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## How to Turn Around a Failing ERP Implementation: Project Management Routines as Boundary Objects

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#### EDITORIAL NOTE

**Project Management Routines as Boundary Objects** addresses an age-old problem: how to turn around large, troubled projects. That a significant number of larger technology and IT initiatives fail in one way or another is a well-known fact. Many times, the signs of such trouble are written on the wall early on. But what should managers and development teams do in such situations? A significant body of literature has examined ways of addressing managers' emotional and cognitive biases that lead them to continue highly troubled projects. This "escalating commitment problem" drives managers to throw good money after bad money – in most cases with dire outcomes. In such situations, managers should pull the plug. But there is another option. Battleson and Matthiassen take a fresh look at the problem in this interesting qualitative case study of a troubled ERP project. They analyze what managers should do differently when they see the writing on the wall and still want to continue the project. They emphasize the central role of team-level sensemaking, which reflects how project teams read the situation and focus their attention. They point out the ironic importance of making things simpler, as well as the importance of boundary objects – the changing and stable daily and weekly routines that guide the project team's focus on key areas: how to run project meetings, how to organize weekly activities, how to manage the activity log of the project. Battleson and Matthiassen also point readers' attention toward building up team members' individual accountability, building shared engagement and commitment, and learning to read and attend to important cues in the environment. The authors use Weick's theory of sensemaking and concepts related to boundary objects (as things that enable sensemaking across boundaries) to highlight a way forward in troubled but common managerial contexts. Although the case study focuses on ERP systems, the findings are applicable in any large, multi-stakeholder project that entails a complex change agenda.

## How to Turn Around a Failing ERP Implementation: Project Management Routines as Boundary Objects

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#### ABSTRACT

Enterprise resource planning (ERP) systems are very challenging and expensive to implement, and past research recognizes that these projects continue to suffer from high failure rates. The factors that contribute to these failures have been extensively examined, but we know little about how to turn failing projects around. In response, this research presents a case study of a failing ERP implementation project that was successfully turned around over a twenty-month period. Adapting a theory of sensemaking in relation to boundary objects, we explain how a new project manager helped team members to share their individual perspectives on the problematic situation and together develop new directions through mindful enactment of project management routines. In this paper, we offer a detailed empirical account of the ERP project turnaround; practical lessons managers can use to intervene in failing ERP projects; and a theoretical model of how project management routines as boundary objects can help participants make sense of cooperative work in the absence of consensus.

## SYNOPSIS

### Purpose

The purpose of this paper is to educate executives, managers, and team members involved in failing enterprise resource planning (ERP) implementations on project management governance for successfully turning the project around. The project management governance involves mindfully engaging in project management routines to help team members individually to make sense of an ambiguous situation and to ensure their varying views work together towards the project's successful completion.

### Problem of Practice

The extreme difficulty of implementing ERP systems is well-documented, as is the tendency to significantly exceed planned budgets. When managers and some team members are committed to an ERP project's failing course of action, the potential results include escalating costs and, ultimately, termination if not successfully turned around. Such turnaround efforts are complex processes that require mindful enactment of project management routines to help team members share their diverging individual perspectives and together find new directions towards successful completion.

### Results

Management and project team members confirmed that an ERP project, Project MELANGE, was committed to a failing course of action. In fact, some considered that the project had already failed although no one would openly admit it. After a new project manager was assigned, the ERP project was successfully turned around and completed after twenty months. The project manager mindfully created a space in which team members, in the absence of consensus about what to do, used project management routines as "boundary objects." They then engaged in "sensemaking," using the boundary objects as a framework. With the boundary objects as a framework and sensemaking as a shared goal, the team members

shared individual perspectives on the problematic situation and together developed new practices. These actions helped the members to make sense of the failing project as an ongoing, ambiguous, and problematic situation and to actively engage in turning it around. They were able to consistently meet milestones and go-live dates. The ERP project was successfully turned around and completed in twenty months.

### Conclusions

ERP projects committed to a failing course of action can be turned around and successfully completed. Through a single case study, we demonstrate how a new project manager mindfully orchestrated project management routines as boundary objects for the purpose of individual and shared sensemaking to help team members actively engage in turning the failing project around. The manager's interventions created a space in which team members, in the absence of initial consensus, could come to appreciate the problematic situation and together explore possible resolutions. As ERP systems continue to be implemented and upgraded with new technologies, the lessons learned from this case study can help turn failing ERP projects around to achieve successful outcomes.

### Practical Relevance

The capability to turn around failing ERP projects towards successful completion is paramount to help organizations improve organizational efficiencies and customer services enabled by these complex technologies. This capability involves appreciating a failing project as a complex problematic situation that management and team members have the tools to resolve. The goal is to transform the established commitment to a failing course of action into an opportunity for team members with divergent perspectives to contribute to a revised course toward success. The project manager plays a primary role in these efforts by supporting indi-

vidual and shared sensemaking based on project management routines as boundary objects. This approach can help to reveal how individual team members' differing perspectives can underlie and drive adverse behaviors and it can facilitate development of new shared perspectives that contribute to the turnaround efforts.

## METHODS

### Research Question

How can project managers facilitate individual and shared sensemaking among team members to turn a failing ERP project around?

### Method and Design

We describe a single qualitative case study in which a merger and acquisition required that the acquired company's ERP processes be moved into the acquiring company's ERP processes in a timely manner to meet federal regulations. The design of our case study relies on engaged scholarship (Van de Ven, 2007), the participation of multiple stakeholders, semi-structured interviews, and participatory observation. The project manager who led the successful turnaround of the project, called Project MELANGE, was the study's primary investigator, in collaboration with a researcher interested in ERP systems. We mitigated participatory observation and retrospective biases through data triangulation and by including more than one interviewer. Moreover, Patton (2002) suggests that researchers' personal experiences and closeness to data are essential to their insights and contributions: "In short, closeness does not make bias and loss of perspective inevitable; distance is no guarantee of objectivity" (Patton, 2002, p. 49).

### Data Collection, Sample, and Analysis

We interviewed seventeen team members using semi-structured interviews. Each interview lasted about one hour. In addition, during the twenty-month period of project turnaround, the study's primary investigator engaged in extensive participatory observation and in systematic development of project management deliverables. We complemented these data sources with a full range of project documentation, including plans, meeting notes, and specifications. We coded the data using NVivo qualitative data analysis software, which involved inductive coding of the failing project and its turnaround and deductive coding of key sensemaking properties. (See the Appendix on method.)

## MAIN BODY OF PAPER

### Practical Problem

An enterprise resource planning (ERP) system is a business software package that automates and integrates many business functions and processes, such as accounting, sales, distribution, and manufacturing (Nah, Lau and Kuang, 2001). According to Chen (2009), 40% of ERP projects do not meet the outcomes specified in the business cases that were used to justify the investment. In addition, Wang and Chou (2005) found that ERP implementation projects typically run 178% over budget, they take nearly 2.5 times longer than estimated, and they provide only 30% of the intended benefits.

Business problems, rather than technical challenges, are the primary causes of ERP project failures (Davenport, 1998). These problems often result from trying to implement industry “best practices,” which may not be well aligned with the strategic goals and culture of the organization (Davenport, 1998). Keil and Robey (1999) suggest that diverse organizational participants have to collaborate to turn projects around that are committed to a failing course of action. To achieve this collaboration, project managers, business and information technology (IT) subject matter experts, business area directors, and other team members must individually make sense of the problematic situation they face, confront diverging perspectives, and combine their insights into a shared understanding that can serve as a platform for communication and collaboration.

### Literature Review

*ERP Project Turnaround Success.* Two key benefits of ERP systems are accessing accurate and timely information across an integrated enterprise and improving customer and other stakeholder satisfaction by increasing the consistency of data (Poston and Grabski, 2001). Many organizations’ IT strategies therefore include ERP systems as key components (Ke and Wei, 2008). However, ERP implementations involve high complexity, cultural con-

**Table 1: ERP Project Characteristics**

Characteristic	Description	Reference
Complexity	ERP systems integrate multiple functions and units within and across organizations. ERP vendors develop preset software parameters based on “best practice” models within a given industry, adding to the complexity and introducing rigidity to the implementation process.	Davenport, 1998; Poston and Grabski, 2001; Robey et al., 2002; Umble et al., 2003; Schneider et al., 2018
Culture	Conflicts between existing organizational cultures and the best practices embedded in the ERP system exacerbate the difficulties of ERP implementation and make ERP projects prone to failure.	Nah et al., 2001; Poston and Grabski, 2001; Ke and Wei, 2008; Wickramasinghe and Gunawardena, 2010; Bintoro et al., 2015
Change	ERP implementations require profound changes in business processes and corporate culture. If people are not properly prepared for these imminent changes, then denial, resistance, and chaos will be the predictable consequences during the implementation effort.	Nah et al., 2001; Poston and Grabski, 2001; Robey et al., 2002; Berente et al., 2016; Berente et al., 2019
Competency	ERP implementations require substantial and diverse competencies, including effective leadership, business process knowledge, technical skills, and change management capability.	Davenport, 1998; Robey et al., 2002; Wang et al., 2005; Chen et al., 2009; Elkhani et al., 2014
Cost	ERP implementations are costly. ERP software is itself expensive, and organizations need to spend substantial resources on implementation team training, change management, and consultants to overcome implementation challenges.	Nah et al., 2001; Poston and Grabski, 2001; Umble et al., 2003; Wang et al., 2005; Ramasubbu et al., 2016

licts, and difficult change management (Berente et al., 2019), and they therefore require substantial and diverse competencies and resource investments (see Table 1).

Keil and Robey (1999) observe that committing to a failing course of action in complex IT projects is more common than turning the projects around. They argue that turnaround research is limited as a result but that such research is more important because it may provide solutions for very common and expensive problems. Effective redirection of a failing project includes the ability to recognize and share

problems and to create and implement new courses of action (Keil and Robey, 1999). Moreover, no specific factors lead to IT project turnaround. Instead, such efforts must be driven by the specific contexts and stakeholders of the project at hand: Appropriate actions are triggered by the variety of stakeholders and the potential actions that can lead to regaining control of a project.

Elaborating on this logic, Mahring, Keil, Mathiassen, and Pries-Heje (2008) explored the key roles involved in turning failing IT projects around. These roles constitute patterns of actions that may in-

fluence, or are perceived as influencing, a course of events. In addition, Montealegre and Keil (2000) suggest that turning a failing project around is a process comprising several triggering activities, rather than a single event that occurs when a commitment to a failing course of action has been recognized. They observe that turning a failing IT project around starts by recognizing ambiguous negative information and lack of consensus; it then unfolds as a complex and gradual process of revealing and developing individual and shared insights.

Studies have looked at how teams recognize problems and take specific actions during ongoing project operations. Using sensemaking theory in relation to “boundary objects,” researchers have looked at how participants, despite differences in background and perception, develop productive collaborations (Carlisle, 2002; Barrett and Oborn, 2010). For our particular case study of Project MELANGE, we adopted this framework, seeking to understand how project managers can turn a failing ERP project around. In the following section, we explain the mindful use of project management routines as boundary objects and explore their capacity to facilitate team members’ individual and shared sensemaking.

*Sensemaking using boundary objects.* Sensemaking can be defined as the process through which participants construct meaning around shared events (Huber and Daft, 1987; Weick, 1995). Waterman (1990) describes sensemaking as comprising the ways in which individuals “structure the unknown” (p. 41). In such contexts, “boundary objects” are shared sensemaking devices that allow participants with different backgrounds and perceptions to work together, even without consensus, by representing the objects around which differences in sharing information and work requirements can be negotiated and resolved (Star and Griesemer, 1989; Star, 2010). The underlying assumption is that in the presence of boundary objects, participants can achieve collaboration in conflicting and ambiguous

situations or crises because the objects afford a space in which they can articulate perspectives about what is similar enough to be recognizable by all, yet also identify the differences they face and possible work arrangements to address them.

In using Project MELANGE as a case study, we zoom in on the concrete activities through which participants leveraged boundary objects. As a framework for this analysis, we rely on Weick’s (1995) theory

of sensemaking. Sensemaking is a process that includes “the construction and bracketing of the text-like cues that are interpreted, as well as the revision of those interpretations based on action and its consequences” (Weick, 1995, p. 8). In this regard, sensemaking is not simply understanding, interpretation, and attribution; it involves making something sensible through engagement over time (Weick, 1995). During this process, the boundary objects form spaces of shared structure

**Table 2: Sensemaking Through Boundary Objects**

Sensemaking Property	Boundary Objects	Weick (1995)
Enactment	<ul style="list-style-type: none"> <li>Boundary objects afford participants opportunity to take part in constructing the work situation based on their individual actions and as basis for future action.</li> <li>Project management routines, such as project schedules, risk register, issues log, and status reports, allow participants to create objects for others to see and inspect.</li> </ul>	“I create the object to be seen and inspected when I say or do something” (p. 61).
Social	<ul style="list-style-type: none"> <li>Boundary objects support sensemaking as a social process that shapes interpretations and interpreting and recognizes a participant’s conduct as contingent on the conduct of others.</li> <li>Regular project meetings allow team members to share perspectives and receive feedback; they facilitate cross-team communication and collaboration; and they socialize professional and constructive behavior.</li> </ul>	“What I say and single out and conclude is determined by who socialized me and how I was socialized, as well as by the audience I anticipate will audit the conclusions I reach” (p. 62).
Extracted Cues	<ul style="list-style-type: none"> <li>Boundary objects afford participants opportunity to extract cues about the work situation as simple, familiar structures that become seeds from which they develop a larger sense of what may be occurring.</li> <li>Using project management routines teaches team members to share information. This sharing in turn influences roles and behaviors as part of their informed future actions.</li> </ul>	“The ‘what’ that I single out and embellish as the content of the thought is only a small portion of the utterance that becomes salient because of context and personal dispositions” (p. 62).
Identity	<ul style="list-style-type: none"> <li>Boundary objects afford participants opportunity to establish and maintain their identity in a work situation by sharing and receiving feedback on their individual perspectives.</li> <li>Team members are assigned a formal project role, but their identities change as a result of social exchanges. Such shifts can motivate them to successfully complete assigned project deliverables.</li> </ul>	“Identities are constituted out of the process of interaction. To shift among interactions is to shift among definitions of self” (p. 20).

with interpretive flexibility (Star, 2010) that allow participants to construct, share, and revise cues about the problematic situation and possible ways to address it.

ERP system implementations affect all functions of an organization and its relationships to suppliers and customers. As a result, they involve a wide variety of participants with different backgrounds and interests. To enroll these participants effectively in turnaround efforts, each of them must make sense of the implementation project, what it entails, and how it relates to his or her specific organizational role and skill set. Boundary objects can serve to refocus ERP projects by helping participants to articulate, share, and eventually find relationships among their individual perspectives.

To investigate these activities in the MELANGE Project, we adopted Weick's (1995) sensemaking theory and identified four sensemaking properties of boundary objects (see Table 2). These four properties are observable both in a general sense and in project management routines in particular:

- *Enactment property:* Boundary objects afford participants opportunity to take part in constructing (i.e., enacting) the work situation based on their actions, and this situational framework can then be used as a basis for future action.
- *Social property:* Boundary objects support sensemaking as a social process. In a relational, team setting, their social property shapes interpretations and recognizes participants' conduct as contingent on the conduct of others.

- *Extracted cue property:* Boundary objects act as simple, familiar structures that afford participants opportunity to extract cues about the work situation. The cues that participants pick up from the boundary objects become seeds for developing a larger sense of what problems may be occurring and why.

- *Identity property:* Boundary objects afford participants opportunity to establish, maintain, and change their identity in a work situation by sharing and getting feedback on their individual perspectives and their identity as it relates to other members of the team.

### Findings

*Evidence of failure.* The ERP implementation began as part of a complex merger that required the acquired company's business processes to be integrated into the acquiring company's. Business and IT participants in Project MELANGE described the project as being on a failing course of action. The evidence points to several reasons for failing: mixed priorities resulting in mixed technical and business solutions; inadequate methodologies; inadequate project planning, execution, monitoring, and control; and inadequate leadership. (See Table 3 for supporting quotations.) As a result of these problems, participants experienced issues such as confusion, lack of progress, frustration, and combativeness. The problems culminated in the recruitment of a new project manager.

*Project management routines as boundary objects.* The new project manager mindfully orchestrated the use of project management routines by assessing the needs of the project (Carlo et al., 2012; Weick and Sutcliffe, 2006) to effectively engage team members and help them frame the failing project as a problem. Attention to the project management routines helped the team members to break the problems down into manageable components and to focus attention on moving the project forward.

**Table 3: Evidence of Failure in Participant Interviews**

Interviewee	Quotation
Director	"It was definitely on a course to fail, and actually in some ways, you can say it reached a failure point. And what we had to decide was either discontinue the integration or basically totally replot the course."
Team Member 1	If the project had continued on the same course of actions, it "would be a disaster. We would not have gone live."  Issue resolution was ineffective: "We continued to trudge down the path.... It was either 'we are not going to make this date' or 'I don't have a decision on this important point in order to move forward on my code' or 'I need this.' You know, whatever it was—issues were not getting resolved.... There was no 'where do I go to get this issue resolved,' so we were spinning [wheels] but getting nowhere.... On the surface, it looked like we were working hard, but we were never moving forward."
Team Member 2	"Had nothing happened, the project would not have led to success. It was simply an impossible situation."
Integration Manager 1	"You had a group of IT people representing the [acquired company] that had basically shut the door on the [acquiring company], which for pride and other reasons would never admit that it had underestimated or made a mistake. So, left to its own devices, the project would have failed without some sort of an external infusion of resources."
IT Subject Matter Expert #4	During the business process workshops, "people walked out even more confused than they had been when they walked in because some people heard of new systems that they hadn't heard about before; so there was a lot of confusion about the final state, about the final architecture."

The intervention that created renewed efforts to avoid failure unfolded around a weekly project manager team lead (PMTL) meeting. The meeting created a shared space in which team members could interact based on a number of additional boundary objects: team status reports, a project schedule with milestone dates, an issues log, a business process master list, and configuration and development objects lists. Turning a failing project around is a complex and gradual process, and in the case of Project MELANGE, these PMTL meetings were a crucial component. The project manager did the majority of the talking in the first few PMTL meetings, but in the remaining meetings, participation broadened and other voices contributed to the forward momentum. Most participants embraced the meetings because they bought into the intention and benefits of consistently meeting milestone and go-live dates. As a result, the participants engaged in the meetings and leveraged the boundary objects, allowing them both individually and together to make sense of the problems plaguing Project MELANGE. Table 4 summarizes how the project management routines served as boundary objects to support sensemaking and team member engagement. The ongoing enactment of the boundary objects and the cues that participants could extract from them supported the socialization of team members into a new environment of individual and shared action. Hence, the mindful enactment of project management governance provided the “concrete activities” that made turnaround of the ERP project possible, based on explicit and sensible interpretations of the cues. Through their engagement in the PMTL meetings, participants started taking actions that could move the project toward its resolution.

*Role of sensemaking's enactment property.* Sensemaking requires action that engenders meaning, rather than simply requiring a response to a stimulus without understanding why or how it creates meaning (Weick, 1995). This difference was demonstrated by an IT business analyst who could not get the project managers to make decisions on key issues. She acted

by developing a business blueprint document, pushing for issue resolution, and, when necessary, escalating the issues to higher levels in the project organization. According to this analyst, “After not getting what I needed to move forward, I just ignored the project managers.... I just said, ‘I am going with my gut, and we’re going to keep moving forward.’”

One of the key boundary objects that helped to turn Project MELANGE around was the issues log. It gave voice to the participants, supported self-enhancement, moved from ambiguous to unambiguous conditions, and facilitated cross-team communication and collaboration. Moreover, the issues log required action: It required investigating, documenting, and resolving issues. These actions gave meaning to what the final ERP solution would be and identified expectations for completing deliverables according to project milestones.

*Role of sensemaking's social property.* Sensemaking is a social process that shapes interpretations and actions and recognizes a participant's conduct as contingent on the conduct of others. In turning around Project MELANGE, functional working relationships and sensemaking were sustained through the development of a common language and shared meanings, through the boundary objects, and through everyday social interactions—literally sitting together. Team Member 3 explained that the weekly PMTL meeting, which was interactive and included many different project roles, allowed team members to have conversations and had a significant effect on deescalating the project's problems:

It was a space where everybody was in, and the project manager was going through all the project management topics first. Then, we went across the room team by team and basically asked if there were issues in meeting the next milestone. That was the biggest impact of that change from being two independent teams [acquiring firm and acquired

firm]. We were finally able to come together as one team looking at one goal.

*Role of Sensemaking's Extracted Cue Property.* The project management routines created points of reference that provided organization and direction for turning Project MELANGE around. Team members extracted cues from these familiar structures (i.e., the boundary objects) to develop a larger sense of what was occurring. These points of reference and extracted cues provided a form-producing process that reduced ambiguity. One IT professional explained how two boundary objects (i.e., the Configuration and Development Objects Lists) created clarity on scope, status, and priority of work: “I think the biggest change was an exhaustive list of configuration and development objects and phases they have to go through, with deadlines for each object.... So we can see quantitatively very quickly where we are in terms of where we should be.” In addition to the significance of these points of reference, the IT professional explained that the previous project management meetings had been informal and lacked focus. In contrast, the new PMTL meetings were formal and scrutinized the team's progress, thus allowing team members to extract cues about their work's progress and how it affected other team members.

*Role of sensemaking's identity property.* Self-enhancement—which involves seeking and maintaining a positive cognitive and emotional state—was important to the participants. According to one IT business analyst, “I have to tell you: Team morale was dropping... because of the spinning. I mean, seriously, most of us were ready to roll off the project” because team members believed the project couldn't deliver the expected results to the business. To maintain a positive cognitive and emotional state, they “just ignored the project managers after a while.” According to the analyst, they focused instead on keeping their business partners informed about deliverables because “what makes me feel successful is that I have done the right thing for my role.” After the new project manager arrived, this participant's fo-



**Table 4: Evidence of Sensemaking Through Boundary Objects**

Boundary Object	Object Orchestration	Evidence of Sensemaking
<b>Project Meeting</b>	<ul style="list-style-type: none"> <li>▪ Conducted weekly for cross-team communication and collaboration and issue resolution, risk assessment, project deliverable status, and more. Team members shared and discussed concerns and contributions.</li> <li>▪ Gave team members a voice.</li> <li>▪ Enactment of boundary objects allowed team members to extract cues both for their identity enhancement and for socialization.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Director: “The previous leadership didn’t have an open dialog for understanding and resolving issues. In contrast, the new project management office did and was focused on resolving problems. Moreover, the weekly team lead meetings gave the team a voice and the PMO helped the team resolve issues in these meetings.”</li> <li>▪ Integration Manager 1: “Everybody’s voice was being heard, and we knew that there was a mechanism in place to gather that information and make the best decision for the customer.”</li> </ul>
<b>Project Schedule</b>	<ul style="list-style-type: none"> <li>▪ Bottom-up scheduling by team members was based on good faith estimates by subject matter experts who were held accountable.</li> <li>▪ Team members provided project schedule updates tracked to milestones.</li> <li>▪ Extracted cues drove individual enactment and social clarity about critical paths and created a sense of urgency.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team Member 4: “That way, you build schedules bottom up. Not only does that give you a better estimate; it also enables you to see if any of the underlying pieces start to shift and what the impact is on the overall project. I thought that was very significant.”</li> <li>▪ Integration Manager 1: “As part of the shift and the reevaluation based on business process and everything else, a more detailed project plan was put together.... The different teams could set goals and priorities around the plan and dates... and then project management would be validating them.”</li> </ul>
<b>Issues Log</b>	<ul style="list-style-type: none"> <li>▪ Issues were logged as either can go live, can go live with a workaround, or cannot go live.</li> <li>▪ Team members provided updates on actions for closing or mitigating issues.</li> <li>▪ Extracted cues drove individual enactment and social clarity about critical paths and created a sense of urgency.</li> </ul>	<ul style="list-style-type: none"> <li>▪ IT business analyst: “We started having meetings and talked about the issues that we were addressing in an issues log. We would address those issues, and make sure we got resolutions to most of our issues that day, especially if they were high priority. This made it easier for us to move forward.”</li> <li>▪ Integration Manager 2: “I think making people keep the issue log up to date and then sharing that weekly with everybody and pushing those issues to closure helped.”</li> </ul>
<b>Business Process Master List (BPML)</b>	<ul style="list-style-type: none"> <li>▪ Documented the functional scope and facilitated scope management and enterprise system design.</li> <li>▪ Used to drive business process workshops and business requirements and solution design.</li> <li>▪ Extracted cues drove individual enactment and social clarity on project scope in designing, testing, and implementing required ERP solution.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team Member 4: “We were told to focus on the business processes, so I guess that’s where the methodology kicked in. We started the BPML, walking through processes end to end both for [the acquiring organization] and for [the acquired organization], and then we started to connect the dots and identify decisions that had to be made in terms of systems, configuration of systems, data requirements, and interfaces.”</li> <li>▪ Integration Manager 1: “And it allowed the folks of different backgrounds ... to come together and say, ‘yeah that’s a business process we want to achieve,’ and now it got everybody focused on the same goal, whereas before, everybody was sort of stuck in their areas of comfort.”</li> </ul>
<b>Configuration and Development Objects Lists</b>	<ul style="list-style-type: none"> <li>▪ Documented the work plan for coordination and completion of configuration and development objects.</li> <li>▪ Team members reported weekly.</li> <li>▪ Extracted cues drove individual enactment and social clarity on scope and on dependencies of configuration and development objects for the ERP system.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Business Manager 2: “The biggest change was a comprehensive list of all the configuration objects and development objects. These are the phases that all of these objects have to go through, and there is a deadline for each phase of each object. So we can see very quickly where we are in terms of where we should be. Instead of being more of an art form, the whole project management was done in a more systematic way.”</li> <li>▪ Project Manager 3: “Everybody, particularly the team, was really happy because we could see things were moving, and it made a lot of positive energy within ourselves. Like we could see the blueprints getting signed off. We could start our core development work and testing, everything, and it made a lot of sense to us.”</li> </ul>

cus on keeping the stakeholders informed and satisfied and her desire to maintain a positive self-perception prompted her to act toward turning the project around.

The weekly PMTL meeting provided a space for cross-team communication, collaboration, and encouragement based on it and the other boundary objects. For example, one business analyst could not deliver the expected results to the business partners; but the PMTL meetings allowed the analyst to share her issues and receive the help she needed. Weekly status reports, attending the PMTL meetings, and updating the issues log were deliverables that the business analyst could manage and that helped move deliverables forward. In other words, the “spinning”

stopped, and the participants started to regain a positive cognitive and emotional state that contributed to turning the failing project around. By the end of the project, the analyst stated, “I loved the project. I grew a lot in that project, and I learned a lot of skills.”

*Evidence of turnaround.* Addressing the individual and project issues with the new project leadership interrupted the commitment to what had been a failing course of action and redirected the project to success, as evidenced by the comments from project participants in Table 5. The acquiring company integrated the acquired company into its ERP solution, and the project was considered successful: The business

operations were integrated on time and were running without issues.

### Lessons for Practice

The project manager’s interventions in Project MELANGE offer lessons for how to turn a failing ERP project around. The interventions involved mindfully orchestrated project management routines, in which boundary objects were used to support individual and shared sensemaking.

*Facilitate individual sensemaking.* Project management must establish proper governance and train project team members how to use project management routines effectively as boundary objects. This framework is critical for creating an ongoing flow of information that establishes important reference points from which team members can take their cues. One of the IT professionals explained: “The old way of the project was basically very general. You put a date out there and then you marched toward it without any breakdown on how to get there. Right? So, the biggest change was an exhaustive list of all the configuration and development objects and their deadlines.” These objects and deadlines were assigned to specific teams. Their explicit identification facilitated sensemaking as individual team members committed to assigned deliverables and deadlines that rolled up to collective project milestones.

*Cultivate individual accountability.* To become engaged in turning a failing ERP implementation around, team members need to recognize and share the problems they face. Individual accountability can be accomplished by having participants engage in project management routines as boundary objects. By presenting and discussing their own unambiguous information about the current project status and trajectory, they claim ownership of these elements of the project. Although participants in Project MELANGE privately had held negative information about the project (e.g., it was “definitely on a course to fail”), the bleak outlook was not shared and substantiated (i.e., its causes were not

**Table 5: Evidence of Project Turnaround**

Interviewee	Quotation
Client project manager	“A lot of folks turned to look at how we did the turnaround, what kind of governance we used and what the decision making was, and why we all of a sudden nailed all of the releases almost to the day for the next year and a half. So, yes, it was successful, and it became a good sounding board for the rest of the company.”
Team member 3	“We went live with no major problems. That was a big success. We did not disrupt [business operations] .... We also met our date after the assessment team came, and we made those changes to make the go-live successful. The people were trained correctly, and the operations were not impacted at all.”
Integration manager 1	Explaining the importance of mindful governance: “Basically [the ERP consultants] retrofitted their methodology into a moving train, in effect. So a project charter had to be written because one really didn’t exist. What issues were escalating? What were the issue logs? How did we track risk? All that stuff had to be retrofitted into a moving project. The business blueprint had to be inserted on the fly without derailing technical objects we knew had to be done anyway and derailing the timeline even further. So getting that scope and those documents in place and getting the project to stop moving forward long enough to make sure that we had the same goal in mind was hard.”
Director	The weekly PMTL meeting “...gave them [the team members] a voice. The PMO leading those meetings, it was very open, you know—get-it-off-your-chest type of situation. It was a very open dialogue to make sure we understood what the issues were, where bottlenecks were, so they could be resolved.”
IT business analyst	Confirming that the PMTL meetings helped to make sense of what was going on and to move the project to completion: “It was constructive in the fact that we were getting resolution to some of our concerns; we were allowed to voice our concerns without feeling like we shouldn’t be speaking.”

made evident), which led to “low morale.” Moreover, when negative information was shared with the project managers, the managers simply ignored it. The new project manager cultivated individual accountability by establishing project management routines that afforded team members frequent opportunities to share and discuss unambiguous and timely information about project activities and deliverables.

*Encourage shared commitment to progress.* Moving multiple project work streams forward simultaneously requires that senior management, project managers, and work stream leaders share a realistic status of the project, instead of adhering to a siloed and disconnected management style. Leaders need to establish clear points of reference that help team members communicate in a constructive manner. One of the business analysts in Project MELANGE reflected: “Before, there was a very informal weekly meeting that was very pleasant, but not very informative. It was replaced by once-a-week two-hour meetings, where the progress of every team was scrutinized and shown on the big screen, which brought up integration issues and required resolution.” To give individual team members a voice in the project and to promote team-building communication, the weekly PMTL meetings and related project management routines were used as boundary objects that could create a space where effective cross-team communication and collaboration could happen. Both individual accountability and commitment to the broader team are prerequisites for turning an ERP implementation around.

*Build collaborative turnaround capacity.* Project managers must help team members protect their opportunity for self-enhancement and also enable them to seek coherence in and proximity to how the “business” of the organization runs. Project management routines can serve as boundary objects that accomplish these needs: They can reinforce positive self-enhancement for individual team members and also help them to engage in collabo-

rative roles in which, together with others, they act to turn an ERP implementation—or any large-scale implementation—around.

Starting with senior management, team members must adopt different roles and identities depending on their role in and interaction with the project. For example, a project manager who is respected in the roles of a leader, coach, trusted advisor, and follower can better facilitate the requisite interactions among participants in a variety of contexts during turnaround efforts. Team members who are aware of their own capabilities as communicator, analyst, and change manager can help business units to assimilate ERP features that become available as the project proceeds and thus can contribute to turning the project around.

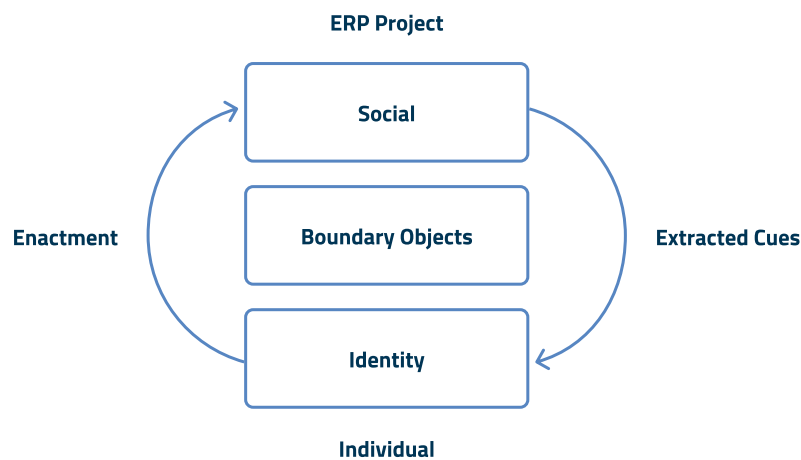
### Contributions to Theory

Our study adapts and extends sensemaking theory into a model of how project management routines, in being used as boundary objects, can facilitate sensemaking by team members and, in serving this function, can help turn a failing ERP project around. A failing project typically is rife with ambiguities and confusion and ultimately has to either terminate or reset and move toward successful completion. One means to work toward the latter outcome is for project managers to combine project management routines (as boundary objects) with the benefits of sensemaking theory. According to Weick and Sutcliffe (2006), individuals undertake sensemaking when they “engage in active information processing while performing their current tasks, such that they are actively analyzing, categorizing, and making distinctions in data (Krieger, 2005, p. 127).” Mindful recognition and use of the sensemaking properties of boundary objects allows the processes in ERP and other large implementation projects to be framed as a resolvable problem and broken down into manageable issues. Thus, the team can turn its project around and start making progress toward the project’s completion.

During Project MELANGE, the project manager orchestrated how project management routines would be used for the project. The routines were shaped by the idea that project renewal “is more successful when people do less, but do it more often, than when they do more, but do it less often” (Weick, 2004, p. 196). As expressions of Weick’s sensemaking properties and as part of the project’s everyday practices, the routines provided opportunities for new *social* leadership and for *extracting cues* both from the routines and structures and from the time with other team members that facilitated individuals’ sensemaking. Offering opportunities for development and expression of team member *identity* at the individual level, in turn, helped members to engage in the project’s turnaround. Finally, sensemaking using boundary objects contributed to team members’ *enactment* over time of their own responsibilities and of their participation in assessing and supporting the activities of their peers. This positive enactment then contributed to new project-level enactments as part of an ongoing virtuous cycle of project turnaround. These applications of sensemaking’s theoretical components are illustrated in Figure 1.

The *enactment* of project management routines as boundary objects affects the turnaround process by providing team members with ways to make sense out of and create meaning from intrinsic aspects of their actions (Star, 2010). Reciprocally, the turnaround process affects individual team members’ sensemaking when their dialogues at the weekly PMTL meetings focus on boundary objects as visible structures and cues (e.g., status reports and issues logs) leading to project renewal (Weick, 2004). These structures, cues, and interactions can help team members to develop a shared understanding of problems by focusing on key elements of the situation. In addition, the sensemaking drawn from the boundary objects sets their attention boundaries, imposing coherence and allowing them to articulate what is wrong and what the new direc-

**Figure 1: Model of Sensemaking Theory's Function in ERP Project Turnaround Through Boundary Objects**



tions for the situation should be (Weick, 1995).

The *social* context of team member interactions around boundary objects leads to cross-team communication and collaboration. Sensemaking's social element initiates a turnaround process that affects the team members' ongoing sensemaking about a situation that might have been mired in confusion and lack of consensus. The resulting workable relations and joint actions help to begin the turnaround process (Star, 2010). In defining sensemaking theory, Weick (1995) emphasizes the cognitive and social connections in organizations, which are understood to be "a network of intersubjectively shared meanings that are sustained through the development and use of a common language and everyday social interaction" (Walsh and Ungson, 1991, p. 60). As team members used boundary objects in a routine, shared fashion, and as they created shared meanings, Project MELANGE offered a social context through which they could develop and debate technical and business solutions.

*Extracted cues* affect a turnaround process as team members interpret and embellish the cues they extract from the boundary objects, based on their priorities. According to Weick (1995), cues extracted from

boundary objects are seeds from which people develop a larger sense of what may be occurring. Smircich and Morgan (1982) recognize the importance of these cues in organizational analysis. They state that "leadership lies in large part in generating a point of reference, against which a feeling of organization and direction can emerge" (p. 258). In addition, control over which cues will serve as this point of reference is an important source of power: Establishing a point of reference—for example, directing people's attention to the dye in a cloth rather than to the density of its weave to infer value—itself is a consequential act (Smircich and Morgan, 1982, p. 50). The boundary objects give team members a kind of regulated freedom to focus on cues that allow them to abandon ineffective activities and routines and to work toward making the business succeed with its ERP solutions. Thus, the team gains a sense of organization and direction that replaces a project's previous ambiguity and confusion (Star, 2010).

Finally, *identity* affects the turnaround process through team members' self-enhancement as they engage in problem solving based on the boundary objects. Just going along with the failing course of action is not an option in a turnaround situation. The increased transparency afforded by boundary objects challenges

team members either to engage to help fix project issues or to leave the project. Prior research suggests that psychological factors (e.g., self-enhancement) and sociological factors (e.g., roles) contribute to the complex, difficult, and ambiguous conditions of ERP projects (Aloini et al., 2007; Bintoro et al., 2015; Elkhani et al., 2014, Poston and Grabski, 2001). Our findings elaborate on this insight by suggesting that team members shape their identities through their interactions and their actions, and as their interactions and their capacity for successful action shift, so does their definition of self.

**Keywords:** enterprise resource planning, ERP, project management, project turnaround, boundary object, sensemaking

## REFERENCES

- Aloini, D., Dulmin, R. and Mininno, V. 2007. Risk management in ERP project introduction: Review of the literature. *Information and Management*, 54(7): 647–67.
- Barrett, M. and Oborn, E. 2010. Boundary object use in cross-cultural software development teams. *Human Relations*, 63(8): 1199–1221.
- Berente, N., Lyytinen, K., Yoo, Y., and King, J. L. 2016. Routines as shock absorbers during organizational transformation: Integration, control, and NASA's enterprise information system. *Organization Science*, 27(3): 551–72.
- Berente, N., Lyytinen, K., Maurer, C., and Yoo, Y. 2019. Institutional logics and pluralistic responses to enterprise system implementation: A qualitative meta-analysis. *MIS Quarterly*, 43(3): 873–902.
- Bintoro, B. P. K., Simatupang, T. M., Putro, U. S., and Hermawan, P. 2015. Actors' interaction in the ERP implementation literature. *Business Process Management Journal*, 21(2): 222–49.
- Carlile, P. 2002. A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, 13(4): 442–55.
- Carlo, J. L., Lyytinen, K., and Boland, R. 2012. Dialectics of collective minding: Contradictory appropriations of information technology in a high-risk project. *MIS Quarterly*, 36(4): 1081–1108.
- Charmaz, K. (2009) *Constructing Grounded Theory*. London: SAGE Publications Ltd.
- Chen, C., Law, C. C. H., and Yang, S. C. 2009. Managing ERP implementation failure: A project management perspective. *IEEE Transactions on Engineering Management*, 56(1): 157–70.
- Coghlan, D. 2001. Insider action research projects. Implications for practising managers. *Management Learning*, 32(1): 49–60.
- Davenport, T. H. 1998. Putting the enterprise into the enterprise system. *Harvard Business Review*, July-August: 121–31.
- Eisenhardt, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14(4): 532–50.
- Elkhani, N., Soltani, S., and Nazir Ahmad, M. 2014. The effects of transformational leadership and ERP system self-efficacy on ERP system usage. *Journal of Enterprise Information Management*, 27(6): 759–85.
- Huber, G. P. and Daft, R. L. 1987. The information environments of organizations. In: Jablin, F. M., Putnam, L. L., Roberts, K. H., and Porter, L. W. (Eds.), *Handbook of organizational communication: An interdisciplinary perspective*. Pages 130–164. Newbury Park, CA: SAGE.
- Ke, W. and Wei, K. K. 2008. Organizational culture and leadership in ERP implementation. *Decision Support Systems*, 45(2): 208–18.
- Keil, M. and Robey, D. 1999. Turning around troubled software projects: An exploratory study of the de-escalation of commitment to failing courses of action. *Journal of Management Information Systems*, 15(4): 63–87.
- Krieger, J. 2005. Shared mindfulness. *Journal of Business Communications*, 42(2): 135–67.
- Mahring, M., Keil, M., Mathiassen, L., and Pries-Heje, J. 2008. Making IT project de-escalation happen: An exploration into key roles. *Journal of the Association for Information Systems*, 9(8): 462–96.
- Miles, M. B. and Huberman, A. M. 1994. *Qualitative Data Analysis* (2nd ed.), Thousand Oaks, CA: SAGE Publications.
- Montealegre, R. and Keil, M. 2000. De-escalating information technology projects: Lessons from the Denver international airport. *MIS Quarterly*, 24(3): 417–47.
- Nah, F. F.-H., Lau, J. L.-S. and Kuang, J. 2001. Critical factors for successful implementation of enterprise systems. *Business Process Management Journal*, 7(3): 285–96.
- Nuttall, P. A. 1998. *Understanding Empowerment: A Study in a Manufacturing Company*, unpublished Ph.D. Thesis, Henley Business School, Henley Management College and Brunel University, Greenlands, UK.
- Patton, M. Q. 2002. *Qualitative Research & Evaluation Methods* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Poston, R. and Grabski, S. 2001. Financial impacts of enterprise resource planning implementations. *International Journal of Accounting Information Systems*, 2(4): 271–94.
- Ramasubbu, N., & Kermerer, C. F. 2016. Technical debt and the reliability of enterprise software systems: A competing risks analysis. *Management Science*, 62(5): 1487–1510.
- Robey, D., Ross, J., and Boudreau, M.-C. 2002. Learning to implement enterprise systems: An exploratory study of the dialectics of change. *Journal of Management Information Systems*, 19(1): 17–46.
- Schneider, S., Wollersheim, J., Krcmar, H., and Sunyaev, A. 2018. How do requirements evolve over time? A case study investigating the role of context and experiences in the evolution of enterprise software requirements. *Journal of Information Technology*, 33(2): 151–70.
- Smircich, L. and Morgan, G. 1982. Leadership: The management of meaning. *Journal of Applied Behavioral Science*, 18: 257–73.
- Star, S. L. 2010. This is not a boundary object: Reflections on the origin of a concept. *Science, Technology and Human Values*, 35(5): 601–17.
- Star, S. L. and Griesemer, J. 1989. Institutional ecology, 'translations', and boundary objects: Amateurs and professionals on Berkeley's museum of vertebrate zoology. *Social Studies of Science*, 19: 387–420.
- Umble, E. J., Haft, R. R., and Umble, M. M. 2003. Enterprise resource planning: Implementation procedures and critical success factors. *European Journal of Operational Research*, 146: 241–57.
- Van de Ven, A. H. 2007. *Engaged Scholarship*. Oxford: Oxford University Press.
- Walsh, J. P. and Ungson, G. R. 1991. Organizational memory. *Academy of Management Review*, 16: 57–91.
- Wang, E., Chou, H.-W., and Jiang, J. 2005. The impacts of charismatic leadership style on team cohesiveness and overall performance during ERP implementation. *International Journal of Project Management*, 23: 173–80.
- Waterman, R. H. 1990. *Adhocracy: The Power to Change*. Memphis, TN: Whittle Direct Books.
- Weick, K. E. 1995. *Sensemaking in Organizations*. Thousand Oaks, CA: SAGE Publications.
- Weick, K. E. 2004. How projects lose meaning: The dynamics of renewal. In: Stablein, R. E. and Frost, P. J. (Eds.), *Renewing Research Practice*. Stanford, CA: Stanford University Press.
- Weick, K. E. and Sutcliffe, K. M. 2006. Mindfulness and the quality of organizational attention. *Organization Science*, 17(4): 515–24.
- Wickramasinghe, V. and Gunawardena, V. 2010. Critical elements that discriminate between successful and unsuccessful ERP implementations in Sri Lanka. *Journal of Enterprise Information Management*, 23(4): 466–85.
- Yin, R. K. 2009. *Case Study Research Design and Methods* (4th ed.). Thousand Oaks, CA: SAGE Publications.

## APPENDIX ON METHOD

The first author was assigned as project manager to a failing enterprise resource planning (ERP) project, Project MELANGE, about seven months after the project had started, and he continued in that role until its completion twenty months later. This deep engagement allowed the first author to experience Project MELANGE's lifecycle, as well as to study the work of and informal interactions among its stakeholders and team members. Our methods are based on this engaged form of observation. According to Coghlan (2001), manager-researchers know the critical events and their meanings, see beyond insincere objectives, are capable of using internal jargon, and use their experiences during interviews to obtain richer data.

Recognizing this participant observer position at the beginning of this research study allowed us to establish measures to control or mitigate participant bias. For example, a second researcher who was a disinterested third-party participated in interviews, listened to recorded interviews, and read transcribed interviews. In addition, the second researcher interviewed the participant observer researcher and had opportunities to challenge his viewpoints. These measures were based on Nuttall's (1998) suggestion to engage "a neutral research assistant to conduct some interviews and then to compare transcripts" (p. 53). In addition, they are justified by Patton's (2002) suggestion that scientists' personal experiences and closeness to data can be essential to their insights and contributions: "In short, closeness does not make bias and loss of perspective inevitable..." Distance, he notes, "is no guarantee of objectivity" (p. 49).

The unit of analysis, which is determined by the research question, was the single project, Project MELANGE (Yin, 2009). The study focused on understanding how individual and shared sensemaking was implicated in successfully turning the ERP project around. Therefore, data about the project were collected from project

team members, from participant observation, and from archival data. Project MELANGE's original planned duration was nineteen months, but the actual duration was twenty-seven months. The project objective and scope were to integrate two ERP systems into one blended solution to support a merger.

We followed three data collection principles: (1) using multiple sources of evidence, (2) creating a case study database, and (3) maintaining a chain of evidence (Yin, 2009). These principles helped to maximize the benefits of the three different sources of evidence (i.e., interviews, participant observation, and archival data) and to establish construct validity and reliability. The primary data source was the semi-structured interviews with project participants, who had a variety of backgrounds and experiences associated with the project. To assist with replication of the findings, and thereby strengthen generalizability (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 2009), we interviewed different stakeholders associated with the project. We conducted a total of seventeen interviews after Project MELANGE was successfully completed. Each interview lasted approximately one hour, and all interviews were audio recorded, with permission, and transcribed. We took detailed notes during the interviews and conducted follow-up interviews to seek clarifications and gather additional data.

Our data analysis procedures included data organization, data reduction by inductive and deductive coding, and conclusion drawing and verification (Miles and Huberman, 1994). These three procedures happened iteratively in relation to one another during data analysis. We uploaded transcripts and archival data into NVivo 9, a software package used for qualitative analysis. Inductive analysis was completed using bottom-up coding of the transcribed interviews (Eisenhardt, 1989), with an initial coding scheme based on the escalation and de-escalation literature. As explanatory inductive themes were

identified, we added new codes (Charmaz, 2009). This data reduction effort facilitated pattern recognition and identification of the evolving empirical account and concluding theory (Miles and Huberman, 1994).

Deductive coding of the data was facilitated by a code book created by the primary investigator based on the sensemaking literature and properties: enactment, sociality, extracted cues, and identity. During coding, the code book was updated with identified sub-concepts to the sensemaking properties. Text fragments (i.e., phrases within sentences) were coded to one or more codes and predominantly were used to support only inductive analysis or deductive analysis. These analytical constructs were used in interpretation of the data as presented in Tables 3, 4, and 5.

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