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Transforming a Company, Project by Project: The IT Engagement Model

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Abstract: An eternal dilemma for Information Technology (IT) Departments is how to achieve company-wide strategies while simultaneously responding to urgent requests from business units to implement dozens or even hundreds of solutions for local projects. Two streams of research have addressed this challenge. Research on IT governance has taken a top-down approach and specified how management groups allocate decision rights to make company-wide IT-related decisions. Research on project management, with a more bottom-up approach, focuses on how projects can be coordinated and managed to help achieve local goals. Neither approach fully addresses how companies can pursue both company-wide and local objectives.

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 governance 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.

Keywords: IT engagement model, linking mechanisms, IT governance, project management, organizational integration

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TRANSFORMING A COMPANY, PROJECT BY PROJECT: THE IT ENGAGEMENT MODEL

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EXECUTIVE SUMMARY

An eternal dilemma for Information Technology (IT) Departments is how to achieve company-wide strategic goals while simultaneously responding to urgent requests from business units to implement dozens or even hundreds of solutions for local projects. Two different streams of research have attempted to address this challenge. Research on IT governance has taken a top-down approach and specified how management groups allocate decision rights to make IT-related decisions. Another stream of research, with a more bottom-up approach, has focused on how projects can be coordinated and managed to help achieve local goals. We believe, however, that neither approach is sufficient to fully address how companies can pursue both company-wide and local objectives.

We have studied what companies are doing to meet this challenge. Our findings suggest that successful approaches address two fundamental goals—*alignment* between IT and the rest of the business and *coordination* across multiple organizational levels. They achieve alignment and coordination by *linking* company-wide IT governance with project governance and *engaging* multiple stakeholder groups. We have developed the *IT engagement model* to describe these successful approaches.

An IT engagement model is defined as *the system of governance mechanisms that brings together key stakeholders to ensure that projects achieve both local and company-wide objectives*. An IT engagement model consists of three general components: company-wide IT governance; project management; and linking mechanisms. In this paper we focus most attention on the crucial linking mechanisms, as these are the parts of the model that, in our experience, are least understood by companies.

We illustrate the model with two case studies: BT plc and Toyota Motor Marketing Europe (TMME) have each made recent efforts to improve their linking mechanisms in pursuit of company-wide objectives, but in very different ways. By using engagement mechanisms to align and coordinate key stakeholders, these companies were able to distribute the risk and responsibilities of achieving company-wide objectives across multiple stakeholders and incrementally achieve company-wide objectives, on a project-by-project basis. We close with recommendations for what a company should do to assess the quality of its engagement model and to implement an effective model.

Our thanks to Jeanne Ross, Peter Weill, Peter Heinckens and Cyrus (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.

*Introduction*¹

An eternal dilemma for Information Technology (IT) departments is how to achieve company-wide strategies while simultaneously responding to urgent requests from business units to implement dozens or even hundreds of solutions for local projects. Two different streams of research have attempted to address this challenge. Research on IT governance has taken a top-down approach and specified how management groups allocate decision rights to make company-wide IT-related decisions. The other stream of research, with a more bottom-up approach, focuses on how projects can be coordinated and managed to help achieve local goals. We believe, however, that neither approach is sufficient to fully address how companies can pursue both company-wide and local objectives. As others have noted before, success requires the concerted efforts of multiple stakeholders and an approach that maintains a healthy balance between strategic and tactical demands. And, success requires flexibility—the details of the final solution often emerge over time and are difficult to anticipate.²

We have studied what companies are doing to meet this challenge. Our findings suggest that successful approaches address two fundamental goals—*alignment* between IT and the rest of the business and *coordination* across multiple organizational levels. They achieve alignment and coordination by *linking* company-wide IT governance with project governance and *engaging* multiple stakeholder groups. We have developed the *IT engagement model* to describe these successful approaches.

An IT engagement model is defined as *the system of governance mechanisms that brings together key stakeholders to ensure that projects achieve both local and company-wide objectives*. An IT engagement model consists of three general components:

- **Company-wide IT governance**—decision rights and accountability 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 formalized 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 the overall IT governance.

¹ This paper draws on 1.) Fonstad, F. and Robertson, D., “Realizing IT-enabled Change: The IT Engagement Model,” MIT Sloan School of Management, Center for Information Systems Research (CISR), Research Briefing Vol. IV, No. 3D: October 2004; 2.) Fonstad, N. and Robertson, D., “Engaging for Change: An Overview of the IT Engagement Model,” MIT Sloan CISR, Research Briefing Vol. V, No. 1C, March 2005; and 3.) Ross, J., Weill, P., and Robertson, D., *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*, Harvard Business School Press, 2006.

² See, for example: Roberts, B., Jarvenpaa, S., and Baxley, C. “Evolving at the Speed of Change: Mastering Change Readiness at Motorola’s Semiconductor Products Sector,” *MIS Quarterly Executive*, 2:2, September 2003, 58–73. Brown, C.V. and Vessey, I. “Managing the Next Wave of Enterprise Systems: Leveraging Lessons from ERP,” *MIS Quarterly Executive*, 2:1, March 2003, 65–77. Gibson, C.F. “IT-Enabled Business Change: An Approach to Understanding and Managing Risk,” *MIS Quarterly Executive*, 2:2, September 2003, 104–115. Ranganathan, C., Watson-Manheim, M.B., and Keeler, J. “Bringing Professionals on Board: Lessons on Executing IT-Enabled Transformation,” *MIS Quarterly Executive*, 3:3, September 2004, 151–160.

The first two of these are well recognized. Research on IT governance has focused more on key decisions that IT and non-IT senior managers must address than on examining in detail how those decisions get implemented in projects.³ Project management, also the subject of much scholarly and practical work, focuses more on ensuring that projects are on time and on budget than how sets of projects can achieve company-wide objectives. What we have found to be the “missing link” is the third element: *linking mechanisms*.

A senior IT manager at a financial services company drew an analogy from professional cycling to underscore the importance of linking mechanisms. The world of 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, focusing on high-level issues such as overall strategy, budget, and allocation of resources. Project management is like individual training, ensuring that each cyclist (in particular, the team leader) is in top shape and performs as best as s/he can. Linking mechanisms connect individual efforts—making sure that cyclists in a race know what their role is (e.g., to ride in front of the leader or to fetch food and water) and providing guidance during a race, such as when to accelerate as a team and take the lead.⁴ Linking mechanisms ensure that the efforts of cyclists remain coordinated and aligned with the team strategy throughout a race.

If all a company has in place is IT governance (decisions about bikes, riders and races), and good project management (fit and skilled riders), there is still a danger that company strategies will not be executed. Without linking mechanisms, coaches are unable to orchestrate the team of cyclists throughout the race and cyclists lose perspective on how to best help the team win.⁵ 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 help to incrementally 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, they 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 the degree to which they are aligning and coordinating the different goals and perspectives of the six key stakeholder groups shown in Figure 1—stakeholder groups that otherwise might inadvertently be working at odds. “Six Stakeholders” (following page) provides brief descriptions of each stakeholder group as well as their distinct objectives. Engagement mechanisms can include groups (e.g., committees, boards), processes (e.g., post-implementation review) and roles (e.g., integrators, oversight

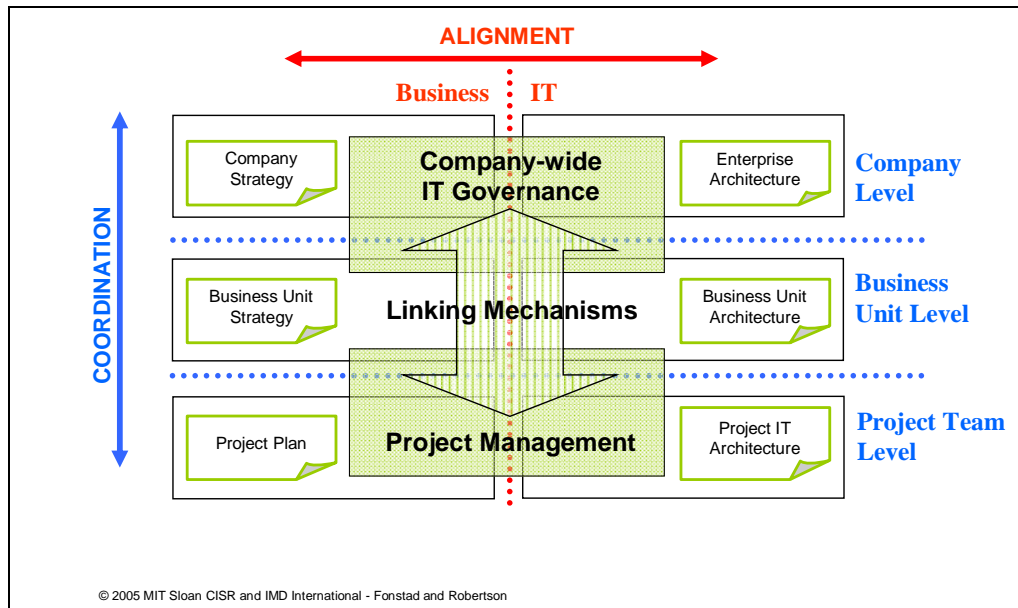
³ Weill, P. and Ross, J., *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Harvard Business School Press, 2004 and Weill, P., “Don’t Just Lead, Govern: How Top-Performing Firms Govern IT,” *MIS Quarterly Executive*, 3:1, March 2004, 1–17.

⁴ 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 who 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.

⁵ 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.

roles). As a set, they enable and constrain communication between stakeholders. By using engagement mechanisms to align and coordinate key stakeholders, companies are able to distribute the risk of and responsibilities for achieving company-wide objectives and incrementally advance company-wide objectives on a project by project basis.

**Figure 1: The IT Engagement Model
Engaging Six Stakeholders and Their Key Objectives**



In this paper we will describe the goals and components of the IT engagement model. We will focus most attention on the crucial linking mechanisms, as these are the part of the model that in our experience are least understood by companies. We will illustrate the model with two case studies: BT plc and Toyota Motor Marketing Europe (TMME) have each made recent efforts to improve their linking mechanisms in pursuit of company-wide objectives. We will close with recommendations for what a company should do to assess the quality of its engagement model and to implement an effective model.

The Two Traditional Approaches and Their Problems

Traditionally, IT groups take different approaches for transforming company-wide operations versus building solutions for local business initiatives, as shown in Figure 2. Company-wide initiatives such as putting into operation an ERP, CRM, or SCM are often accomplished through large “big bang” implementations of new systems, processes, and data (the top arrow in Figure 2). Some companies simply handed off to IT the responsibility for implementing the new systems and associated business process changes, even though IT had insufficient knowledge or authority to change the way the rest of the business worked. IT’s effectiveness was often limited due to its lack of engagement with the rest of the business and with project level members primarily driven

by local objectives. The predictable result was too many projects not making their expected benefits.⁶

Six Stakeholders

Achieving alignment and coordination involves six key stakeholder groups. Figure 1 can be regarded as a political map, showing how each group is primarily driven by a local set of objectives (e.g., corporate strategy, project goals, IT architecture, etc.) that corresponds to the interaction of their functional role (i.e., Business and IT/IS) and organizational level. In the left “Business” column are the stakeholders focused on the strategy and operations of the company. They measure the success of their efforts with metrics such as sales growth, profitability, ROA, and customer satisfaction. In the right “IT” column are stakeholders who are primarily focused on developing and maintaining IT solutions and infrastructures that are effective, robust, and help support current and future company and business unit goals. Alignment between these two sides of the organization is a continuing and difficult problem.⁷

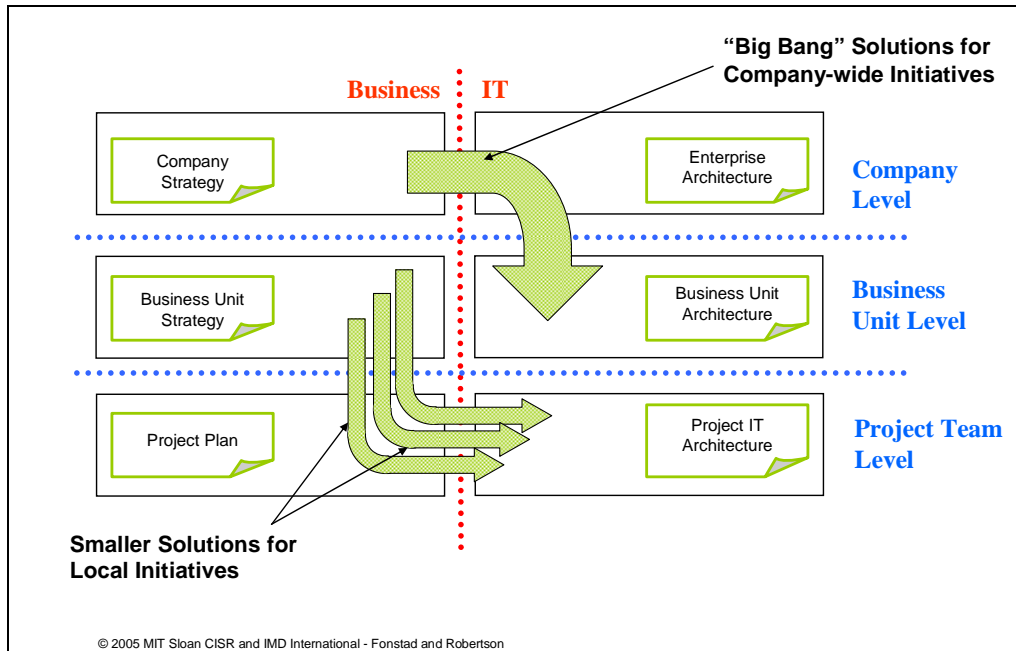
Looking across the top row, high-level managers seek to optimize resource use, reduce redundancies, and coordinate activities across the company. The IT personnel at the top level (the CIO, chief architect, and their direct reports) are trying to maximize business value from IT for the company as a whole. To help them manage the company’s systems, they typically have company-wide funding strategies, governance 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*.⁸ At the business-unit level, managers are looking across many projects to make sure they collectively meet business-unit goals. The business unit-level IT group is focused on maximizing the business-unit value from IT. This includes managing the systems estate, implementing a business-unit architecture, and managing the development of IT solutions for the unit. Finally, at the project level, business managers are primarily interested in optimizing their project—making sure it meets the goals set out in the business case, is on time, and is on budget. Project-level IT managers seek to support their business counterparts by focusing on developing the best IT solution as quickly as possible.

⁶ Robey, D., Ross, J., and Boudreau, M-C., “Learning to Implement Enterprise Systems: An Exploratory Study of the Dialectics of Change,” *Journal of Management Information Systems*, 19:1, Summer 2002, 17–45.

⁷ Henderson, J.C. and Venkatraman, N., “Strategic Alignment: Leveraging Information Technology for Transforming Organizations,” *IBM Systems Journal*, 32:1, 1993, pp. 4–16.

⁸ To learn more about company architecture, please see Ross (2003) “Creating a Strategic IT Architecture Competency: Learning in Stages,” *MIS Quarterly Executive*, 2:1, pp. 31–43.

Figure 2: Different Approaches for Projects



To build solutions for local business initiatives (the smaller arrows in Figure 2), companies have favored small, nimble project teams that develop solutions tailored to specific local needs. While these teams have a higher probability of locally-defined “success,” the solutions they develop, if uncoordinated with company-wide IT governance, provide little help in achieving company-wide goals. When local project teams are not sufficiently engaged with company-level and business unit-level IT decision making bodies, disparate IT solutions accumulate into IT infrastructure spaghetti that is expensive to maintain, difficult to integrate, inflexible, and not scaleable, becoming a significant source of operational, financial, and strategic risk.

Figure 2 illustrates why these two approaches are limited: they fail to engage all six stakeholder groups and, consequently, do not adequately support the degree of *alignment* and *coordination* between key stakeholders necessary for transforming company-wide operations. Alignment between IT and the business ensures that each party is doing the most it can to help the others achieve business value; coordination between levels of the company hierarchy ensures that bottom-up actions help support top-down initiatives.

Linking Mechanisms

An effective IT engagement model enables traditionally independent stakeholders to negotiate between competing demands, influence one another, learn from each other, develop trust across the company, and work collectively on achieving local and company-wide objectives. All three components of the IT engagement model are important sources of mechanisms. “Company-wide IT Governance” and “Project Management” (see following page) provide a brief overview of company-wide IT governance and project management, respectively, including examples of mechanisms from each.

Company-wide IT Governance

We use Weill and Ross' definition of company-wide IT governance as the organizational distribution of "decision rights and accountability to encourage desirable behavior in the use of IT."⁹ An important part of IT governance is what decisions to make. For example, Weill and Ross have identified five different types of major IT decisions—IT principles, enterprise architecture, infrastructure strategies, business application needs, and investment priorities. Firms draw on a set of governance mechanisms, including processes, decision-making bodies, and roles, to bring together various stakeholders to address each decision type.¹⁰ In most cases, effective IT governance involves both IT and non-IT stakeholders across the company and business unit levels.¹¹ Companies with good governance get 40% more value from IT.¹²

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.

Project Management

Project management has emerged as a critical competence in many, if not most, companies. Increasingly, companies are adopting standardized project methodologies—using either homegrown or industry-standard approaches. They ensure that all projects execute certain tasks at certain times, in a manner that is consistent 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).¹³ 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.

⁹ Weill, P. and Ross, J., *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Harvard Business School Press, 2004.

¹⁰Weill, P. and Ross, J., *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Harvard Business School Press, 2004; Sambamurthy, V. and Zmud, B., "Arrangements for information technology governance: A theory of multiple contingencies," *MIS Quarterly*, 23:2, pp. 261–290, 1999; Brown, C., "Horizontal mechanisms under differing IS organization contexts," *MIS Quarterly*, 23:3, pp. 421–454, 1999.

¹¹ Weill, P. and Ross, J., *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results* Harvard Business School Press, 2004.

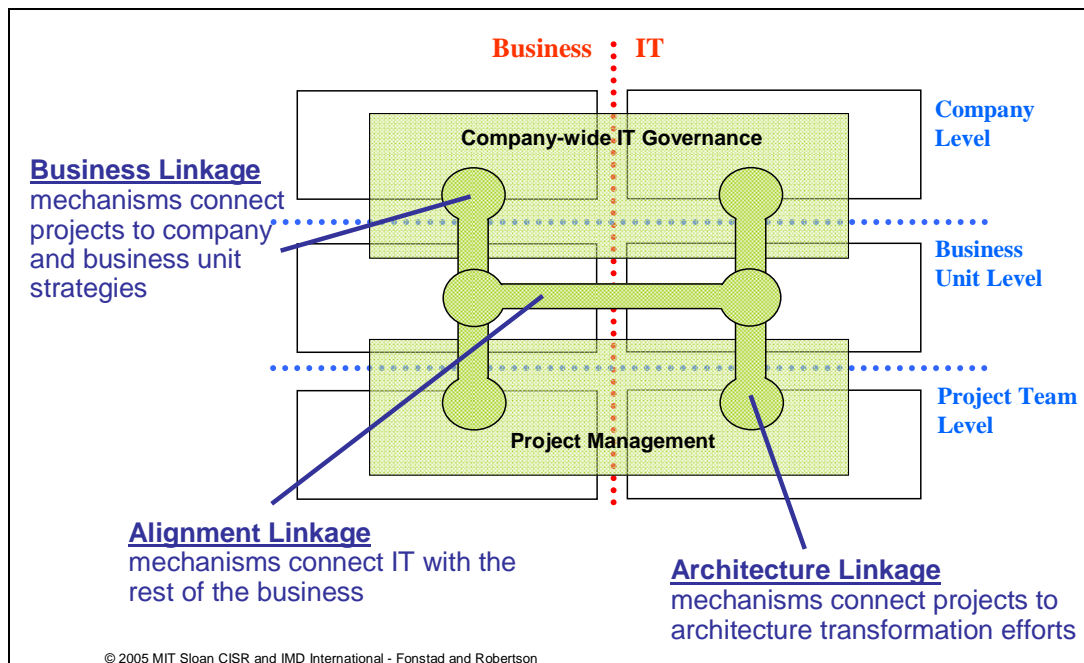
¹² *Ibid.*

¹³ Information systems textbooks provide many different examples of project management processes. For example, see Efraim Turban, Ephraim McLean, and James Wetherbe, *Information Technology for Management: Transforming Organizations in the Digital Economy*, 4th ed., New York: Wiley, 2004; Kenneth C. Laudon and Jane P. Laudon, *Management Information Systems: Managing the Digital Firm*, 9th ed., Upper Saddle River, NJ: Pearson Prentice Hall, 2006; Steven Alter, *Information Systems: Foundation of E-Business*, 4th ed., Upper Saddle River, NJ: Prentice Hall, 2002; E. Wainwright Martin et al., *Managing Information Technology*, 4th ed., Upper Saddle River, NJ: Prentice Hall, 2002.

Our research suggests that effective IT engagement models have a range of linking mechanisms that enhance both alignment and coordination. Three categories of linking mechanisms are shown in Figure 3: business linkage, architecture linkage, and alignment linkage.

Business linkage mechanisms link projects to company- and business-level strategies. They include process owners who are responsible for the structure and performance of standardized business processes, strategy boards that manage across projects, program management offices that coordinate individual projects, funding reviews that decide whether to kill or continue to fund projects, and reward systems that encourage the achievement of company-wide goals. These mechanisms provide opportunities for managers to periodically assess the degree to which projects are achieving company-wide goals, and to revisit company strategy in response to the front line experiences.

Figure 3: Three Categories of Linking Mechanisms



Architecture linkage mechanisms link projects to enterprise and business unit architectures. Companies may put together a system of 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, and bill future projects for that improvement.

Alignment linkage mechanisms link IT with the rest of the business, particularly 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 introduced additional mechanisms for the principle purpose of improving alignment. The most common type of alignment mechanism is to formally introduce a role of integrator. For example, BT plc has

established business-IT liaisons whose key purpose is to secure and maintain the proactive strategic role of IT.

Figure 3 shows how the three categories of linkages interact to enable coordination and alignment. 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.

In what follows, we draw on BT plc and Toyota Motor Marketing Europe (TMME) to illustrate these linking mechanisms. We selected these cases to show how differently companies can apply the concept of engagement and linkage. The BT plc case study shows how major company-wide changes required significant changes in IT governance, project management, and all three types of linking mechanisms. We thus spend more time in this case describing the total engagement model. 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; our case study thus focuses more on the architectural linkages.

BT plc

BT plc (the former British Telecom) provides an example of a company where increasing engagement between key stakeholders was a core part of an ambitious strategy to pursue company-wide transformation. During the late 1990s and 2000, BT was in the process of preparing to break up the company and spin off many parts as separate businesses. However, after the technology bubble burst in 2001, BT found itself with little market for its business spinoffs, a great deal of debt, and declining margins in its traditional businesses. The company replaced its CEO, changed its strategy, and began to fundamentally transform its business processes. BT decided that it needed to bring the different parts of the company together to provide a better experience for its customers. The new CEO, Ben Verwaayen, put “OneBT” in place, in an effort to integrate its internal operations and reduce redundancies. 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 Lines of Business (LoBs)—Wholesale, Retail, and Global Services—divided up their responsibilities and met the challenge with time to spare. However, because each LoB developed its piece of the solution without engaging with other LoBs and using its own systems estate, 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 other company-wide initiatives, senior management quickly realized that there was a need for a stronger company-wide IT governance, the core of which would be a common systems architecture across BT.

Company-wide IT Governance at BT

To ensure the LoBs worked in a manner more coordinated with “One BT,” the CIO introduced several high-level decision-making bodies. The Senior Information Forum (SIF), composed of the CIOs of the different business units and their architects, was formed to connect the efforts of

the different business units and provide them with a consistent, cohesive strategy. 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.

In addition, 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. Led by chief architect Jim Crookes, the ARG engaged with other decision-making bodies to design, debate and reach consensus around 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, there were several areas where developing a single common solution would lead to significant clashes. For example, one line of business 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 was able to make significant progress defining and implementing a new enterprise architecture by “riding waves” (i.e., using the urgency of major business transformation efforts to engage with key business and IT stakeholders from different LoBs and implement architecture linkage mechanisms to connect the 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, as the waves were unpredictable and temporary, leading to inconsistent engagement and assumptions that greater engagement was only necessary during crises. Instead, the IT Group wanted to develop a more robust system of governance to regularly engage with key stakeholders throughout BT and ensure that every project helped to achieve company-wide goals.

Project Management at BT

At BT, about two years after introducing IT governance mechanisms to increase engagement at the company level, a new CIO, Al-Noor Ramji, came on board. With an enterprise architecture already well under development and senior management aligned on the need for a single, company-wide enterprise architecture, Ramji focused on ensuring that each major project helped to advance company-wide objectives. To improve and extend engagement from the company level down through all the projects, Ramji streamlined company and business unit-level governance, and introduced a standard project methodology for all of BT.

In the new methodology, all approved business programs were required to go through 90-day cycles that consisted of a series of standard “gates,” including “hot housing” (an intense three days of rapid prototyping between competing teams of IT and non-IT participants from various levels of the organization), Build, Test, Implementation, and Post Implementation Review (PIR). These mechanisms brought IT and non-IT stakeholders together—many for the first time. With a 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 operations. He removed almost all IT personnel from the LoBs and consolidated them into a single central IT group. He left behind only a small number of IT people in each LoB, led by a

“Market Side” CIO, whose responsibility was to provide strategic guidance for the business unit CEO. He also pulled the remaining IT operations from the individual lines of business and consolidated them into a single central IT group so that he could better manage human resources and skill development.

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

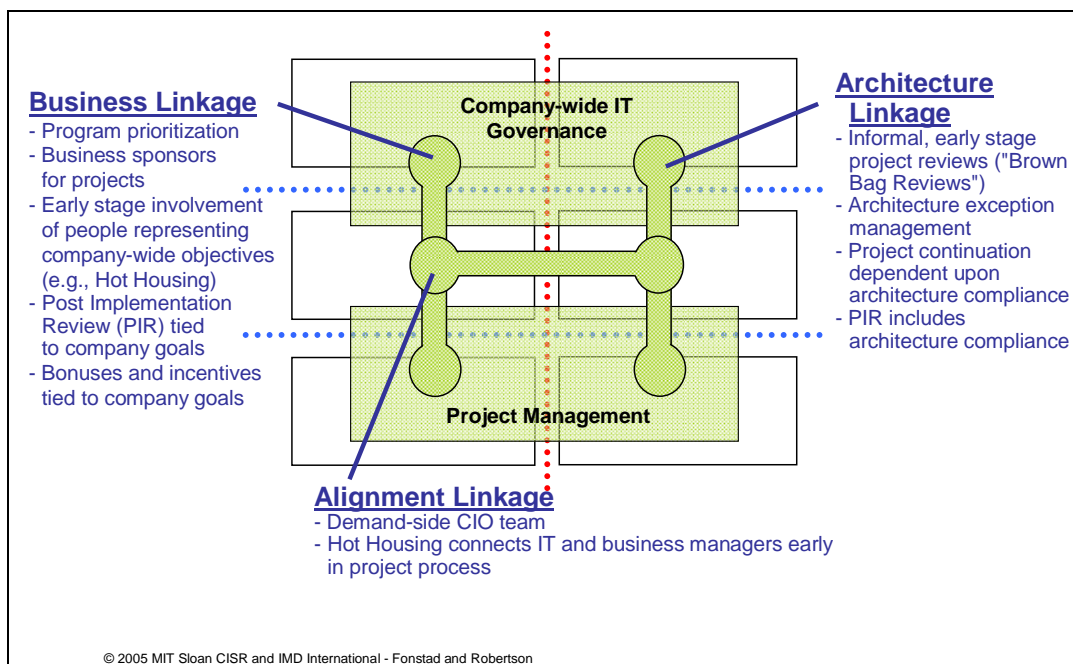
Each program was managed by a dedicated team that consisted of IT and non-IT managers who were responsible for ensuring that constituent projects met program objectives. A critical mechanism for linking projects to program objectives was the Post-Implementation Review (PIR). A PIR at BT did not simply examine whether or not a project achieved its local goals in an efficient manner. It also assessed a project according to broader objectives. In addition, over half of the total time spent on a PIR occurred during the early stages of a project. Soon after the “hot housing” phase of a project, IT and non-IT participants from multiple organizational levels (many of whom had worked together in the hot housing phase) negotiated realistic metrics to assess the progress (or lack thereof) of a project, with regards to short-term and long-term, local and company-wide objectives, including architecture compliance. At the end of 90 days, they then used those metrics to review the project. If a project review found that a project had not met key metrics, project participants did not receive bonuses and the project could be stopped.¹⁴

Architecture linkage consisted of training solution designers to design architecturally compliant solutions, getting architects involved in the earliest stages of a project to instill a long-term (through informal meetings called “Brown Bag Reviews”), company-wide perspective early in the life cycle of a project, and an exceptions handling process that did not simply enforce but also was open to learning from participating stakeholders. Together, these proved to be a valuable means of collecting insights for improving and refining the enterprise architecture.

In 2001, when Verwaayen announced “One BT,” there were very few mechanisms to align and coordinate efforts across the business units. By 2005, BT had strengthened its company-wide IT governance, standardized project management, and introduced several linking mechanisms. Figure 4 illustrates these. With all the pieces of a more robust IT engagement model now in place, stakeholders could focus on improving their collaborative capabilities and refine the IT engagement model as it matured. Many of the executives that we interviewed credited engagement with enabling IT to reduce costs by ten percent every year—savings that were critical to fund new initiatives. In August 2005, *CIO Magazine* awarded BT as one of the 100 boldest companies of the past year, for “assuming significant risk for the sake of great reward.”

¹⁴ To learn more about post-implementation reviews, see Nelson, R.R., “Project Retrospectives: Evaluating Project Success, Failure, and Everything In Between,” *MIS Quarterly Executive*, 4:3, September 2005, 361–372.

Figure 4: Examples of Linking Mechanisms from BT



Toyota Motor Marketing Europe

Over the past ten years, Toyota Motor Marketing Europe S.A./N.V. (TMME)¹⁵ has altered its operations from a set of independent country units to a more integrated and centrally coordinated organization. An integral part of their transformation effort was to modify the company's enterprise architecture to improve flexibility and the transparency of information throughout the supply and demand chain. TMME already had a strong culture and set of business processes developed around continuous improvement. As a result, their IT engagement model focuses very strongly 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 in Europe grew, the management team realized it needed to take more control over operations if the company was to serve its European customers well. For example, prior to 1999 inventories of new cars were maintained within country units—a Swiss customer desiring a green Corolla with an automatic transmission would have to wait months to get it, while that exact car could be just over the border in France, a few kilometers away. The same situation was true for repair parts. Management realized that 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

The first step that the architecture group took when asked to transform the company's architecture was to link the principles of the architecture to the goals of the company. To do this,

¹⁵ TMME is a wholly owned subsidiary of Toyota Motor Europe S.A./N.V. and is responsible for the wholesale marketing of Toyota and Lexus vehicles, parts and accessories in Europe. Toyota Motor Europe also owns Toyota Motor Engineering & Manufacturing Europe S.A./N.V., which is responsible for Toyota's European manufacturing and engineering operations.

Peter Heinckiens, TMME's chief architect and deputy general manager of IT strategy, surveyed the strategic initiatives underway at the company to identify patterns. He summarized these patterns into a document that was intended to capture the strategy of the company in a concrete manner.

From the statement of these desired capabilities, the architecture group designed a high-level set of architectural principles showing how each principle helped the company achieve its goals. In 2000 the management team endorsed the principles. The IT unit then used the principles to start conversations with country units about the 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 set up a disciplined process for projects, 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: project architects; the authority to “pull the line”;¹⁶ funding tied to architecture compliance; and an appraisal phase. Each project team included a project architect, with some project architects responsible for multiple projects. Project architects were responsible for helping to develop the architecture for the project solution, ensuring that the solution was compatible with the company's enterprise architecture, and helping to update and improve the enterprise architecture if necessary.

The project architects' incentives rewarded successful project delivery and realistic solutions, helping their acceptance by the projects. The first and most basic requirement for a project architect was whether his or her project succeeded. If the project was successful—i.e., if it met the project plan on time and on budget, even if it violated the architecture to some degree—the architect was judged to have “nearly achieved” his or her goals. If the project was successful and the project helped to implement the enterprise architecture, then the architect “fully achieved” goals. And if the project was successful, the project helped implement *and improve* the enterprise architecture, then the architect “exceeded” goals. This dual focus on successful project delivery and enterprise architecture helped project teams accept project architects and helped ensure that the architectural solutions were realistic and aligned with business goals.

¹⁶ “Pull the line” is a term borrowed from Toyota's manufacturing organization and is an integral part of Toyota's culture. In a Toyota plant, a worker is obligated to “pull the line” and stop production if he or she sees poor quality production occurring.

Project architects were also given the authority to “pull the line” on a project. Because of the careful linkage of the architecture with the strategic goals of the company and extensive education about the importance of architecture, the architecture team gained the credibility and authority it needed to stop a project if necessary. Although it was an authority that the architects rarely used, this option helped give the architects the power needed to achieve Toyota’s goals.

Another component of architecture linkage was funding. The central architecture group had a limited pool of funds to support projects. Consequently, the architecture group had to figure out how to support infrastructure development with multiple projects. For example, if a project had 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 the project for the additional cost, the architecture group would first look for other projects that also required interaction with that database to see if the cost could be shared. If no other projects were found, then the architecture group funded the extra development cost themselves. As the chief architect for TMME, Peter Heinckens, 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 into a robust architecture linkage and applied them early in the life cycle of projects to engage IT and non-IT stakeholders and introduce company-wide objectives into the solution strategy of projects. 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 to allow customers to select automotive accessories—steering wheel covers, gear shift knobs, and the like. The goal was to provide customers with pictures of the accessories and the ability to choose which ones they wanted. The architecture group realized that the underlying data was located in a number of places, including within an application whose vendor had gone out of business. Rather than build an application on top of this data structure, the architecture group worked with the business managers to re-scope the project and incorporate the design and construction of a new accessories database. The initial project only had to implement one small piece of this new database, but they did it in a way that made it easy for future projects to finish the job. By being involved before the start of the project and re-scoping the project, the architecture group helped push the architecture forward, without increasing the cost of the original project.

Based on this and other experiences, the architecture group added a new phase to their project process— “appraisal.” The appraisal phase became the first phase in a project’s lifecycle and focused on the specification and staffing of a project. This phase provided a forum for the business and IT groups to decide what the goals and solution strategy for a project should be, and how it would build on the enterprise architecture. In the appraisal phase, projects like the web-based service to access the accessories database (described above) can be re-scoped to include architectural improvements (like the restructuring of the database) in the project as well. This phase ensures that each project will help achieve not just short-term local business goals but also long-term, company-wide goals as well.

Over time, business managers on the project teams were more motivated to cooperate with the architects to help achieve longer-term goals for three reasons. First, the authority that architects had to “pull the line” and stop a project initially helped motivate cooperation. However, architects rarely resorted to that authority. Second, the architects had done a careful job to link the strategy of the company to the enterprise architecture. If someone was resisting the enterprise architecture, the architecture team could argue that they were hindering the company from executing its strategy. Finally, many on the business side began to see that when a team followed the recommendations of the architects, the initial phases of the projects might take slightly longer, but the overall project cost and time actually was reduced.

TMME designed metrics to measure the degree of architectural compliance of projects and how the architecture was contributing to business success. The architectural compliance of projects went from 26% in 2001 to 93% in 2004. In addition, the company assessed the degree to which its enterprise architecture enabled strategic initiatives. The score on this assessment improved by 76% between 2002 and 2005.¹⁷

Figure 5: Examples of Linking Mechanisms from TMME

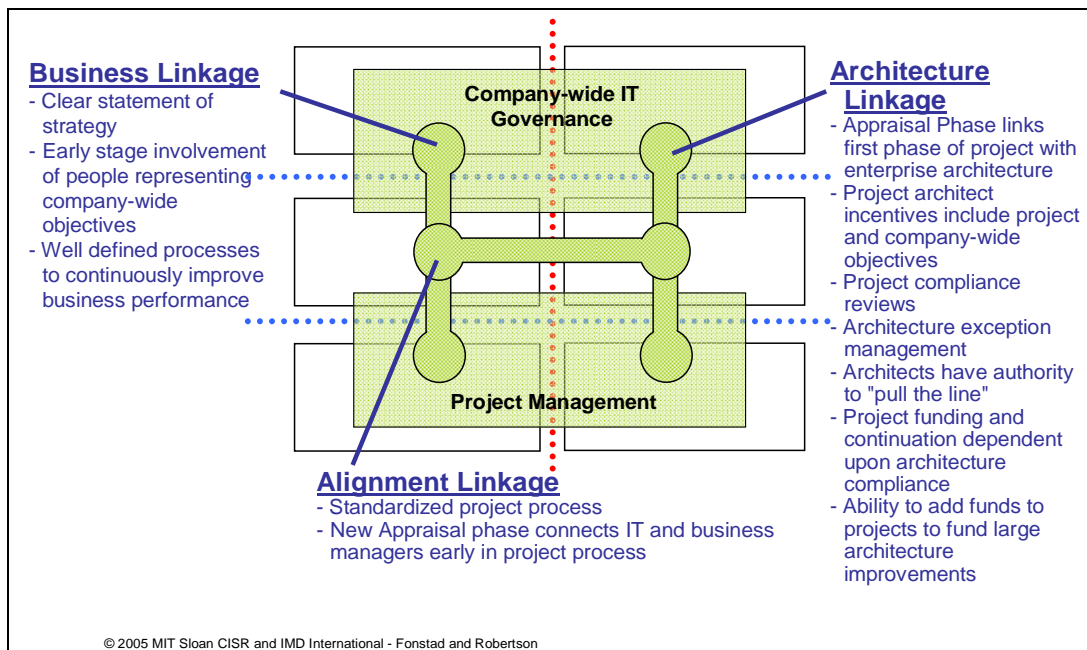


Figure 5 summarizes the linking mechanisms used by TMME. The results of the engagement efforts have been positive: Toyota’s European delivery lead time for vehicles has been reduced by 35% and the inventory of spare parts has been reduced by almost 50%. And Toyota’s European unit sales have grown by over 11% per year for the three years ending 2004.

¹⁷ For more information on Toyota Motor Marketing Europe’s architecture and how it is measured, see Heinckiens, Peter M., “Meta-level Business Integration for Supporting New-Economy Business Models,” Ph.D. Thesis, University of Ghent, Belgium, May 2004.

What Is Good Engagement?

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

- 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. That way, when they are linked together, they are better able to make the best of the other components and the sum of the whole is significantly greater than the sum of the individual components.
- Define clear, specific, and actionable objectives. Clear strategic objectives are necessary to guide engagement efforts. For example, the first action of Toyota's architecture group was creating a clear statement of strategy and gaining top management's endorsement of it.
- Provide motivation to meet company goals. Formal incentives such as bonus plans, annual reviews, and performance metrics can help to focus and align activities. For Toyota, these were embodied in the reward systems of the project managers and the project architects.
- Assign enforcement authority. Complementary to formal incentives are formal enforcements. Unless an engagement model has the ability to stop efforts that go against the goals of the company, managers will begin to ignore or resist engagement efforts. The first project to actually get penalized or stopped is an important tipping point that boosts the credibility of engagement efforts.
- Encourage early intervention and prevention. Successful IT groups engage with business projects during the earliest stages of development to ensure that goals are aligned and to prevent bad solutions from being designed in the first place.
- Promote transparent, regular, two-way communication. With good engagement, alignment and coordination are maintained through regular communication between business and IT. This enables parties to 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 the parties they bridge (e.g., savvy in business and IT objectives; 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 US and Europe, Ross, Weill and Robertson¹⁸ found two major predictors of whether a company's architectural initiatives were strategically effective. The first was the degree to which senior managers were involved in the definition and oversight of architecture initiatives, a result of

¹⁸ Ross, J., Weill, P. and Robertson, D., *Enterprise Architecture as Strategy: Creating a Foundation for Execution*, Harvard Business School Press, 2006.

alignment among the top management team. The second was the degree to which the architecture effort were well linked to project activities—successful companies had architects on 81% of 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?

Table 1 lists a selection of linking mechanisms from TMME and BT and describes in detail how they are used to improve coordination. As TMME and BT both illustrate, companies draw on a variety of mechanisms (e.g., roles, decision-making bodies, incentives, processes—both formal and informal) to achieve each type of linkage. Each mechanism has its strengths and weaknesses (e.g., a new boundary-spanning role may be fulfilled by someone who can provide in-depth understanding across two parties; however that person may not solve any political tensions). Companies try out a variety of mechanisms to see which fits best with their particular situation. As stakeholders learn to engage, they adapt existing mechanisms or replace them with new ones.

Table 1: A Selection of Linking Mechanisms from BT and TMME

Linking Mechanism Type of Linkage	Impact on Project Level <i>How did the mechanism enable company-wide IT governance to influence projects?</i>	Impact on Company-Wide IT Governance <i>How did the mechanism enable projects to influence company-wide IT governance?</i>
BT plc		
Market Side CIOs <i>Alignment Linkage</i>	Market Side CIOs ensured that personnel from the central IT organization understand business needs.	Market Side CIOs focused on strategic role of IT, guiding investment and project priorities.
Program and Project Prioritization <i>Business Linkage</i>	All projects had to belong to one of 29 programs. A standard prioritization framework was jointly agreed between CIOs, CFOs and the Strategy group. Projects that belonged to programs with low priority were also given low priority. This helped control the number of projects that project level IT worked on.	Senior management finally had a comprehensive view of projects across the BT. This enabled them to compare and assess strategic fit and risk profile of programs and projects, and to guide IT investments.
Brown Bag Review <i>Architecture Linkage</i>	IT architects sit down with project managers to review solution architecture. Early influence of project solution helps manage expectations of business sponsors before they become too invested in a specific solution.	Helps enterprise architecture team identify and address gaps in architecture before they become significant impediments.
Post Implementation Review <i>Business Linkage and Architecture Linkage</i>	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 of project level participants. Lessons from PIR were used to develop more realistic and specific business cases for projects.	Results used to refine the measures and targets used to evaluate projects. In addition, at the end of each 90-day cycle, the PIR team reported back on lessons learnt.
Exceptions handling process <i>Architecture Linkage</i>	Each project was assigned a Program Lead Designer who was trained in BT's enterprise architecture. Any exceptions had to receive approval before they received IT resources.	Exceptions were used to improve architecture. Exceptions sometimes highlighted parts of the enterprise architecture that required refining.
TMME		
Project architect on project teams <i>Architecture Linkage</i>	Project architects developed the architecture for the project solution, helping to ensure that project is architecturally compliant	Project architects help to design and update the enterprise architecture.
Architecture funding process <i>Architecture Linkage</i>	Architecture funding helped spread the cost of major improvements over many projects, making it easier for projects to also take on related architectural improvements.	The process of reviewing what strategic initiatives could benefit (and would pay for) a major architectural improvement helped establish how important that improvement really was.
Addition of Appraisal Phase <i>Alignment Linkage</i>	Project goals and solutions strategy are assessed early in the life cycle of a project and the project rescope if necessary so that it accomplishes both business and architectural goals.	Restructuring of projects helped educate both business and IT on each others' goals.
Assessment of impact of architecture <i>Architecture Linkage</i>	At their conclusion, projects are assessed on the degree of compliance with enterprise architecture. Feedback helped to ensure that architectural efforts are truly benefiting projects.	The strategic impact of architecture is assessed to ensure it continues to provide business value, and adjust architecture goals if necessary.
Continuous improvement of standard project methodology <i>Business Linkage</i>	Lessons from past projects are used to inform adjustments and improvements to the way projects are executed.	Projects are considered as learning opportunities from which to improve the standard project methodology.

While BT and TMME illustrate a range of different mechanisms, there are many others that are possible. For example, another common mechanism to enhance alignment linkage is a Business-IT relationship manager. Through continuous engagement, relationship managers build trust and common understanding, 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 company.

There are two ways to map out your company's system of linking mechanisms, and each reveals different aspects of the engagement model. The first approach is to draw the organizational view,

such as the one shown in Figures 4 and 5. To follow this approach, ask yourself the following questions:

- What mechanisms do IT governance bodies use to reach and to enforce their decisions?
- How do these mechanisms interact with the projects?
- How are projects coordinated?
- What specific linking mechanisms connect projects to business leadership? To IT leadership? To IT architects?

The top-down organizational view can be complemented by a project-focused view. Pick an important strategic initiative and ask the project manager these questions:

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

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

Conclusion

Most IT groups face myriad requests for new projects, each competing for the groups' increasingly scarce resources. Tackling each challenge separately is rarely effective—individual solutions quickly become 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 ensure that the right projects are taken on, the projects execute well, and the projects together collectively help achieve company goals.

Because of TMME's effective engagement model, TMME has been able to build large parts of its enterprise architecture through ongoing projects and drive the central architecture budget almost to zero. For many IT groups that we've talked to, this statement is met with disbelief. Yet we believe that this is a goal that every company can aspire to: by engaging effectively across all parts of the company, real company-wide transformation can be achieved, one project at a time.

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Since July 2000, CISR has been directed by Peter Weill, formerly of the Melbourne Business School. Drs. Jeanne Ross, George Westerman and Nils Fonstad are full time CISR researchers. CISR is co-located with MIT Sloan's Center for e-Business and Center for Coordination Science to facilitate collaboration between faculty and researchers.

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