



Inconsistent and Incongruent Frames During IT-enabled Change: An Action Research Study into Sales Process Innovation

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Abstract:

Integrating research on the social construction of technology and social cognitive processes in organizations, technology frame of reference (TFR) theory has helped researchers investigate how stakeholder groups perceive information systems practices and opportunities, how these perceptions shift over time, and, how stakeholders may impact or leverage them to facilitate change. Such insights are particularly important in dynamic environments where individuals, groups, and organizations face a constant challenge to make sense of and respond to how industries undergo change, information technologies (IT) evolve, and new opportunities to transform processes and products emerge. Still, although extant research provides detailed accounts of TFR dynamics between groups, we know little about TFR dynamics in groups and about how intra- and inter-group TFRs interact during IT-enabled change. Accordingly, we report on an action research project in which we relied on TFR theory to assist organizational innovators in a rapidly growing mobile phone company, VoiceTech, during a sales force automation (SFA) project. Consistent with current TFR studies, our analyses reveal how the SFA project implicated frame incongruences between different stakeholder groups. In addition, our analyses reveal important inconsistencies in how individual groups framed the SFA project and consequential interactions between the observed inconsistencies and incongruences over time. Based on these findings, we argue that inconsistencies and incongruences in stakeholders' technological frames play equally important but quite distinct and interacting roles during IT-enabled change. As a result, we extend current TFR theory with a nuanced account of how IT-enabled change efforts implicate these two fundamental characteristics of framing processes. In conclusion, we discuss the empirical and theoretical contributions to TFR theory and highlight implications for future research and for the management of IT-enabled change in dynamic contexts.

Keywords: IT-enabled Change, Technology Frames of Reference, Inconsistency, Incongruence, IS Action Research.

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1 Introduction

Organizational innovators have long focused on how to implement advanced information systems (IS) so they are embraced widely and used effectively to support a firm's strategy and operations (Markus, 2004). Typically, such implementation efforts involve operational managers, information technology (IT) staff, and a variety of user groups to organize and carry out these IT-enabled change projects (Heng, Trauth, & Fischer, 1999). To ensure adequate project funding, staff, and managerial attention, these diverse stakeholders must develop a sufficiently shared understanding of how the IS will support strategy and operations. The IS research literature highlights many challenges innovators encounter when attempting to do so—in particular, how stakeholder groups perceive IS practices and opportunities, how these perceptions shift over time, and how stakeholders may impact or leverage them to facilitate change (Azad & Faraj, 2008; Davidson, 2002; El Sawy & Pauchant, 1988; Orlikowski & Gash, 1994).

The challenges increase substantially when firms are growing rapidly and evolving, information technologies (IT) innovation is fast-paced, and industries are undergoing change. In such dynamic settings, many “moving parts” can disrupt organization members' provisional understanding of organizational change projects (Bogner & Barr, 2000; Isabella, 1990), which makes it even more difficult to maintain sufficient agreement among stakeholders to enable IS implementation and use (Davidson, 2002). Therefore, we can gain important insights by examining how key stakeholders understand the possibilities for IT-enabled change, whether their understanding is shifting during implementation, and how shifts affect the trajectory of the change effort (El Sawy & Pauchant, 1988; Leonardi, 2013; Ovaska, Rossi, & Smolander, 2005). Such analysis are interesting theoretically because they can increase our understanding of the sociocognitive processes that underlie IS implementation (Davidson, 2006; Leonardi & Barley, 2010; Orlikowski & Gash, 1994) and practically because guiding beneficial shifts and aligning stakeholders' frames can enhance the outcomes for IT-enabled change.

To help researchers conduct sociocognitive studies of organizational IS phenomena, Orlikowski and Gash (1994) developed the technological frames of reference (TFRs) framework by integrating research on the social construction of technology (Bijker, 1995; Bijker, Hughes, Pinch, & Douglas, 2012) and social cognitive processes in organizations (Bartunek, 1984; Bartunek & Moch, 1987; Daft & Weick, 1984). IS researchers have widely used the TFR framework to investigate the consequences of frame incongruence among stakeholder groups in IS activities (Davidson, 2006). Recent studies have also investigated framing as a process during IS development and implementation to examine how stakeholders resolved incongruences in some form of consensus (e.g., through the exercise of power or political struggles) (Azad & Faraj, 2008, 2011; Hsu, 2009; Yeow & Sia, 2008).

In contrast to frame incongruence *between* groups, frame inconsistency *in* groups—a possibility that Orlikowski and Gash (1994) note—has received little research attention. We suggest that inconsistencies in a group's shared frames may be equally problematic, particularly in highly dynamic settings for IT-enabled organizational change when market conditions, strategy, organizational processes, and IT capabilities may all be in flux. In highly dynamic settings, organizational members face an ongoing stream of new information to make sense of and interpret relative to IT-enabled change initiatives. If frames shift frequently, inconsistencies will likely develop and become problematic (Davidson, 2002). We posit that inconsistencies can contribute to unproductive conflict and confusion during IT-enabled change projects and that inter-group incongruences may interact with intra-group inconsistencies to shape the trajectories and outcome of IT-enabled change. Thus, a nuanced accounting of frame inconsistencies, incongruences, and their interactions could lead to better explanations of how stakeholders' interpretations over time shape and are shaped by the outcomes of an IT-enabled change effort.

Accordingly, for this research project, we drew on TFR theory through a longitudinal study of IT-enabled change at VoiceTech, a public telecommunications company headquartered in the southeastern United States with offices in over ten major U.S. cities. We initiated the action research (AR) project to help VoiceTech managers understand how they might reduce their sales force turnover rates by adopting a new sales force automation (SFA) system combined with mobile technology. Our research interest was to investigate stakeholder-technology interactions during the phased rollout of SFA and mobile technology to the sales force. The first two authors' engagement as action researchers (Mathiassen, 2002; McKay & Marshall, 2001; Susman & Evered, 1978) provided rich data about IT-enabled sales process innovations over a 30-month period. The third author did not participate in the interventions at VoiceTech but provided an outsider's view that added independent analytical capability to the study (Coghlan, 2001; Gioia, Price, Hamilton, & Thomas, 2010). The case analysis highlighted champion, innovator, and user frame

inconsistencies and technology strategy, technology-in-use, and technology implementation frame incongruences. Moreover, we observed how specific frame inconsistencies and incongruences interacted to shape the IT-enabled change process at VoiceTech as it progressed through the project stages of SFA conversion, selective mobility, incremental improvement, and smarter sales. This nuanced accounting of frame inconsistencies, incongruences and their interactions explained how the change process at VoiceTech, despite severe TFR inconsistencies and incongruences at the start of the project, eventually converged towards a relatively successful effort. In this effort, a new SFA and mobile technologies supported the sales operation and served as a platform for continued sales process innovation in the dynamic and rapidly developing firm.

Our study provides three key contributions to TFR theory. First, the detailed account of how process outcomes interacted with shifts in stakeholders' TFRs over time at VoiceTech highlights the importance of intra-group inconsistencies as drivers of framing processes during IT-enabled change processes, an important aspect of the sociocognitive framing process hitherto overlooked in the literature. Second, we extend current understanding of how stakeholders negotiate and align inter-group incongruences by demonstrating how inconsistencies and incongruences interact to drive framing processes throughout an IT-enabled change process. Third, we offer a process model of inconsistencies and incongruences during IT-enabled change, which complements research focused on discursive strategies, power, and politics to re-emphasize sociocognitive processes.

2 Theoretical Foundations

The IS field has long explored how organizations introduce and use information systems and technologies (Leonardi, 2011; Markus, 1983; Orlikowski, 1992; Robey, Ross, & Boudreau, 2002). Researchers adopting a constructionist view have investigated how these activities implicate organization members' interpretations of IT (Leonardi & Barley, 2010), typically drawn from related theoretical traditions: sociocognitive theory (Orlikowski & Gash, 1994), social construction of technology (Bijker, 1995; Bijker et al., 2012), and discursive framing (Benford & Snow, 2000; Howard-Grenville & Hoffman, 2003).

Contemporary organizational IT projects are often part of large-scale, IT-enabled change efforts (Markus, 2004) that involve multiple stakeholder groups, such as managers, IT professionals, IT vendors and consultants, and the diverse users of the intended IT application. Thus, projects often involve conflicting interpretations for their "how" and "why". Macredie and Sandom (1999, p. 257) comment that "a significant factor contributing to the difficulties of managing IT-enabled change is the discrepancy between the way people perceive technical change and the way they actually implement it". Mitchell and Zmud (2006, p. 348) argue similarly that incongruences between stakeholders' perceptions regarding the deployment of IT "will inevitably result in greater design uncertainty and implementation risk".

In their seminal paper, Orlikowski and Gash (1994) draw together social, cognitive, and constructivist theories of technology into a theoretical framework centered on the TFR concept. They define technological frames as:

That subset of members' organizational frames that concern the assumptions, expectations, and knowledge they use to understand technology in organizations. This includes not only the nature and role of the technology itself, but the specific conditions, applications and consequences of that technology in particular contexts (p. 178).

Drawing on the concept of relevant social groups from the social construction of technology literature (Bijker, 1995; Bijker et al., 2012), Orlikowski and Gash (1994) suggest that organizational members with similar education, experience, and relationships related to organizational technology (for instance, designers, users, managers) often share technological frames and that frames may differ significantly between groups. Defining differences among frames as incongruence in frame structure or content, they posit that incongruence is an important, underlying contributor to persistent problems during IT-enabled change. In a case study of the introduction of groupware technology in a consulting firm, they demonstrated how the technological frames of technologists, who introduced the new IS, differed from those of intended users and how these incongruences contributed to problematic organizational outcomes, such as insufficient training and support provided to users and users' limited adoption and use of the technology.

Much research has cited and incorporated TFR theory, such as studies of how stakeholders' interpretations influence organizational IS development, implementation, and use (Davidson, 2006). Early studies identified context-specific frame domains and incongruences among stakeholder groups' frames

and assessed the organizational consequences of incongruences. For instance, Barrett (1999) investigated incongruence between IT innovators' frames for an electronic trading system and frames of insurance brokers, which contributed to high levels of resistance to and nonuse of the system. Gallivan (2001) examined how IT trainers' frames related to the need for training in change efforts were incongruent with the frames of potential users in need of training. Hsu (2009), on the other hand, examined how frame incongruence ("misalignment") stimulated sensemaking about the need for and direction of an IS security certification project.

While researchers have typically examined TFRs during requirements definition, design, and initial implementation stages, some have emphasized users' sensemaking around new IS during preliminary stages of rollout and use. Leonardi (2011) and Davis and Hufnagel (2007), for instance, highlight how users' occupational values and their experiences with IT may lead different groups of users to evaluate and respond quite differently to an IS and, thus, increase frame incongruence. Leonardi (2013) illustrates how managers' initial interpretation of and communication about a new IS can trigger users to appropriate it in significantly different ways that enhance or limit the realization of IT-enabled changes. Mazmanian's (2013) study of mobile technology appropriation in two organizational groups demonstrates how, despite their initially similar frames, one group came to view the technology as a stress-inducing intrusion into personal time while the other group came to view the technology as liberating their time. These studies highlight that framing dynamics are also evident during uptake and use of a new IS.

Finally, some TFR process studies explicate how incongruences in IT-enabled change efforts contribute to contestations and conflict among groups and how stakeholders may negotiate and resolve such incongruences. A common theme in these studies is how one group dominates interpretive processes through political and discursive strategies. Lin and Silva (2005), for instance, explored how members of the IT group translated other stakeholders' expectations about email solutions to be consistent with their own. Olesen (2012) documents how senior administrators' frames dominated, and limited, the organizations' exploration of new IS over an extended period. Azad and Faraj (2008) examine translation processes when multiple groups may influence an IT-enabled change effort; they outline a process of frame differentiation during initial negotiation, frame adaptation as frames become more aligned, and frame stabilization that leads to a "truce frame" that can facilitate IS implementation. Azad and Faraj (2011) similarly emphasize political contests as key influences in framing, whereas Yeow and Sia (2008) suggest that incongruence per se is not problematic if it motivates organization members to negotiate shared frames for new IS functionality.

These later studies focus on frame incongruences among different groups and the dynamic processes of negotiating differences and on emphasizing the organization's trajectory of IT-enabled change efforts largely from the theoretical perspectives of political power. While we agree that political conflicts pervade organizations, we suggest that, in highly dynamic contexts, political maneuvering may not be the most important or analytically interesting phenomenon. Framing is inherently a sensemaking process in which organization members adapt their interpretations of an IS in light of changing circumstances. Frames serve as problem solving templates and interpretive filters that shift in salience and, in doing so, influence organization members' decisions during IT-enabled change programs (Davidson, 2002). Understanding the role of frames requires "studying their shifts and the process through which this shifting occurred" (El Sawy & Pauchant, 1988, p. 458). Davidson (2002), for instance, demonstrates how the frames of a group of IT innovators shifted in salience from a focus on IT-enabled business transformation to a focus on projects with a limited scope, which stymied the project's overall progress during a period of organizational turbulence. The group's shifting focus on doing "big things" with IT or planning around short-term opportunistic "quick hit" projects suggested an underlying frame inconsistency that inhibited the project's progress and confused managers, users, and developers.

A *frame incongruence* represents differences across groups in the content or structure of frames about IS development or implementation, whereas a *frame inconsistency* represents a group's (or individual's) contradictory or conflicting assumptions and expectations about IS development or implementation. To distinguish between these types of TFR dynamics, we rely on the assumption of stakeholder theory (Donaldson & Preston, 1995; Freeman, 1984) that it is possible to identify distinct groups of organizational actors with similar interests and that such groups play important roles in shaping complex change processes. For instance, frame incongruence between stakeholder groups would be evident if top managers assume that an IT project's strategy focuses on increasing the firm's competitive advantage through new IT-enabled services but line managers assume the IT strategy focuses on reducing operational costs and increase operational control. On the other hand, frame inconsistency in a

stakeholder group would be evident if top managers assumed the IT strategy was to become more competitive with new IT-enabled service offerings and expected that the IT project would simply replace current systems and functionalities with minimal changes or costs.

While Orlikowski and Gash (1994) mention that frames may be internally inconsistent because individuals or groups can hold ideas that are inconsistent *in* the individual or group, they and subsequent TFR researchers have focused primarily on frame incongruences *between* groups. We argue that TFR inconsistencies and incongruences represent two complementary and interdependent phenomena that shape stakeholder groups' interactions and engagements during IT-enabled change processes. Reconciling framing incongruences between such groups may require perspective taking as groups engage in appreciating the perspectives of other groups, whereas reconciling framing inconsistencies in such groups requires perspective making (Boland & Tenkasi, 1995) to identify, examine, and adjust assumptions to reduce contradictions. Thus, there are important differences in how stakeholders identify TFR incongruences and inconsistencies, how they manifest, and how they may reconcile them.

Against this theoretical backdrop, we studied sales process innovation at VoiceTech. Acknowledging that implementing SFA technology may change the roles and responsibilities of stakeholders in the organization and in groups, we investigated in detail how implementing such technologies interact with stakeholders' TFRs over time. Thus, our initial research question was:

RQ: What is the role of technological frames in managing IT-enabled change in highly dynamic contexts?

From analyzing the data we obtained from VoiceTech, we found not only that frames between stakeholder groups were at times incongruent, but also that stakeholders in the same group (e.g., managers) were inconsistent in how they framed the technology, its use, and implementation. We also found that stakeholders, as individuals, may be inconsistent in their own framings. Thus, as we analyzed the case data, we refined our analytic focus to consider:

RQ (revised): How do frame incongruences among groups and frame inconsistencies in groups (or by influential individuals) shape the trajectory and outcomes of IT-enabled change in highly dynamic contexts?

In Sections 3 and 4, we describe the action research project and analytic methods we used to address this question.

3 Research Design

We conducted our study at VoiceTech, a public telecommunications company headquartered in the southeastern United States with offices in more than a dozen major U.S. cities. Organizing it as action research (Mathiassen, 2002; McKay & Marshall, 2001; Susman & Evered, 1978) into IT-enabled sales process innovations over a 30-month period, we initiated the research to help VoiceTech reduce their sales force turnover rates by adopting a new SFA system combined with mobile technology. SFA systems support the sales process by improving the speed and quality of information flow among sales representatives, customers, and managers (Speier & Venkatesh, 2002). As the project progressed, the collaboration grew to support management of IT-enabled change as the company went through a phased rollout of SFA and mobile technology. This collaboration provided us with access to rich data on stakeholder-technology interactions during the change process.

3.1 Research Site

VoiceTech was founded in the late 1990s with a mission to deliver the communication capabilities typically reserved for large businesses to small businesses, such as phone services, website management, and business application hosting. The company launched its services in the Southeastern U.S. in the early 2000s and, when the research collaboration started in 2006, it operated in six cities. The rapid pace of growth continued and, by November 2010, VoiceTech served over 50,000 customers in more than a dozen cities. The company had a 99 percent customer retention rate and was among the fastest-growing providers of communication services in the United States.

While one could not question the success of the company as measured by stock price, product offerings, financial reports, and industry innovation awards, VoiceTech had, at the point of the intervention in 2006, outgrown their sales processes and related IS. The consequences of homegrown sales support systems

combined with lean information gathering and distribution processes prompted executives to consider sales process innovations. During the initial stage, it focused on moving current sales reporting processes to a more stable and reliable platform through SFA conversion. However, as the process unfolded, the environment changed. Externally, organizations in the industry had begun to use mobile technology, and, internally, VoiceTech needed to scale its SFA platform as it included new markets and to modify its sales processes as existing markets matured. As a result, the company had to adapt its approach to managing the IT-enabled change effort to both internal and external contextual dynamics.

Each city had approximately 60 sales representatives divided into two markets each with three regions. A vice president, two directors, and six team managers managed each city, and each region had up to ten sales representatives including a senior sales representative. The company encouraged fierce competition across the sales organization, with all sales information posted on display boards, white boards, and in daily sales updates. Staff also discussed sales results at daily morning meetings, indicating the close attention managers paid to the sales force's activities. The company developed its management teams organically. Each sales representative—no matter how experienced prior to joining the company—started at the bottom and progressed based on sales performance. Managers set expectations and managed their team's performance. Directors helped vice presidents generate weekly and monthly sales forecasts based on feedback from managers through frequent sales team meetings. The daily routine at VoiceTech was highly regimented and based on rigid sales force management protocols. Sales representatives received training to cold call on a specified number of small businesses each day, and they might call on their manager for information when in the field. Thus, the organization expected salespersons to aggressively seek sales through cold calls, set up future appointments, and maintain close contact throughout the day with their managers to discuss sales opportunities and review daily results.

3.2 Research Collaboration

Action research aims “to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework” (Rapaport, 1970). Hence, action researchers work collaboratively with key stakeholders to effect change or improvement in a problem context (Baskerville & Wood-Harper, 1996; McKay & Marshall, 2001). Although the research at VoiceTech involved five stakeholder groups (Figure 1) (i.e., users, champions, innovators, technologists, and researchers), the researchers' main collaboration was with the innovators (solid arrows) who were responsible for managing the IT-enabled change process while also involving multiple interactions with other stakeholders (dotted arrows). A group of four researchers, including the first and second author, collaborated directly and on a regular basis with the innovators and other stakeholders through nine workshops and multiple informal exchanges. With a primary interest in facilitating change through a new SFA, the innovators, including the director of sales operations and a young but experienced marketing analyst, worked closely with the other stakeholder groups. The director of sales operations was responsible for implementing the SFA in sales operations and became the primary point of contact during the collaboration. The marketing analyst coordinated and monitored the implementation across the various markets and, on occasion, conducted SFA training sessions for users.

The champions included the chief marketing officer (CMO) and the vice president (VP) of marketing, who were primarily interested in providing strategic direction and requisite resources for the innovators. The technologists included the chief technology officer (CTO), the director of IT planning, and an IT business analyst, and their interests related to effectively managing IT resources and infrastructure. Finally, the users included the vice presidents, sales office managers, sales directors, sales team managers, sales leaders, and sales representatives located in each city. Sales representatives and team managers were the ultimate users of the SFA on a day-to-day basis, and they were primarily interested in having appropriate support for their sales activities.

Figure 2 provides a timeline structured into four primary project phases (detailed in Section 5) of the change process at VoiceTech. A group of four researchers, including the first and second author, collaborated directly and on a regular basis with the innovators and other stakeholders through nine workshops and multiple informal exchanges. The innovators shared problems and ideas with the researchers through the workshops and informal exchanges. The researchers, in turn, shared insights from interviews and informal interactions with the other stakeholders, analyzed current approaches to managing the change effort, and provided additional ideas on how to best leverage SFA and mobile technology in VoiceTech.

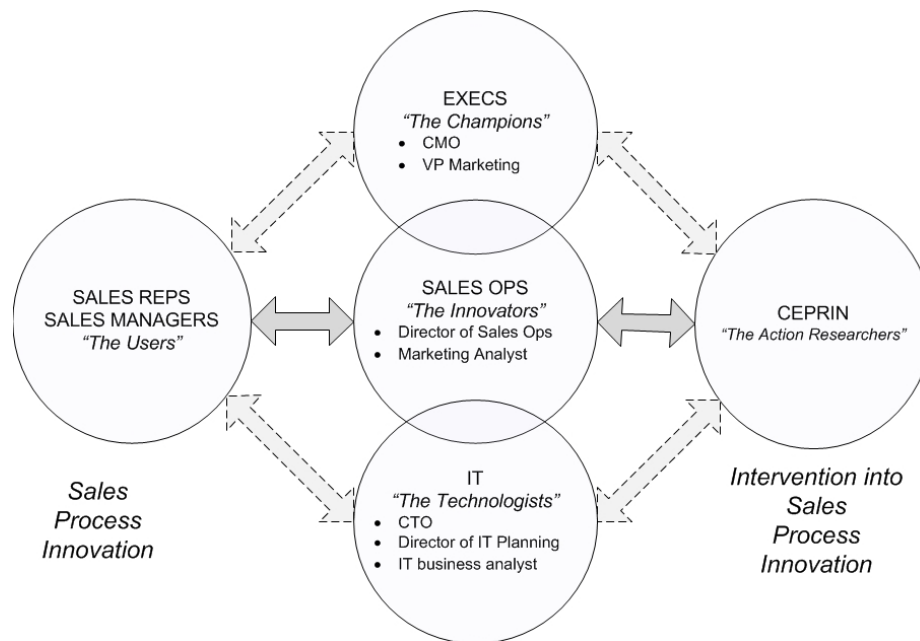


Figure 1. Agency in the VoiceTech Collaboration

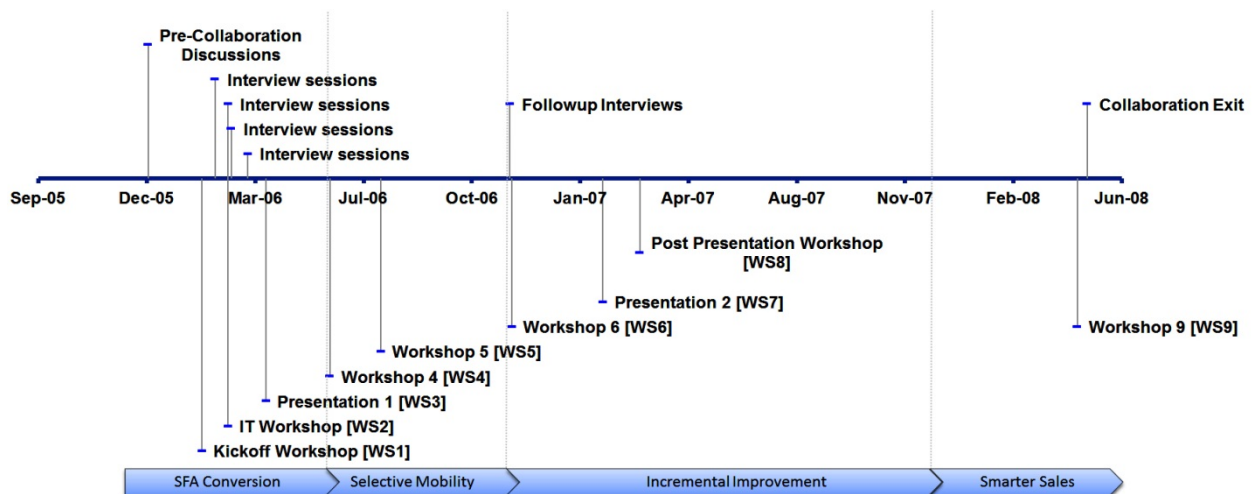


Figure 2. Timeline of VoiceTech Collaboration

Interventions occurred over 30 months with periodic meetings, workshops, and researcher-innovator sessions. Our analysis focused on the TFRs of VoiceTech actors, but, where appropriate, we also highlight the action researchers' interventions and their implications for framing processes.

3.3 Data Collection

We generated data for the research project from workshops, interviews, informal exchanges, and observations over the project's duration. We collected data from 32 interviews and nine workshops resulting in over 49 hours of recordings and 1,000 pages of transcriptions. In addition, we created research notes to capture our reflections during and after interviews, and at two researcher reflection sessions. We also collected materials such as VoiceTech's sales force handbooks, SFA screenshots, company presentation materials, and public documents from quarterly and annual reports and the VoiceTech website. Our transcript data represents company informants from all levels of the company—from a newly hired sales person, to mid-level and senior-level managers and executives, to the CTO and CMO—which provides evidence about TFRs of all key groups for analysis.

4 Data Analysis

In an empirical study of a collaborative group technology (Lotus Notes), Orlikowski and Gash (1994) identify three TFR domains salient in the organization studied: the nature of technology (general understanding of technology features and capabilities), technology strategy (motivation for adoption and criteria for success), and technology-in-use (assumptions about training, priorities, resources, ease-of-use, and policies). Orlikowski and Gash (1994) caution that different frames would be salient in each context studied. However, despite variation in precise definitions and category names that various researchers have used, these three general categories are generally useful for TFR analysis (Davidson, 2006).

Guided by Orlikowski and Gash's (1994) original theory, we developed an analytical framework that focused on the salient features of our data (Mason, 2002; Miles & Huberman, 1994). As a basis for our TFR analysis, we adopted a coding procedure similar to the one developed by Cousins, Robey, and Zigurs (2007). The initial coding scheme (Miles & Huberman, 1994) included the TFR domains identified by Orlikowski and Gash (1994), but we adapted the original constructs by including a "technology implementation" and a "contextual insight" domain (Table 1). Before proceeding to the final coding by the first author, we established inter-coder reliability by having the first and second author independently code select transcripts and resolve any differences. We created the coding scheme in Atlas.ti, imported the transcripts into Atlas.ti, and coded them according to the scheme. As a result, we had 1460 coded quotes across all roles and TFR domains plus an additional 350 contextually interesting quotes.

Table 1. Extended TFR Framework

TFR domain	Description	# of coded quotes	
Nature of technology	"Refers to people's images of the technology and their understanding of its capabilities and functionality" (Orlikowski & Gash 1994, pp. 183-184).	Champions	18
		Innovators	49
		Technologists	36
		Users	25
Technology strategy	"Refers to people's views of why their organization acquired and implemented the technology. It includes their understanding of the motivation or vision behind the adoption decision and its likely value to the organization" (Orlikowski & Gash 1994, pp. 183-184).	Champions	39
		Innovators	67
		Technologists	30
		Users	23
Technology in use	"Refers to people's understanding of how the technology will be used on a day-to-day basis and the likely or actual conditions and consequences associated with such use" (Orlikowski & Gash 1994, pp. 183-184).	Champions	73
		Innovators	256
		Technologists	74
		Users	380
Technology implementation	Refers to people's understanding of how their organization will implement technology as part of its day-to-day operation and how the organization will incentivize each individual to adopt the technology.	Champions	86
		Innovators	206
		Technologists	65
		Users	33
Contextual insight	Any quote that is interesting in understanding the context and that cannot easily be captured by other codes.	350	

Next, we organized and summarized the evidence by distinguishing between stakeholder groups, TFR domains, and stages of the IT-enabled change process. We identified the four stages of the process (Figure 2) by zooming in on key characteristics of how the implementation progressed over time and the evolving identity of the SFA project effort (Davidson, 2002). In addition, we organized the nine workshops focused on establishing the collaboration, initially diagnosing the situation, identifying SFA capability options, and assessing progress and identifying ways to more effectively implement and leverage SFA and mobile technology. As such, we could identify 1) key incongruences between stakeholder groups (Table 2), 2) key inconsistencies in stakeholder groups (Table 3), and 3) key shifts in stakeholder frames as the process unfolded (Table 5).

5 Results

In 2004, VoiceTech selected SalesLogix as its first SFA solution and customized it to track sales representatives' activity. In 2005, the innovators surveyed the VoiceTech community of users and received a negative response regarding SalesLogix system performance and usability. At that time, VoiceTech operated in a highly dynamic context experiencing explosive 30 percent per year growth, and its sales processes and IS could not efficiently support that growth. Moreover, the company had a high turnover in sales representatives, which had an adverse effect on its sales force's effectiveness. When VoiceTech received an attractive offer from Siebel CRM Systems (which Oracle had just purchased) for licensing fees for this software package, VoiceTech management decided to convert their existing systems to Siebel SFA. While the existing configuration focused on basic data collection for tracking sales representatives' productivity, the new Siebel SFA would afford VoiceTech opportunities to implement additional features such as customer interactions, sales notifications, customer and sales representative communications, real-time data availability, and other SFA enhancements.

In this context, we engaged in close collaboration with the innovators in charge of the sales process innovation. The following account shows how the innovation effort developed through four phases from a routine upgrade (SFA conversion) to process experimentation (selective mobility) and planned organizational change (incremental improvement) and finally to a fully integrated IT-enabled change program (smarter sales). As action researchers, we enabled these developments through interventions in which we presented key analyses and recommendations to innovators and select managers. Specifically, we used the TFR theoretical lens to highlight frame incongruences, frame inconsistencies, and interactions between them that this process implicated.

5.1 SFA Conversion

In September 2005, VoiceTech began transitioning to Siebel SFA and integrating it with their previously implemented Siebel CRM system. Although the organization had a clear and convincing rationale for engaging in the SFA conversion (the offer by Siebel CRM), from analyzing stakeholders' TFRs, we found significant incongruences and inconsistencies from the start of the process. The champions found that the organization needed to move on technologically to address the specific challenges it faced. They also believed that the SFA conversion could support innovation of the sales organization by improving sales leads, collecting real-time data from the field, keeping managers updated on sales visits, and developing comprehensive sales intelligence and planning. Reflecting this strategic vision for SFA, the VP of marketing said:

We wanted to automatically generate rolled up reports and be able to actually look at data like what percent of our customers are receiving a proposal. ...We also thought we could do a better job of collecting prospect profile, industry, employee, and competitor information. [40:51]¹

The CMO added:

We are not necessarily being...as smart as we could be. We are not taking advantage of tools and technology like we should be. [1:5]

In contrast with the champions' expectations for the revised SFA systems, users assumed that the new IS was primarily a tool for better controlling the sales force. The user representatives were concerned that the new SFA afforded executives and managers more control over sales representatives, while their managers indeed approached the technology from a control perspective. One sales manager said:

Every sales team fills out [a report] every Friday night and turns it in to our vice president who then sends it to people above them... [and] reps can't lie. [For example,] they may have had eight [appointments] scheduled but four of them canceled. I think that stuff is very, very beneficial for us as management. [22:2]

These quite different perceptions of the underlying rationale for and the perceived value of the new SFA for VoiceTech revealed a technology strategy incongruence between champions and user representatives (Table 2, row 1). Therefore, the innovators believed they needed to demonstrate to the user

¹ We quote quotes from stakeholders first with the transcript number and then with the quote number. So, here, [40:51] indicates transcript 40, quote 51.

representatives that the change would be to their advantage. Otherwise, technology strategy incongruences could jeopardize the organization from successfully implementing the new SFA.

Table 1. Observed Frame Incongruences

Incongruence	Stakeholders	Manifestations
Technology strategy incongruence	Champions versus user representatives	Champions perceived that the new SFA could enable smarter sales and increase user representatives' effectiveness and efficiency. User representatives' saw the SFA as a means for executives and managers to exert more control over them.
Technology-in-use incongruence	Innovators versus champions, technologists & users	Innovators believed the new SFA should help solve existing problems and enable improvements in the sales process, whereas technologists and users believed the new technology simply replicated existing SFA functionality. Innovators were concerned that the organization continued to use multiple, overlapping information sources after it implemented the new SFA, whereas champions believed all reporting was based on the new SFA.
Technology implementation incongruence	Champions versus innovators	Champions expressed they had developed and communicated a strategic vision for the new SFA, whereas innovators believed the vision of smarter sales remained too abstract to help them drive the implementation effort. Innovators viewed mobile technology as a key driver of improving sales performance and decreasing sales representatives' turnover, whereas champions believed the organization could add mobile devices and features at a later stage.

At the same time, champions believed they could implement the new SFA with limited resources. For example, in discussing the types of mobile technology that could be provided, the champions, as articulated by the VP of marketing, valued cost minimization over providing sales representatives the best technology:

Our biggest challenge will be...will the laptops walk? ... When the reps leave how do we make sure we'll get them back? [1:7]

The CMO summarized:

I think we're scared of the cost and the support issues associated with it. We're a pretty frugal bunch ... We're cheap, and I don't know any other way to say it. [1:237]

This champion inconsistency between ambitious process innovation and technology minimalism (Table 3, row 1) created barriers to translating SFA technology into smarter sales. Champions believed that, even with limited resource allocation, they could implement a complex SFA. As a result, in this early phase, the organization allocated too few resources to implement the technology.

During this phase, we engaged in three workshops with the innovators, the director of sales operations, the director of IT planning, and an IT business analyst. The first workshop (WS1) lasted one day in which we discussed the change initiative in detail based on several presentations from VoiceTech. The second workshop (WS2) lasted half a day and focused on Siebel SFA, the implementation plan, and the options it afforded for sales process innovation. Next, we conducted comprehensive interviews with representatives of all stakeholder groups to capture perceptions of the change efforts and the use of Siebel SFA (Figure 2). We analyzed the material from the interviews and the initial workshops and presented the findings at a third half-day workshop (WS3). The presentation overviewed stakeholder perceptions and proposed a comprehensive set of relevant SFA capabilities for sales process innovation beyond those currently considered at VoiceTech (Table 4). We based this list of capability options on our analysis of industry practices and SFA features, and the detailed discussions of each option at WS3 established the list as an important foundation for our continued collaboration with the innovators.

Table 3. Observed Frame Inconsistencies

Inconsistency	Domains	Manifestations
Champion inconsistency	Technology strategy vs. technology implementation	Champions crafted a strategic vision whereby SFA technology would make sales representatives smarter and more effective in the field; however, champions believed they could implement the new SFA with minimal resources. Champions saw the new SFA as a world-class solution with mobile access; however, champions acknowledged user representatives' frustrations with the mobile interface and annoyance with quirks in how the organization implemented the new SFA.
Innovator inconsistency	Technology strategy vs. technology implementation	Innovators projected the new SFA would add mobile access and real-time sales data for sales managers and representatives; however, innovators deferred implementation decisions to technologists who aimed to convert the old legacy system to the new platform without enabling new features. Innovators were responsible for developing a long-term strategic vision for SFA usage; however, innovators focused on the next SFA release with a three to six month time horizon.
User inconsistency	Nature of technology vs. technology-in-use	Sales managers wanted to rely on the new SFA as the authoritative information source to increase sales data availability and reliability; however, sales managers continued to rely on duplicate and conflicting systems for collecting and reporting sales data User representatives requested new mobile SFA features; however, user representatives only minimally used the new SFA features that had already been made available.

Table 4. Proposed SFA Capability Options

Capability	Explanation
Territory management	Add territory management capability to SFA to avoid and help manage conflicts over sales.
Lead generation	Add more comprehensive lead generation capability to SFA.
Contact capture	Add contact capture capability to SFA to provide more useful lead generation.
Lead qualification	Add lead qualification capability to SFA to help sales representatives filter cold calls.
SFA planning and support	Develop SFA planning and support capability for sales representatives.
Real-time sales representative activity	Add real-time sales representative activity information capturing capability to SFA.
Installation information	Add detailed installation information capability to SFA.
Mature forecasting	Add mature forecasting capability to SFA by replacing ad hoc forecasting methods with a more disciplined and efficient forecasting model.
Ubiquity	Make SFA ubiquitous.

Although our discussions with the innovators revealed a strong commitment to sales process innovation, the innovators had at this point diverging views of the innovation initiative. On one hand, they believed the new SFA would eventually provide sales representatives and managers with important real-time sales data. The director of sales operations said:

[Sales representatives] want to know who is in this building and they pull up that building code and get a list of all of the leads and quickly determine which ones would be valid prospects and then go talk to those [prospects]. [40:234]

On the other hand, the innovators followed the established tradition in VoiceTech and deferred implementation decisions to the technologists. For example, instead of ensuring the implemented

technology responded to the needs of sales operations, the innovators continued to accept whatever IT provided. The marketing analyst said:

We're getting push back from IT that we're not buying a certain module. Therefore, we are limited in what the system can do. [16:104]

So, the innovators perceived the SFA would be beneficial to sales representatives and eventually lead to smarter sales, but, at the same time, they left it to IT to determine which technologies the organization implemented and did not object to IT's decision to simply convert the old legacy system to the new platform. This innovator inconsistency (Table 3, row 2) between technology strategy and technology implementation played an important role in shaping the early stages of the sales process innovation. Moreover, this innovator inconsistency and the champion inconsistency (Table 3, rows 1 and 2) mutually reinforced each other. The innovators followed the tradition at VoiceTech of deferring implementation decisions to the technologists, who had limited resources because the champions believed the new SFA was simple to implement; as a result, the technologists aimed to simply convert the old legacy system to the new platform rather than enable the new features the SFA afforded.

This phase of the change process was highly dynamic in terms of market and technology development. VoiceTech was experiencing strong growth in sales and rapidly opening sales operations in new markets. As mobile phone technologies rapidly developed, the company also introduced mobile technology in the form of BlackBerrys as a product offering for customers. These organizational and market dynamics contributed to a shift in the project's focus on a straightforward SFA conversion to introducing selective mobility functionality for the sales force at VoiceTech.

5.2 Selective Mobility

In two workshops, June 2006 (WS4) and July 2006 (WS5), we worked closely with the innovators to review status and plans in the ongoing innovation effort. In doing so, we used the proposed SFA capability options (Table 4) as a benchmark for evaluating progress and identifying new initiatives. In addition, we considered VoiceTech's recent decision to introduce mobile technology options to its customers. The change in service offerings afforded VoiceTech an opportunity to experiment with mobile SFA technology to help sales representatives capture and use information. To sell these new services to customers, sales representatives needed to master mobile solutions. Moreover, mobile SFA would eliminate the need for sales representatives to return to the office each evening to enter data on the legacy SFA computers, which was one of the primary reasons many sales representatives left the company. Specifically, mobile technology afforded sales representatives the opportunity to gather additional prospect data and use GPS technology to identify prospects that the organization had not visited recently. With this technology, sales representatives could enter contract expiration information, update business owner information, and automatically be informed about which prospects to visit.

Based on this opportunity to introduce mobile features into the SFA and inspired by the discussions in the two workshops, the innovators started to develop a clearer understanding of how the organization would need to address implementing the SFA if it was to realize the strategic goals of "smarter sales". Resolving this internal conflict in their frame also deepened the innovators' knowledge related to what capabilities the new SFA afforded. Their more integrated understanding of technology strategy, the nature of the technology features, and their implementation enabled them to take a new position in the project. Notably, instead of relying on the views of the technologists about implementation, the innovators actively explored the new SFA's potential, including the mobility option, to help solve existing problems and enable improvements in the sales process.

Thus, as the innovators adjusted their framing of the sales process innovation to align strategy with features and implementation, the innovator inconsistency weakened (Table 5, row 2). At the same time, the innovators' new framing revealed significant technology-in-use incongruences between the innovators and the other stakeholders (Table 2, row 2). The innovators believed and actively pursued the idea that the new SFA and the mobility option could help streamline sales processes and simplify information management. The marketing analyst elaborated:

The reps BlackBerry is what they have of the SFA out in the field. It is their main working space, their office. So, I want to give them functionality to be able to manage their appointments, to create reminders for themselves, and to track key decision dates. [37:13]

In contrast, the technologists, in alignment with their minimalist implementation assumptions, believed the new SFA functionality should replicate the as-is legacy sales process based on a more stable technology. The director of IT said:

The main goal for the initial [SFA release] is to launch as is with the same functionality. ... We're not going to introduce a whole lot of brand new functionality at the same time we're transitioning to a whole new SFA platform. [39:475; 40:301]

There will be very little difference between what we capture today versus what we're going to capture [in the new SFA]. [39:344]

Hence, this incongruence emerged when the innovators developed a more holistic and integrated understanding of the SFA project in which technology strategy, the nature of technology features, and related implementation assumptions complemented rather than contradicted each other.

The innovators also started to zoom in on how the sales force and their managers should use the SFA in their day-to-day practices. They were concerned that VoiceTech, for some time, had relied on multiple, overlapping information sources to keep track of its sales. The marketing analyst justified this concern:

I don't look at sales in [the new SFA] because I don't have any confidence in them. ... We have three versions of what's sold. [16:117]

The innovators understood that they needed to establish sales management based on reliable real-time data from the field. However, from their experience with the sales force, they assumed sales representatives and managers still largely relied on their own manual data-tracking methods because they lacked trust in SFA data:

If reps were...updating all of their activity on or near real-time around databases it would be accurate. But, they track it manually and get different numbers than what [the new SFA] is telling them. They're always going to count on their manually counted numbers as being the gospel. [40:278]

In fact, sales managers spent much time each day preparing and reviewing sales performance reports. Because the legacy SFA had many problems and did not give managers requisite information in a timely manner, sales managers became accustomed to using alternative technologies, such as spreadsheets and email, for manual sales reporting. Thus, although they wanted to rely on the new SFA as the authoritative information source to increase sales data availability and reliability, sales managers continued to use duplicate and conflicting systems for collecting and reporting sales data:

I have each person send me the same exact Excel spreadsheet with just their information and then I do a lot of cutting and pasting into the master tracker and send that out to the branch. [19:27]

As such, sales managers did not at this stage use the new SFA as intended to support reporting, which suggests a user inconsistency (Table 3, row 3) between technology strategy and technology-in-use.

We found a similar inconsistency among users. Some sales representatives expressed a need to improve technology support in the field:

If you had a mobile device out in the field that had internet service, you could conceivably look up every president, CEO or owner before you walked through that door and you could learn a little bit more. [11:6]

However, users only minimally used the new SFA features that were available at this point. Moreover, some of them were reluctant to adopt new technologies:

There are some people that adopt technology right away and love to make it work for them. There are other people that are always going to fear it.... I think the BlackBerry is pretty intimidating to some people. [25:9]

Thus, we observed an inconsistency between the user representatives' understanding of the nature of the technology features and their own use of the technology (technology-in-use). Accordingly, instead of having users who actively pushed for technology-enabled sales process innovation, these user inconsistencies (Table 3, row 3) reinforced the status quo.

Nonetheless, as the innovators reduced TFR inconsistencies in their own frames, they became more sensitive to incongruences between themselves and users about how they used the SFA and how they could possibly use it. Still, they had limited ability to resolve incongruences at this point due to the limited progress on implementing a reliable SFA.

Reinforcing the technology-in-use incongruence (Table 5, row 5) evident in this phase of the SFA project was the champions' belief that the new SFA supported all reporting. This incongruence resulted from their naïve view of how sales managers reported sales to the organization and how they used various IS to do so. At this point, the champion's frame was incongruent with users' (who knew they were not using the new SFA extensively) and the innovators' (who saw the potential for SFA features but suspected that users were underusing the software). Interestingly, the champions' frames related to technology strategy were, for the most part, unchanged; however, like the innovators, they began to more fully appreciate the nature of SFA technology. For instance, they continued to emphasize the general goal of smarter sales as a way to reduce sales representatives' attrition and increase sales revenue, and, eventually, they wanted to adopt mobile SFA solutions:

Now we're doing mobile and ultimately we want...our sales reps equipped with a device they can use in the field. [40:217]

Like the innovators, the champions' frames related to technology strategy, nature of technology (i.e., mobility), and technology-in-use had become in part internally consistent, though they had a more high-level and superficial understanding and incorrect assumptions about technology-in-use. Importantly, champions were still reluctant to invest additional resources in new mobile features, which reinforced the champion inconsistency (Table 5, row 1), which, in effect, stymied the innovators' ability to act fully and effectively on their newly aligned frames.

For instance, the action researchers' analyses suggested that VoiceTech should have provided all sales representatives with a BlackBerry when it employed them because it seemed counterproductive to only give mobile technology to the highest performing sales representatives when the technology, arguably, would best help the weakest performing sales representatives. However, the innovators decided to balance the diverging perceptions of the involved stakeholders. As a result, VoiceTech gave BlackBerrys only to select productive sales representatives in July 2006, which allowed them to mark an account as "sold" while in the field, to transfer basic sales information in real time from the SFA to sales operations where post-sales activities occurred, and to enter new prospects from the mobile SFA. Because of this limited rollout of mobile services, new user representatives became reliant on paper notes and had no exposure to the advantages of real-time data capture.

Despite slow progress on the SFA project overall, the innovators grew convinced that VoiceTech needed to commit fully to mobile access and real-time sales data through the new SFA. Such a tactical move was simply a technological prerequisite for realizing smarter sales in the long term that could also contribute to addressing the high attrition rates by making the job of sales representatives more attractive. Thus, the innovator inconsistency (Table 5, row 2) weakened even further, leading to the next project stage in which they began to take new and different actions.

5.3 Incremental Improvement

It became increasingly clear that the introduction of mobile solutions to sales representatives reflected a fundamental technology implementation incongruence (Table 2, row 3) between the champions and innovators. Although the innovators had to implement the champions' vision of smarter sales, the two stakeholder groups had different views of what it would take to implement that vision into the sales process at VoiceTech. The champions believed they had developed and communicated a clear path in which the new SFA would allow VoiceTech to adopt mobile devices for sales representatives to help implement smarter sales practices. The CMO expressed the vision for replacing the old SFA with an integrated CRM:

We decided that [the old SFA] wasn't going to take us where we wanted to go. ...Ultimately we want our sales reps equipped with a [mobile] device that they can use in the field. ...We thought [the new SFA] would be a better path for us to go down to implement [solutions] that will tie into everything else that we have already. [40:217]

Although the innovators understood the ultimate vision of smarter sales, they were uncomfortable with the incremental approach to changing the sales process. Without a clear commitment to mobile

technology, the innovators found it difficult to translate the overall vision of smarter sales into a detailed understanding of the to-be sales process that could help drive the implementation effort. The director of sales operations said:

We have a lot of information in different places. We haven't taken a global vision and documented it. ...I think you're asking for what we would call a vision statement about how would we in a perfect world want this whole thing to work in a global sense. We have to find that right now. [39:602,622]

This technology implementation incongruence created uncertainty about how to enhance sales performance, and it explained why champions and innovators had come to see implementation and rollout of mobile solutions for sales representatives differently. The innovators viewed mobile technology as a key driver of improved sales performance and decreased sales representative turnover, whereas champions believed the company could add mobile devices and features at a later stage or, at best, in an incremental fashion. As we describe above, although the innovators promoted increased use of mobile technology more actively, they still acted consistently with others' assumptions about an incremental approach to improving the sales process through system implementation and inconsistently with their own assumptions about the IS project strategy.

Up to this point, the user representatives had mainly seen the new SFA as replicating the legacy SFA on a new platform and reinforced it as a means for executives and managers to exert more control over sales representatives (reinforcing the technology strategy incongruence, Table 5, row 4). However, beginning in late 2006 and supported by our recommendations, the innovators conducted what they termed "adoption tours" by travelling to VoiceTech offices to conduct in-depth SFA training for sales representatives. The innovators toured VoiceTech office locations to acquire first-hand feedback, reinforce new features, and share coming initiatives. The impressions from this tour reinforced the change in the innovators' leadership role, and, with our further encouragement, they emphasized greater SFA mobility, increased user acceptance, and improved SFA implementation and usage (further weakening the innovator inconsistency, Table 5, row 2). At the same time, their interactions and communications with user representatives helped the sales people to adjust their own frames about the SFA and to become more aligned with the innovators' expectations for the system.

Select users now started to use the mobile SFA facilitated by the innovators' visits and with strong encouragement from sales managers (weakening the technology-in-use incongruence, Table 5, row 5). As a result, user representatives started to request mobile SFA features that would support sales in the field (weakening the user inconsistency, Table 5, row 3). In response, innovators pushed for enhanced mobile access to relevant information about customers and leads from the field to persuade more user representatives that the new SFA would support their sales activities directly rather than merely serve as a control instrument for sales managers (weakening the technology strategy incongruence, Table 3, row 4). Moreover, during this stage, VoiceTech incrementally implemented mobile functionality related to reporting sales, sales funnel statistics, and time tracking—functionality beneficial to sales managers. Although several sales managers still used multiple manual sources to collect and report data, this development helped them see the new SFA as the authoritative information source. Accordingly, the innovators continued to detail a longer-term strategic vision for SFA (weakening the technology strategy incongruence, Table 5, row 4) and to ensure broad participation in moving VoiceTech toward smarter sales (eventually weakening the technology implementation incongruence, Table 5, row 6).

As a result, more sales representatives adopted the SFA. After the adoption tours and subsequent incremental improvements of mobile SFA, 93 percent of sales representatives updated daily appointments, and nearly 100 percent of sales representatives sent a "sold" email and updated the account as sold in the SFA. However, approximately 40 percent of sales representatives did not enter daily cold calls, although the innovators believed that sales representatives and managers needed this information to understand sales-closing ratios. Still, sales representatives and managers made many suggestions on how to improve the SFA, and the innovators leveraged these inputs to drive the implementation forward. For example, sales representatives' ideas included a system-generated tool identifying VoiceTech clients in their area so representatives would not revisit those customers, having the ability while in the field of entering and viewing (via a Blackberry) their sales funnel, and having an easy-to-use dashboard summarizing their week-to-date and month-to-date sales status.

During this project phase, we interviewed six executives and managers to get a sense of how they perceived the change process, and we conducted a half-day workshop (WS6) with the innovators and the

VP of marketing to review implementation of the identified SFA capability options. Based on these insights, we offered an overall evaluation of the sales process innovation in a two-hour workshop (WS7) with the innovators, the VP of marketing, the director of IT planning, and an IT business analyst. We recommended they focus on improving the level of SFA assimilation (i.e., making sure VoiceTech fully exploited already-implemented SFA capabilities) and on increasing the portfolio of SFA capabilities (i.e., exploring how VoiceTech could implement all capability options (Table 4)). We subsequently turned these recommendations into plans in a half-day workshop with the innovators (WS8).

Through these close interactions with the innovators, we realized that they had largely resolved the innovator inconsistency (Table 5, row 2). The innovators had taken full leadership over the sales process innovation and delegated IT issues to the technologist. The innovators had also moved from an operational, day-to-day perspective to drive the innovation effort with a dual focus on improving SFA assimilation and expanding SFA capabilities. As a case in point, the innovators started to establish partnerships with Siebel Wireless:

What's interesting is that Siebel Wireless has become pretty interested in our project, saying: okay you're using this, what do you need from us, and, what additional functions do you need. RIM told us no one else had done this yet, which surprised us. We've got their attention so they're behaving more like a strategic partner, which at first was kind of like pulling teeth, but now there's better alignment and more responsiveness. [37:223]

At this point of the innovation effort, the innovators had successfully taken over leadership in the change process, which left the technologists with a less dominant role. The innovators' frames were internally consistent, and inconsistencies in users' frames had weakened. Also important, incongruences in frames between the key stakeholder groups had reduced so that they formed a common understanding of the project's strategy and direction. However, the champions were still inconsistent in their TFRs. Most notably, the champions had yet to dedicate requisite resources to realize the vision of smarter sales at VoiceTech.

5.4 Smarter Sales

The champions were instrumental in launching the sales process innovation, but they had allocated limited resources compared to their ambitious goal of implementing smarter sales processes with the SFA system and, thereby, contributed to framing inconsistencies and incongruences and to practical (budget) issues in the project. As the innovators took leadership and successfully enrolled both the sales representatives and managers in the efforts, the champions became increasingly responsive to the innovators' plans and need for resources. This shift grew from their improved understanding of implementation requirements and reflected their expanded understanding of the nature of SFA. Notably, the champions reconsidered their approaches to funding when VoiceTech's board of directors pushed them to provide sales representatives and sales managers with more robust mobile technologies such as laptops (weakening the champion inconsistency, Table 5, row 1). The director of sales operations said:

There were a couple of executives on the board that when they started asking us what technologies we're using at the sales rep level, we said the BlackBerry and they said, oh you're not using laptops? Almost every company empowers the reps to be as efficient as possible with laptops, they're not that expensive. Why aren't we doing it here? [41:75]

Responding to these evolving circumstances, the champions began developing a nuanced strategic vision for how the new SFA could support smarter sales through extensive use of mobile technology (weakening the technology strategy incongruence, Table 5, row 4). They created a sales leadership academy to train sales representatives and sales managers how to be more effective by using GPS-enabled mobile devices in the field; they targeted specific potential customers that the company had not yet visited; and they became smarter in how and where VoiceTech deployed its limited sales resources (weakening the technology-in-use incongruence, Table 5, row 5). As a further reinforcement of this development, the innovators focused on effectively supporting management decision making related to sales:

We developed a reporting system and release reporting system to management that's really helped with SFA adoption. Now, managers can see real time all their appointments and opportunities in a very nice and easy-to-print report versus in the previous version of the SFA it was a very onerous process to actually get to that information because you have to click ten times to get to what you needed to know. [41:22]

Accordingly, the champions started to view the new SFA as a world-class solution that provided mobile access and real-time access to sales data (further weakening the champion inconsistency, Table 5, row 1). The key stakeholders had aligned, and the goal of implementing smarter sales dominated the SFA discourse during this final stage of the innovation effort (weakening the technology implementation incongruence, Table 5, row 6).

Before exiting from the collaboration, we conducted a final two-hour workshop (WS9) with the innovators to evaluate implementation progress against plans (Figure 2). Over a 30-month period, we collaborated closely with the innovators to help them manage the change process and interact effectively with the other stakeholders. Our collaboration helped the innovators take early leadership over the process, position the technologists in a more reactive role than what was traditionally the case in VoiceTech, effectively enroll user representatives and user managers into the process, and eventually involve the champions actively in the efforts. As we have shown and as Table 5 summarizes, these changes emerged over time involving multiple interactions between TFR incongruences and inconsistencies as stakeholders responded to rather complex contextual dynamics

Table 5. TFR Shifts Implicated in Change Process

TFR	SFA conversion	Selective mobility	Incremental improvement	Smarter sales
Champion inconsistency	Introduced	Reinforced		Weakened
Innovator inconsistency	Introduced	Weakened	Weakened	
User inconsistency		Introduced	Weakened	
Technology strategy incongruence	Introduced		Reinforced-weakened	Weakened
Technology-in-use incongruence		Introduced-reinforced	Weakened	Weakened
Technology implementation incongruence			Introduced-weakened	Weakened

6 Discussion

In this paper, we focus on understanding how stakeholders' perceptions of new IT influence the course and outcomes of IT-enabled organizational change, such as the sales process innovation at VoiceTech. We applied Orlikowski and Gash's (1994) TFR theory to analyze the rich data from collaborative workshops with key stakeholders during action research interventions; interviews with users, managers, technologists, innovators, and champions; and on-site observations. We premised our analysis on the expectation that we could better explain project trajectories and outcomes in IT-enabled change efforts through the lens of frame inconsistencies and frame incongruences, particularly in dynamic organizational settings. Through this analysis, we determined that not only were inconsistencies highly relevant to understanding the change process, but that TFR inconsistencies and incongruences interacted in ways that shaped the change processes and were, in turn, shaped through that process.

The empirical findings of this case analysis (Section 5 and summarized in Tables 2, 3, and 5) are limited to the organization and project studied, and one cannot generalize them to other settings without further empirical studies (Lee & Baskerville, 2003). We suggest, however, the TFR incongruences and inconsistencies evident in the VoiceTech project (Tables 2 and 3) would not be surprising to many experienced IT managers or consultants. Of note, one can see the TFR inconsistencies that we observed for champions and innovators, which resulted from their expansive strategic ideas for SFA versus their resource-limited, cautious, incremental approach to implementation, in the SFA case that Davidson (2002) reports as well. However, the outcomes of framing in these two organizations were quite different, with the

latter organization failing to gain momentum and clarity in the project; in contrast, at VoiceTech, stakeholders developed sufficient agreement to progress towards transforming sales processes with SFA technology. These contrasting outcomes support our contention that actively managing framing is a crucial aspect of IT-enabled change efforts.

With these limitations in mind, we now consider the second-order analytical generalization of the empirical TFR analysis of the VoiceTech case (Eisenhardt & Graebner, 2007; Klein & Myers, 1999; Lee & Baskerville, 2003). Figure 3 provides a visual depiction and guide for this discussion.

First, researchers have argued that, if the frames of relevant stakeholder groups align (frame congruence), IS development projects and associated organizational change efforts will likely be more manageable and successful (Davidson, 2006). We posit that, in addition to between-group congruence, within-group alignment (frame consistency) is equally important with distinct implications for project outcomes and that frame consistency and frame congruence can interact to enable transformative IT-enabled change outcomes (interaction 1). The VoiceTech case provided evidence of such beneficial interactions in the smarter sales phase because innovators, champions, and users each developed more consistent TFRs and TFRs across groups better aligned with each other. The firm could then adopt a comprehensive approach that linked organizational change (e.g., the sales force academy) and IT change (e.g., advanced SFA features) to support sales processes in its dynamic market environment.

Of course, few IT-enabled change programs begin in this ideal state. Even successful projects may exhibit frame incongruences between key stakeholder groups at various stages. Research case analyses adopting the TFR lens have demonstrated the implications of frame incongruence (Barrett, 1999; Gallivan, 2001; Orlikowski & Gash, 1994; Shaw, Lee-Partridge, & Ang, 2003) and examined how firms might resolve incongruences through inter-group political or power processes (interaction 2) (Azad & Faraj, 2008; Hsu, 2009; Lin & Conford, 2000; Lin & Silva, 2005; McGovern & Hicks, 2004; McLoughlin, Badham, & Couchman, 2000; Olesen, 2012). Similarly, in the VoiceTech case, we found various forms of incongruence among champions, innovators, technologists, and users (Table 2) and explained how these incongruences developed, reinforced, or lessened as the project progressed (Table 5).

Expanding Orlikowski and Gash's (1994) notion of contradictions in a group's frames, we posit that misalignment between the domains of a group's or of influential individuals' TFRs (frame inconsistency) can be equally problematic. Our analysis highlighted inconsistencies in the frames of champions, innovators, and users (Table 3) and detailed implications for the project (e.g., when champions advocated strategic SFA approaches but still supported the implementation project as a low-cost, incremental technology replacement effort). The VoiceTech case also illustrated how stakeholders can resolve frame inconsistencies (interaction 3). Notably, in the first two phases (SFA conversion and selective mobility), the innovators believed the SFA project to be a long-term strategic project, but they focused on short-term planning and deferred implementation decisions to the technologists, who were only concerned with updating the SFA software platform. That is, the innovators' inconsistent frames contributed to their contradictory actions, which weakened their ability to be effective change agents in the firm. As the innovators developed a fuller understanding of the nature of the SFA technology through their interactions with the action research project team and in workshops and as they began listening to and working more closely with users during the incremental implementation phase, they developed a more robust understanding of the project that was aligned across frame domains. As a result, they could assume a more effective leadership role in the change effort.

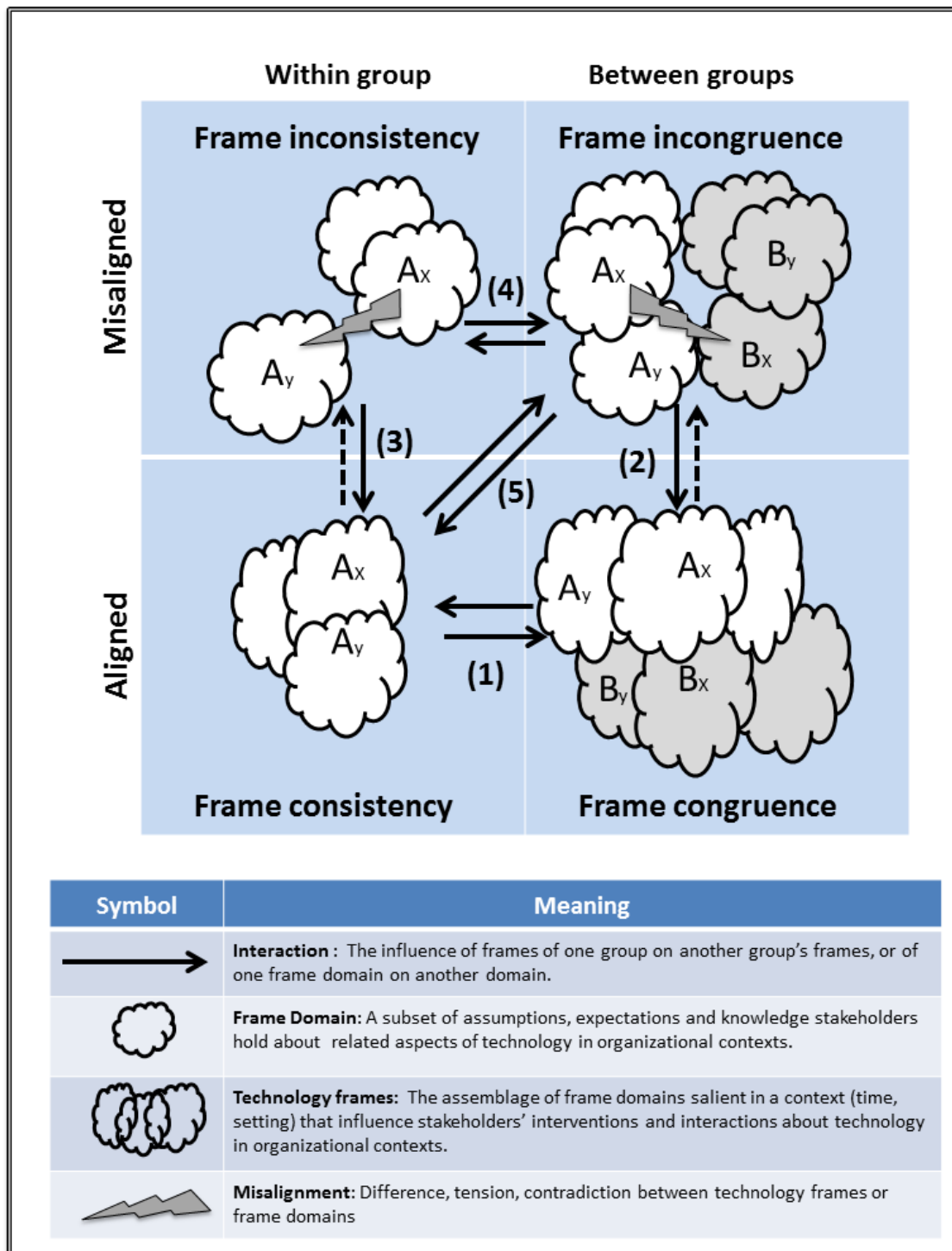


Figure 3. Interaction of TFR Inconsistency and Incongruence

Another important new insight from the VoiceTech case is that frame inconsistencies and frame incongruences can mutually reinforce each other and, therefore, be especially problematic in an IT-enabled change project (interaction 4). For instance, the champions' inconsistency about technology strategy and technology implementation contributed to the technology strategy incongruence between champions and users. Despite their claims that the SFA project would enable "smarter sales" for the sales force, the champions' refusal to fund new features (e.g., mobile technology) for all sales personnel resonated with users' suspicions that the SFA project strategy was simply tighter administrative control over them. Similarly, the inconsistency in the stated desire of sales managers and representatives for

advanced SFA features even though they were not using the SFA features contributed to the technology-in-use incongruence between users and innovators and between innovators and champions. The mixed signals from users reinforced champions' mistaken assumptions about how the sales managers used the SFA technology and the innovators' understanding of what users really wanted from the project. The technology implementation incongruence between champions and innovators also reinforced the innovator inconsistency in technology strategy and technology implementation during the first two phases of the project when innovators did not take consistent actions that would have contradicted the champion's understanding of and actions towards the project.

One can easily imagine how such negative framing dynamics can disrupt an IT-enabled change project. Figure 3 suggests various paths through which stakeholders may weaken or resolve negative reinforcement patterns. For instance, resolving an area of frame incongruence (interaction 2) may weaken or eliminate the interaction with a frame inconsistency (interaction 4), which, in turn, may weaken the frame inconsistency (interaction 3). Although such positive patterns are possible, our analysis of the VoiceTech case suggested that one might need to resolve frame inconsistencies first (interaction 3) in order to resolve or disrupt negative reinforcement patterns, especially if designated innovators in a change program hold inconsistent frames. However, an immediate process outcome of resolving a frame inconsistency might be increased frame incongruence (interaction 5), which, through productive interactions among groups, could lessen frame incongruence (interaction 2) and frame inconsistency (interaction 1) as group members learn from their experiences and from each other during the project.

We found evidence of this positive reinforcing pattern in the VoiceTech case. A key turning point in this project happened at the end of the selective mobility phase in which innovators recognized and acted on inconsistencies in their frames, which enabled them to become more effective change agents and project leaders. Resolving frame inconsistencies did not lead directly to greater frame congruence (interaction 1) since other stakeholder groups also held inconsistent frames. However, although innovators' and champions' TFRs remained misaligned during the incremental innovation phase, the innovators became more willing and able to address incongruence with the champions so champions, eventually, could align their technology strategy and technology implementation assumptions with innovators' and with users' assumptions (interaction 2). As innovators confronted incongruences with other groups (interaction 5), these groups' frames eventually became more aligned (interaction 1) as, for example, sales representatives and managers became more consistent in their expectations about the nature of the SFA technology and their own use of it and as champions reconsidered contradictions in their assumptions about strategy and implementation (interaction 3).

To conclude our discussion of this model, we note that TFRs will seldom be entirely consistent or perfectly congruent, nor is total alignment necessary for an IT-enabled change project to proceed successfully. Indeed, Yeow and Sia (2008) suggest incongruence may be inconsequential, and Hsu (2009) argues that incongruence can be beneficial if it stimulates critical thinking and discussion. Moreover, a group's knowledge, assumptions, and expectations about a project may be objectively wrong and not just a matter of perspective. For instance, for much of the VoiceTech project, champions incorrectly assumed that sales managers were relying on the SFA system to produce sales reports when in fact they were not. Thus, we cannot assume that resolving frame inconsistencies and incongruences will always result in positive outcomes for a change effort or the organization; instead, they may contribute to escalation of failing projects (Keil & Robey, 1999; Newman & Sabherwal, 1996) or faltering commitment to projects if these dynamics reinforce inaccurate TFRs. Finally, Figure 3 suggests framing interactions that we did not observe in the VoiceTech project but which we posit one may observe in other cases. Of special note, the dotted lines in interactions 2 and 3 suggest that framing does not always progress from misalignment to alignment and that TFR alignment in a group or between groups, once achieved, might revert to misalignment. Davidson (2002) suggests that turbulence in the organizational environment can unsettle TFRs if influential stakeholders (with their frames) join or leave a project, whereas stability in stakeholder group membership, which we observed during the VoiceTech project, allowed the organization to move forward once stakeholder frames became, and remained, more aligned.

6.1 Implications for Theory

With this study, we contribute to TFR theory in several important ways. First, we bring to the foreground the importance of frame inconsistencies in the socio-cognitive processes that underlie IT-enabled organizational change projects. Orlikowski and Gash (1994) acknowledge that problematic differences in TFR's might be manifest both in and between stakeholder groups, but their study and subsequent TFR

research has focused primarily on between-group incongruence. Second, our analysis builds on Davidson's (2002) discussion of tensions between frame domains in a stakeholder group's TFRs to explicate the ways in which framing implicates incongruences and inconsistencies and how within-group inconsistencies can interact with between-group incongruences in nuanced and influential ways. Third, we develop a framing process model (Figure 3) that accounts for possible interaction patterns and implications for the trajectory of this sociocognitive process in IT-enabled change. Our discussion highlights interaction patterns evident in the VoiceTech case and posits other patterns that one may observe elsewhere.

We also contribute to the practical utility of TFR by including technology implementation as a domain construct. Orlikowski and Gash (1994) established the important domains nature of technology, technology strategy, and technology-in-use, which TFR studies have broadly applied and found to be useful (Davidson, 2006). TFR research that addresses the IT project development process (Davidson, 2002; Ovaska et al., 2005) or that examines technology users' experience of a new technology after implementation (Davis & Hufnagel, 2007; Leonardi, 2013; Mazmanian, 2013) have given less attention to how TFRs and framing are influential in and are influenced by the implementation of organizational change projects. Our case analysis illustrates the potential value of including implementation in TFR analysis.

6.2 Implications for Practice

In the 30 months of this case, stakeholders' initial understanding of "the sales model" for VoiceTech's sales activities, which did not change substantively by the introduction of the SFA per se, was eventually transformed significantly as champions and innovators recognized that VoiceTech should focus on how it organized sales processes in conjunction with SFA technology opportunities. Stakeholders' TFRs developed towards a more harmonious assemblage of assumptions and expectations for technology strategy, the nature of technology, technology-in-use, and implementation of the SFA project. As a result, VoiceTech's executives, innovators, and sales force could envision a more transformative change process that resulted in the firm's creating a sales academy and restructuring its leadership team in accord with rapid developments in the marketplace related to mobile technologies, the firm's expansion in the market, and other SFA technologies.

While IT consultants and scholars have long advocated this approach to IT-enabled organizational change (Benjamin & Levinson, 1993; Macredie & Sandom, 1999; Markus, 2004), doing so is not simply a question of project management. Actually, developing a vision and carrying it out effectively requires significant socio-cognitive development—frame alignment within and among stakeholder groups—in the organization. Current practices and limited understanding and expectations of other stakeholders can submerge the lofty and far-reaching ideas of executives or innovators for using new IT for transformative change as we saw in the SFA conversion phase of VoiceTech's project. Even the advocates of strategic change themselves may sabotage change efforts unintentionally if their own frames and the actions they take based on frames are inconsistent as we saw in the selective mobility phase. Developing more robust, consistent frames related to IT-enabled change as we saw first with the innovators in the incremental improvement phase and later with the champions in the smarter sales phase is an important sociocognitive organizational outcome that we argue can facilitate change in dynamic business environments in which markets, technologies, and organizations develop and change.

To work towards such beneficial framing outcomes, it is useful to view IT-enabled change as a process of distributed cognition that involves multiple communities of specialized knowledge workers. Boland and Tengasi (1995) describe how groups interact to create the patterns of sensemaking and behavior so that new configurations of knowledge and new forms of behavior emerge through the interactions in and between groups. While groups maintain and refine existing practices through organizational routines and policies, new knowledge and behaviors emerge as groups question and revise routines to create new processes and relationships. Boland and Tengasi (1995) argue that, in these situations, transformations in and between groups result from a combination of perspective making and perspective taking as two distinct and interdependent approaches to build on and reconcile differences in perception.

We argue that TFR incongruences are expressions of differences between communities of specialized knowledge workers (e.g., technologists, sales managers and sales representatives) as they engage in changing routines and processes enabled by technology. To create new and aligned knowledge out of these differences, groups need to engage in perspective taking; that is, in actively appreciating the perspectives of other stakeholder groups. However, to do so, each group must also engage in perspective making to explicate their own view on technology and process options. Hence, groups (led by organization

members with an organizational perspective and influence to address differences or guided by external process consultants as we saw here with the action research interventions) may reconcile incongruences and inconsistencies as they engage in perspective taking and perspective making exercises.

7 Conclusion

Successfully integrating new ITs into operational processes to support a firm's ability to thrive in dynamic business environments is the promise and the peril of IT-enabled change projects. In this paper, we argue that framing processes underlie and permeate the decisions and actions stakeholders take in projects. Using the TFR framework, we examined how framing evolved over 30 months of a change project at VoiceTech. The case analysis highlighted the nuanced interactions of frame incongruences and inconsistencies that influenced the evolution of the project and the outcomes the firm realized through the project. By analytically generalizing this case, we developed a process model to account for the varied interactions of TFR inconsistencies and incongruences as a guide for future research.

As with any research, our study has limitations. The choice to study a particular project in a single company brings to the foreground phenomena that are present in the case, whereas other patterns may be present in other settings. We need additional empirical studies to explicate patterns of frame inconsistencies, incongruences, and their interactions. As we note earlier, the patterns we identified in this case can provide a starting point for such studies. One can fruitfully examine complex multifaceted organizational cases from various theoretical perspectives. We chose to adopt TFR theory to highlight the sociocognitive framing process. Given the number of in-depth case studies using TFR theory that have been published, one could use qualitative meta-analysis across cases to further develop and support the process model we proposed from the VoiceTech case and to enrich this model with complementary theoretical perspectives such as interpretive power and politics (Jasperson et al., 2002; Markus, 1983).

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