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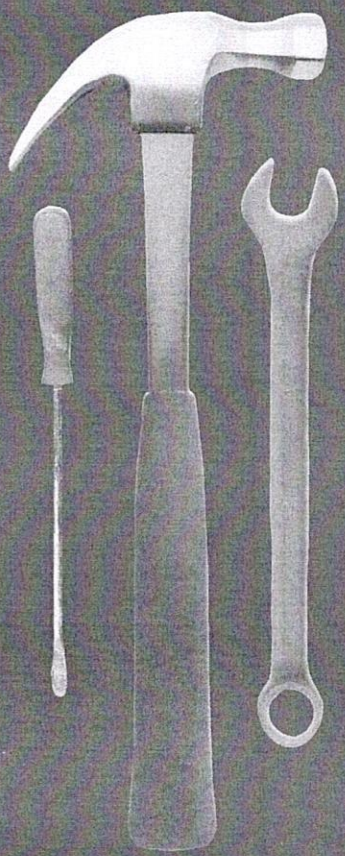
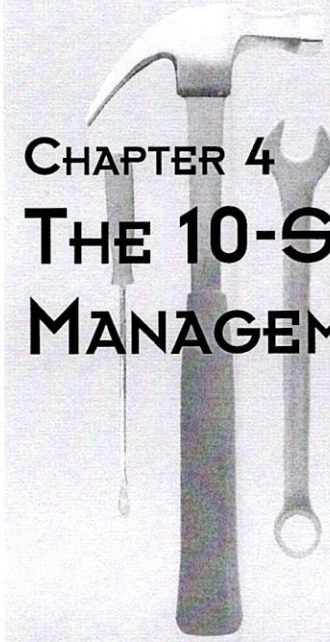


Part II
The Road Ahead: Implementing Knowledge Management



Chapter 4
The 10-Step Knowledge Management Road Map

IN THIS CHAPTER

- ✔ Understand the 10-step KM road map and how it applies to *your* company.
- ✔ Understand the four phases constituting these 10 steps: infrastructural evaluation; KM system analysis, design and development; deployment; and evaluation.
- ✔ Understand where each step takes you.
- ✔ Articulate a clear link between KM and business strategy.
- ✔ Learn how to prioritize KM support for processes to maximize business impact.
- ✔ Understand the key steps involved in knowledge auditing, knowledge mapping, strategic grounding, deployment methodology, teaming, changing management, and return-on-investment (ROI) metrics formulation.
- ✔ Use real-options analysis to guide your KM investments.

THEY COPIED ALL THAT THEY COULD FOLLOW BUT THEY COULD NOT COPY MY MIND, AND I LEFT 'EM SWEATING AND STEALING AND A YEAR AND HALF BEHIND.
—RUDYARD KIPLING

Knowledge management is a complex activity that cannot deliver business impact without a concrete plan. This chapter introduces that plan: The 10-step KM road map that will guide you through strategizing, designing, developing, and implementing a KM initiative—with *your* company in mind. Recall, this is a road map, not a methodology with a deceptive look of a cookie-cutter formulation. Even if your competitors get to it, they cannot apply it because knowledge is protected by context as copy-protected software is protected by encryption.

This strengthening idiosyncrasy of knowledge also has a negative implication for you: You cannot easily copy a competitor's KM strategy. Examples from your industry's leaders can be useful for understanding KM, but they cannot show you the right way to do it. For these reasons, your KM system and KM strategy will have to be unique to your company. What follows in the next four sections of this book is an explication of the road map for developing an idiosyncratic knowledge strategy.

THE 10-STEP KNOWLEDGE MANAGEMENT ROAD MAP

Each of the next 10 chapters that follow will describe one each of the 10 steps in the KM road map. These steps and their sequence are described in Figure 4-1.

To grasp the bigger picture, look at the four phases that the 10 steps of the road map comprise:

1. Infrastructural evaluation
2. KM system analysis, design, and development
3. System deployment
4. ROI and performance evaluation

These four phases are described in Parts II, III, IV, and V of this book. Table 4-1 describes how each of these steps is logically arranged in these chapters.

PHASE 1: INFRASTRUCTURAL EVALUATION

The first phase of the 10-step technique involves two steps. In the first step, you analyze your existing infrastructure, then identify concrete steps that you can take to leverage and build on your KM platform. In the second step, you perform a strategic analysis to link KM objectives and business strategy.

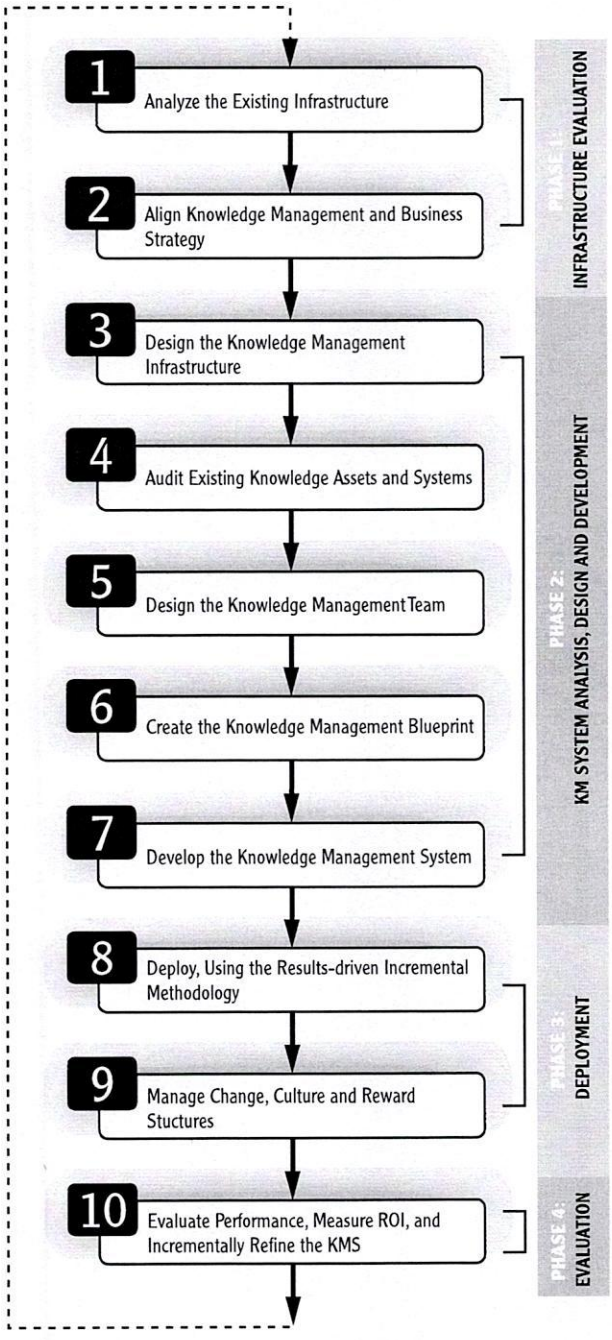


Figure 4-1 The 10-step KM road map.

Table 4-1 Organization of Chapters Describing The Four Phases of The 10-Step KM Roadmap

Part	Chapter	Step
PHASE 1: INFRASTRUCTURAL EVALUATION		
II	5	Step 1: Analyzing existing infrastructure
	6	Step 2: Aligning KM and business strategy
PHASE 2: KM SYSTEM ANALYSIS, DESIGN, AND DEVELOPMENT		
III	7	Step 3: Designing the KM architecture, and integrating existing infrastructure
	8	Step 4: Auditing and analyzing existing knowledge
	9	Step 5: Designing the KM team
	10	Step 6: Creating the KM blueprint
	11	Step 7: Developing the KM system
PHASE 3: DEPLOYMENT		
IV	12	Step 8: Deploying with results-driven incrementalism (RDI) methodology
	13	Step 9: Leadership issues
PHASE 4: METRICS FOR PERFORMANCE EVALUATION		
V	14	Step 10: Real-options analysis of returns and performance

Step 1: Analysis of Existing Infrastructure

In this first step, you gain an understanding of various components that constitute the KM strategy and technology framework. By analyzing and accounting for what is already in place in your company, you can identify critical gaps in the existing infrastructure. Consequently, you will be able to build on what already exists. Instead of *telling* you what components to build on, I will guide you through the process of making those decisions specifically in the context of your company. Although leveraging existing infrastructure is the logically, scientifically, rationally, theoretically, common-sensically, and financially right approach, it also stands a better chance of generating stronger management support for your KM project because of the perception that you are not completely abandoning the "old" existing investments.

Step 2: Aligning Knowledge Management and Business Strategy

Business strategy is usually at a high level. Developing systems is always at a low level: Specifications and features are needed, not abstractions or visions. The second step in the 10-step road map allows you to make the connection between these two: Raise KM platform design to the level of business strategy and pull strategy down to the level of systems design. As a part of the process of creating this alignment between KM and business strategy, Chapter 6 describes what you must do.

PHASE 2: KNOWLEDGE MANAGEMENT SYSTEM ANALYSIS, DESIGN, AND DEVELOPMENT

The second phase of KM implementation involves analysis, design, and development of the KM system. The five steps that constitute this phase are:

1. KM architecture design and component selection
2. Knowledge audit and analysis
3. KM team design
4. Creation of a KM blueprint tailored for your organization
5. The actual systems development process

Let us briefly examine each of these steps and understand the key tasks that need to be accomplished at each step.

Step 3: Knowledge Management Architecture and Design

As the third step toward deploying KM, you must select the infrastructural components that constitute the KM system architecture. KM systems use a seven-layer architecture, and the technology required to build each layer is readily available. Integrating these components to create the KM system model requires thinking in terms of an *infostructure,* rather than an infrastructure. Your first big choice is the collaborative platform. We will reason through the choice of the preferred collaborative platform to decide whether the Web or a proprietary platform is better suited for your company. You will also identify and understand components of the collaborative intelligence layer: artificial intelligence, data warehouses, genetic algorithms, neural networks, expert reasoning systems, rule bases, and case-based reasoning. You will also examine how newer developments, such as peer-to-peer platforms, hold promise for corporate KM.

Step 4: Knowledge Audit and Analysis

A KM project must begin with what your company already knows. In the fourth step, you audit and analyze knowledge, but first you must understand why a knowledge audit is needed. Then you assemble an audit team representing various organizational units, as described in Chapter 8. This team performs a preliminary assessment of knowledge assets within your company to identify those that are both critical and weak.

Step 5: Designing the Knowledge Management Team

In the fifth step on the KM road map, you form the KM team that will design, build, implement, and deploy your company's KM system. To design an effective KM team, you must identify key stakeholders both within and outside your company; identify sources of expertise that are needed to design, build, and deploy the system successfully while balancing the technical and managerial requirements. We examine the issues of correctly sizing the KM team, managing diverse and often divergent stakeholder expectations, and using techniques for both identifying critical failure points in such teams.

Step 6: Creating the Knowledge Management System Blueprint

The KM team identified in Step 5 builds on a KM blueprint that provides a plan for building and incrementally improving a KM system. As you work toward designing a KM architecture, you must understand its seven layers specifically in the context of *your* company and determine how each of these can be optimized for performance and scalability, as well as high levels of interoperability. You will also see how to position and *scope* the KM system to a feasible level where benefits exceed costs. Finally, you will see ways to *future-proof* the KM system so that it does not "run out of gas" when the next wave of fancy technology hits the market. This step integrates work from all preceding steps so that it culminates in a strategically oriented KM system design.

Step 7: Developing the Knowledge Management System

Once you have created a blueprint for your KM system (Step 6), the next step is that of actually putting together a working system. We will tackle the issues of integrating a system across different layers to build a coherent and stable KM platform.

PHASE 3: DEPLOYMENT

The third phase in the 10-step road map involves the process of deploying the KM system that you built in the preceding stages. This phase involves two steps:

1. Deployment of the system with a *results-driven incremental* technique, more commonly known as the RDI methodology. This step also involves the selection and implementation of a pilot project to precede the introduction of a full-fledged KM system.
2. Cultural change, revised reward structures, and the choice of using (or not using) a CKO to make KM produce results. This is perhaps the most important complementary step that is critical to the acceptance of a KM system in any company.

Let us take a brief look at these two steps.

Step 8: Pilot Testing and Deployment Using RDI Methodology

A large-scale project such as a typical KM system must take into account the *actual* needs of its users. Although a cross-functional KM team can help uncover many of these needs, a pilot deployment is the ultimate reality check. In the eighth step on the KM road map, you must decide how you can select *cumulative* releases with the highest payoffs first. You will evaluate the need for a pilot project; if it is needed, select the right, nontrivial, and representative pilot project. You will also appreciate scope issues and ways to identify and isolate failure points. Finally, you will evaluate how to use the RDI methodology to deploy the system, using cumulative results-driven business releases.

Step 9: Leadership and Reward Structures

The most erroneous assumption that many companies make is that the intrinsic value of an innovation such as a KM system will lead to its enthusiastic adoption and use. Knowledge sharing cannot be mandated: Your employees are not like troops, they are like volunteers. Encouraging use and gaining employee support requires new reward structures that motivate employees to use the system and contribute to its enthusiastic adoption. Above all, it requires enthusiastic leadership that sets an example to follow. Chapter 13 guides you through these leadership and incentive development issues.

PHASE 4: METRICS FOR EVALUATION

The last phase involves one step that most companies have been struggling with: measuring business value of KM. When pushed for hard data, managers have often resorted to ill-suited and easily misused approaches, such as cost-benefit analysis, net present value (NPV) evaluation, vague ROI measures, or, at best, Tobin's *q*. Chapter 14 describes the traps that companies are most vulnerable to and suggests ways to avoid them while devising a robust set of company-specific metrics for KM.

Step 10: Real-Options Analysis for Knowledge Management

The tenth step—measuring ROI—must account for both financial and competitive impacts of KM on your business. This step guides you through the process of selecting an appropriate set of metrics and arriving at a lean but powerful composite. We will use the Nobel Prize-winning real-options approach for analysis. We will also evaluate many ways in which real-options data can be tracked. We also see how successful companies have approached metrics, what errors they have made in the past, and how you can learn from their mistakes.

Being able to measure returns serves two purposes: It arms you with hard data and dollar figures that you can use to prove the impact of effective KM, and it lets you refine KM design through subsequent iterations.

LESSONS LEARNED

The 10-step road map is built on years of cumulative research involving small and large companies in a variety of industries worldwide. It is a road map that—unlike a cookie cutter methodology—will help you build both a KM strategy and a KM system that is tailored to *your* company.

12 A framework for knowledge management

As those who work in organizations know, organizations are not homogenous entities where grand theoretical systems are easily put in place. Change is difficult. A special challenge in deploying knowledge management is that is requires systemic change. Isolated initiatives fail, but is also impossible to revamp the whole organization in one sweeping wave of change.

A consideration for a knowledge management framework, therefore, is that it needs to address systemic change in organizations. In practice, the framework has to provide a coherent language and a point of view that enables the various organizational actors to see their activities within the overall effort to develop organizational knowledge management. This requires that the current state and the vision of the organization can be seen together, in a way that enables the organization developers to bridge the gap.

Moreover, we need to take into account the simultaneous existence of several competing frameworks. In any large organization, it is impossible to develop one single approach to knowledge management and simply roll it out. Knowledge management is already happening, and much of the organizational development is working on solutions to its problems. When we deploy knowledge management, we have to be able to show how it relates to the ongoing initiatives in the organization, as well as to point out those areas where new thinking is required. Those frameworks that do not take into account change, or address issues of migration and co-existence of old and new concepts, practices, and tools, rarely generate major impact.

I proposed before that the answer to the question of knowledge management is that we want to make organizations more intelligent. There still remains the question how are we going to do this. In practice, knowledge management can be viewed as consisting of several dimensions where change is needed, and we have to address all these to get knowledge management deployed. To understand and manage knowledge in organizations, we need to understand what knowledge is, how it is used, what does its management consist of, and how we could improve organizational knowledge processes. The first dimension, therefore, is *conceptual*. We have to develop a set of integrated constructs that can be used to discuss knowledge in organizations. As we have seen in the previous chapters, this is a challenge in itself. The theoretical and conceptual basis for knowledge

management requires a multi-disciplinary approach and rather sophisticated theoretical discussion. In practice, we can not expect that everyone within the organization becomes an expert in the theory of organizational cognition, meaning processing, or activity theory. Therefore, we have to package the theory in a way that suits the needs of the organization in question.

Second, as I pointed out above, we need to explicitly address *change*. Change is closely related to stability. Therefore, a knowledge management framework has to say something about institutions and their evolution. As was discussed before, change, in itself is created when knowledge changes. Before new knowledge changes knowledge structures and systems of activity within an organization, knowledge has to be accessed, understood, and accepted. Knowledge management framework, to change the organization, needs to include concepts for change management.

One major aspect of change management is migration of old forms of activity into new forms. This requires coexistence of activities that are different versions of each other. In most cases this means that new activities are piloted as limited and isolated experiments, which in due course can be deployed more extensively within the organization.

Change often creates resistance. I would argue that in many cases this resistance actually, in itself, is a knowledge management problem, which results from problems with accessibility, acceptability, understanding, but also from problems in the management of attention. In effective organizations, people are busy doing those activities that they have understood to be the most relevant and urgent. Therefore any suggestions for new activities are competing with an existing set of relevant and urgent activities. In many cases, the newness of novel contributions of knowledge management is sufficient to make them less relevant and less urgent than items on the current agenda. This means that in practice there has to be some re-evaluation of priorities in the organization if the organization is going to deploy knowledge management practices. This, in turn, requires that the organization changes its vision so that it explicitly includes some aspects of knowledge management. For example, the organization can create a vision of itself as an intelligent organization, and look back from its strategic needs to see how it should prioritize its organizational development activities.

In research organizations, one commonly used approach to deal with the problem of change is to keep the number of possible projects so large that there exists alternatives if the priorities change. This

approach is used to make it easier for the researchers to develop their work identity around a strategic vision of the organization instead of specific "pet-projects" that for various reasons may change their priority. A similar management problem exists also for organizational development and innovation. To overcome this problem, the organization may develop a strategic vision from which a manageable portfolio of knowledge development projects are selected. At the same time there have to be processes that re-evaluate priorities from time to time. In knowledge management programs it is often reasonable to generate a set of high-priority implementation projects, and develop organizational knowledge management systems using a portfolio of strategically selected projects. Within each such project, change management, however, needs also to be addressed separately.

When organizations need to change, often the most scarce resource is time. Knowledge management is therefore also about management of time. This is so both at the macro-level and at the micro-level. At the organizational level, there has to be time to reflect on the organizational priorities and practices. If the organization is overloaded with current activities and existing initiatives, there is not much that can be done to manage organizational attention, and focus it toward knowledge management.

Time is critical also at the individual level. Learning requires that there is time for cognitive re-arrangement. Often, however, the drive for efficiency means that there is not much time devoted for reflection. A critical tool for knowledge management is, therefore, allocation of slack. Such "unallocated" time, however may need to be institutionalized and its use directed towards the strategic goals of the organization. If a strategic goal of an organization is to increase its intelligence, however, strategic allocation of slack may equal to making sure that there is enough time for consolidation of experiences, and radical reframing of existing knowledge structures. In a knowledge intensive organization, appropriately allocated slack may be its most productive investment.

It would be unwarranted to think that one organizational actor can design and implement change. As knowledge management touches more or less all the areas of organizational development, this leads, in practice, to the requirement of involvement of stakeholders in any knowledge management initiative. One way of doing this is, for example, to systematically integrate the change laboratory concept in knowledge management initiatives.

An especially important organizational institution is its system of incentives. This is also one of the major tools by which organizational change can be implemented. More generally, the third dimension in the framework relates to the problem of *measurement* of knowledge. Measurement is an important integration mechanism within organizations that directs managerial attention within an open field of potential interventions. Each measurement system implicitly defines a point of view. Therefore, the design of a measurement system is one of the most fundamental statements of organization's goals. Measurement also enables us to see whether we are moving towards these goals. I discuss this dimension in the next chapter in more detail.

The fourth dimension is informal and formal *organizational structure*. For knowledge management we have to be able to view organizations as knowledge processes, and discuss ways to implement formal, informal and communication structures that improve organizational knowledge processing. This includes defininig new roles and responsibilities that are required for effective knowledge management. Such roles may include, for example, knowledge owners, knowledge publishers, knowledge harvesters, and community coordinators. In many cases, these roles exist in any given organization, but they are not institutionalized or supported. Much of the most important knowledge management work is currently done simply because people in the organization understand that it is useful and should be done. Often, however, such work is invisible, and instead of promoting and managing it, organizations make it difficult and unrewarding.

The fifth knowledge framework dimension is that of *knowledge content*. If we view knowledge as a product in itself, the resulting product can be classified and categorized in various ways. To manage the products of knowledge processes, we need compatible and complementary typologies for knowledge. Content can also be related to skills of people. To manage content we may develop expertise directories, skill management systems, knowledge maps, or other meta-models of knowledge content. For example, categorization principles used by information services professionals embed decades of research on knowledge categorization. Especially in electronic environments, however, also issues such as version control and document reliability, quality, and life-cycle require conscious effort.

The sixth dimension of knowledge management is *tools*. These include various knowledge management methodologies and their representations, but also infrastructure that makes effective knowledge

management possible. Most important, such infrastructure includes information and communication technology that can be used to support organizational knowledge processes and their management. For example, knowledge management may be supported by collaboration tools, document management systems, organizational memory support systems, innovation support systems, information retrieval tools, and data discovery tools.

As was noted before, although knowledge management is often seen as a technological issue, in practice it is widely understood that technology is a relatively small part of any successful knowledge management program. This is so because a tool can not be utilized without the corresponding practice. Although organizational change can sometimes be arranged around the introduction of a specific tool that symbolizes change, manages attention, and structures discussions, the criteria for successful deployment is behavioral change. For example, if the explosive growth of intranets, for example, would be measured by some quality criteria, we might see that the relative amount of actionable information, by any reasonable criteria, is decreasing. We might analyze this situation as a simple example of a situation where the link between knowledge products and activity systems that produce and use these products do not exist. Information is often produced without any clear model why someone would need it. More generally, in knowledge management similar waves of excitement and frustration follow each other when technology gets too much attention compared to organizational practice.

The dimensions of the framework are summarized in Figure 41, and the interpretation of the various dimensions is summarized in Table 13.

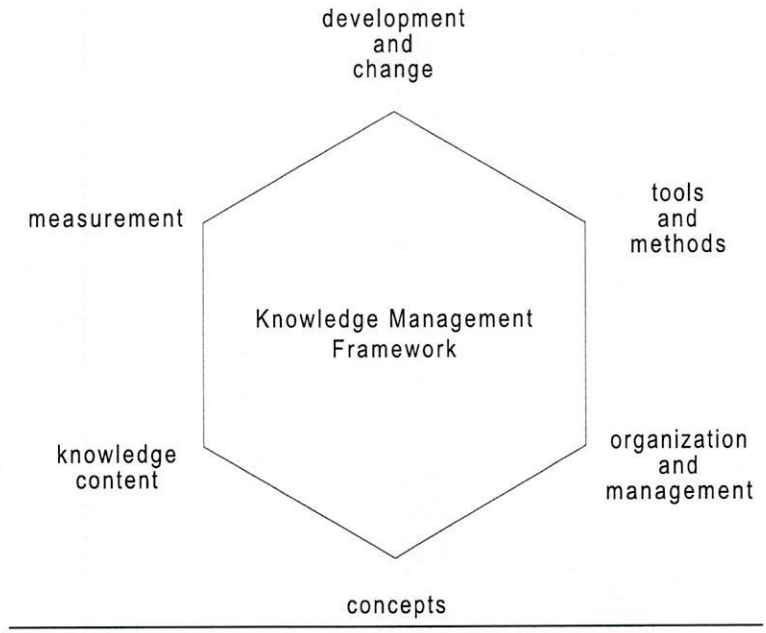


Figure 41. Framework dimensions.

Framework dimension	Interpretation
Concepts	an integrated set of constructs for understanding knowledge and its management in organizations
Development and change	migration and co-existence of knowledge frameworks, processes, tools, and behavior
Organization and management	integration and institutionalization of formal, informal and knowledge processing structures; knowledge management roles; organizational institutions, including incentive structures, knowledge sharing policies, and culture
Content	characteristics and typologies of the products of knowledge processes
Measurement	valuation of knowledge content, capabilities, and potential opportunities for their utilization; measuring knowledge processes, and locating areas of improvement
Tools and methods	methodologies, organizationally tailored "communication packages," information systems

Table 13. Interpretation of the framework dimensions.

In the next two chapters, I discuss in more detail two of the dimensions. First, I introduce the topic of measurement, and describe how the theory develop in earlier chapters can be used to develop a measurement system for knowledge management. After that, I show how the theoretical concepts presented can be implemented as new organizational structures that support knowledge creation. These two examples illustrate how the conceptual work done in the course of this work can be translated to organizational practice.