Lecture 1: Introduction

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LECTURE 1

Introduction

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In This Lecture

- The critical importance of IT for modern business
- Modern organizations as complex socio-technical systems of business and IT
- The problem of achieving business and IT alignment
- The concept of enterprise architecture as a potential solution to the problem of alignment

The Role of IT in Modern Organizations

- Most organizations today are critically dependent on information technology (IT) in their daily operations
- Large organizations often run and maintain thousands of various IT systems enabling their business processes
- Moreover, the influence of IT systems on business models of organizations is continuously increasing
- Historically, the role of IT in organizations evolved from a purely technical and supporting function to a more strategic or even business-enabling function
- Information systems often become a backbone of major organizational changes and transformations

Investments in IT Are Growing

- Capital investments in IT systems and infrastructure are steadily increasing over the last decades
- For instance, in the United States private business investments in IT increased from less than 100 billion dollars in 1980 to more than 500 billion dollars in 2010
- Moreover, the proportion of IT investments in total capital investments grew from 32% in 1980 to 52% in 2010
- Over the decade from 2007 to 2017 average IT budgets as a percentage of revenue increased almost by 75%, from 3.50% of revenue in 2007 to 6.08% of revenue in 2017

IT Systems Are Becoming More Powerful

- Over the time, information systems become more powerful, ubiquitous, diverse and affordable
- The computing power and storage capacity of IT systems are increasing exponentially
- Business applications now can be deployed on dedicated servers, hosted in the cloud, run in web browsers and even installed on handheld mobile devices
- Packaged systems available today include various ERP, CRM, SCM, BI, ECM, KM and other offerings
- The relative price of information systems is gradually decreasing making different IT systems more accessible

The Use of IT Systems in Organizations

- The productive use of information systems for improving the quality of business processes in organizations is not equivalent merely to installing the appropriate software and hardware
- Instead, the productive use of information systems always requires consistent and coordinated changes in three broad organizational aspects:
  - People
  - Processes
  - Technology

People, Processes and Technology

- People aspect:
  - Providing the necessary education and training to system users
  - Explaining benefits of the new system, coping with resistance
  - Dealing with political, cultural and power redistribution issues
- Processes aspect:
  - Introducing new business processes enabled by the system
  - Modifying existing business processes affected by the system
  - Modifying relevant decision-making procedures and rules
- Technology aspect:
  - Setting up the new IT system and required infrastructure
  - Making the new system available to its end users
  - Providing technical and help desk support to end users

Business Benefits of IT Systems

- The proper use of information systems can deliver numerous business benefits and open multiple innovative opportunities to organizations:
  - Improve or automate business processes
  - Reduce costs and delays
  - Enable analytical capabilities
  - Support executive decision-making
  - Enable information sharing with partners, e.g. in supply chains
  - Facilitate effective knowledge exchange between employees
  - Provide new customer communication channels
  - Create new innovative products and services
  - Develop entirely new business models

IT Systems and Competitive Advantage

- Information systems can help organizations execute their business strategies and gain strategic competitive advantage:
  - Operational excellence and cost leadership – IT systems can be used to automate operations, eliminate delays and deviations, avoid manual labor and achieve predictable business processes
  - Product differentiation and leadership – IT systems can be used to facilitate the design of new products, support teamwork and creativity or provide unique innovative products and services
  - Customer intimacy and focus – IT systems can be used to collect and store customer data, analyze customer preferences, target specific customer groups and develop highly customized offers

Disruptive Technologies

- The dynamic technological environment also poses significant threats to many organizations
- So-called **disruptive technologies** have the potential to make entire industries irrelevant and reshape the global competitive landscape:
  - Yesterday the publishing industry had been disrupted by electronic books (e-books), while the recording industry had been disrupted by the Internet-based delivery of audio files
  - Today the propagation of mobile devices, big data, Facebook, YouTube and other social media disrupts many industries
  - Tomorrow the Internet of things, industrial 3D printing, artificial intelligence, blockchain-based technologies, electric and driverless cars will disrupt many conventional industries

IT Systems and Compliance

- The proper use of information systems in organizations became a subject of strict regulatory control
- National governments enacted legislative **compliance acts** intended to regulate access, sharing and protection of sensitive information stored in corporate IT systems, e.g. SOX in the USA and GDPR in the European Union
- Organizations are liable for incompliance with various data protection acts established in their jurisdictions
- Therefore, information systems provide numerous benefits, opportunities, threats and obligations to organizations and their management is now a direct responsibility of business executives

Organizations as Socio-Technical Systems

- Many or even most organizations today essentially experience the convergence of business and IT
- Business capabilities of a modern organization are often determined largely by the capabilities of its IT systems
- Modern organizations represent complex **socio-technical systems** consisting of diverse but interacting human actors, business processes and IT systems
- Business activities and IT landscapes enabling these activities represent “two sides of the same coin”

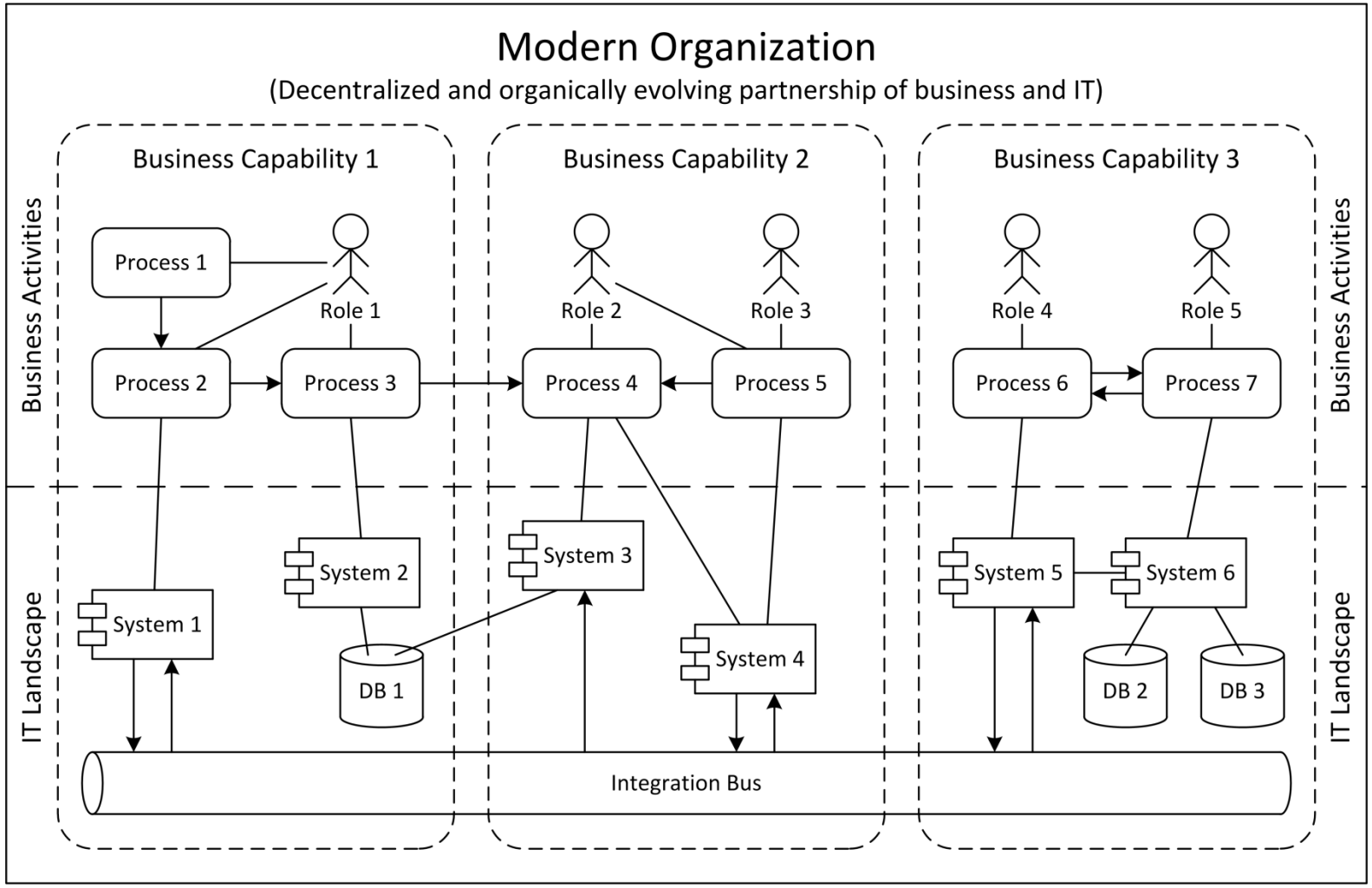
Organizations as Evolving Systems

- Modern organizations represent decentralized, dynamic and constantly evolving socio-technical systems
- Decision-making processes are distributed across multiple global and local decision-makers
- Organizations are self-evolving entities, where actors belonging to the organizational system gradually modify this system by their daily decisions and actions
- Organizations always evolve organically, rather than mechanically

Business and IT People in Organizations

- Business managers and IT specialists in organizations are partners with significantly different duties
- Business managers represent a “frontend” responsible for analyzing the external business environment and determining the direction for evolving the organization
- IT specialists represent a “backend” responsible for modifying the IT landscape to enable the evolution of the organization towards the direction defined by business
- Put it simply, business decides what needs to be done, while IT responds to these decisions

The View of a Modern Organization



Consequences for Planning

- The nature of modern organizations has two critical implications from the perspective of their planning
- Firstly, all the ongoing changes in business and IT parts of an organization should be synchronized
- Secondly, organizations should be planned based on the balance of global and local interests
- Therefore, organizations should align both short-term and long-term changes in their IT landscapes to their business plans, strategies and goals
- In other words, organizations should strive for so-called business and IT alignment

The Notion of Business and IT Alignment

- The effective use of IT in organizations requires achieving business and IT alignment
- **Business and IT alignment** implies that the IT goals, plans and systems in an organization are consistent with its business goals, plans and processes
- Business and IT alignment increases the payoff from IT investments and improves overall business performance
- Ideal business and IT alignment is achieved when all IT specialists working on IT projects act in the best interests of the whole organization defined by its executives

The Problem of Achieving Alignment

- To achieve alignment, an organization should act as a single “big brain” always making best globally and locally optimized business and IT decisions
- However, no actors are competent enough to make such optimal planning decisions alone and powerful enough to enact the subsequent implementation of these decisions
- For this reason business and IT alignment requires *collective* decision-making with the involvement of multiple organizational actors

Diversity of Actors Involved in Alignment

- Ideal business and IT alignment requires achieving complete mutual agreement between all actors involved in decision-making and implementation of IT systems
- These actors work in different areas and occupy different levels of the organizational hierarchy
- They have different responsibilities, backgrounds, competences, goals, interests, concerns, planning horizons and mindsets
- Essentially, these actors range from the C-level executives to junior software developers

Business Actors and IT Actors

- **Business actors** are knowledgeable in business strategy and processes, customer needs and preferences, competitive advantages and disadvantages
- Business actors barely understand IT and consider IT-related talks as a meaningless techno-babble
- **IT actors** are knowledgeable in technologies, systems, programming languages, databases, operating systems, servers, networks and other hardware
- IT actors barely understand the relative importance of different software and hardware for the business performance

Strategic Actors and Tactical Actors

- **Strategic actors** are concerned with long-term planning, global trends in the external environment, organization-wide capabilities and disruptive influences
- Strategic actors be unaware of how their high-level plans can be implemented or ignorant of the critical needs, demands and problems of separate business units
- **Tactical actors** are concerned with carrying out specific processes in business units, implementing concrete IT systems or projects and solving urgent problems
- Tactical actors may not understand how their activities aimed at achieving local short-term objectives contribute to the global long-term vision

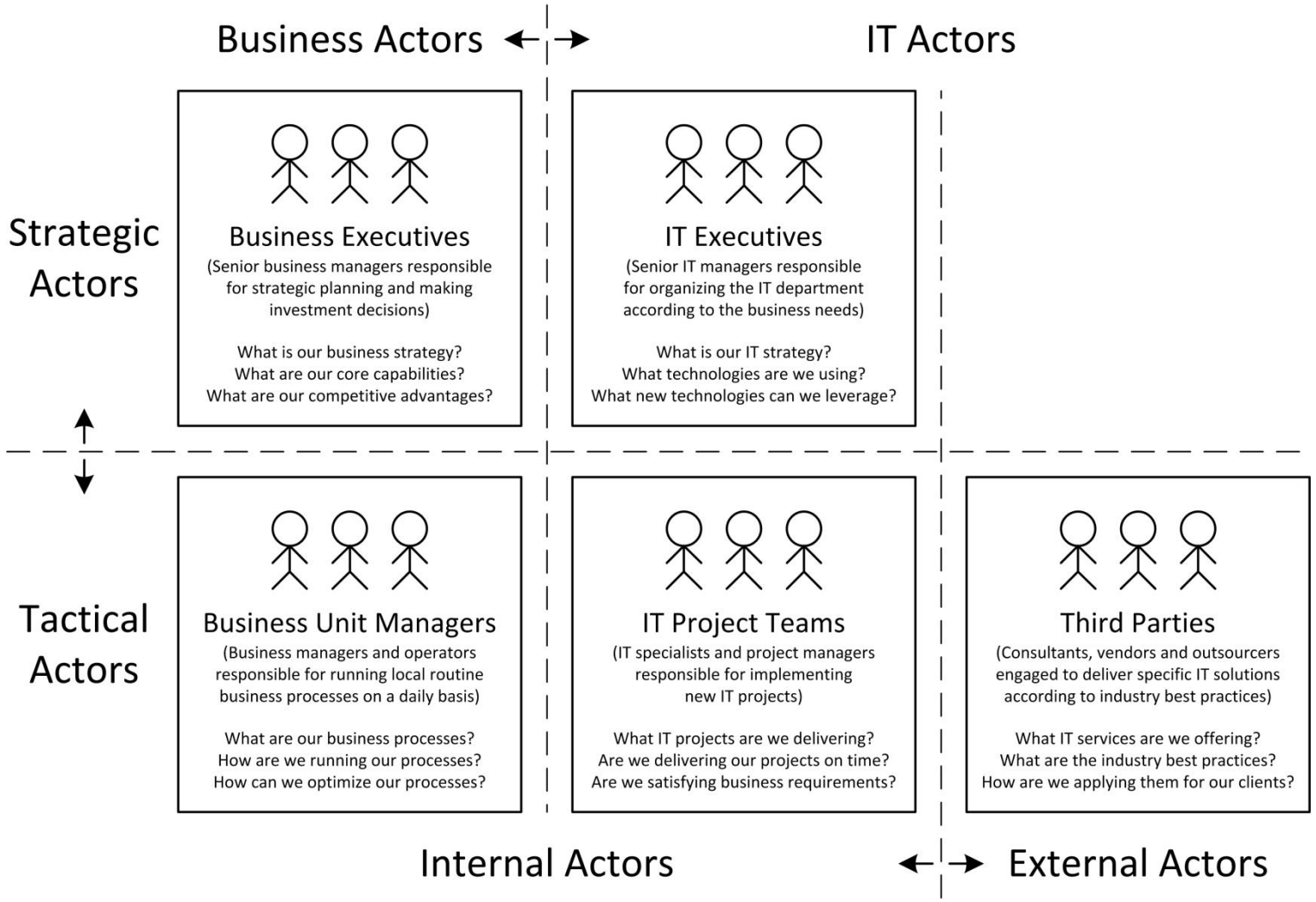
Internal Actors and External Actors

- **Internal actors** are aware of their own organization and understand what business processes, systems and technologies they have
- Internal actors may be unaware of new prospective technologies, products or industry best practices
- **External actors**, e.g. consultants, vendors and outsourcers, are aware of the situation in their niche areas and understand their technologies, products and respective latest industry best practices
- External actors may not know specific features of their client companies, their unique needs, peculiarities, legacy-driven standards or limitations

Groups of Actors Involved in Alignment

- The three aspects of diversity represent the boundaries disconnecting different groups of decision-makers
- These boundaries prevent effective communication, mutual understanding and partnership between different actors undermining overall business and IT alignment
- All relevant actors can be separated by these boundaries into five broad groups:
  - **Business executives**
  - **IT executives**
  - **Business unit managers**
  - **IT project teams**
  - **Third parties**

Main Groups of Actors and Boundaries

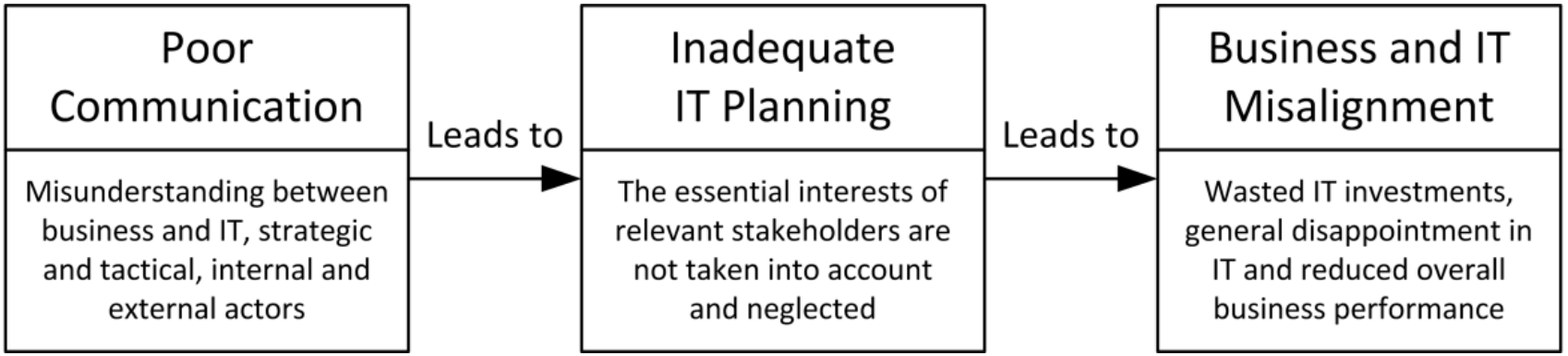


The Root Cause of Misalignment

- The three boundaries significantly complicate the communication and mutual understanding between different groups actors in organizations
- Poor communication and the lack of mutual understanding lead to inadequate planning decisions neglecting the interests of their stakeholders
- Inadequate planning in its turn results in the general misalignment between business and IT
- Poor business and IT alignment manifests itself in all kinds of inefficiencies and problems

Miscommunication Causes Misalignment

The misalignment between business and IT caused by miscommunication ends up in wasted IT investments, disappointment in IT and reduced business performance



The problem of alignment is an inherent and natural problem of establishing effective communication between heterogeneous groups of people with conflicting concerns

Enterprise Architecture as a Solution

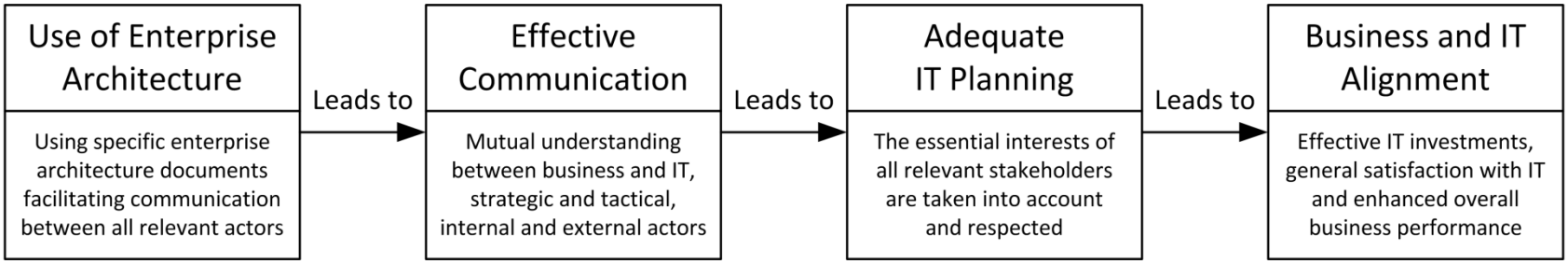
- A set of special documents is used in organizations to facilitate communication between different groups of relevant actors, improve information systems planning and thereby achieve business and IT alignment
- These documents are collectively titled as enterprise architecture (EA)
- In other words, enterprise architecture is a collection of documents helping establish effective communication between all relevant actors involved in strategic decision-making and implementation of IT systems

The Value of Enterprise Architecture

- For each group of relevant actors EA documents provide the necessary information that satisfies their interests, reflects their concerns and answers their questions
- EA documents help different actors collaborate and achieve mutual understanding despite their disparate roles, interests and expertise
- Enterprise architecture helps close the communication gaps existing between all groups of actors and eliminate the three boundaries preventing effective collaboration

Good Communication Leads to Alignment

Through improved communication, organizations using enterprise architecture are able to achieve better business and IT alignment and obtain more benefits from using IT



Enterprise architecture enables successful translation of the strategic plans defined by business executives into the corresponding activities of specific IT project teams

Lecture Summary

- Today the effective control, management and planning of IT is a direct responsibility of business executives
- Modern organizations represent complex decentralized socio-technical systems of business and IT
- The effective organizational use of IT requires achieving so-called business and IT alignment
- Diversity of actors involved in planning of IT systems undermines communication and leads to misalignment
- Enterprise architecture enables effective communication, helps improve the quality of information systems planning and achieve better business and IT alignment

In the Next Lecture

- The next lecture will focus specifically on the concept of enterprise architecture and discuss in more detail its key aspects

QUESTIONS?

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The Full Teaching Pack on Request

The full teaching pack with 19 lectures, tests and other materials based on the book ***The Practice of Enterprise Architecture: A Modern Approach to Business and IT Alignment***, which can be freely used for teaching purposes, adapted or translated with references to the original, is available on request to the author (visit http://kotusev.com)