Executive Summary

Information Technology (IT) organizations have long struggled with achieving company-wide strategies while simultaneously responding to urgent requests from business units to implement solutions for local projects.

Our studies suggest that successful approaches address two fundamental goals: alignment between IT and the rest of the business and coordination across multiple organizational levels. Our IT engagement model describes these successful approaches. We define our model as the system of mechanisms that brings together key stakeholders to ensure that projects achieve both local and company-wide objectives. It consists of three general components: company-wide IT governance, project management, and linking mechanisms. This article focuses on the linking mechanisms because they are crucial but not well understood. We illustrate the model with two case studies: BT plc and Toyota Motor Marketing Europe (TMME). Both companies have distributed the risks and responsibilities of achieving company-wide objectives across multiple stakeholders and have incrementally achieved company-wide objectives on a project-by-project basis.

ADDRESSING IT ALIGNMENT AND COORDINATION ISSUES

Two streams of research have addressed the challenge of IT organizations aiming to achieve company-wide strategies while simultaneously responding to urgent requests from business units.

The top-down research approach has focused on IT governance, and how management groups can allocate decision rights to make company-wide IT-related decisions. This research has studied the key decisions that IT and non-IT senior managers must address. But it has not examined in detail how these decisions get implemented in projects.3

The bottom-up research approach has focused on project management, and how projects can be coordinated and managed to achieve local goals. This research has studied how IT departments ensure that projects are on time and on budget, but it has not addressed how sets of projects can achieve company-wide objectives.

Neither approach fully addresses how IT organizations can simultaneously pursue both company-wide and local objectives. Success requires the concerted efforts of multiple stakeholders and maintaining a healthy balance between strategic and tactical demands. Success also requires flexibility because the details of a final solution often only emerge over time. The end solution can be difficult to anticipate.4

1 Bob Zmud was the accepting Senior Editor for this article.
2 Our thanks to Jeanne Ross, Peter Weill, Peter Heinckiens, and Chuck Gibson for their significant contributions to our thinking on the IT engagement model. We are grateful to the managers who participated in this research and shared their experiences and insights. We are also grateful to Bob Zmud and three anonymous reviewers for helpful comments on improving this paper. This paper was made possible by support of CISR sponsors and, especially, CISR patron BT plc. This paper draws on 1. Fonstad, N. and Robertson, D. “Realizing IT-enabled Change: The IT Engagement Model,” MIT Sloan School of Management, Center for Information Systems Research, Research briefing (IV:) Oct 2004; 2. Fonstad, N. and Robertson, D. “Engaging for Change: An Overview of the IT Engagement Model,” MIT Sloan School of Management, Center for Information Systems Research, Research briefing (V:1C), Mar 2005; and 3. Ross, J., Weill, P., and Robertson, D. “Enterprise Architecture as Strategy: Creating a Foundation for Business Execution”, forthcoming in 2006 from Harvard Business School Press.
We have studied how companies are addressing this challenge. Our findings suggest that successful approaches address both alignment between IT and the rest of the business and coordination across multiple organizational levels. They achieve both alignment and coordination by linking company-wide IT governance with project governance and by engaging multiple stakeholder groups.

We use the term engagement to mean negotiating, influencing, educating, socializing, and interacting in other ways across organizational levels and functional boundaries to develop greater alignment and coordination throughout the company.

The IT Engagement Model

We have developed the IT engagement model to describe these successful approaches. We define our IT engagement model as the system of mechanisms that brings together key stakeholders to ensure that projects achieve both local and company-wide objectives. It consists of three components:

- **Company-wide IT governance**—the decision rights and accountabilities of company-level and business unit-level stakeholders to define company-wide objectives and encourage desirable behavior in the use of IT.
- **Project management**—a formal project management process, with clear deliverables and regular well-defined checkpoints, that encourages disciplined, predictable behavior for project teams.
- **Linking mechanisms**—processes and decision-making bodies that connect project-level activities to overall IT governance.

Each component is made up of a set of mechanisms, which can include groups (e.g., committees, boards), processes (e.g., post-implementation review), and roles (e.g., integrators, oversight roles). As a set, these mechanisms enable and constrain communication among stakeholders.

The first two components—IT governance and project management—are well recognized and well researched. We found the “missing link” to be the third component: linking mechanisms.

An Analogy with Professional Cycling

To underscore the importance of linking mechanisms, a senior IT manager at a financial services company drew an analogy from professional cycling. Professional cycling is a team sport where individual cyclists must work closely with each other and the coach to support the team leader. Company-wide IT governance is like overall team management in that it focuses on the high-level issues of overall strategy, budget, and resource allocation. Project management, on the other hand, is like individual training in that it aims to ensure that all the cyclists (in particular, the team leader) are in top shape and perform as well as they can. Linking mechanisms connect individual efforts—making sure the cyclists know their role (such as riding in front of the leader or fetching food and water)—as well as provide guidance during a race (such as when to accelerate as a team and when to take the lead). Linking mechanisms ensure that the efforts of cyclists remain coordinated and aligned with the team strategy throughout a race.

The Importance of Linking Mechanisms

If a company only has IT governance (decisions about bikes, riders, and races) and good project management (fit and skilled riders), there is a danger that the company’s strategies will not be executed. Without linking mechanisms, coaches are unable to orchestrate the team of cyclists throughout the race, so the cyclists lose perspective on how they can best help the team win.

Linking mechanisms are the heart of a company’s IT engagement model because they enable ideas to flow back and forth between company-wide IT governance and project management. Linking mechanisms ensure that high-level governance decisions are understood and implemented by project teams, so that projects incrementally help achieve the company’s objectives and the company learns from each project. Linking mechanisms connect key governance decisions with projects by means of regular access points provided by standard project methodologies. As a result, these mechanisms enable stakeholders from different organizational levels to manage interdependencies, identify commonalities across business units and projects, and negotiate conflicting demands.

The IT engagement model is a framework that lets companies assess how well they are aligning and coordinating the different goals and perspectives of six key stakeholder groups, as shown in Figure 1. These

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5 Some examples of linking mechanisms in cycling include team training; race radios that keep cyclists in touch with the coach; team vans that provide equipment and nourishment during the race; teammates whose role is to constantly monitor their leader in relation to competitors and are prepared to block rivals or give up a tire; and incentives for individual cyclists to do as much as possible for the team, even at the risk of losing.

6 An interesting debate in cycling is whether or not to allow cyclists to wear devices that enable them to be in continuous communication with their coaches and each other. For some, this would be too much linking.
stakeholder groups might otherwise inadvertently work at odds with each other. The box, “Six Stakeholder Groups,” provides brief descriptions of each stakeholder group as well as each one’s primary objectives. By using a system of mechanisms to align and coordinate key stakeholders, companies can distribute the risks of and responsibilities for achieving company-wide objectives and incrementally advance company-wide objectives project-by-project.

The Problems with Two Traditional Approaches to IT Projects

Traditionally, IT organizations have taken a different approach to transforming company-wide operations than to building solutions for local business initiatives, as shown in Figure 2.

For company-wide initiatives, like ERP, CRM, or SCM, companies often use a “big bang” approach to implementing the new systems, processes, and data (the top arrow in Figure 2). The difficulties encountered in this approach are well known. For example, some companies have handed off the responsibility for implementing the new systems and associated business process changes to the IT organization, even though IT did not have sufficient knowledge or authority to change the way the rest of the business worked. IT’s effectiveness has often been limited by its lack of engagement with the rest of the business and with project-level members primarily driven by local objectives. The predictable result has been too many projects not making their expected benefits.7

On the other hand, to build solutions for local business initiatives (the smaller arrows in the lower left in Figure 2), companies have favored small, nimble project teams to develop solutions tailored to specific local needs. These teams have had a higher probability of locally defined “success.” But, when their solutions were developed without coordination via company-wide IT governance, these solutions provided little help in achieving company-wide goals. Worse yet, when the local project teams were not sufficiently engaged with company-level and business unit-level IT decision-making bodies, disparate IT solutions accumulated, creating IT infrastructure spaghetti. Such infrastructure is expensive to maintain, difficult to integrate, inflexible, and not scalable. In fact, it presents a significant source of operational, financial, and strategic risk to the company.

Figure 2 illustrates why these two approaches to projects are limited: they fail to engage all six stakeholder groups. Consequently, they do not adequately support the degree of alignment and coordination among stakeholders necessary to transform company-wide operations. Alignment

Six Stakeholder Groups

Achieving alignment and coordination involves six key stakeholder groups. Figure 1 can be regarded as a political map, showing the objective driving each group—company strategy, business unit strategy, project plan, enterprise architecture, business unit architecture, and project IT architecture. Each primary objective corresponds to the stakeholder group’s functional role (business or IT) and its organizational level.

In the left “business” column are the stakeholders focused on company strategy and operations. They measure their success using such metrics as sales growth, profitability, ROA, and customer satisfaction. In the right “IT” column are the stakeholders primarily focused on developing and maintaining IT solutions and infrastructures. Their goals are effective and robust results that support current and future company and business-unit goals. Creating and maintaining alignment between these two sides of the company is a continuing and difficult challenge.¹

Looking across the top row, high-level managers seek to optimize resource use, reduce redundancies, and coordinate activities across the company. The top-level IT personnel (CIO, chief architect, and their direct reports) aim to maximize business value from IT for the entire company. To help them manage the company’s systems, they typically have company-wide funding strategies, mechanisms to structure and support decision making, and an enterprise architecture. We define “enterprise architecture” as the organizing logic for the integration and standardization of data, business processes, and IT systems in a company.²

In the business-unit row, managers look across many projects to make sure they collectively meet business unit goals. The IT group at the business unit level focuses on maximizing the value from IT for that business unit. This job includes managing the systems estate, implementing a business unit architecture, and managing the development of IT solutions for the unit.

In the project row, business managers are primarily interested in optimizing their project—making sure it meets the goals set out in the business case and is on time and on budget. Project-level IT managers seek to support their business counterparts by developing the best IT solutions as quickly as possible.

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2. To learn more about enterprise architecture, see Ross, J.,“Creating a Strategic IT Architecture Competency: Learning in Stages,” MISQ Executive, (2:1), 2003, pp. 31-43.
**Company-wide IT Governance**

We use the Weill and Ross definition of *company-wide IT governance* as the organizational distribution of “decision rights and accountabilities to encourage desirable behavior in the use of IT.” An important aspect of IT governance is deciding which decisions need to be made. Weill and Ross have identified five major IT decisions (which they call domains): IT principles, enterprise architecture, infrastructure strategies, business application needs, and investment priorities.

Companies draw on a set of mechanisms, including processes, decision-making bodies, and roles, to bring together various stakeholders to address each decision type. In most cases, effective IT governance involves both IT and non-IT stakeholders across the company and business unit levels. Companies with good governance get 40% more value from IT.

*Examples of mechanisms used for company-wide IT governance:* enterprise architecture committee; CIO representation on senior business strategy team; chargeback processes; formal IT investment and prioritization process.

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4. Ibid.

**Project Management**

Project management has emerged as a critical competence in many, if not most, companies. Increasingly, they are adopting standardized project methodologies—either homegrown or industry standard. These approaches ensure that all projects execute certain tasks at certain times, in a consistent manner across the company. A good project management methodology has well-defined process steps with clear deliverables and metrics to be reviewed at regular checkpoints (often called gates). Project management presents a valuable opportunity for engagement between IT and non-IT decision makers at the project team level.

*Examples of mechanisms used for project management:* project management office; industry-standard methodology; project tracking software tool; project manager role.

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between IT and the business ensures that each party is doing its best to help the others achieve business value. *Coordination* across the company hierarchy ensures that bottom-up actions support top-down initiatives.

**Linking Mechanisms**

Figure 3 shows how the three components of an effective IT engagement model enable all six stakeholder groups to achieve alignment and coordination. Company-wide IT governance depends on one set of mechanisms to bring together IT and non-IT executives to make company-wide decisions. (See the box “Company-wide IT Governance.”) Project management depends on a different set of mechanisms to bring together IT and non-IT stakeholders from project teams and business units to make decisions about projects. (See the box “Project Management.”)

Finally, linking mechanisms are mechanisms that link project management with company-wide IT governance—that is, they ensure that project teams remain coordinated and aligned with higher-level strategies throughout their lifecycle. When integrated effectively, these three components form a system that enables independent stakeholders to negotiate their differences, influence one another, learn from each other, develop trust across the company, and collectively achieve local and company-wide objectives.

Our research suggests that effective IT engagement models have a range of linking mechanisms. We have found three categories, shown in Figure 3, business linkage, architecture linkage, and alignment linkage.

*Business linkage mechanisms* work vertically up and down the organization, linking projects to company-level and business-level strategies. They include:

- Process owners responsible for the structure and performance of standard business processes,
Strategy boards that manage across projects, and program management offices that coordinate individual projects,

- Funding reviews that decide whether to kill or continue to fund projects,
- Reward systems that encourage the achievement of company-wide goals.

These linking mechanisms give managers ways to periodically assess how well projects are achieving company-wide goals and spur managers to revisit company strategy in response to front-line experiences.

**Architecture linkage mechanisms** work vertically, linking projects to company and business unit architectures. Companies may put together a system of such mechanisms—such as an architecture office, architects on projects, and an exceptions-handling process—to establish and update standards, review projects for compliance, and approve and manage exceptions. Another powerful mechanism is an architecture-driven funding process that can add funds to a single project above and beyond the funds provided by the business, to allow it to accomplish significant architectural improvements. Using such a linking mechanism can provide a way for future projects to be charged for that improvement.

**Alignment linkage mechanisms** work horizontally, linking IT with the rest of the business at the business-unit level. Both company-wide IT governance and project management include mechanisms that companies use to improve alignment. However, we found several firms that introduced additional mechanisms to improve alignment further. The most common was to formally introduce the role of integrator. For example, BT plc has established business-IT liaisons whose key role is to secure and maintain a proactive strategic role of IT. They are also involved in project management and company-level committees. In fact, in the companies that we studied, alignment linkage mechanisms were always integrated into a broader system of mechanisms.

Figure 3 shows how the three categories of linkages interact to enable coordination and alignment across the three organizational levels and between the business and IT. In general, business linkage mechanisms coordinate business stakeholders; architecture linkage mechanisms coordinate IT stakeholders; and alignment linkage mechanisms align IT with the rest of the business.

To illustrate these linking mechanisms, we draw on BT plc and Toyota Motor Marketing Europe to illustrate how differently companies can apply the concepts of engagement and linkage. BT plc required significant changes in IT governance, project management, and all three types of linking mechanisms to make major company-wide changes. In contrast, TMME, with its strong company culture of continuous...
improvement, process discipline, and consensus-oriented management, had fewer challenges related to IT governance and business linkage. The case study thus focuses more on the architectural linkages.

**BT PLC**

At BT plc (formerly British Telecom), a core part of an ambitious strategy to pursue company-wide transformation involved increasing engagement among key stakeholders. During the late 1990s and 2000, BT prepared to divide the company and spin off parts as separate businesses. However, after the technology bubble burst in 2001, BT had a great deal of debt, there was little market for its business spinoffs, and the margins in its traditional businesses were declining.

The company replaced its CEO, changed its strategy, and began to fundamentally transform its business processes. Management decided it needed to bring together the different parts of the company to provide a better experience for its customers. The new CEO—Ben Verwaayen—established “OneBT,” to integrate internal operations and reduce redundant efforts. The company also kicked off a number of company-wide efforts to grow revenues, improve coordination and performance, and cut costs.

During his first month at BT, Verwaayen issued the Broadband Challenge: to sell and implement one million broadband connections within 18 months. The different business units—Wholesale, Retail, and Global Services—divided up their responsibilities and met the challenge, with time to spare. However, because each business unit developed its piece of the solution using its own systems estate, and without engaging the other business units, the total solution lacked sufficient integration and standardization to be adequately scalable, reliable, and efficient to meet the next challenge: four million connections in 24 months. From the Broadband Challenge and the other company-wide initiatives, senior management quickly realized that BT needed stronger company-wide IT governance, with a common enterprise architecture at its core.

**Company-wide IT Governance at BT**

To ensure that the business units worked in a “One BT” coordinated manner, the CIO introduced several high-level decision-making bodies. The Senior Information Forum (SIF) was formed to connect the efforts of the different business units and provide them with a consistent, cohesive strategy. SIF was composed of the CIOs of the various business units and their architects. IT managers were placed on the boards of several key company-wide transformation efforts, to help evaluate and prioritize efforts and reduce duplication across them.

A central group, called the Architecture Realization Group (ARG), was formed and charged with designing a BT-wide architecture and implementing it across the company. ARG was led by Chief Architect Jim Crookes, and it engaged with other decision-making bodies to design, debate, and reach consensus on a first draft of BT’s enterprise architecture. Crookes and his team had to contend with three major business units that were already well into their own respective and unique architecture development and transformation efforts. As a result, developing the single common enterprise architecture led to significant clashes in several areas. For example, one business unit was using Vitria for its middleware hub technology, whereas another was using BEA. Each had invested a tremendous amount in its particular technology.

Despite these clashes, during its first year, the ARG made significant progress defining and implementing a new enterprise architecture by “riding waves”—that is, by using the urgency of the major business transformation efforts to engage with key business and IT stakeholders from the different business units.

ARG also implemented architecture linkage mechanisms to connect high-level governance to project-level activities. However, the IT group did not want to have to rely on riding waves to engage with key stakeholders because the waves were unpredictable and temporary. Reliance would lead to inconsistent engagement and assumptions that greater engagement was only necessary during crises. Instead, the IT group wanted more robust governance, to regularly engage with key stakeholders throughout BT and ensure that every project helped to achieve company-wide goals.

**Project Management at BT**

Some two years after introducing IT governance mechanisms to increase engagement at the company level, a new CIO—Al-Noor Ramji—came on board. The enterprise architecture was already well under development and senior management was aligned on the need for a single, company-wide enterprise architecture. So Ramji focused on ensuring that all major projects advanced BT’s company-wide objectives. To improve and extend engagement from the company level down through all the projects, Ramji streamlined company-level and business unit-level governance and introduced a standard project methodology for all BT.
In the new methodology, all approved business programs were required to go through 90-day cycles that consisted of five standard phases. Before a program could proceed to the next phase, it had to go through a “gate” and get approval. The “hot housing” phase, for instance, was an intense three days of rapid prototyping between competing teams of IT and non-IT participants from various levels of BT. The four other phases were build, test, implementation, and post implementation review (PIR). These mechanisms brought IT and non-IT stakeholders together, many for the first time. With its standard process for managing and measuring programs, BT was able to prioritize and allocate resources.

**Linking Mechanisms at BT**

To improve alignment and coordination across BT, Ramji dramatically reorganized IT. He removed almost all IT personnel from the business units and consolidated them into a central IT group, so that he could better manage human resources and skill development.

**Alignment Linkage Mechanisms**

The few IT staff members left in each business unit were led by a “Market Side” CIO. These staff members’ job was to provide strategic guidance to the business unit CEO.

**Business Linkage Mechanisms**

Senior IT management introduced a number of business linkage mechanisms. For one, the IT group consolidated 4,000 projects into 29 major business programs. All the programs required a business sponsor and an architect, who together created the initial business case. Each program’s business case was then assessed and prioritized based on a framework jointly agreed on by the CIOs, CFOs, and strategy management group. This prioritization framework contained four core IT and non-IT criteria: strategic fit with BT Group strategy, expected financial return, size of budget, and risk of failure. Senior IT management used this framework to map and track programs and their respective projects. If a proposed project did not fit within one of the 29 programs, or it veered too far off course, it was stopped.

Each program was managed by a dedicated team of IT and non-IT managers. Their job was to ensure that the projects met program objectives. A critical mechanism for linking projects to program objectives was the Post-Implementation Review (PIR). The PIRs did not simply examine whether or not projects efficiently achieved their local goals. They also assessed projects on broader objectives. In addition, over half the total time spent on PIRs occurred during the early project stages. Soon after the “hot housing” phase, IT and non-IT participants from multiple levels of BT (many of whom had worked together in the hot housing phase) negotiated realistic metrics to assess project progress (or lack thereof). The metrics needed to consider short-term and long-term value, local and company-wide objectives, and architecture compliance. At the end of 90 days, these metrics were used to review the project. If the review found that the project had not met key metrics, the project’s participants did not receive bonuses and the project could be stopped. Projects that continued onto another 90-day cycle used the results of their PIR to improve management going forward. Finally, all PIRs were managed by a central company-level PIR team that disseminated best practices across BT.

**Architecture Linkage Mechanisms**

These vertical linkage mechanisms included:

- Training designers to design architecturally compliant solutions,
- Involving architects in the earliest stages of projects to instill a long-term company-wide perspective. Generally, their involvement was through informal meetings called “Brown Bag Reviews;”
- An exceptions-handling process that did not simply enforce standards but was open to learning from participating stakeholders.

Together, these three mechanisms provided valuable means to collect insights to improve and refine the enterprise architecture.

In 2001, when Verwaayen announced “One BT,” the company had few mechanisms to align and coordinate efforts across its business units. By 2005, it had strengthened its company-wide IT governance and standard project management and introduced several linking mechanisms. Figure 4 illustrates these linking mechanisms. With all the pieces of a more robust IT engagement model in place, stakeholders could focus on improving their collaborative capabilities and refine the model as it matured. Many of the executives that we interviewed credited engagement with enabling IT to reduce costs by 10 percent every year. These savings proved critical to fund new initiatives. In August 2005,

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CIO Magazine named BT one of the 100 boldest companies of the year for “assuming significant risk for the sake of great reward.” In January 2006, One BT earned ISO 9001 certification for its “innovative agile development methodology.”

TOYOTA MOTOR MARKETING EUROPE

Over the past 10 years, Toyota Motor Marketing Europe S.A./N.V. (TMME) has transformed its structure from a set of independent country units to a more integrated and centrally coordinated organization. An integral part of this transformation effort was transformation of its enterprise architecture, to improve its flexibility and increase the transparency of information throughout TMME’s supply and demand chains. TMME already had a strong culture and business processes around continuous improvement. As a result, its IT engagement model focuses on architecture linkage mechanisms.

Toyota’s European operations started as a central headquarters handling only supply and demand management for Toyota’s many independently managed country operations. As Toyota’s sales grew in Europe, management realized it needed to take more control over operations to serve its European customers well. For example, prior to 1999, inventories of new cars were maintained within country units. Thus, a Swiss customer desiring a green Corolla with an automatic transmission might have to wait months to get it, even though that exact car was a few kilometers away, just over the border in France. The same was true for spare parts. Management realized TMME had to start acting as a single European entity rather than as individual country units.

Company-wide IT Governance and Project Management at TMME

When asked to transform the company’s architecture, the first step the Architecture Group took was to link the principles of the architecture to the goals of the company. To do this, Peter Heinckiens, TMME’s Chief Architect and Deputy General Manager of IT Strategy, surveyed the strategic initiatives underway to identify patterns. He summarized these patterns in a document, to capture TMME’s strategy in a single place and in a concrete manner.

This strategy document set forth the desired capabilities of the enterprise architecture. The architecture group
designed a high-level set of architectural principles showing how each one contributed to these desired capabilities and, hence, to TMME’s strategic goals. In 2000, management endorsed these principles. The IT unit then used the principles to start conversations with the country units about their need to comply with the enterprise architecture. Heinckiens explained:

“It was important to connect the architecture principles to the company’s goals. If we were to talk to project managers only about architectural compliance, they would dismiss it. By connecting the architecture with the strategy of the company, we make architecture relevant. Now, if managers resist complying with the architecture, we simply point out that this means that they are not supporting Toyota’s strategy. That changes the conversation.”

The architecture group then began implementation. After a few initial missteps, the group realized that the only way to effectively ensure that business projects didn’t violate the architecture was to establish a disciplined process and assign an architect to each project. The architecture group adapted and installed a four-phase standard project methodology.

**Linking Mechanisms at TMME**

To link the standard project methodology with enterprise architecture, the architecture group introduced four linking mechanisms:

1. Project architects
2. Architects’ authority to “pull the line”
3. Architecture funding
4. An appraisal phase

**Project Architects**

Each project team included a project architect, with some architects on multiple projects. These architects were responsible for helping to develop the architecture for the project solution, ensuring that the solution was compatible with TMME’s enterprise architecture, and helping to update and improve the enterprise architecture, if necessary.

The architects were rewarded for realistic solutions and successful project delivery, which aligned with each project team’s goals. This alignment fostered the teams’ acceptance of the architects. In fact, each project architect’s primary goal was project success. When the project was successful—that is, when it met the project plan on time and on budget, even if it violated the architecture to some degree—the architect was deemed to have “nearly achieved” the goals. When the project was successful and helped implement the enterprise architecture, the architect “fully achieved” the goals. And when the project was successful and helped implement and improve the enterprise architecture, the architect “exceeded” the goals. TMME’s dual focus on successful project delivery and enterprise architecture helped project teams accept the project architects’ role and helped ensure that the architectural solutions were realistic and aligned with business goals.

**“Pull the Line”**

Project architects had the authority to “pull the line” on a project when it was veering off course. Because of the explicit linkage between the architecture and TMME’s strategic goals, and because of TMME’s emphasis on the importance of architecture, the architecture team had the credibility and authority to stop projects, if necessary. Although the architects rarely “pulled the line,” this option gave them the power to keep projects focused on achieving Toyota’s goals.

**Architecture Funding**

The central architecture group had a limited pool of funds to support projects. Consequently, it looked for ways to get multiple projects to support infrastructure improvement. For example, if a project needed to connect to a spare parts inventory database that required updating, then that project would be given the task of updating the database and its interface. Rather than charge this project for that entire additional cost, though, the architecture group first looked for other projects that also required interaction with that database, to see if the updating cost could be shared. If no other projects were found, then the architecture group funded the additional cost itself. As Heinckiens explained:

“If you have good engagement, most architecture efforts get funded through the projects. The projects need to do the work anyway, so all you’re doing is asking them to do the work in an architecturally sound way. The cost of doing something right is usually no greater and often leads to overall savings for the project.”

TMME tightly interwove these components—the project architects, their ability to “pull the line,” and architecture funding—into a robust architecture linkage and applied all three early in projects’ life cycles to engage IT and non-IT stakeholders and introduce company-wide objectives into project strategies. As a
result, projects advanced both local and company-wide objectives, and business managers developed respect for architectural efforts.

For example, the IT group was asked to create a Web-based service for customers to select automotive accessories—steering wheel covers, gear shift knobs, and the like. The goal was to show customers pictures of the accessories and let them choose which ones they wanted. The architecture group realized that the underlying data was located in numerous places, including one application whose vendor had gone out of business. Rather than build the application on top of this data structure, the architecture group worked with the business managers to re-scope the project and incorporate design and construction of a new accessories database. The initial project only had to implement one small piece of this new database, but it was done architecturally so that future projects could easily finish the job. By being involved before the start of the project and re-scoping the project, the architecture group helped advance the architecture, without increasing the cost of the original project.

An Appraisal Phase

Based on its experiences with projects, the architecture group added a new phase to its project process, called “The Appraisal Phase.” The appraisal phase became the first phase in a project’s lifecycle and focused on project specifications and staffing. This phase provided a forum for the business and IT to decide on the goals and solution strategy for a project, and how the project would build on the enterprise architecture. Thus, in this phase, projects can be re-scoped (as the Web-based accessories service was) to include architectural improvements (such as restructuring a database). This new, up-front phase ensures that all projects will contribute to achieving not only short-term local business goals but also long-term company-wide goals.

Business managers on the project teams have become more motivated to cooperate with the architects to achieve longer-term goals for three reasons. First, the architects’ authority to “pull the line” initially spurred cooperation—even though the architects have rarely resorted to taking this action. Second, the architects had carefully linked TMME’s strategy to the enterprise architecture. So the architects could argue that business managers resisting the architectural approach were hindering Toyota from executing its strategy. Third, the business managers began to see that following the architects’ recommendations reduced overall project cost and time, even when the initial project phases took slightly longer.

TMME designed metrics to measure degree of architectural compliance of projects and the architecture’s contribution to business success. The architectural compliance of projects went from 26% in 2001 to 93% in 2004. Architecture contribution to strategic initiatives improved 76% between 2002 and 2005. Figure 5 summarizes TMME’s linking mechanisms. The results of the engagement efforts have been positive: Toyota’s European delivery lead time for vehicles has been reduced by 35% and its inventory of spare parts has been reduced by almost 50%. And Toyota’s European unit sales have grown over 11% per year for the three years ending 2004.

SEVEN PRINCIPLES FOR GOOD ENGAGEMENT

Based on our case study research of BT, TMME, and other companies, we have identified seven principles for ensuring that IT governance, project management, and linking mechanisms lead to successful engagement:

1. **Build on a foundation of good IT governance and project management.** Each component of the IT engagement model needs to be effective on its own. Then, when they are linked together, they are better able to make the best of the other components, and the sum of the whole becomes significantly greater than the sum of the individual components.

2. **Make strategic objectives clear, specific, and actionable.** Clear strategic objectives are necessary to guide engagement efforts. For example, the first activity of Toyota’s architecture group was to create a clear statement of strategy and gain top management’s endorsement.

3. **Motivate to meet company goals.** Formal incentives, such as bonus plans, annual reviews, and performance metrics, can help focus and align activities. Toyota motivated both its project managers and project architects to focus on company goals through its incentive programs.

4. **Define enforcement authority.** Complement formal incentives with formal enforcement mechanisms. Unless an engagement model has the ability to stop efforts that stray from supporting company goals, managers will ignore or resist engagement efforts. The first project to actually

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Emphasize early intervention and prevention. Successful IT groups engage with business projects during the earliest development stages, to ensure that goals are aligned and to prevent bad solutions from being designed in the first place.

Maintain transparent, regular, two-way communication. With good engagement, alignment and coordination are maintained through regular communication between business and IT. Such communication helps the parties learn from each other, negotiate their differences, and develop a common understanding of goals.

Involve the right people. Successful engagement depends on having effective cross-boundary communicators. These people tend to be knowledgeable and empathetic to the concerns and objectives of both parties (that is, they are savvy in business and IT objectives and they are fluent in both company-wide and business unit objectives).

The results of good engagement can be profound. In a survey of 103 companies in the U.S. and Europe, Ross, Weill and Robertson\textsuperscript{12} found two major predictors of the strategic effectiveness of architectural initiatives. The first predictor was the degree to which senior managers were involved in defining and overseeing architecture initiatives. This predictor resulted from alignment across the top management team. The second predictor was the degree to which the architecture effort was well linked to project activities—that is, successful companies had architects on 81% of their teams versus 49% at less successful companies. And, successful companies reviewed 80% of their projects for architectural compliance versus 60% at less successful companies.

Are Your Stakeholders Engaged?

Figure 6 lists a selection of linking mechanisms from TMME and BT, and describes in detail how each has been used to improve coordination. As TMME and BT both illustrate, companies draw on a variety of linking mechanisms (including roles, decision-making bodies, incentives, and formal and informal processes) to achieve the three types of linkages. Each mechanism has its strengths and weaknesses. For instance, a new boundary-spanning role may be filled by someone who can provide in-depth understanding across two parties; however, that person may not solve political tensions. Companies generally test out a variety of mechanisms to see which ones fit their situation best. As stakeholders learn to engage, they adapt existing mechanisms or replace them with new ones.

\textsuperscript{12} Op cit, Ross, Weill, and Robertson, forthcoming in 2006.
While BT and TMME illustrate a range of linking mechanisms, many others are possible. Another common alignment linkage mechanism is business-IT relationship managers. These managers build trust and common understanding through continuous engagement, which helps to guide projects. They also can summarize business needs and IT constraints so that projects are well scoped and targeted. Similarly, business process owners increase alignment when they work with IT to reduce redundancies and increase reuse across the company. Linking mechanisms, integrated with the mechanisms that make up company-wide IT governance and project management, form a system of mechanisms that we call the IT engagement model.

There are two ways to illustrate your company’s system of mechanisms. Each approach reveals different aspects of the engagement model. The first approach is to draw a top-down organizational view, such as

<table>
<thead>
<tr>
<th>Linking Mechanism</th>
<th>Impact on Project Level</th>
<th>Impact on Company-wide IT Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Linkage</strong></td>
<td><strong>How did the mechanism enable company-wide IT governance to influence projects?</strong></td>
<td><strong>How did the mechanism enable projects to influence company-wide IT governance?</strong></td>
</tr>
<tr>
<td><strong>BT plc</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Side CIOs</td>
<td>Market side CIOs ensured that personnel from the central IT organization understood business needs.</td>
<td>Market side CIOs focused on the strategic role of IT, guiding investment and project priorities.</td>
</tr>
<tr>
<td>Alignment Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program and Project Prioritization</td>
<td>All projects had to belong to one of 29 programs. A standard prioritization framework was jointly agreed on between CIOs, CFOs, and BT’s strategy group. Projects that belonged to programs with low priority were also given low priority. This alignment helped control the number of projects that project-level IT worked on.</td>
<td>Senior management finally had a comprehensive view of projects across BT. This BT-wide view allowed them to compare and assess the strategic fit and risk profile of programs and projects, and better guide IT investments.</td>
</tr>
<tr>
<td>Business Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Bag Review</td>
<td>IT architects sat down with project managers to review the project solution’s architecture. Early influence of project solution helped manage the expectations of the business sponsors before they became too invested in a specific solution.</td>
<td>Helped the enterprise architecture team identify and address gaps in the architecture before they became significant impediments.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Implementation Review</td>
<td>After the PIR metrics were defined, the project was assessed once a month against those metrics. At the end of the 90-day cycle, a final review was conducted. Projects that did not meet their goals were stopped. The results were used to determine bonuses and rewards for project-level participants. Lessons from PIRs were used to develop more realistic and specific business cases for projects.</td>
<td>Results were used to refine measures and targets to evaluate projects. In addition, at the end of each 90-day cycle, the PIR team reported lessons learned.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceptions Handling Process</td>
<td>Each project was assigned a program lead designer who was trained in BT’s enterprise architecture. All exceptions had to receive approval before receiving IT resources.</td>
<td>Exceptions were used to improve the enterprise architecture. Exceptions sometimes highlighted parts of the architecture that required refining.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Architect on Project Teams</td>
<td>Project architects helped develop the architecture for the project solution, and ensure that the project was compliant with the enterprise architecture.</td>
<td>Project architects helped to design and update the enterprise architecture.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture Funding Process</td>
<td>Architecture funding helped spread the cost of major architecture improvements over many projects, making it easier for projects to also take on related architectural improvements.</td>
<td>The process of reviewing which strategic initiatives could benefit (and would pay for) a major architectural improvement helped establish the importance of that improvement.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition of Appraisal Phase</td>
<td>Project goals and solution strategy were assessed early in the life cycle of a project and the project was re-scoped, if necessary, to accomplish both business and architectural goals.</td>
<td>Restructuring of projects helped educate both business and IT on each other’s goals.</td>
</tr>
<tr>
<td>Alignment Linkage</td>
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</tr>
<tr>
<td>Assessment of Impact of Architecture</td>
<td>At their conclusion, projects were assessed on the degree of compliance with enterprise architecture. Feedback helped ensure that architectural efforts were truly benefiting projects.</td>
<td>The strategic impact of the architecture was assessed to ensure that it continued to provide business value and to adjust architecture goals, if necessary.</td>
</tr>
<tr>
<td>Architecture Linkage</td>
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</tr>
<tr>
<td>Continuous Improvement of Standard</td>
<td>Lessons from past projects were used to adjust and improve the way projects were executed.</td>
<td>Projects were considered as learning opportunities to improve the standard project methodology.</td>
</tr>
<tr>
<td>Project Methodology</td>
<td></td>
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</tbody>
</table>
shown in Figures 4 and 5. To follow this approach, ask yourself four questions:

1. What mechanisms do our IT governance bodies use to reach and to enforce their decisions?
2. How do these mechanisms interact with our projects?
3. How are our projects coordinated?
4. What linking mechanisms connect our projects to business leadership? To IT leadership? To IT architects?

The second approach is to take a project-focused view. This approach can complement the top-down organizational view. Choose an important strategic initiative and ask the project manager three questions:

1. If you were to attach yourself to the initiative and follow it from inception to completion, what mechanisms would it experience?
2. For each mechanism, describe who provides inputs and who is authorized to make the final decision.
3. How do these mechanisms enable or constrain business-IT alignment across organizational levels? How do the mechanisms enable or constrain coordination across the company and within IT?

Once you have drawn these two pictures of your IT engagement model, ask yourself the following five questions:

1. Are the right people involved? Is there good involvement at all levels from both the business and IT sides?
2. Is there real authority, or are people ignoring the mechanisms when they’re not convenient?
3. Do people understand how the IT strategy and enterprise architecture support the business strategy?
4. Does IT get involved early in projects? Does it link efforts across the company?
5. Is it clear to everyone why the engagement model exists and how it functions?

CONCLUSION

Most IT groups face a myriad of requests for new projects, each competing for scarce resources. Tackling each challenge separately is rarely effective because the individual solutions quickly turn into an unwieldy tangle that suffocates innovation and erodes the credibility of senior decision makers. And big, top-down initiatives, too, often fail to meet their goals. We have found that the three key components of the engagement model—IT governance, project management, and linking mechanisms—help companies take on the right projects, execute them well, and, when taken together, collectively help the company achieve its goals.

Because of TMME’s effective engagement model, it has built large parts of its enterprise architecture through ongoing projects, driving the central architecture budget almost to zero. Many IT groups we have talked to respond to this statement with disbelief. Yet, we believe this is an achievable goal. By effectively engaging across all parts of the company, real company-wide transformation can be achieved, funded by business-driven initiatives, one project at a time.

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