DESIGNED FOR FAILURE?

How Business Decisions Can Drive Unsafe Work

By Thomas R. Krause and Laura A. Harrison

When we talk about exposure, most people picture the obvious: gases, gravity, motion, pressure and heat. But in many organizations, the most dangerous exposures are far less visible.

These exposures are embedded in decision-making and show up in the actions people take under pressure. This is systemic exposure, when business decisions at any level create conditions that force tradeoffs between safety and productivity. Sometimes these tradeoffs are explicit, such as when frontline workers are aware that they are choosing between getting the job done and doing it safely. Other times, tradeoffs are made further upstream, embedding gaps into roles, processes or systems in ways that are not visible until something goes wrong. In these cases, workers may not realize they are operating under such a tradeoff because the system has not enabled them to identify, understand or manage the risk. Often, frontline workers want to do the right thing, but previous decisions may leave them with no good options or without the necessary tools to make the safe choice.

ALIGNING BUSINESS DECISIONS & SAFETY

- **Trace decisions to frontline risk.** Map how strategic decisions such as staffing cuts, acquisitions, or production targets cascade through processes and constraints to shape the risks workers face on the job.
- **Reassess risk after major business changes.** Whenever leadership reduces head count, expands capacity, acquires facilities or delays capital investment, conduct a formal safety and risk reassessment to identify new operational pressures.
- **Identify and act on SIF precursors early.** Monitor for SIF warning signs such as compromised controls, operational constraints or normalized work-arounds before they combine with hazards to produce an incident.
- **Treat work-arounds as system signals.** Document and escalate exceptions or informal practices that workers use and treat them as indicators that procedures, resources or system design need correction.
- **Share accountability for risk across leadership levels.** Ensure that leaders who make strategic or structural decisions also track and respond to the downstream safety impacts of those decisions.
- **Engage workers to uncover hidden tradeoffs.** During site visits, ask employees where procedures conflict with reality or require improvisation to surface systemic pressures before they lead to unsafe choices.

The Hidden Architecture of Risk

Leaders frequently make reasonable decisions, such as acquiring aging facilities, restructuring, reducing head count or expanding capacity, but do not fully anticipate how these decisions shift risk downward. They rely on local operating conditions to absorb the pressure. As a result, workers may be left to figure out how to make do, potentially using unsafe work-arounds. To truly protect workers, organizations must recognize how their strategic decisions create exposure and not limit their view to frontline hazards.

The authors have been studying leadership decision-making and its relationship to serious injuries and fatalities (SIFs) for 10 years. Overall, the authors have analyzed 365 SIF events and identified the decisions that were critical to the event (Krause Bell Group Inc., 2025). To understand how these decisions shape risk, a consistent set of variables called the decision profile is captured for each event. The decision profile is a four-part lens that shows where a decision sits in the organization, what type it is, how it was made and how it connects to other decisions in the network (see Figure 1, p. 30). This structure enables analysis of hundreds of events with a common frame for identifying patterns that repeat across sites, functions and industries. This article presents examples of how common business decisions, once mapped through the decision profile, reveal systemic exposures that are not visible when looking at incidents in isolation.

Strategic Decisions May Create Downstream Risk

Every serious or fatal event analyzed with the decision profile is the product of more than one decision. Strategic, system-shaping choices made upstream often cascade through layers of the organization, shaping prescribed processes and influencing adaptive actions at the front line. In this translation, operational constraints emerge, sometimes explicitly, as with budget cuts or staffing limits, and other times only when the system is under stress. Bias can echo at each stage, and in some cases becomes amplified as decisions move closer to the front line. The following examples reveal how upstream overconfidence, cost bias or misplaced assumptions may resurface as work-arounds, missed hazards or unsafe improvisations.

The risk translation model in Figure 2 (p. 30) shows how this cascade functions. It illustrates the relationship between system-shaping decisions, the constraints they can create and the decisions that

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follow, whether prescribed by the system or adapted in the moment. This same pattern is visible in the five case examples in this article.

The five example cases listed in this article illustrate this framework using real SIF events drawn from cases included in the Krause Bell Group decision database (Krause Bell Group Inc., 2025). In each example, a seemingly reasonable business decision carried unintended risk once it collided with local realities. The examples demonstrate how upstream production pressure, cost bias, leadership overconfidence, misplaced assumptions and optimization bias resurfaced downstream as normalized work-arounds, missed hazards or unsafe improvisations.

FIGURE 1
DECISION PROFILE: VARIABLES OF INFLUENCE

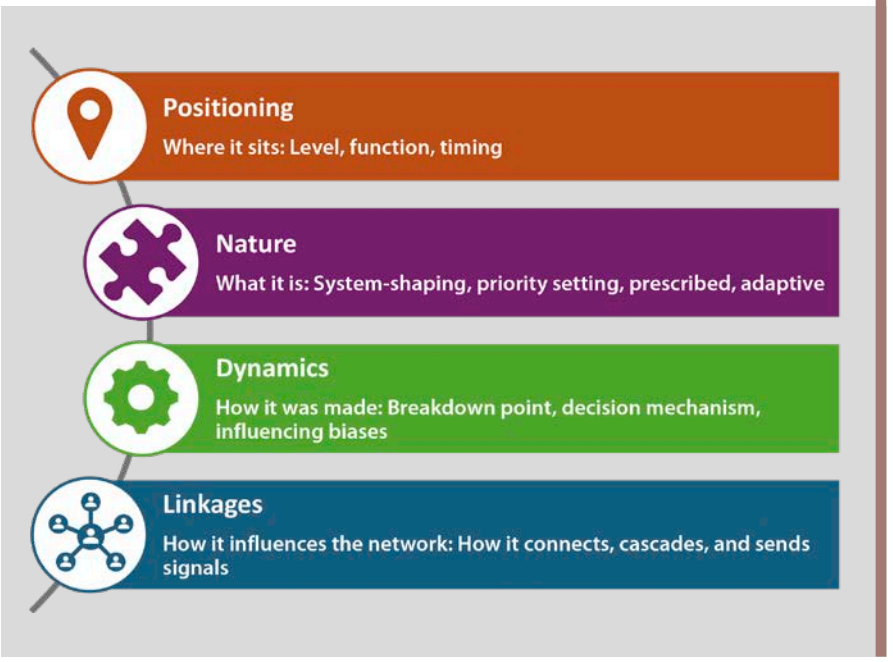
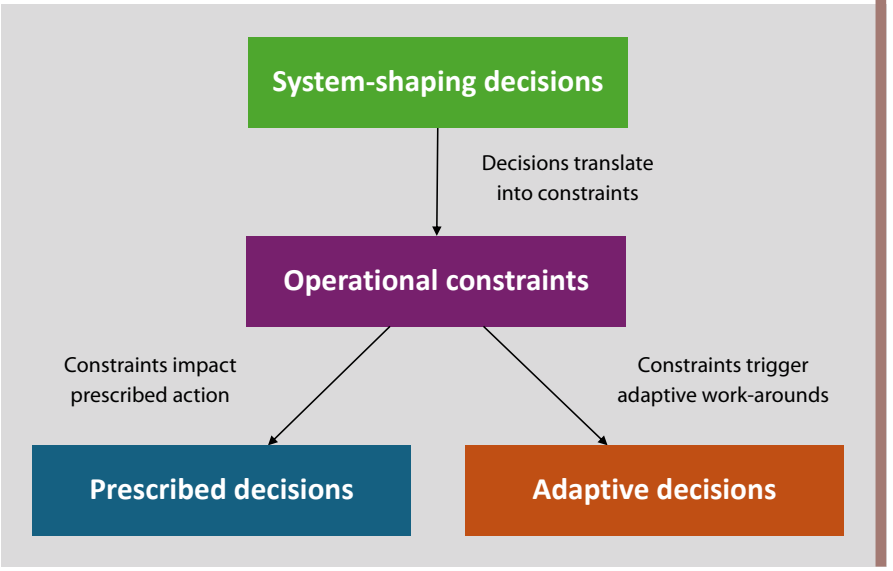


FIGURE 2
RISK TRANSLATION MODEL



1. Maintaining Production in Aging Facilities Without Reinvestment

Decision: Keep aging assets operational while delaying capital investment.

Implication: In one case example, as equipment reliability declined, workers faced mounting pressure to meet production targets without the tools, resources or system support necessary to do so safely. With maintenance issues escalating and investment deferred, informal work-arounds became normalized. Risky improvisations such as overriding lockout/tagout procedures or interacting with energized equipment became common out of necessity.

This context showed up in a case where repeated conveyor failures created significant disruption. Rather than addressing the mechanical root cause, the only control implemented was administrative in nature and relied on worker compliance despite the known frustrations. Unsafe actions at the front line were predictable outcomes of unresolved pressures. When the conveyor jammed again, a worker attempted to clear it without fully isolating the energy source. His hand was pulled into the equipment, resulting in a serious injury. This was a foreseeable outcome of continued production demands layered on top of aging infrastructure, inadequate controls and normalized deviation, all conditions that the authors have noted as present in many serious incidents.

2. Reducing Head Count While Demanding Higher Output

Decision: Cut the workforce as a cost-saving measure while increasing productivity expectations.

Implication: In this case, systems were stretched to cover more work with fewer people without a full risk reassessment. The contractor permitting process was centralized, unintentionally decreasing oversight over contractors with a known high tolerance for working around powerlines and a history of parking underneath them. As a result, contractors deviated from safety protocols unnoticed, culminating in a tragic event when a vacuum truck boom was raised into a live powerline.

3. Scaling Through Acquisitions Without Fully Understanding Risk

Decision: Pursue rapid growth by acquiring new businesses.

Implication: In one case, corporate standards still being developed by a relatively young parent company were imposed without fully accounting for the acquired company's systems, risks or context. Critical training resources were eliminated, and key operational knowledge was lost. Safety personnel and project managers without deep understanding of the operational risks were assigned to the acquired organization, which now lacked critical training resources.

A newly assigned project manager approved a prework assessment without recognizing a serious hazard involving a bucket truck with a swiveling boom and control panel, but no full platform for the operator to safely move with the equipment. The operator was seriously injured when the controls shifted during use. This incident was the outcome of multiple systemic gaps (leadership unfamiliarity, reduced resources and impaired standards) combining to increase frontline risk.

4. Launching Greenfield Operations Without Tailored Risk Systems

Decision: Expand capacity by opening a new facility while leveraging existing infrastructure.

Implication: A new greenfield refinery used legacy smelter permitting systems that did not match the unique risks of the new operation. During a cold shutdown, supervisors who had been put on a development plan due to not meeting performance expectations were left in place and continued to not execute the verifications required by the permitting process. The facility was flooded with more contractors than the permitting system and staffing could handle. Ultimately, the system broke down; a line was mistakenly de-isolated while a crew was actively working on it, leading to a major steam release incident.

5. Layering Risk Through Design Choices & Emission Controls

Decision: Standardize wellhead design across regions and eliminate methane-powered pneumatic devices to meet emission and cost targets.

Implication: In this case, the overlapping decisions made safe operation and troubleshooting significantly more difficult in practice. Although aligned with general industry norms, the standardized wellhead design was not well suited to the environmental and infrastructure conditions at certain legacy sites. As a result, it took more time and effort for operators to safely verify pressure isolation between the master valve and lubricator, particularly during cold-weather interventions.

At the same time, the removal of methane-powered pneumatic systems, which are often used to support plunger lift operations, contributed to increased plunger instability in aging, waxy wells during extreme cold. In one incident, after multiple failed attempts to clear what was assumed to be a wax blockage, an operator removed the lubricator cap and attempted to dislodge a stuck plunger by tapping it with another plunger. This released trapped pressure beneath, ejecting fluid, sand and debris with force. The operator was struck and seriously injured. This event resulted from layered design and policy decisions that eroded the practicality of procedural safeguards and left the worker in a situation where the safest choice became the hardest to make.

From Frustration to Support: Rethinking Risk Ownership

Each decision in these examples made business sense at the executive level. Yet, in execution, they created systemic exposures: misalignments between how work is imagined and how it is actually done (Hollnagel, 2014). In every case, familiar patterns emerged that created SIF precursors:

- a hazard (e.g., energized equipment, electricity, gravity, steam, pressure)
- a compromised control (e.g., lockout/tagout, permits to work, prejob assessments, training, standard operating procedures)
- often, one or more risk amplifiers (e.g., operational constraints, drift into failure or normalization of deviance, goal conflicts and misaligned incentives, change)

Leaders at various levels of the organization are typically aware that these conditions exist. But they often lack the time, resources, authority, knowledge or support to fix them, and so a tradeoff is made, and deviation is normalized.

In nearly all of the examples shared, the same underlying decisions and resulting operational constraints appeared in other analyzed incidents. These are recurring patterns, not isolated situations. The constraints created by these decisions actively shape the conditions that lead to many incidents, far beyond a single event.

These conditions arise through interconnected decisions, not in isolation. It accumulates across a network of decisions over time, across departments and through compounding operational realities, as illustrated in several of the preceding examples. These are classic latent conditions: hidden system weaknesses that undermine controls long before failure occurs (Reason, 2000). If we fail to understand and anticipate how decision networks influence frontline behavior, we leave workers to manage contradictions they cannot safely resolve. When workers are consistently forced to bridge these gaps on their own, it erodes trust, fosters normalization of deviance (Vaughan, 1996) and disconnects them from the organization's goals. Over time, these patterns create the culture, and culture becomes the system's most persistent barrier to safety.

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Behavior Still Matters

It is important to be clear that while this article focuses on decisions, individual behavior still matters. In fact, behavior is often where risk becomes visible and where accountability tends to land.

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But behavior is only part of the story. The choice to follow a procedure, take a shortcut or stay silent when something does not seem right is often shaped by the system around individuals. What is seen as behavior is often the product of upstream decisions: how procedures are written, how performance is measured, what tradeoffs are normalized and which constraints are left unaddressed. When workers behave unsafely, it can be from ignorance or recklessness, but the more common driver found in the authors' analysis of 365 SIF events was how the system had been designed or left undesigned. The focus of this article on decisions is to understand and improve the conditions that make safe behavior possible in the first place, not to excuse behavior.

What Needs to Change

Organizations must do more than manage hazards, they must also design decision systems that make the safe choice the easy choice. To change behavior, the system of decisions that make certain actions more likely than others must be changed. Operational constraints will always exist. The goal is to first acknowledge them and then design decisions, priorities, workflows and accountabilities at the right levels so that when constraints emerge, workers are not put in impossible positions.

- **Map how decisions and decision networks shape exposure.** Trace how strategic and structural decisions cascade to the front line. Look at both individual choices and the network of connected decisions that accumulate across levels, functions and time, and recognize how risk moves through that network and builds as decisions interact. Use both prospective methods (e.g., during risk assessments) and retrospective methods (e.g., after incidents) to uncover how decisions introduce tradeoffs or erode controls.
- **Strengthen decision-making around SIF precursors.** Invest in systems that surface and address SIF precursors early, before a serious event occurs. Ensure that precursors capture the critical risk amplifiers, such as operational constraints, normalization of deviance and organizational silence, that are eroding the effectiveness of controls.
- **Create a system that supports, documents and escalates exceptions.** When strategic or system-level decisions introduce new risks and create gaps between procedures and frontline realities, provide interim safe operating procedures as approved exceptions. Each exception should be documented, reviewed and escalated as a signal that the system requires adjustment. Treated this way, exceptions become precursors; they offer visibility to leadership of where workers are compensating for gaps and create a pathway to redesign before those gaps lead to a serious event.
- **Share risk ownership across levels.** Decisions that shape roles, resources or workflows must carry shared accountability. Leaders who define or approve those designs must also be responsible for monitoring their downstream impacts and responding when misalignments emerge. Create systems where those at the working interface can safely escalate risks and see evidence that leadership acts on them.
- **Monitor system strain through leading indicators.** Use both metrics and behavioral cues to detect when the system is under pressure. Watch for early signs like rising rework rates, fewer near-miss reports, increased informal work-arounds, escalations or unchanged output despite reduced staffing. These patterns can signal that people are compensating for hidden tradeoffs and that the system may be operating beyond its limits.
- **Surface tradeoff pressures through field engagement.** On site visits, go beyond compliance checks. Look for normalized work-arounds, quiet rule-following or overreliance on specific individuals to keep things moving. Ask workers direct questions. Where do you have to get creative? When does the job get hard? What does not match what is on paper? These conversations help turn behavior into signal and signal into action before a serious event occurs.

When done correctly, this approach protects both safety and production even amid the unavoidable pressures of modern business. In high-hazard industries, safety depends not only on what workers do, but on what the system expects of them and whether it has been designed for them to succeed safely. **PSJ**

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