, serving as an administrator of safety programs—or even in some cases as the safety cop. As organizations come to recognize the strategic importance of safety performance, however, they are also beginning to rethink the unique role and potential of their safety experts. Safety professionals have the expertise to guide the organization’s management of exposure and the execution of initiatives and activities. Could they not also lead the development of safety strategy, support change execution, and partner with leaders at the highest levels in advancing overall operational performance?

The answer to this question is largely one of education and perception. In most cases, the safety professional was never trained to be a change agent and the organization has typically pigeonholed safety expertise within a narrow sphere. Repositioning the safety professional’s role requires both the development of safety personnel and a realignment of expectations within the organization itself. Safety professionals must develop fluency in change management methodology, the role of behavior in performance, culture, and leadership. At the same time, organizations need to advance their understanding of the role of safety in the overall strategy of the organization, and redefine the scope of the safety professional’s responsibilities and reach.

Reflecting the Role of the Safety Professional

In our experience, the position, function, and contribution of the safety professional correlate with the sophistication of safety strategy and execution. When safety professionals are limited to the enforcement of rules or the running of programs, the expertise available to the leaders who drive the strategy and operation of the organization is similarly limited. On the other hand, when organizations engage safety professionals as partners in change, they necessarily create access to safety and performance expertise at the highest levels in a way that supports operational excellence (Table 6–2).
### TABLE 6–2. The Expertise Discipline.
The position, function, and contribution of the safety professional.

<table>
<thead>
<tr>
<th>Facet</th>
<th>Defined as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>There is no safety professional.</td>
</tr>
<tr>
<td>Enforcer</td>
<td>The safety professional enforces rules in an effort to reduce liability and cost associated with incidents.</td>
</tr>
<tr>
<td>Administrator</td>
<td>The safety professional administers traditional safety activities and responds to safety issues.</td>
</tr>
<tr>
<td>Facilitator</td>
<td>The safety professional is guiding the safety process and is often the main driver of it.</td>
</tr>
<tr>
<td>Agent</td>
<td>The safety professional is a change agent and works with senior leadership on direction and execution.</td>
</tr>
<tr>
<td>Partner</td>
<td>The safety professional is a strategic partner to leaders at all levels in achieving the highest standards of performance.</td>
</tr>
</tbody>
</table>
## What you might see or hear

Safety expertise is not recognized as important and there is no formal role defined for a safety professional. Individual managers deal with safety issues as they arise, with significant variability in results.

The safety professional is seen as the “safety cop”. Safety learning is generally limited to the individual safety professional who is consulted only when there is a problem. Safety professionals are hired and evaluated based on regulatory expertise.

The safety professional tends to be a “fixer” who is consulted for addressing and resolving basic safety issues. Safety professionals are hired and evaluated based on regulatory and administrative expertise.

The organization relies on the safety professional for implementing safety processes and activities. Leaders look to the safety professional for information on safety performance within traditional parameters. The safety professional spends a significant portion of time creating programs and training workers. Safety professionals are hired and evaluated based on technical expertise.

The highest ranking safety professional is a resource to operational leaders, guiding safety activities. The professional focuses on assessing current performance and making recommendations. The safety professional is hired and evaluated based on technical and business expertise. At this level, the safety professional spends a greater portion of time advising leaders.

At this stage, the safety leadership role is used to develop high-potential employees and the safety professional is hired and evaluated on business and strategy expertise. The lead safety professional spends a large portion of her time working with senior management on performance issues.
Evaluating the Expertise Discipline

To understand how the role of safety professional is developed and deployed in your organization, ask yourself:

• How do we describe the role of safety professionals here?
• What criteria do we use to hire and evaluate safety professionals?
• How do safety professionals spend their time? For example, what percentage of time do they spend on enforcement compared with consulting with operational or senior leaders?
• What is the highest level held by a safety professional in our organization?
• How do we leverage the knowledge and expertise of safety professionals in our daily business decisions and activities?
• What is the career path for safety professionals here?
CASE IN POINT: EXPERTISE

From Police to Partner

Developing the Expertise discipline is sometimes as much about changing perceptions as it is about developing the role. In one company we worked with, safety professionals performed a traditional, technician role familiar to many organizations. The professionals collected data, compiled reports, and, frequently, acted as enforcers. Not surprisingly, their interaction with executives was limited to delivering reports using previously determined templates. When a new senior safety director met with the safety professionals, he was struck by how little of their insight and experience ever made its way up to where safety strategy was formed.

The new director set out to position safety professionals as consultants to executive leadership, rather than just technicians delivering information. The trick was to “up their game”; they needed a new model for what safety professionals were and could be. The director organized a series of training sessions using serious injuries, a major organizational concern, as a focal point. The objective was to help the safety professionals become comfortable with analyzing incident reports in a deep way and then developing their ability to collaborate with others on addressing their findings, specifically the high-potential exposures uncovered in their analysis.

Safety professionals in this organization now routinely pull together data analysis that separates exposures and near misses by severity potential (high, mid, low) and present their findings to executives personally in addition to delivering reports by email. The result is that safety professionals and executives are having a much different discussion than they did previously. Safety experts (as they are now known) point out areas of concern to executives, advise leaders on how best to apply resources based on potential, and provide an “on the ground” picture of safety functioning that executives wouldn’t get otherwise. As the safety director put it, “We’re applying safety expertise now to organizational learning instead of ‘putting people in jail’.”
THE SCORECARD DISCIPLINE

Unlike most other business measures—think earnings growth or debt load—the traditional measures of safety performance tell us little about where existing functioning actually is, and where it is headed. The deficiency of safety measurement in describing actual performance is so common as to be a cliché: many catastrophic industrial events occur in organizations with a history of low injury rates (and who may have even been recognized previously for “high” safety performance). The reality is that there are many variables that determine the quality of safety functioning. It is often only after a serious event that a picture of these elements (e.g., the execution of safety systems, the consistency of follow through on safety issues, the quality of culture and leadership) begin to paint a truer picture of the safety functioning present before the incident—one that could have been detected with the right set of metrics, processes, and analysis.

The Scorecard discipline describes how well the organization seeks and processes essential indicators of safety performance. This discipline is measured both in terms of the comprehensiveness of the set of measures the organization uses, as well as the way in which the organization collects, processes, and interprets that information. The higher an organization functions in the Scorecard discipline, the more effectively it is able to manage safety performance and the better leaders can steer the culture by providing antecedents and consequences that match desired activities.

What We Measure

The first concern of the Scorecard discipline is determining an appropriate mix of measures. Zero Index performance requires indicators that tell us where we are and where we are headed. It also requires measures that allow the organization to detect changes, and responses to changes, with precision. Experience has shown us that there is no perfect suite of measures common to all organizations. Instead, high-performing organizations aim for a set of measures that provide useful and robust indicators of how they are doing against their unique objectives and appropriate to the application and level of the organization. The suite of measures useful at the executive level (where the question “how are we doing” is often the focus) necessarily differs from the measures that are useful at the mid-levels of an organization (where the question, “What are we going to do in order to improve?” should be the focus). Fundamentally, any mix includes both leading and lagging indicators.
Lagging Indicators

As the standard measures of safety, lagging indicators offer the advantage of helping organizations benchmark their performance against industry. Lagging indicators, such as Lost Work Case rate, Total Recordable or Medical Case rate (OSHA recordable rate in the United States), serve as the report card at the end of the day and tell us in broad terms whether our efforts are on the right track. At the same time, lagging indicators have significant limitations for steering safety performance. Many lagging indicators used today are driven by government regulations and financial concerns and by themselves have a tremendous amount of noise in them. What looks like a very good OSHA recordable rate on paper can mask a high level of risks that have simply not been realized. Lagging indicators also introduce a delay in evaluating performance. They don’t accurately tell you how the organization is performing in real time and they have a diminishing value as they decrease. The more an organization improves, the greater its need for upstream predictive metrics and a more sophisticated evaluation and action protocol.

Leading Indicators

In addition to measuring lagging indicators, high-performance organizations typically measure leading indicators, upstream measures that predict the outcome of interest (as opposed to merely occurring before the outcome of interest). The best leading indicators have two features that set them apart:

1) They have a robust research base establishing their predictive relationship to an outcome of interest, and
2) they provide diagnostic information about how to improve the outcome of interest. In our consultations with clients, we evaluate the organization’s employment (or lack thereof) of these leading indicators:

Exposure. Excellence in safety is directly related to how effectively the exposure to hazards is controlled throughout the organization. Organizations need to measure the levels of exposure to hazards, and changes within those levels, across the business.

Safety activities. Organizations need actionable information on the quality and scope of those activities responsible for driving safety performance. Specific activities will vary across the organization and are not limited to traditional safety programs. Measured activities may specifically include the
“critical few” rules or procedures that most directly influence high-severity potential situations, such as lock-out/tag-out or requiring people to tie off when working at heights. They may also include organizational practices that have a profound impact on safety, such as employee selection criteria, performance management, and decision making at all levels.

**Climate and culture.** The factors that correlate with high performance in safety are well established and easy to measure. Having a good baseline of the culture and climate characteristics linked to safety outcomes allows the organization to target resources in the right areas (for example, on teamwork or on procedural justice) and periodically assess progress. Effective measures of culture and climate also allow the organization to create a concrete, compelling case for asking people to put their shoulders to the wagon in order to effect real organizational change.

**Leadership.** In our experience, the leadership-culture connection cannot be separated. Research has identified specific leadership practices that predict and drive safety excellence. Whereas some leadership practices are fairly obvious, in most cases leaders are flying blind when it comes to knowing how well they are executing these practices and how they are being perceived by those around them in the organization. Not knowing your effectiveness as a leader leads to unacceptable variation in performance-driving behavior, a loss of consistency in the message the organization receives, and, worse, a pessimistic and cynical culture. A lack of knowledge about your leadership behavior is a game stopper if you are serious about achieving Zero Index performance. A good measure of leadership behavior should provide organizations with a diagnostic capability to detect and address variations that can undermine safety efforts. If we get the leadership behavior right, we get a high-performing culture; if we get the culture right, we get excellence and sustainability. This is too important to leave to guesswork.

Before we leave the discussion about leading indicators, it is important to note that not all upstream measures are valid leading indicators. The presence in and of itself of an upstream measure (or suite of measures) is not sufficient to monitor and manage safety performance. Too often in the safety field, organizations measure activities such as hours spent in safety training without measuring whether those increased hours actually paid off in better safety performance.

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3 Discussed further in Chapter 7.
How We Use the Data

Ultimately, the power of measurement comes down to how the organization processes and applies the information it gathers. Data use poses several problems. For many organizations the problem is not that they don’t have enough to measure, it’s knowing how to process the various indicators that they do have, particularly if they are tracking a comprehensive mix of leading and lagging indicators. In organizations that focus on injuries and meeting certain numbers, safety metrics can become tainted by the emotional significance of certain indicators as they experience natural fluctuations. How leaders respond to data, particularly if it includes bad news, can make people reluctant to provide complete and timely information and compromise the integrity of the inputs into the system.

High-functioning organizations use practices that help them quickly navigate the macro and micro views of safety functioning without getting bogged down in the noise. They also focus on establishing reliability in measurement activities and remove negative consequences for reporting or using data. For example, many organizations establish rules around what data require further analysis, they give leaders a grounding in statistical methods and variation, and they set expectations around the tone and consistency of follow-through.

The stages of the Scorecard discipline are shown in Table 6–3.
<table>
<thead>
<tr>
<th>Facet</th>
<th>Defined as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited</td>
<td>Accident data are tracked to the extent required by regulation, but are not reported internally.</td>
</tr>
<tr>
<td>Stunted</td>
<td>Accident data are reported internally but are not regularly reviewed or used by management.</td>
</tr>
<tr>
<td>Cyclical</td>
<td>Management tracks lagging indicators and reacts when the numbers rise. Most consequences that result from the data are negative.</td>
</tr>
<tr>
<td>Consistent</td>
<td>Management tracks lagging indicators and responds to rises and falls with a steady focus on improvement. Positive and negative consequences for performance result from their use.</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Management tracks leading and lagging indicators, with a focus on valid diagnostic information that can be used to improve the outcomes. Data are used to remove barriers, improve systems, and enable people to work safely.</td>
</tr>
<tr>
<td>Enterprise</td>
<td>Management expands leading indicators to include leadership and organizational influences on exposure. Response to the information reinforces critical safety behaviors for people at every level and in every function.</td>
</tr>
</tbody>
</table>
What you might see or hear

**Required tracking data are available with varying levels of completeness, however they are not used or reported within the business. Injury reporting tends not to be consistent or reliable.**

**Accident data are formally circulated internally, however they are seldom used for improvement activities. Managers may not know how to interpret or apply the information. Minor injuries and near misses may not be reported.**

**Management has more engagement with accident data at this stage, however data use tends to be reactive. Reporting injuries will sometimes cause problems for employees and their supervisors. Exposures are often addressed only after they are implicated in an event. Periods of low or no injuries are seen as evidence of high safety performance.**

**Organizations at this stage have a laser focus on lagging metrics (injury rates, lost times, etc.) and apply steady pressure on improving the rates. Reporting injuries and near misses generally does not cause problems for employees and their supervisors.**

**Leaders approach the data within metrics as a learning opportunity. Managers and supervisors are trained to interpret and respond to safety data constructively. People feel comfortable personally reporting their own injuries and near misses. Metrics grow in scope and sophistication as leaders seek more indicative data. One organization we work with is expanding its tracking to include “total hurts” with an objective of fostering a reporting culture.**

**At this stage, injury data is typically too sparse to be of significant use in analysis. Organizations here use a sophisticated sampling strategy that approaches data as an indicator of operational functioning. Metrics are a major object of study, review, deliberation, and reconsideration as leaders and safety professionals look for evidence of the next event.**
Evaluating the Scorecard Discipline

Assessing the Scorecard discipline requires attention to what we’re measuring, how we are measuring it, and the way we use and respond to data. Ask yourself, for example:

- What data are we tracking? What is the mix of leading to lagging indicators?
- What predictive data do we track?
- If someone asked us to paint a picture of the exposure to hazard as it is today in organization, would we have the data to tell them?
- How do we collect information? Are there negative consequences to accurate reporting?
- How do we use the information we collect? Do we report it internally? Use it for decision making? Do we respond to exposure information consistently?
- How do we process information? What are the rules for what to dig into?
- How reliable are our tracking activities perceived to be?
CASE IN POINT: SCORECARD

Upgrading a Dashboard

One organization we worked with used the same safety dashboard for many years. Each month, a safety committee composed of senior operations managers and safety professionals met to review and discuss their lengthy dashboard. Section 1 showed OSHA recordable incident rates from each of their locations, lost workday incident rates, and a breakdown of injuries by body part. Section 2 listed Tier 1, 2, and 3 process safety events. Section 3 listed the status of action items, recommendations, open issues, and past due inspections. Publicly, many senior leaders joked about the length of the report. Privately, a few leaders admitted that safety meetings were a waste of time, particularly the dashboard review. Discussions during the review focused on whether or not the numbers were accurate. Managers who had not had incidents that month said nothing, while managers who had incidents in their areas argued with the safety professionals about incident management, classification, and record-keeping. Discussion of the action items, recommendations, and open issues were limited except immediately before or after an inspection.

The organization’s senior safety leader asked us to help develop a new safety dashboard. The goal was to present a set of information that would prompt a productive and proactive safety discussion. Senior leaders needed to be able to quickly assess the state of safety functioning but also have enough detail to respond with precise, and upstream, action. As the leader put it, “I don’t need to know how many body parts were injured... we can all count. I need management to be able focus on reducing exposure to the most serious incidents in their areas.”

Working with members of the safety committee, we developed a hierarchical report. Functionally, the dashboard offered a high-level view of a mix of critical indicators. Leaders were able drill down for additional detail as they needed. Substantively, we balanced traditional measures with new leading indicators. Exposure metrics tracked levels of exposure to both personal and process safety hazards. Control metrics looked at indicators of functioning in both safety systems and the management systems that supported them, for example the proportion of safety audit findings resolved within 60 days (personal safety) or on-time completion of critical safety equipment testing (process safety).

Right away, leaders were surprised by the level of detail available upstream of a crisis. The report was both easier to read and more detailed. Most important, the new dashboard has allowed the senior leadership team to develop a better fluency with the moving parts of safety in their organization.
THE SAFETY-ENABLING SYSTEMS DISCIPLINE

Safety-Enabling Systems, the last of the four Safety disciplines, are the specific mechanisms used to manage and improve safety. Used well, they ensure that people have the skills, competence, knowledge, processes, and procedures to work safely. The list of activities that make up Safety-Enabling Systems varies little across most industries. For example, almost all companies do a risk assessment on processes and equipment, conduct safety trainings, hold safety meetings, write procedures, etc. The real difference is not the list but in the effectiveness of these systems—how they are executed and how the organization uses them. Here, the variation is huge—and so are the results.

A few years ago, two companies in the same industry approached us for help in improving their safety performance. One organization had a lost-time injury frequency of 0.09 and an OSHA recordable rate\(^4\) of a bit under 1.0. The other had a lost-time frequency of 0.90 and an OSHA recordable rate of about 7.0. Despite the wide gulf in performance, their practices, at least on the surface, looked a great deal alike.

As part of an assessment, we conducted interviews with supervisors from each company. When asked if they held safety meetings, the teams from both companies enthusiastically replied that they did. Each team described very similar activities; both had large monthly group meetings, weekly team or crew meetings, and daily toolbox huddles. Then we asked each group why they did these meetings. In the poor-performing company, the supervisors unanimously responded that they held safety meetings because they were “told to”. It was just part of the job. In the higher-performing company, supervisors gave a range of answers. They held meetings because it helped them understand safety, collaborate on difficult issues, listen to the barriers that employees faced, and display leadership and concern for people’s safety. For these supervisors, safety meetings were not a checkbox to be ticked. The meetings were part of a bigger picture.

The quality of execution was evident in how the meetings themselves were conducted. In the poor-performing company, five of the six meetings we sat in on consisted of popping in a video and turning out the lights. Many of the supervisors did not know how to conduct an effective safety meeting.

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\(^4\) Lost-time injury rate in the United States is calculated as the number of injuries requiring days away from work per 100 full-time employees. OSHA rate refers to the number of all recordable workplace injuries per 100 full-time employees.
and were solely concerned with making sure everyone signed the roster. Attendance, not quality, was the measure of success. Not surprisingly, these meetings were not very effective in lowering exposure or enabling people to identify and deal with the risks that they encountered on a daily basis. To employees, the message was that safety is something that we give lip service to but are not actually committed to. More implicitly, the message was: “You guys should feel free to do whatever you think is OK.”

As organizations move toward Zero Index performance, the development of Safety-Enabling Systems typically progresses in breadth (are activities focused on risk or just on compliance?) and execution (how effective are these activities or are we simply checking off the box?). An excellent indicator of the development of the Safety-Enabling Systems discipline is the quality of behavior-based safety processes, if they are used. Understood, built, and executed properly, these systems are very effective at moving the organization from an injury focus to an exposure-reduction focus. Yet, like other systems and tools used in this discipline, emphasis determines the quality and outcome. At the lower levels of functioning, behavior-based safety tends to be a mind-numbing, box-checking, cover-your-behind sort of exercise, done to satisfy a requirement. As organizations advance in this discipline and they pay more attention to the principles of continuous improvement, employee engagement, and system improvement overall, they find that their behavior-based safety systems create a profoundly positive impact on the organization’s culture, level of exposure, and safety performance.

The Engine of Risk Management

To develop the Safety-Enabling Systems discipline, the systems and tools must be in place to enable safe work, with the professionals leading these systems optimizing the systems’ effect. The full range of this discipline is shown in Table 6–4.
TABLE 6–4. The Safety-Enabling Systems Discipline.
The specific mechanisms used to manage and improve safety.

<table>
<thead>
<tr>
<th>Facet</th>
<th>Defined as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sparse</td>
<td>Few, if any, safety-enabling systems are in place.</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>Safety-enabling systems are rules-based and inconsistently used.</td>
</tr>
<tr>
<td>Compliant</td>
<td>Rules-based safety-enabling systems are consistently used. Systems that dig into root causes begin to emerge.</td>
</tr>
<tr>
<td>Advanced</td>
<td>Safety-enabling systems are risk-based but inconsistently used.</td>
</tr>
<tr>
<td>Reliable</td>
<td>Risk-based safety-enabling systems are consistently used.</td>
</tr>
<tr>
<td>Futuristic</td>
<td>Highly reliable safety-enabling systems anticipate and prepare for future risks.</td>
</tr>
</tbody>
</table>
## What you might see or hear

At this level, there are few formal systems for supporting safe work. Safety rules tend to be developed on an ad hoc basis and typically only in response to a crisis.

At this stage, systems are heavily weighted toward rules and compliance rather than exposure identification or reduction. There tends to be high variability in the understanding and enforcement of basic policies and procedures. When rules occasionally are enforced, employees may feel unfairly singled out. Skills development is sporadic and training may be over generalized or irrelevant to the work.

Employees and management are essentially aligned in their understanding and use of basic policies and procedures. Safety meetings or other activities are routine but may tend to be done out of rote. Required PPE and administrative controls are consistently used. At the same time, some work teams and their managers may not have the skills and knowledge they need to enable safe work in all situations or to communicate effectively about safety. Rudimentary root cause analysis is present in some areas.

There is a formal process for near miss reporting and tracking. Hazard identification systems look for exposures with varying effectiveness. Risk-based policies, procedures, and rules can vary in their use, leading some employees to feel that following them is “optional”. Atypical exposures may go undetected until an event occurs.

Hazard recognition systems engage employees, supervisors, managers and contractors in identifying and mitigating risks. Risk-based policies, procedures, and rules are applied consistently. Work teams and their managers have the skills and knowledge they need to enable safe work and communicate effectively and credibly about safety. Exposure identification and resolution is consistent and reliable.

Exposure identification systems adapt with the business and routinely identify risks as the configurations change. Work teams and their managers are fluent in exposure identification and handle atypical tasks as safely as routine work.
Evaluating the Safety-Enabling Systems Discipline

Assessing the Safety-Enabling Systems discipline is about understanding the systems’ connection to, and support of, the organization’s safety objectives. Ask yourself:

- What safety systems do we have in place?
- What is the basis for choosing the systems that we have? Do we select them based on regulatory requirements alone or on risk assessment?
- How are these systems actually being executed? Do people use them in a way that enables a constant downward pressure on exposure?
- What systems do we have in place for addressing exposures with a high potential of causing life-altering injuries?
CASE IN POINT: SAFETY-ENABLING SYSTEMS

Calibrating Safety Systems in Amtrak’s Mechanical Department

Keeping Amtrak’s nation-wide equipment safe and reliable is in large part the responsibility of the organization’s mechanical department. Made up of 4,500 dedicated employees across the United States working predominantly within a dozen major terminal locations, the mechanical department cleans, inspects, maintains, and dispatches long and short distance trains for their next assignments, often in the very same day. In addition, three main shop facilities are dedicated to perform component repair and major overhaul work, which periodically involve stripping down and upgrading cars from the ground up.

With the primary focus placed on equipment performance, there can be lost opportunities for safety system improvements. Maintaining consistent performance standards, let alone implementing a culture of continuous improvement, across a group spread over thousands of miles is a significant challenge. While the work and exposures are similar, sites tended to develop solutions to common problems in isolation.

In 2006, the mechanical department implemented Process Focus Teams (or PFTs) to capture and share best practices across all disciplines of work. The Safety PFT, led by process owner Tommy Farr, specifically takes innovation and insight around safety-enabling systems from the individual site to the national level with a heavy emphasis on an open and collaborative approach. The team is made up of 20 employees who represent every division in the country. Team members visit sites to document standards of excellence in safety systems and routinely develop and distribute best practices with photos and articles that best represent their findings.

One of the Safety PFT’s successes is a program called Another Set of Eyes. Under this initiative, a subset of the Safety PFT visits facilities to observe a site’s working environment from a fresh perspective. Bringing in Another Set of Eyes helps prevent the “wallpaper” effect that many get when they work in the same place for years, and exposures are less visible and more likely to become unnoticed. The program involves a walkabout and performing observations of the work environment, such as housekeeping, infrastructure, condition of tools, as well as how mechanics interact with equipment. The team members then provide the site leadership team with informal feedback on what they’re doing well, what they could improve upon, and leave them with lean management tools to aid with the improvement efforts.

Another Set of Eyes represents an effective complement of the Mechanical Department’s safety program in its goal to reduce risk exposures and provide all employees a safe work environment.
ADVANCING THE SAFETY DISCIPLINES

Getting safety right requires highly functioning systems that work together in mitigating exposure to injury. Although leaders need to optimize each of the Safety disciplines individually, they must also work to ensure that the disciplines are configured to inform, support, and enable high functioning in all the others. To improve performance in the four Safety disciplines, ask yourself:

- What is the net effect of the Safety disciplines together? How well do they realize the organization’s vision and objectives?
- What is the organization’s current level of functioning in each of the disciplines?
- How does each discipline currently affect the functioning of the others? For example, how does the way we measure safety (the Scorecard discipline) influence the way we execute safety systems (the Safety-Enabling Systems discipline)?
- What is the relationship between the Safety disciplines in this chapter and the Foundational disciplines covered earlier, in chapter 5? How does our current functioning in Vision, Engagement, and Exposure shape how we execute the Safety disciplines?
- What factors are keeping our performance where it is today? What would we need to change to move forward?

The Safety disciplines are at the heart of safety performance improvement, yet for an organization to develop safety as a strategic activity—indeed, to move safety performance itself forward—its leaders need to understand the connections between safety activities and practices and the rest of the business. In the next chapter, we discuss the three Organizational disciplines, Leadership, Culture, and Sustaining Systems, which are critical to driving and sustaining safety functioning.