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## How to Construct a Safety Management System (SMS) That Promotes Safety Culture in Your Organization

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The Federal Aviation Administration (FAA, 2020) describes a *Safety Management System* (SMS) as a formal risk management approach intended to assure safety risk control effectiveness. A successful SMS program is more than just the sum of documented processes; it is predicated on the complex, unseen, and perhaps even unwritten cultural climate that drives the organization. This organizational environment can be difficult to quantify and tricky to formulate. It is generally unique to the organization, and may be comprised of a set of norms, values, philosophies, rules, habits (Choudhry et al., 2007), stories (Galloway, 2016), and even vocabularies (Duhigg, 2012). These characteristics combine to form an organization's identity and can often drive the organization's conscious and unconscious value system. An organizational culture of silence, for example, may prevent employees from voicing their concerns, or may result in substantial consequences to the careers of those who do speak up. For these reasons, an SMS must be completely devoid of even the semblance of intimidation, and must reinforce, every day, that safety is the organization's first priority.

### SMS

An organization's SMS codifies the philosophical, procedural, and technical framework which forms an organization's ability to "understand, construct, and manage proactive safety systems" (Stolzer & Goglia, 2017, p. 15). It is comprised of four basic components: (1) Safety Policy, or the organization's documented commitment to safety; (2) Safety Risk Management, hazard identification, assessment, and control; (3) Safety Assurance, monitoring risk controls; and (4) Safety Promotion, development of an environment of institutional knowledge capture and sharing, effective communication, and training (FAA, 2020). The SMS establishes policies and procedures which document the organization's commitment to safety, defines its safety objectives, and specifies the roles, responsibilities, and accountabilities of personnel at all levels of the organization (FAA, 2020). It also incorporates a closed-loop system that identifies, analyzes, characterizes, assesses, controls, and tracks risk, consistently measuring and monitoring performance. The system further assures safety by collecting, managing, and monitoring operational data, and investigating, auditing, and assessing performance and implementing corrective actions, including those of product and service providers. Finally, the system promotes safety through a combination of training and communication, creating an environment conducive to the safety objectives of the organization.

Bottani et al. (2009) studied the performance of SMS adopters and non-adopters by surveying 160 safety (36%), quality (16%), financial (16%), production (11%), and logistics (7%) managers, as well as other business functions (14%) in 116 companies. The researchers asked general questions about the employer, followed by questions about accidents occurring within their organizations and root

causes, and ending with questions weighing company performance against the benefits expected through adoption of an SMS. Responses revealed companies adopting an SMS suffer substantially fewer accidents annually. They also perform significantly better in assessments of the perceived importance the company attaches to safety and how risks in the workplace are communicated to employees, the attitude to update risk data and to assess risks, and the attitude to implement employees training programs.

### **Safety Culture**

Safety Culture is a broad term that came into existence in the 1980s (Reason, 1997) and received particular attention following two fatal 1986 explosions: the loss of the Space Shuttle Challenger and the Chernobyl nuclear power plant reactor (Galloway, 2016). Reason (1997) defined *Safety Culture* as meeting four criteria: (1) *Reporting Culture*, one where employees freely report errors and near-misses; (2) *Just Culture*, a non-punitive, trusting environment, where the system rather than the employee is held accountable for errors; (3) *Flexible Culture*, where employees are so well-trained and where their skills, experience, and abilities, are so well respected, that management is able to cede control to front line experts under conditions of crisis; and (4) *Learning Culture*, where the organization is able to draw the right conclusions and implement changes as needed based on data from its safety information systems. Together, these criteria create an *Informed Culture*, where managers and operators have full awareness of all the factors that affect safety in a system. When it comes to SMS, an Informed Culture is, essentially, a Safety Culture.

Gerede (2015) conducted a study on aircraft maintenance organizations in Turkey to identify the challenges of effecting an SMS into practice. A two-day workshop was held in the summer of 2012 with 52 SMS managers and specialists, quality supervisors, and training managers, attending from 24 maintenance organizations and the Turkish Directorate General of Civil Aviation (DGCA). The “top 3” challenges of putting SMS into practice were identified as: (1) a failure to create a Just Culture, (2) a fear of punishment that impairs reporting, and (3) a punishment culture by the Civil Aviation Authority (CAA) which hinders voluntary reporting. The importance of developing a Just Culture is a key takeaway from Gerede’s study, as its absence “feeds a culture of fear and impairs both the proactive and predictive components of the SMS” (Gerede, 2015, p. 111). An environment of blame, with “no distinction between human error and violations” (Gerede, 2015, p. 111) is antithesis to learning from mistakes and ensuring an organization’s continuous improvement.

Safety Culture requires a trusting environment, where sharing and learning are valued and rewarded. Such an environment provides Psychological Safety, a necessary precondition for continued success. *Psychological Safety* is defined as “a

shared belief held by members of a team that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 350). When beginning any teamwork activity, people automatically assess their environment to determine their expected repercussions of risk-taking (Roussin et al., 2018). If they feel safe, they will openly participate, reflect, and learn or discuss. If they feel unsafe, they will shut down or withdraw. This safety climate is highly correlated to the level of trust employees have in their coworkers and management (Avram et al., 2014). “Safe behavior rises and falls in tandem with a set of variables that relates specifically to workplace culture and that mutual trust among participating individuals forms the foundation on which any culture develops” (Dawson, 2002). Not only does trust in supervisors and colleagues influence compliance with safety procedures, but it is also required if an organization is to expect employees to report mistakes and errors in safety procedures, so safety can be honestly monitored and continuously improved (Roussin, 2018).

Attentive and engaged management also contributes to a reciprocal culture of communication and trust. A 1920s study of Western Electric Company’s Hawthorne facilities began as a study to understand the importance of lighting on productivity. Instead, the study uncovered that productivity improved simply due to the observation itself (Minter, 2013). Referring to the Hawthorne study, Florczak (2003) suggested that when management created an environment that gave individuals attention, workers felt valued and became more motivated and attentive. He concludes the management attentiveness necessarily also made for safer employees, who were more open to following management’s safety practices and more engaged in the process. Regular check-ins keep employees attentive and motivated, and thus also safer, and more likely to bring up problems or suggestions.

One of the best examples of the value of instituting a Safety Culture in an organization took place in the late 1980s. Paul O’Neill was a newly hired CEO, brought on board to lead a transformation at Aluminum Company of America, a failing international aluminum manufacturing conglomerate known colloquially as Alcoa (Duhigg, 2012). O’Neill intuitively understood that safety would be both a driver for change and a metric for success. By focusing on safety, O’Neill was able to effect other changes that rippled through his organization, creating an environment that encouraged employees to propose suggestions for improved processes, and even to shut down a production line if they became overwhelmed. By creating a Safety Culture that permeated his entire organization, O’Neill’s leadership created an environment that encouraged employees to speak up when they observed safety concerns. As a result, Alcoa dramatically reduced costs, improved product quality, and increased productivity. As Alcoa’s success story illustrates, safety systems that welcome employee feedback can have dramatic effects on the business by increasing employee engagement and productivity,

reducing operational costs, boosting safety ratings (when applicable), and improving the customer experience.

### **Principled Dissent**

Graham (1983) defined *Principled Organizational Dissent* as a “protest and/or effort to change the organizational status quo because of a conscientious objection to current policy or practice” (Graham, 1983, p. iv). There is evidence that Principled Dissent enhances workplace safety, and that, conversely, one of the greatest risks to employee safety is the employer who attempts to silence its employees (“Dissent Boosts,” 2013). Suppressing dissent creates a toxic and unprincipled environment that suffers from preventable mistakes (Shahinpoor & Matt, 2007) and therefore risks employee safety (Rebbitt, 2013). Hierarchical organizations tend to be particularly destructive because they do not value or approve of creativity nor dissent (Shahinpoor & Matt, 2007), while organizations with matrix reporting structures tend to embrace dissent and have better safety performance metrics (Rebbitt, 2013). Regardless of size or reporting structure, how an organization responds when safety concerns threaten cost or schedule (Kassing, 2011) sends a strong signal to employees about whether principled dissent will be respected or even tolerated.

There are examples of organizations that deliberately create an environment that not only makes it easier for concerned employees to speak up—they make it an *obligation* (Scott, 2017b). Apple’s Steve Jobs was a master at coaxing employees to argue their position. In her book, Scott (2017a) recounts a colleague’s experience arguing with Jobs about an idea, and it later turned out that her colleague was right. Rather than apologizing for his mistake, Jobs marched into the employee’s office and started yelling: “It was your job to convince me I was wrong, and you failed!” After that, the employee argued his position until one of them had convinced the other. Jobs’ unconventional approach would later prompt Andy Grove, CEO of Intel to bark in frustration, “Steve ALWAYS gets it right!” When employees feel an *obligation* to get it right, they feel free to voice their dissent. The result is typically a better outcome in the long term, even when concerns threaten short term cost margins or schedules.

The Religious Society of Friends (Quakers) grants extraordinary power to any member of the community, who may express dissent at any meeting simply by declaring: “I am unable to unite with the proposal” (Shahinpoor & Matt, 2007, p. 46). In doing so, the member automatically stops the action that has been agreed upon by the rest of the group and forces the community to continue deliberations on the proposed topic at hand. Quaker business customs were “deliberately designed to maintain unity while allowing the utmost possible tolerance for individual views” (Pollard et al., 1949, p. 55). The dissenter is given this authority because it is assumed that she or he is expressing “profound matters of conscience”

(Shahinpoor & Matt, 2007, p. 46). This custom signals to all the members present that the community is expressing their conscience, and that the dissenter is no different than the group, all of whom share an environment in which everyone is simply seeking the truth. An additional benefit of the practice is that it helps the community avoid the pitfalls of *Groupthink*, defined as “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members’ strivings for unanimity override their motivation to realistically appraise alternative courses of action” (Janis, 1972, p. 9). Groups that find themselves in this mode of “extreme concurrence seeking” (Turner et al., 2014, p. 118) would do well to establish an environment where any member has the authority to refocus deliberations or question assumptions in pursuit of the truth.

There are plenty of examples where employees expressed Principled Dissent, only to find their careers ruined as a result. In 2010, star surgeon Dr. Paolo Macchiarini was hired at the renowned Karolinska Institute in Stockholm, Sweden, the same establishment that awards the Nobel Prize in Medicine. Dr. Macchiarini began to partake in a series of groundbreaking surgeries that replaced patients’ windpipes with plastic stem cell-treated replacements (Fountain, 2014; Herold, 2018). The patients had been in stable condition pre-surgery, yet all eventually died in horrific agony as a result of Macchiarini’s procedure. Rather than report the results, as would be expected by medical ethics, the renowned surgeon continued performing surgeries. Four whistleblowers took it upon themselves to study the patients’ medical records and report their findings—that the patients had, essentially, been mutilated—to the Institute’s President, Dr. Anders Hamsten. To their surprise, Institute management, more concerned with a \$45 million grant and its own reputation, responded with intimidation and retaliation, systematically discrediting the reputations of the whistleblowers and nearly ending their careers. How an organization characterizes its own tolerance of Principled Dissent is perhaps less important than how it actually responds when an employee disagrees with company policy or business decisions (Kassing, 2011).

### **Conclusions and Recommendations**

An SMS codifies an organization’s commitment to safety, its risk management and monitoring practices, and its ability to permeate and operationalize its institutional knowledge throughout the organization. Entities spend considerable resources building robust SMSs, indicating safety is clearly a corporate value in which they are willing to invest. Yet where organizations often fail is in neglecting to develop their Safety Culture. This includes a Reporting Culture, a Just Culture, a Flexible Culture, and a Learning Culture. Together, these form an Informed Culture. When Informed Culture is given a trusting environment where Psychological Safety values and rewards sharing and learning, a culture of safety can thrive. Perhaps most importantly, employees feel empowered to express

discomfort with safety practices. When employees believe Principled Dissent is not just expected but also their *obligation*, they can feel free to extract themselves from the group dynamics or team cohesion that often result in Groupthink. These expressions of Principled Dissent can have far-reaching effects on organizations, particularly safety-critical organizations, including improved safety, quality, productivity, employee engagement and retention, and customer satisfaction.

Building a strong Safety Culture is simply good business—therefore it is beneficial for safety-critical organizations to understand how to create an SMS that encourages the voice of dissent. The following recommendations are aimed at the leader who is building or re-evaluating an SMS, and who is committed to creating an environment that encourages employees from every part of the organization to speak up when they identify safety concerns.

#### **Safety Policy**

- As you develop policies and procedures, spell out your mechanisms for enabling and encouraging reporting. Ensure employees from every part of the organization know that human error and systemic problems will be handled without blame. Your policies should reinforce a Just Culture that distinguishes between human error and violation of rules. If they feed a culture of fear of reprisal it will impede the adoption of your SMS.
- Define the chain of command that a safety report will follow. This ensures transparency in the process, which enhances Reporting Culture. It also ensures the report is shared within the organization or escalated to the next higher authority as appropriate.

#### **Safety Risk Management**

- Develop a written risk management plan and ensure there is a mechanism by which risks are communicated to employees. Set a continuous feedback loop that identifies problem indicators and define roles and responsibilities that identify who is to act on problem indicators, so your organization can address problems quickly.

#### **Safety Assurance**

- Data is dependent on Reporting Culture and directly contributes to Informed Culture. Metrics can serve as a driving force that has enormous effects on an organization, as illustrated by Alcoa's transformation (Duhigg, 2012). Data can also help teams combat Groupthink, check assumptions, and approach debates with clarity and well-thought-out rationale. Start by identifying the key metrics of success that drive your organization's problem indicators and results. Develop systems that capture data about your organization's performance and establish a mechanism for continued refinement of these systems over time. Establish efficient systems that allow employees to request or share data which can be used for decision-making.

- Management controls allow management to reinforce Safety Culture without being present. However, as the Hawthorne study (Florczak, 2003) suggests, leadership must also be present, engaged, and attentive, and must invite dialogue and build trust.

### **Safety Promotion**

- If your high-risk organization is hierarchical in nature, ensure management is especially conscious (and public) about valuing and approving of creativity in your enterprise.
- Training is an opportunity to teach new and existing employees how to do their job safely and reinforces both Safety Culture and Psychological Safety. Employees must feel safe learning and failing during training, and it must be clear during training that you value a Learning Culture not only during training but also in the course of their work.
- Training must reinforce Just Culture by including the following key takeaways: (1) yours is an environment that is truth-seeking, not ego-feeding, as demonstrated by Shahinpoor and Matt (2007); (2) in your organization, as at Jobs' Apple (Scott, 2017a, 2017b), there is an *obligation* to dissent; (3) among your teams there is not a lack of respect, but rather an absence of deference; and (4) everyone is welcome to speak their conscience, and all dissenting opinions are heard.
- Understand that how your organization responds to Principled Dissent is far more impactful than how it *claims* to respond (Kassing, 2011). Remember that dissent it is not an expression of criticism (Shahinpoor & Matt, 2007), but rather an expression of conscience, and ensure the entire management chain treats it as such.



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