

1 Introduction

We will start by arguing the importance of enterprise governance and enterprise engineering in addressing the organized complexity of enterprises. This demonstrates the essential purpose of these themes, and clarifies the notion of design. Anticipating the specific subject chapters, the governance topics currently discussed in the literature will be introduced briefly, providing an initial sketch of the essential characteristics of these topics and the manner by which governance is generally effected. The brief introduction will also provide sufficient insight to appreciate the close mutual relationships between the various governance topics. This offers the rationale for the argued integrated approach, whereby each governance topic is not treated in isolation, but addressed jointly in a mutually coherent and consistent manner within the overall concept of enterprise governance. As our starting point, governance will be positioned as an organizational competence, with central attention to enterprise design. Finally, the setup of the further chapters will be elucidated.

1.1 Our Central Themes

1.1.1 A World of Problems

Humans face a variety of problems. Attempts to solve them require at least an approach matching the nature of the problem. For the type of problems addressed in this book, we believe many approaches to be fundamentally at odds with the inherent nature of these problems. To carve out our problem area of concern, we will limit ourselves to problems characterized by some degree of *organization* and *complexity*. These characteristics are difficult to define precisely, but for our discussion we will associate ‘organization’ with formal, non-random relationships between entities, and ‘complexity’ with the number of relationships. Using these characteristics, three problem areas are particularly noteworthy [Weinberg 2001]. The first area concerns problems characterized by relatively limited complexity, but a high level of organization. The limited complexity signifies that there are few interdependencies – relationships between certain aspects that manifest being organized – while the high level of organization indicates that these relationships are formal and predictable. Examples are problems associated with the operation of machines and mechanisms. The limited complexity (few interdependencies) allows these problems to be addressed through analytical (mathematical) methods. In view of the relatively low complexity, Weinberg has coined the term ‘organized simplicity’ to identify problems of this nature [op. cit.]. Opposing this problem area is that of problems characterized by a high level of complexity, but a low level of organization. The high level of complexity indicates that there are

numerous interdependencies, but the low level of organization implies that the interdependencies are non-formal and random in nature. This is the area of ‘unorganized complexity’, whereby the random nature of the numerous interdependencies allows these problems to be addressed through statistical means [Weaver 1967, Weinberg 2001]. So, despite the random, unpredictable character of individual interdependencies, the totality of the ‘unorganized complexity’ can be understood and predicted. For example, gas molecules in a closed space, certain aspects of (car or telephone) traffic, or life insurance, pose problems that can be addressed this way. Between these two problem areas lies the large area of problems of ‘organized complexity’ [Weaver 1967, Weinberg 2001]. Here there is a high level of complexity, hence many interdependencies, as well as a high level of organization, indicating that the interdependencies have a formal relationship to a significant extent. The problems in this area are therefore too complex for analytical methods, and too organized for statistical methods. Expressed differently, a core problem confronting modern science is developing a theory and associated methodology for addressing problems of organized complexity [Weaver 1967, Bertalanffy 1969]. Many biological and societal problems are problems of ‘organized complexity’. Figure 1 shows the three problem areas discussed schematically.

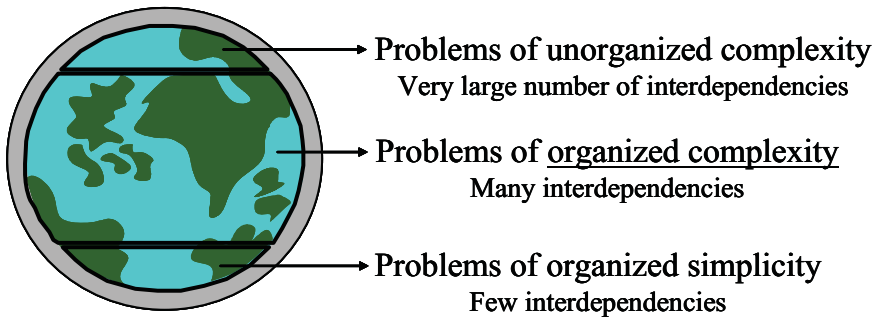


Fig. 1.1. A world of problems

1.1.2 Enterprises as Organized Complexities: Enterprise Governance and Enterprise Engineering as Crucial Concepts

Why Enterprise Governance and Enterprise Engineering?

Essential aspects of an enterprise will be outlined in Chapter 3. For now, the notion of ‘enterprise’ can be interpreted as an overall term to identify a company, organization, business or governmental institution. Hence an enterprise is an intentionally created entity of human endeavor with a certain purpose. Enterprises are organized complexities: they are highly complex, as well as highly organized entities. In the nine-level scale of complexity defined by Boulding, enterprises

rank among the highest complexities (level eight) [1956]. On this scale, the bottom-three lowest complexities are: (1) static frameworks, (2) mechanisms and machines, and (3) machines and mechanisms with control devices. Despite the significant difference in complexity between enterprises and the bottom-three complexities, much thinking about enterprises is at level 1–3, assuming that enterprises behave as static frameworks or mechanical (control) systems [Tsoukas 1994b]. This ‘mechanistic’ approach, and our critique of it, will be a central theme in Chapter 2.

The core problem with organized complexity is the necessity of taking into account numerous aspects and interdependencies that jointly form an organic whole. Many authors argue that the system approach, which we will outline in Chapter 4, is the only meaningful way to address the core problem of organized complexity, hence the only meaningful way to study and develop enterprises [Bertalanffy 1969, Gharajedaghi 1999, Rechlin 2000]. According to Ackoff, failing strategic enterprise initiatives are thus due to the fact that the initiatives are fundamentally “anti-systemic” [1999].

As stated, an enterprise is an intentionally created entity of human endeavor with a certain purpose. The intentional character points to being purposefully organized: the arrangement of things such that the enterprise purpose is realized. One might say that being organized points to a certain *order*, which is manifest in the enterprise *design*. It seems plausible that enterprise order does not (generally) occur incidentally, which is precisely the reason for referring to the intentional character of enterprises. Hence, guiding authority – enterprise governance – is required to bring about the desired order. Since order is manifest in design, enterprise design is obviously a central area of attention within enterprise governance. Enterprise design must also be such that the enterprise purpose and goals are realized successfully. Neither will this occur incidentally. Evidently, adequate design requires a formal design theory and associated methodology. For that we will advocate the notion of enterprise engineering. Figure 1.2 shows our line of thinking and the central themes of this book: enterprise governance and enterprise engineering.

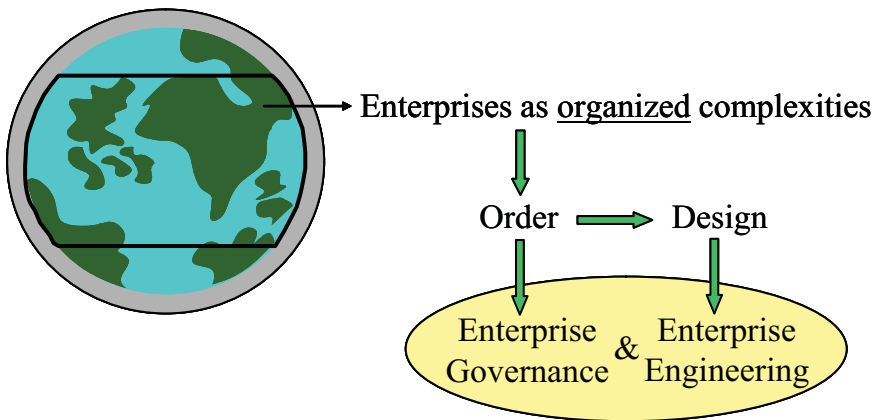


Fig. 1.2. Enterprises as organized complexities

complexity effectively in the case of enterprises, by providing a fundamentally different view on governance than is customary, and by introducing the concept of enterprise engineering.

Clarifying the Notion of Design

For some, the term ‘design’ in the context of enterprises has uncomfortable connotations. The term is associated with mechanistic approaches to enterprises: arranging them as if they are machines. The ‘social engineering’ label is sometimes used to identify the mechanistic view on organization and management [Tsoukas 1994b]. This approach essentially equates management with control, with the associated conviction that by using certain ‘controls’ management is able to steer the enterprise (top-down) within the desired range of control. The enterprise is thereby assumed to be an objective entity, external to management, that like a machine, merely needs to be controlled. This viewpoint and its roots will be discussed and criticized in Chapter 2. There we will present a fundamentally different perspective that, among other things, acknowledges the non-planned, emerging character of many enterprise developments. Such developments rest for a large part on the capacity for self-organization. In view of this, the question thus becomes: can we do away with design altogether? Our answer is an emphatic no.

First, the reliable delivery of enterprise products and services requires some sort of formal arrangements on which this delivery (also) depends. We fail to see how, for example, transport, educational, health care, utility, or governmental products and services – on which society depends daily – or the production of material goods, can take place reliably if left totally to incidental, emerging processes whose outcome is unpredictable. Put another way, some underlying structural-functionalistic foundation is obviously necessary, but is insufficient, as we will show in Chapter 2. This is precisely the reason for the inadequacy of the mechanistic perspective on enterprises. In our view, arranging the structural-functionalistic foundation necessitates design.

Secondly, as we will show in Chapter 2, non-mechanistic enterprise characteristics are essential for enterprise strategic and operational success, as well as for the ability to innovate and change. These characteristics concern non-planned, emerging developments, which rest on the capacity for self-organization, as indicated earlier. It seems plausible that innovation, flexibility, the ability to change and the capacity for self-organization are not provided by any incidental set of enterprise characteristics. On the contrary, such capacity rests on specific enterprise conditions, as we will corroborate in Chapter 2. It would seem imprudent to leave the creation of these conditions to chance: spontaneous, incidental developments. Again, these conditions must be created intentionally: they must be designed. Hence enterprise design must also enable future, yet unknown, enterprise change and adaptation. The notion of enterprise design should thus be interpreted broadly and seen as devising “courses of action aimed at changing existing [enterprise] situations into preferred ones” [Simon 1969, p. 111]. Ultimately, on one hand design concerns understanding the intentions that are to be operationalized, and on the other, arranging that to happen. As Winograd and Flores

put it: design concerns “the interaction between understanding and creation” [1987, p. 3]. The discipline of enterprise engineering should thus be viewed broadly from this perspective.

1.1.3 *Enterprise Engineering*

In Chapter 3 we will discuss the rather poor success rate of enterprise strategic initiatives: the majority fail. Research has shown that strategic failure is mostly the avoidable result of inadequate strategy implementation. Rarely is it the inevitable consequence of a poor strategy. A plethora of literature indicates that a core reason for strategic failures is the lack of coherence and consistency among the various components of an enterprise, which precludes it operating as a unified and integrated whole. Seriously enough, it is precisely these aspects which gain importance in view of enterprises collaborating over more extended domains. Unity and integration are thus necessary conditions, though difficult to realize, for successfully operationalizing strategic initiatives. This begs the question as to how success can be established. Put another way, which theory and underlying methodology offers an effective approach for implementing strategic initiatives successfully? For reasons outlined later, we contend that the emerging discipline of enterprise engineering offers a fruitful first onset.

The current situation of theory development about enterprises strongly resembles that of information sciences around 1970. At that time new insight emerged that changed the perception on information technology and its utilization. Since then a distinction between *form* and *content* of information has been made. This breakthrough marks the transition from the era of ‘data systems engineering’ towards the era of ‘information systems engineering’ [Dietz 2005].

Referring to this breakthrough is relevant for two reasons. First, the crucial technology that shapes modern enterprises is information technology. Indeed, relationships between collaborating actors in enterprises are largely informational relationships. Work is not merely automated, but ‘informed’ [Zuboff 1989]. Second, there is a growing insight that the central notion about the utilization of information technology in relation to enterprises has to do with entering into, and complying with, ‘commitments’ by social actors (e.g. customers, employees, business partners, suppliers). These commitments are entered into through the expression of communicative (coordinative) actions. Examples are: the *request* (to realize or produce something), the *promise* (to honor the request), the *statement* (that the requested is produced), and the *acceptance* (of the produced) [Dietz 2006]. These communicative actions can be explicit or implicit. Again, a new insight emerges: as earlier the content of information was placed above the form of information, now the *intention* of information (communication) is placed above its content. Thus the various responsibilities, qualifications and authorizations associated with commitments and their communicative actions become clear. This new insight marks the transition from the era of ‘information systems engineering’

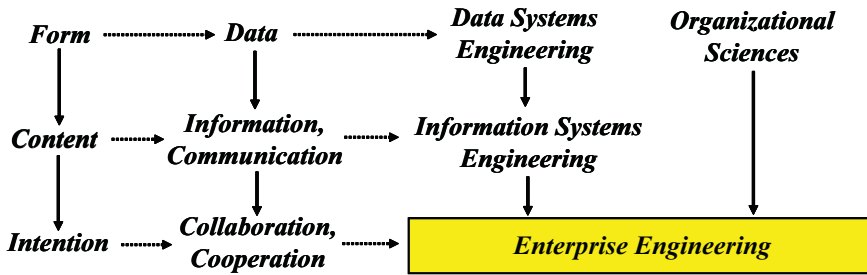


Fig. 1.3. Roots of enterprise engineering

towards the era of ‘enterprise engineering’. Since the traditional organizational sciences have much to say about enterprise arrangements, such a transition towards enterprise engineering enables the fruitful fusion of information systems engineering and traditional organizational sciences. Figure 1.3 shows this reflection schematically.

We indicated previously that a major problem facing modern science is the development of a theory for addressing organized complexity. Enterprise engineering aims to comprehend enterprise complexity – and thereby master it – and can be seen as a developing discipline – domain of knowledge, concepts, theory and associated methodology – for analyzing, designing and creating enterprises. Enterprise management is often only interested in *what* the enterprise should realize, not in *how* that should be accomplished. This disparity is not without danger, since the required unity and integration necessitates the latter perspective first and foremost. Enterprise engineering intends to address the design perspective in a formal, methodological way. Two important concepts underpin enterprise engineering: *enterprise ontology* and *enterprise architecture*. These concepts will be outlined in subsequent chapters. Briefly stated, they concern the following. Enterprise ontology focuses on the essence of an enterprise, fully independent of its actual or possible implementation. Appreciably, this will greatly reduce the complexity, hence reducing the difficulty of comprehending enterprises. Enterprises must ultimately be designed such that they can be implemented. In view of the enterprise purpose and its objectives, it seems obvious that not just any arrangement of the enterprise will suffice. On the contrary, enterprise design must satisfy specific requirements. Enterprise architecture is a crucial concept in this respect and provides normative guidance for design, in order for the enterprise to operate as a unified and integrated whole, whereby various enterprise objectives must be satisfied. An important objective was mentioned earlier: enterprise engineering must address not only operational aspects having to do with producing enterprise products and services, but enterprise engineering must also address the ability of the enterprise to address future, yet unknown developments successfully: design must enable enterprise change and adaptation.

The concept of engineering an enterprise has been emphasized notably in earlier publications. For example, as far back as several decades ago James Martin stated that “Enterprise Engineering is an integrated set of disciplines for building

or changing an enterprise, its processes, and systems” [1995, p. 58]. With deep insight he foresaw that “A new type of professional is emerging – the enterprise engineer” [op. cit., p. xii]. Underlying the approach advocated by James Martin was the notion that enterprise success necessitates unity and integration of various enterprise aspects, a notion we will likewise emphasize throughout this book. Despite the similar use of the term ‘enterprise engineering’, our approach nonetheless differs in various aspects. The difference lies primarily in our emphasis on the formal theory and associated methodology for enterprise design, as well as in our focus on the characteristics of effective governance for making the enterprise engineering approach successful.

1.2 Growing Attention to Governance

1.2.1 *Three Governance Themes*

An Internet search for the term ‘governance’ will be fruitful: the number of hits is so high that an average human life would be too short to investigate them all. Some analysis teaches however that the results contain considerable overlap, and that essentially they boil down to three governance themes: corporate governance, IT (information technology) governance and enterprise governance. Anticipating the more elaborate discussion, we will introduce these three themes and their typical characteristics briefly.

Corporate Governance

Concisely stated, the ‘corporate governance’ theme centers around the way companies are managed and controlled [Solomon and Solomon 2004]. Corporate governance is therefore associated strongly with (top) management of companies. This governance theme has a long history, and has its roots in issues arising from the separation between owners (shareholders) and management of an exchange-listed company. While shareholders expect management to act in shareholders’ interests – as an ‘agent’ of the shareholders – actual experience indicates otherwise, at least in shareholder perception. Management acts according to its own agenda when it comes to the company’s strategy and development [Berle and Means 1932]. This is the core of the so-called ‘agency problem’ identified as the first crisis in corporate governance. Such a crisis raises the question as to how corporate governance must be arranged so that management acts in the interests of shareholders.

After the first crisis, a second crisis manifested itself at the end of the last century. Where the first crisis could be attributed to a difference of opinion between management and shareholders about the company’s strategy and development, the second arose from severe forms of fraudulent actions, greed, corruption and the appropriation of company financial means for dubious (including private) purposes. Dramatic consequences followed, among them the downfall of companies, inflicting severe damage on many affected parties.

The ‘corporate governance’ theme received prominent attention as a result of the second crisis, together with a call for governance reform. Proposed changes are translated for a considerable part into rules and legislation, among them the well-known American Sarbanes-Oxley legislation. Given the origin of the crisis in corporate governance, the type of discussion about this theme and the character of the proposed reform, the corporate governance theme manifests strong dominance in the financial/accounting and auditing profession. The perspective is heavily structurally oriented, focused on internal risk management and control in financial/economic developments. Formal reporting and auditing play an important role, including compliance: satisfying rules and legislation on corporate governance. Such rules and legislation are directed for a considerable part to the responsibilities of (top) management towards shareholders. As indicated earlier, the notion of corporate governance is therefore associated strongly with (top) management. Corporate governance can thus be regarded as the totality of internal arrangements, as well as external rules and legislation, for control and risk management that ensures that companies are addressing their responsibilities towards shareholder interests effectively.

IT Governance

Information Technology (IT) – sometimes also identified as Information and Communication Technology (ICT) – has affected society and enterprises dramatically, and will most likely continue to do so. From a historic perspective, IT developments can be characterized as ‘revolutionary’, specifically by observing the enormous progress from the 1980s onward. In view of the revolutionary character – and the subsequent need to pay attention to these developments – the IT governance theme surfaced as an area of interest at the end of the 1980s and beginning of the 1990s. Self-evidently, the considerable and revolutionary influence of IT makes guiding IT development important: IT governance. One might thus interpret the attention paid to IT governance in a positive sense: such innovative use of IT that competitive advantage is established. History teaches however that attention paid to IT governance is generally driven by more disturbing concerns, such as:

- The advantages of IT investments are unclear or controversial
- Vague relationships between IT investments and enterprise strategic intentions
- IT systems limit enterprise flexibility
- IT developments are often technology driven
- Unproductive relationships exist between IT users and IT professionals
- Long lead times for IT developments
- High costs for IT developments and operation.

Supposedly, adequate IT governance would then rectify the aforementioned drawbacks. One speaks of ‘business and IT alignment’: the state of perfect fit between business requirements and the response of IT. The question is nonetheless, *how* the state of alignment is established. Many IT governance approaches provide a structurally oriented answer to this question, whereby IT governance is

viewed as “the process by which decisions are made around IT investments” [Symons 2005]. Others claim that IT governance is about “specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT” [Weil and Woodham 2002]. These structurally oriented perspectives seem to suggest that once the framework for decision-making is defined, IT developments will progress in the desired manner. What those IT developments are, and how they are established remains unclear however.

Inevitably, the aforementioned IT governance perspectives associate IT governance strongly with management responsibilities and their assumed decision-making prerogative. It is stated for example, that “IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of leadership and organizational structures and processes that ensure that the organization’s IT sustains and extends the organization’s strategies and objectives” [IT Governance Institute 2003]. A comparable perspective appears from the notion that “IT governance is the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT” [Grembergen and Haes 2008, p. 5]. Similarly as with corporate governance, the visions regarding IT governance are thus almost exclusively associated with (top) management of enterprises. It apparently only concerns structures for decision-making and responsibilities for IT developments. This book will present a different perspective on IT governance.

Enterprise Governance

This is a theme of more recent origin. The way the concept of ‘enterprise governance’ is presented in the literature currently bears a strong relationship to the previously discussed corporate governance theme. Put another way, proponents of corporate governance have recently been advocating the enterprise governance notion. The background for this new focus lies in the insight that fraud and the publication of misleading (financial) information are evidently not in the interests of shareholders, but that failing strategic developments and implementations likewise – and probably even more so – form a considerable risk for shareholders. Remarkable in this context is the outcome of a study among a thousand enterprises into sharp fluctuations in their share prices. Two-thirds of the fluctuations appeared to be connected to strategic issues, whereas only one-third involved financial and operational risks [Ernst and Young 2002]. So the strategic and operational performance of the enterprise is therefore included in the governance perspective. Alongside the traditional focus on compliance, governance must also be concerned with performance. The International Federation of Accountants sees enterprise governance as the combination of corporate governance (focused on *compliance*) and ‘business governance’ (focused on *performance*) [IFAC 2004]. The notion of business governance remains unclear however. Enterprise governance is considered as “the set of responsibilities and practices exercised by the board and executive management with the goal of providing strategic direction, ensuring that objectives are achieved, ascertaining that risks are managed appropriately

and verifying that the organization's resources are used responsibly" [IFAC 2004, p. 10]. Within this view, the realization of performance has to do with planning, decision-making and risk management. The aforementioned definition resembles the structural, management-oriented governance approaches discussed in brief above. Enterprise governance is viewed as an 'accountability structure', dealing with compliance, performance and responsibility [Fahy et al., 2005]. Within this outlook it has even been suggested that external financial auditors who verify compliance with rules and legislation from the corporate governance perspective, should also verify and assess the enterprise strategy!

Appreciably, the enterprise governance view sketched above fits the formal, planning, and management-oriented approach to enterprise development neatly. It is about (strategic) planning, decision-making, forecasting, budgeting, risk and performance management, as well as milestones and timelines [IFAC 2004, Fahy et al., 2005].

Our view on enterprise governance presented in this book aims likewise at bringing 'compliance' and 'performance' into an integrated perspective, but nonetheless differs fundamentally from the aforementioned approach. First, the enterprise governance perspective outlined previously provides no indication – let alone a formal methodology – for realizing the unity between compliance and performance. Second, as we will discuss thoroughly later, enterprise performance does not follow primarily from attention to planning, decision-making, risk management and accountability structures, but is determined primarily by a coherent and consistent enterprise design. Third, within the aforementioned enterprise governance perspective, no coherent attention is paid to IT developments.

1.2.2 The Difference Between Governance and Management, Governance as an Organizational Competence

The term 'governance' is used with different denotations. On one hand the term refers to the totality of processes and (administrative) systems that determine how an organization or society operates. On the other, the term is used to identify activities that differ from the operational execution, and whereby governance is considered as a guiding capacity that determines the manner by which operational activities are performed. We will use the latter interpretation.

The origin of the term 'governance' lies in the Latin word *gubernāre*, meaning to control, in the original meaning, the control of a ship. Governance can thus be considered roughly as regulating or controlling 'something'. That 'something' depends on the specific governance perspective, and might be IT, but also the organization as a whole. So, one refers to IT governance, corporate or enterprise governance respectively.

It is important to distinguish 'governance' from 'management'. The latter term has its origin in the Latin word *manus* (hand). Hence to differentiate 'management' from 'governance' we will view the notion of management in an operational, executing sense. Put another way, management deals with *executing* activities, whereas governance deals with *guiding* those activities to safeguard

their adequacy and correct execution [Dalles and Bell 2004]. Within this distinction, IT management focuses on the effective delivery of IT products and services for example, while IT governance concentrates on guiding principles regarding that delivery, as well as on the strategic development of IT, such that IT can be utilized competitively, now and in the future [Grembergen and Haes 2008].

Often the aforementioned distinction is not strictly adhered to: the terms ‘governance’ and ‘management’ are used interchangeably. The term ‘management’ can also refer to both an activity or a group. Some of the governance definitions given above used the term ‘management’ to identify a group of persons fulfilling a governance role. In short, the terminology is not always clear. Nonetheless, the distinction given is useful, whereby the regulating, guiding characteristics of governance imply that governance activities should be conducted from, or associated with, the overall authority and control of an enterprise or society (legislation). As indicated previously, this viewpoint often implies that governance is linked with enterprise (top) management. Although the governance definitions given refer to organizational structures and processes, they suggest that governance is primarily a ‘management’ affair. However we will argue the opposite in this book: governance is primarily an organizational competence – a coherent whole of organizational skills, knowledge and technology – anchored in the competencies of employees. The character and activities of this competence will be discussed in later chapters.

1.3 Relationships Between Governance Perspectives

Paragraph 1.2.1 introduced three different perspectives on governance briefly. This paragraph will outline their mutual relationships, and thereby provide arguments to present the various governance perspectives in a unified treatment. The mutual relationships are depicted schematically in Figure 1.4 and will be discussed below.

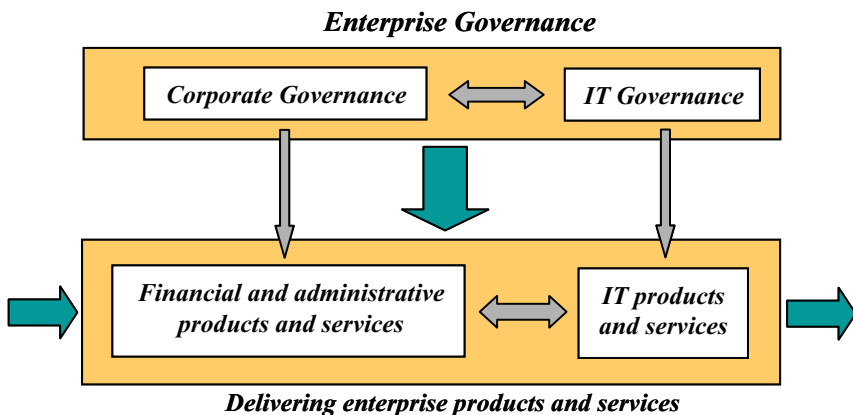


Fig. 1.4. Relationships between the various governance perspectives

1.3.1 Corporate Governance and IT Governance Relationship

An important aspect of corporate governance indicated previously concerns the arrangement of internal control, viewed as the totality of (financial) arrangements and associated activities geared towards financial prudence and the adherence to pertinent rules and legislation for safeguarding the interests of shareholders. The Sarbanes-Oxley legislation formulates stringent requirements for financial reporting and the formal top management testimonial that said reporting reflects the actual state of affairs.

Understandably, many IT systems are for a considerable part, if not exclusively, involved with initiating, authorizing, handling, storing and reporting on financial transactions. Put another way, important aspects for adequately arranging corporate governance rest on the adequate arrangement of IT systems, such that corporate governance requirements can be satisfied. One might consider obvious attention areas like [IT Governance Institute 2004b]:

- Security management and data classification
- Identity management (authentication and role-based authorization)
- Data management and data warehousing (data integrity).

Another reason for the strong relationship between corporate and IT governance lies in the fact that IT systems are generally not developed primarily from a corporate governance perspective. Rather, those systems are developed for supporting customer and operational processes, but at the same time provide essential data which is relevant to corporate governance considerations. Consequently the quality of the development, implementation and operation of IT systems must be such that corporate governance requirements can be fulfilled concurrently. Moreover, changes in IT systems might have considerable implications for the integrity and completeness of (financial) data. Aspects of the design, implementation and operation of IT systems thus have a bearing on the ability to satisfy corporate governance requirements. Hence corporate governance entails important implications for the total spectrum of IT governance. The overall enterprise responsibility in this respect is not alleviated if parts of IT services delivery are outsourced to third parties.

Our considerations indicate that enterprise design requirements regarding compliance – satisfying corporate governance rules and regulations – are not unique in the sense that they are only defined from the corporate governance perspective. On the contrary, fulfilling compliance follows likewise (and primarily) from design requirements that are already defined on other grounds, such as areas pertinent to information security and data management mentioned earlier. This implicit relationship between design requirements from compliance considerations and those from the design of IT systems constitutes the second reason for the strong mutual relationship between corporate and IT governance.

1.3.2 Corporate Governance and Enterprise Governance Relationship

The internal aspects of corporate governance reform concern the structure and manner of control in view of shareholders' interests. This begs the question as to how these interests are best served. Fraud and the publication of misleading (financial) information is evidently not conducive to shareholders interests. However as indicated earlier, failing strategic developments and implementations are likewise – and probably even more so – damaging to shareholder interests, and do not enhance the enterprise economic value. Some authors on corporate governance therefore bring enterprise strategy development and execution within the scope of corporate governance.

Roughly, two approaches can thus be identified: (1) a narrow perspective on corporate governance that is focused primarily on top management supervision and compliance in view of financial/economic aspects and associated reporting, and (2) a broad perspective on corporate governance that also includes the enterprise strategy and execution. In the latter case, corporate governance reform is also argued based on examples of failing enterprise strategies, since internal control is viewed to have failed in adjusting the enterprise strategy timeously [Jensen 2005a]. In the opinion of some authors therefore, effective governance and top management supervision implies that supervising directors must concern themselves with the assessment and analysis of the enterprise competitive market in which it operates, with the internal organization, as well as with personnel and political issues, including the associated information and knowledge, to be able to assess the enterprise strategy as suggested by top management. Supervising directors should have a special staff for conducting these tasks effectively [MacAvoy and Millstein 2004]. Comparably, Coley et al. state that from the broader perspective, good corporate governance entails [2005]:

- A valid business concept that addresses customers and the products and services to be delivered
- Goals, plans and means to realize strategic initiatives effectively
- Systems ensuring that important obligations regarding 'stakeholders' (customers, employees, suppliers, owners, etc.) can be honored
- Complete and timely reporting about enterprise performance for owners and the larger community of investors.

It is emphasized therefore, that success regarding corporate governance not only has to do with legislative aspects, but also with the development and execution of a valid business concept [Coley et al. 2005]. This inevitably leads to an enterprise-wide perspective.

According to Prahalad and Doz, enterprise value creation rests on three mutually related pillars [2005]. First, the portfolio of products and services. Second, the business model reflecting the internal enterprise logic with which – through the portfolio of products and services – economic value is created. Finally, the governance model that not only guides the development of the

portfolio of products and services, but also guides the organizational arrangements that brings the products and services forward. These arrangements point to the notion of enterprise competencies, discussed in paragraph 1.4.2.

Evidently, corporate governance in the broad sense concerns enterprise strategy development, the subsequent design of the enterprise, the definition of relevant programs and projects for realizing the design, and the implementation of programs and projects. Hence, within this view, corporate governance concerns not merely internal structures and systems for (financial) control, reporting and risk management, but the broad perspective concerns the strategic development of the enterprise itself. Aspects that concern enterprise (strategic) development – with business, organizational, informational and technological aspects – require a perspective that encompasses the enterprise in all its facets, from design and implementation to actual operation. This points to the themes of enterprise governance and enterprise engineering, which we will discuss in Chapter 7. We submit that the broad view transcends the corporate governance theme and the financial/economic perspective of its proponents considerably: adequate enterprise performance and the control of risks in the financial/economic domain require an approach that surpasses this domain fundamentally and conceptually, which approach thus inherently *cannot* be developed within the financial/economic domain and its associated concepts and thinking. When discussing corporate governance more thoroughly in Chapter 5, the fundamental limitations of the financial/economic perspective in this respect will become manifest.

Comparably as with IT governance, the strong mutual relationship between corporate governance and enterprise governance follows additionally from the fact that design requirements for the enterprise as a whole must also concurrently address requirements following from compliance considerations. Indeed it seems rather problematic to arrange the enterprise, with enterprise governance as the guiding capacity, and then afterwards and separately to incorporate requirements and conditions following from corporate governance. On the contrary, requirements and conditions following from corporate governance must form an integrated part of enterprise design, and are thus addressed concurrently. As such, corporate governance is an integral part of enterprise governance. One might consider requirements on process design to safeguard coherent and consistent process execution and control. For example, through minimizing reconciliation, the avoidance of process reversals, or the assurance of non-repudiation, coherent and consistent process operation is ensured, which at the same time improves the coherence and consistency of financial/economic data.

1.3.3 IT Governance and Enterprise Governance Relationship

The definition of IT governance given by the IT Governance Institute explicitly mentions enterprise governance: “IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of leadership and organizational structures and processes

that ensure that the organization's IT sustains and extends the organization's strategies and objectives" [IT Governance Institute 2003]. It remains unclear however how enterprise governance must be understood. Nonetheless, it seems plausible that IT governance should be an integral part of enterprise governance since IT developments must ultimately support current enterprise developments and must enable future developments. Developments in the area of e-business are a well-known example. Ineffective forms of IT governance are partly due to a lack of formal embodiment of IT governance within enterprise governance.

A more formal foundation for the strong mutual relationship between IT governance and enterprise governance can additionally be argued as follows. When discussing the background for the attention for IT governance the questionable results of IT investments were mentioned. A clear positive relationship between enterprise performance and IT investments seems to be absent [Strassmann 1990, Pisello and Strassman 2000]. In the chapter about IT governance we will argue that the lack of a positive relationship is the inevitable consequence of the suboptimal use of IT. That means applying IT whereby a mismatch exists between the possibilities and capabilities of IT and the enterprise context in which IT – more specifically the IT system – is utilized. So, the introduction of an IT system for local, distributed decision-making by employees hardly seems effective in a context where decision-making is seen primarily as a (central) management prerogative. Likewise, the introduction of a system for customer relationship management appears less meaningful in an enterprise context devoting little attention to customer satisfaction. A call center where employees are rated by the number of customers 'served' per hour is an example.

Research indicates that enterprises which merely introduce IT and 'leave it at that' hardly realize enterprise performance improvements. However, considerable improvements can be obtained if the introduction of IT is accompanied by changes in enterprise design, such that unity and integration between IT functionality and the enterprise context is created [Brynjolfsson and Hitt 1996]. To quote the authors on 'Information Economics': "To achieve real lasting impact from information technology, the business itself must change." [Parker and Benson 1988, p. 44].

These observations show that IT systems and their functionality must be designed concurrently and in unity with the enterprise context. This constitutes the fundamental grounds for the strong mutual relationship between IT and enterprise governance.

1.4 Design- and Competence-Oriented Governance

1.4.1 The Focus on Enterprise Design

We have argued the focus on design based on the notion of an enterprise as an organized complexity. Both aspects are addressed through design: the process towards being organized, while at the same time mastering complexity. As will become apparent in the following chapters, the focus on design has enormous

practical implications, and is associated directly with strategic and operational enterprise success. A fairly recent McKinsey report argued that “Most corporate leaders overlook a golden opportunity to create a durable competitive advantage and generate high returns for less money and less risks: making organizational design the heart of strategy” [Bryan and Joyce 2007, p. 21]. Hence, “Organizational design, we believe, should be about developing and implementing corporate strategy” [op. cit., p. 25]. Others have argued the competitive potential of enterprise design comparably [Nadler et al. 1992, Hammer and Champy 1993, Johansson et al., 1993, Nadler and Tushman 1997]. Above all, strategic success necessitates a unified and integrated enterprise design, whereby enterprise architecture will prove to be a crucial concept, as mentioned earlier, and will be corroborated throughout this book. As previously emphasized, enterprise design should not only address current (strategic) objectives, but should enable change and adaptation in light of future, yet unforeseen developments. For one thing, the very notion of governance advocated in this book manifests such design.

However, the short introduction of governance topics discussed in the literature showed that the focus on design was notoriously absent: governance approaches are heavily formal, structural and management-oriented. Put another way, the question as to how the enterprise must be arranged is virtually not addressed. The primary focus is on internal control, decision-making and accountability structures. These characteristics and their limitations will be discussed thoroughly in later chapters, thereby corroborating our conviction that the structural, management-oriented governance perspective cannot arrange the necessary unity and integration previously emphasized. To put it somewhat graphically: the various enterprise aspects cannot be ‘talked or decided together’. Defining decision-making and accountability structures is not without merit, but unity and integration between various enterprise aspects – the business, organizational, informational and technological arrangements – have to do with the *design* of the enterprise as a whole. Such design does not follow from structural provisions for budgeting, planning and decision-making. For successful enterprise governance, attention to enterprise design (and enterprise engineering as the design methodology) must thus take the central position. In a similar vein, the McKinsey report cited above points to the situation that CEOs traditionally focus on structural arrangements for enterprise change, however, “They would be better off by focusing on organizational design” [Bryan and Joyce 2007, p. 22].

Further, the focus on design is also essential for addressing strong mutual relationships between the various governance topics illustrated in paragraph 1.3. A unified approach is evidently necessary for addressing these relationships. Publications from the various governance-related disciplines are not conducive to a unified approach however, a theme manifestly lacking in these publications. Understandably, unity and integration can only result through the overall encompassing enterprise governance perspective, whereby the focus on design actually effectuates the necessity to treat the three governance topics in a unified manner.

1.4.2 Enterprise Governance Competence

Probably the first source for the heightened attention to the notion of competence at the enterprise level was publication of the book *Competing for the Future* written by Hamel and Prahalad [1994]. They argue that an enterprise must not be seen as portfolio (group) of individual business units, but rather more as a portfolio of competencies. In their eyes, it is the competencies that define (unique) opportunities for enterprises and the capabilities to exploit them. Strategic issues thus do not (or not only) concern what has to be done to maximize revenue or market share for a given product-market combination, but primarily (or also) concern which competencies must be acquired in light of possible future revenue and opportunities. Hamel and Prahalad introduce the concept of core competencies within this conceptual framework. These are competencies that underpin the dominant position of the enterprise regarding the delivery of products and services. Conversely, new opportunities necessitate the development of new core competencies. So strategy development is not only about defining possible initiatives pertinent to products and services, but also about defining the necessary competencies.

Hamel and Prahalad characterize an enterprise competence as the integrated whole of enterprise skills, knowledge and technology, more than as a singular skill, knowledge domain or technology [1994]. The essence of an enterprise competence lies in the *integration* of important qualities. Integration is key, and the determining factor for competitive advantage. Notably, this aspect also points to design since integration does not occur spontaneously. Failing enterprise strategies are attributed to entering new business domains that require core competencies that the enterprise does not (yet) have [Javidan 1998]. Comparable observations are made by Ciborra: “Unique sources of practice, know-how and culture at the firm and industry level can be the source of competitive advantage, rather than the structural analysis of internal assets and market structures” [2002, p. 32].

The notion of enterprise competencies connects closely with the so-called resource-based view on enterprises. This view holds that the different resources of enterprises enable them to follow different strategies. Put another way, the different resources make up different core competencies. A broad spectrum of resources can be identified: (1) physical resources, such as buildings, machines, technology and other means, (2) human ‘resources’ with their skills, knowledge and experience, and (3) cognitive resources, such as the enterprise culture or brand image [Javidan 1998]. Four levels of enterprise abilities are identified. The basic level is the *resources*, seen as the building blocks of the enterprise competencies. Next, the *enterprise skills* that are considered to be the ability to exploit the resources. Exploitation of resources takes place within a certain enterprise functional domain, such as engineering, production, communication, marketing etc. Integration of enterprise skills over multiple functional domains constitutes the third level, the level of *enterprise competencies*. Within this scheme, the fourth level of *enterprise core competencies* is established when competencies are shared and integrated over individual business units [op. cit.]. Hence, core competencies

manifest themselves at the overall enterprise level through integration of various enterprise competencies.

Central to the notion of competence is the *integration* of various enterprise resources. In view of the above, we define an enterprise competence as *an integrated whole of enterprise skills, knowledge and technology*. Understandably, competencies must be organized: they are thus an organizational capacity or ability to produce something. And as previously mentioned, integration does not occur spontaneously: intentional activities are required for integration to happen. These activities were broadly identified earlier as ‘design’ [Simon 1969]. To a considerable degree, (tacit) knowledge and skills accrue over time. This has to do with enterprise learning discussed in Chapter 2. Not all aspects of an enterprise competence can thus be designed as being operational from the initial start. Nonetheless, conditions conducive to enterprise learning must be designed.

Appreciably, an enterprise competence is not merely about form, but primarily about substance, manifested through products and services the competence brings forward. So one might consider an enterprise competence for producing furniture, transport services or growing plants. In Chapter 2 we will outline the fundamental difference between the structural, management-oriented governance perspectives already briefly discussed, and the competence-based perspective on governance. Since enterprise competencies rest on employee competencies, employees will be shown to be the crucial determinant for successful enterprise governance. We will provide various fundamental arguments for the necessity of competence-based governance, among them (1) the ability to deal with complexity, dynamics and the associated uncertainty, and (2) the ability to establish a unified and integrated enterprise design. As Mason and Mitroff observe, problems of organized complexity need a broad perspective on their solution; they must be handled in a holistic or synthetic way, whereby only an organizational competence can deal with the multitude of mutually related issues of organized complexity [1981].

Our notion of enterprise governance is expressed by the following definition:

Enterprise governance is the organizational competence for continuously exercising guiding authority over enterprise strategy and architecture development, and the subsequent design, implementation and operation of the enterprise.

The word ‘guiding’ in this definition aims to express that strategy development is not the exclusive domain of the enterprise governance competence. Rather, as we will argue extensively, strategy development is an emerging process that rests to a considerable extent on enterprise-wide involvement of employees and the enterprise competence to stimulate and utilize their creativity. However, we aim to show that governance guidance is required for enabling that strategy development to happen, and for implementing strategic choices effectively in a coherent and consistent way.

The underlying viewpoints and concepts for arguing the competence-based approach to governance will be discussed in detail in subsequent chapters. Our further discussion includes outlining the viewpoints and concepts that enable successful strategy development and implementation. The next paragraph provides the outline of the further chapters.

1.5 Outline of Further Chapters

Chapter 2: Mechanistic and Organismic Perspectives on Governance

Our brief introduction to the three governance themes stated previously – corporate, IT and enterprise governance – indicated the strong structural, control and management oriented focus. This focus is associated with one of the two fundamental perspectives on organizing discussed comprehensively in this chapter: the mechanistic and organismic perspective. It will be shown that these perspectives have an all-determining influence on the way governance is perceived and operationalized. We will argue that the dominant governance perspective is related to the deep-seated characteristics of Western thought (in contrast to the briefly outlined characteristics of Eastern thought), and as such is deeply ingrained in the Western managerial ‘mental map’. This mental map therefore has a high tenacity and impedes the recognition of its limitations. In view of these limitations, the myth of traditional control in enterprises is sketched. These reflections form the basis for presenting the alternative, organismic, competence-based perspective. As will be illustrated, this perspective centers around employee involvement and their creative, self-initiating potential. Reflections on enterprise productivity, quality, service, and learning and innovation aim to argue the importance of employee involvement and self-organization. Ultimately, enterprise success – also with respect to governance – rests on employee competencies, even more so within the modern enterprise context. Appreciably, the views outlined in this chapter determine our competence-based approach to governance discussed in later chapters.

Chapter 3: Enterprise Essentials

Since enterprises (companies, organizations or institutions) are the focal point of corporate, IT and enterprise governance, Chapter 3 reviews some core facets of enterprises. Our discussion in this chapter focuses on what an enterprise essentially is, when enterprises emerged initially as entities, and the important (design) characteristics of enterprises. Two core, non-trivial problems facing every enterprise will be identified. In doing so, we address the question if, and to what extent, universally applicable – not culture-bound – theories about enterprises are possible. Various facts of enterprise development are then reviewed. Important changes consider the context in which modern enterprise operate. This context appears to be highly dynamic and complex, and as such implies significant paradigm shifts pertinent to the way enterprise must be viewed. It will be argued

that these paradigm shifts entail important consequences for the (strategic) development and arrangement (the design) of enterprises. Those considerations also provide grounds for the employee-centric, competence-based governance approach. Two fundamental perspectives are introduced on the nature of strategic choices. Conditions for implementing strategy choices successfully will be discussed. Unity and integration will turn out to be important conditions. These conditions necessitate the positioning of governance as a central organizational capacity, which raises the issue of central governance versus local freedom. Different perspectives on the relationship between enterprise strategy and design are introduced, which are associated with the mechanistic and organismic perspective on governance respectively. Since the employee-centric, organismic governance perspective rests on employee self-organizing capacities, the importance of employee behavior and the behavioral context will be highlighted. Important paradigm shifts in views on enterprises are then summarized.

Chapter 4: System Thinking

Unity and integration – the consistency and coherence between the various enterprise facets – were identified in Chapter 3 as essential conditions for implementing strategic choices successfully. Such conditions necessitate viewing the enterprise as a system. Comparable considerations hold for the unity and integration of IT systems. Approaches outlined in the chapters about IT and enterprise governance thus rest to a large extent on system thinking. From a general perspective, this chapter therefore outlines some core aspects of system thinking, whereby unity and integration are emphasized as important system characteristics. References to enterprise system aspects will be provided for illustrative purposes. The crucial concept of *architecture* is introduced for safeguarding unity and integration during system design. We will outline what architecture essentially is, and show the difference between architecturing and designing. The reference context for architecturing and the formulation of architecture principles are also discussed, including the meaning and relevance of an architecture framework. Finally, the question will be addressed as to whether the emphasized emerging nature of various enterprise developments is consistent with the systemic perspective on enterprises.

Chapter 5: Corporate Governance

Recent financial scandals have placed the corporate governance theme strongly in the public eye. We will highlight backgrounds and show how the notion of corporate governance has developed historically, and discuss important suggestions for corporate governance reform. Remarks made about the suggested reform argue that reform initiatives are partly useful and partly rather problematic: bureaucracy, high costs, questionable usefulness, or even risky. It will be illustrated that, paradoxically enough, the financial/economic focus of corporate governance in fact makes this approach unsuitable to fulfill its main purpose

adequately: safeguarding the interests of shareholders. For that, the broader perspective on enterprise governance will be argued. From this broader perspective, the well-known COSO framework for corporate governance will be analyzed and commented upon. Finally, we will deal with the question as to how the requirements following from corporate governance (compliance) can be addressed. This will show that effectuating corporate governance must take place within the context of overall enterprise governance and design.

Chapter 6: IT Governance

After initial observations on the motivation for the IT governance theme, a short historic overview of IT developments is presented, showing that from an initial purpose in the area of calculating, IT has developed into a pervasive technology that affects virtually all societal and enterprise facets fundamentally. The developments outlined show how IT governance could grow into a problematic phenomenon, and makes plausible why ‘business and IT alignment’ has turned out to be a theme addressed frequently in the literature. This theme and a number of IT governance approaches are then discussed. We will illustrate that IT governance approaches are primarily structurally oriented, having their focus on control and decision-making structures. The limitations of that approach will be argued. This serves as the foundation for arguing that realizing real business value through IT can only be accomplished through a focus on design, whereby IT architecture provides normative guidance. This will be emphasized as a core aspect of the competence-based IT governance perspective. Three essential core competencies within the IT governance competence are identified. Those competencies are the answer to the limitations of the structural, control-oriented IT governance approach, and are the answer to the necessary design focus. Pertinent to the IT governance core competencies the overall governance process will be illustrated, and related formal meetings are indicated. Support competencies are mentioned briefly. Under the label ‘enterprise engineering’, the design focus will be formally addressed in Chapter 7. In view of the IT governance core competencies and their tasks, the central position for the IT governance competence will be emphasized. We will show that central IT governance is essential for reducing and avoiding IT legacy complexity. Finally, the often promoted IT governance CobiT framework is discussed, and an outlook on IT governance maturity will be presented.

Chapter 7: Enterprise Governance

From an overall governance perspective, encompassing corporate and IT governance, the notion of enterprise governance is introduced. After a short summary of the arguments for enterprise governance given in the previous chapters, core aspects of the enterprise engineering theory and methodology will be presented. This will be advocated as essential ‘tooling’ within the enterprise governance competence with the purpose of establishing unified and integrated enterprise design. Two foundational topics of enterprise engineering will be

discussed: enterprise ontology and enterprise architecture. Within the enterprise ontology approach, we will focus on essential enterprise transactions and their associated processes. The notion of business rules will be discussed in relation to enterprise processes, whereby the difference with enterprise architecture is outlined. Special attention will be paid to enterprise architecture and enterprise design domains. Four main enterprise design domains are discussed: business, organization, information and (information) technology. As an illustration, examples of sub-design domains and the associated architecture within the four main design domains will be given. The enterprise governance core competencies are discussed thereafter. These competencies will turn out to be comparable with those of the IT governance competence, and can be seen as their complement. The importance of the enterprise governance competencies will be illustrated comparatively as with IT governance, while levels of enterprise governance maturity are introduced. Since the service-oriented governance approach is gaining increasing attention, we will show that such an approach necessitates enterprise governance, and fits within the argued competence-based view. Finally, we will address the relevant personal competencies on which the enterprise governance competence rests. Competencies of the enterprise architect are our prime focus.

Chapter 8: The Praxis Illustrated

This final chapter illustrates the inherent nature of enterprise governance and enterprise engineering by demonstrating some core facets of the praxis of these concepts within the context of a fictitious company, one facing considerable dynamics and uncertainty necessitating a fundamental company transformation. The case aims to show that it is not so much the top-down, management and planning oriented governance approach which is crucial for making sense of the dynamics faced, and defining how the transformations should progress, but the enterprise governance competence, and more specifically, the strategy and architecture competence. In the praxis of exercising governance, topics that the competence should address and resolve will be shown to manifest themselves in an emerging fashion. Not all the topics discussed in the previous chapters can be illustrated within the case description's limited space. So, we will limit ourselves to indicating how the core concepts outlined in this book can be applied. In doing so, the case aims to substantiate the importance of the competence-based perspective on governance, within which enterprise design is a central area of attention.



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