LECTURE 3

Architectural Planning

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In This Lecture

- The meaning of architectural planning
- The primary and secondary stakeholders of architectural planning
- The technical and organizational sides of architectural planning
- Organizational domains relevant to architectural planning
- The stack of organizational domains and conceptual differences between them
- The specifics of multilevel architectural planning of hierarchical digitalization initiatives

Notion of Architectural Planning

- **Architectural planning** is the overall process of developing optimal architectural solutions for initiatives
- Architectural planning represents a complicated *organizational* effort that unites all the relevant actors, activities and documents
- Architectural planning is accomplished during the planning phase of the initiative implementation process
- Architectural planning equally applies to projects, programs and strategies
- Implicit manifestations of architectural planning also pervade many other IT-related decision processes

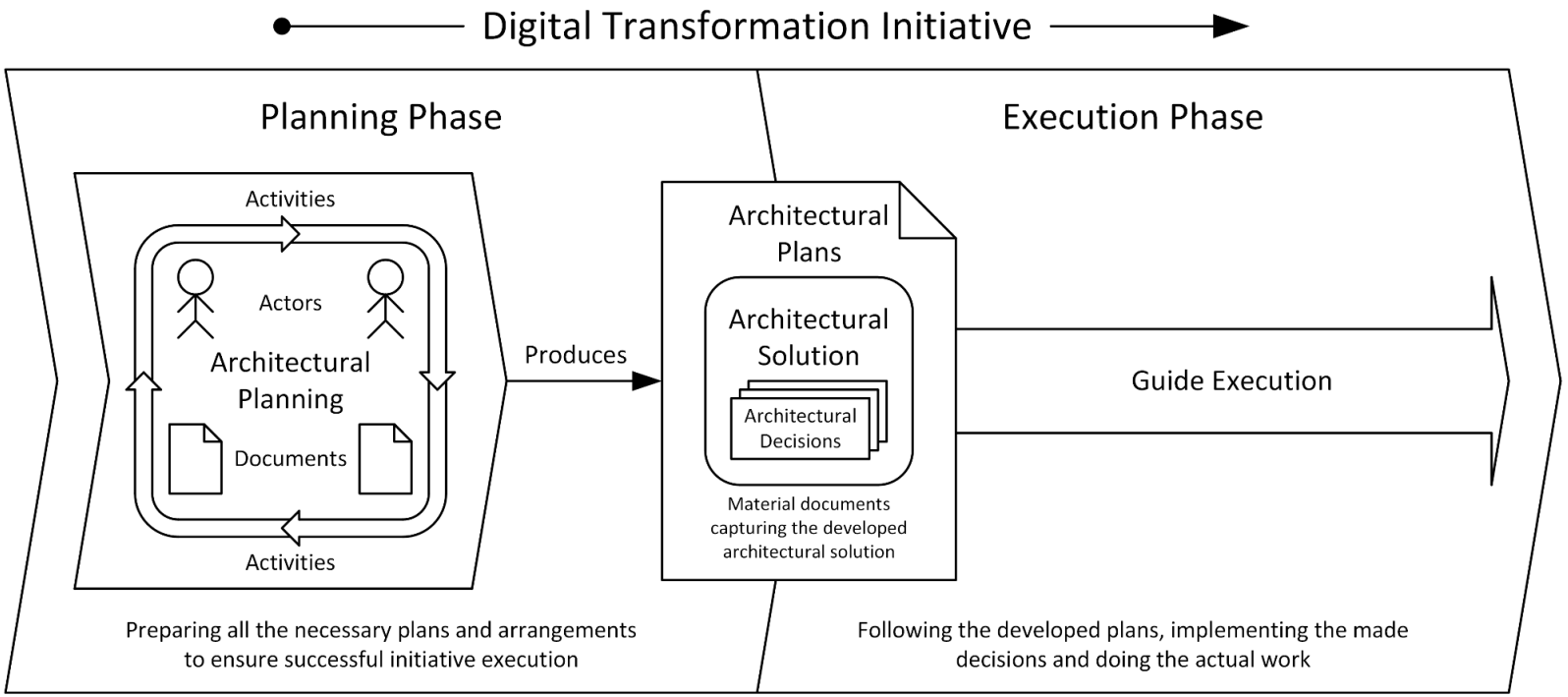
Decisions, Solutions and Plans

- **Architectural decisions** represent a broad class of planning decisions relevant to the *structure* of the organizational business and IT landscape
- **Architectural solutions** for initiatives should be understood as comprehensive sets of architectural decisions covering all their business and IT aspects
- Architectural solutions for initiatives define both the actions necessary to implement these initiatives and their expected beneficial consequences
- **Architectural plans** are tangible deliverables reflecting the resulting planning decisions made during the architectural planning of initiatives

Plans for Different Initiatives

- Depending on the nature and scope of initiatives, their architectural plans can take many different forms:
  - For projects — rather detailed blueprints of specific IT solutions depicting the structure of their components
  - For programs — abstract investment schedules outlining the desired future spendings on new IT systems
  - For strategies — highly conceptual imperatives, rules and suggestions for prospective information systems
- Architectural plans guide the subsequent activities during the execution phase:
  - For high-level initiatives — the launching of derivative initiatives at lower levels
  - For projects — the physical delivery efforts of project teams

Architectural Planning in Context



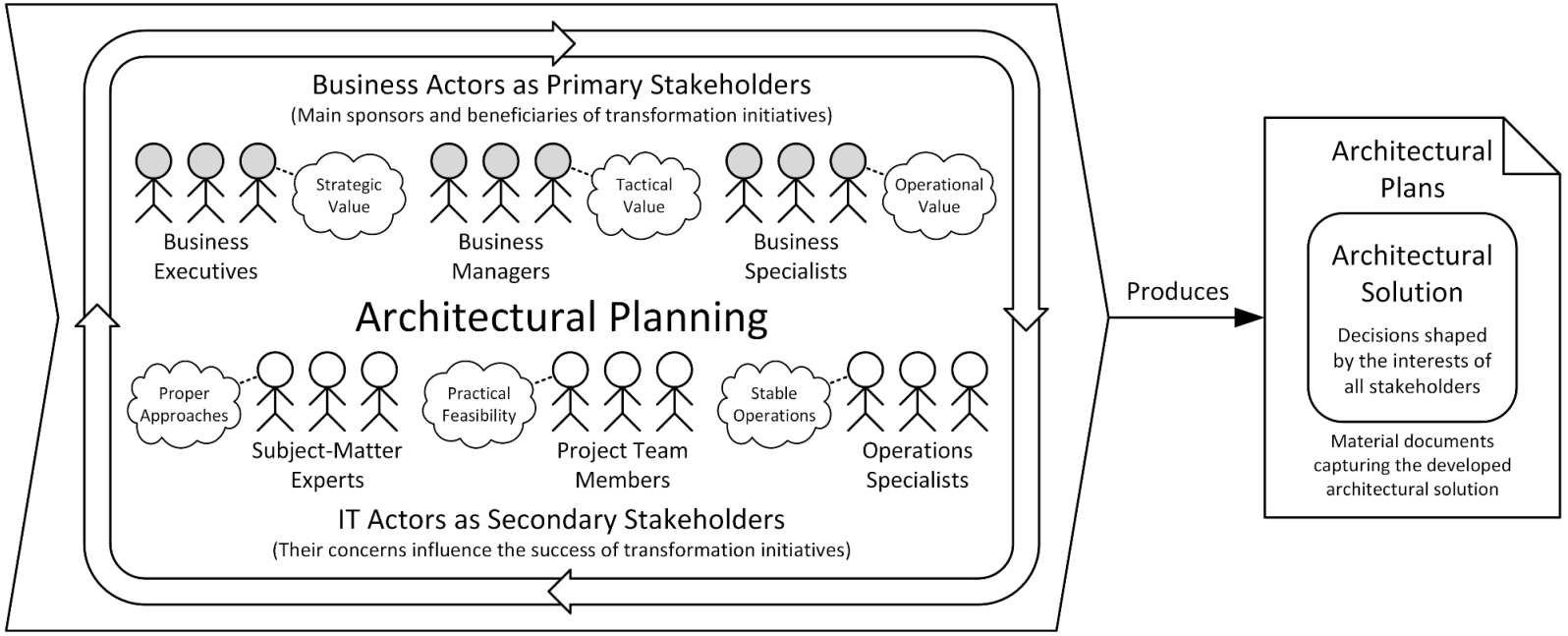
Primary Stakeholders of Planning

- **Stakeholders of architectural planning** are initiative stakeholders having certain interests in architectural decisions and shaping architectural solutions
- **Primary stakeholders** include business representatives of all functional areas and corporate levels
- Primary stakeholders can be clustered based on level:
  - **Business executives** — top-tier business managers accountable for different aspects of the whole organization
  - **Business managers** — mid-level business leaders responsible for specific business functions or units
  - **Business specialists** — rank-and-file business staff performing concrete business processes and routine daily tasks

Secondary Stakeholders of Planning

- **Secondary stakeholders** include IT representatives, who rarely become the sponsors of digitalization
- Three groups of secondary stakeholders can be noted:
  - **Subject-matter experts** — all sorts of specialists with deep but narrow expertise in specific technologies or areas
  - **Project team members** — all IT specialists involved in project delivery, e.g. software developers and project managers
  - **Operations specialists** — all IT representatives responsible for keeping information systems up and running
- Concrete lists of stakeholders are always initiative-specific and depend on the nature, size and impact of the respective initiatives

Stakeholders of Architectural Planning



Technical Solutions for Initiatives

- **Technical solutions** represent consistent sets of purely technical planning decisions regarding the *structure* of the proposed changes in the corporate IT landscape
- Technical solutions cover more the *actionable* part of initiatives and define mostly *what* needs to be done to implement them
- Technical solutions can be judged based on factual premises using the criterion of efficiency, i.e. whether a solution meets the needs with minimum resources
- The solution space of technical solutions is bounded and lies within the overlap of business requirements and technology capabilities

Technical Side of Planning

- Technical challenges of digital transformation resemble traditional *engineering* tasks and can be tackled by analytical means
- Technical solutions can be designed by individual experts with broad IT competence based on stipulated business requirements
- To design technical solutions, the following question should be answered: “What solution is feasible technically?”
- The technical side of architectural planning implies developing technical solutions to technical challenges of digital transformation

Organizational Solutions for Initiatives

- **Organizational solutions** are multi-aspect and aggregate certain business planning decisions regarding the overall *value* of initiatives for organizations
- Organizational solutions cover more the *motivational* part of initiatives and explain mostly *why* they are needed in the current motivational context
- Organizational solutions can be judged only subjectively, depending on the adopted values, i.e. whether a solution pursues what is *deemed* valuable for the company
- The solution space of organizational solutions encompasses all imaginable business ideas, or whatever business people may wish

Organizational Side of Planning

- Organizational challenges of digital transformation require reaching a *political* compromise and can be resolved only via *negotiations*
- Organizational solutions can be developed only collaboratively, through intense dialog between all parties, based on the balance of their interests
- To develop organizational solutions, the following question should be answered: “What solution is desirable organizationally?”
- The organizational side of architectural planning implies developing organizational solutions to organizational challenges of digital transformation

Planning in Its Full Complexity

- The technical and organizational sides of planning present only different perspectives on the same activity
- Technical and organizational solutions also refer to different sides of the same architectural solution
- Architectural planning implies an intricate *interplay* of engineering and political activities
- Architectural solutions represent complex compromises between technical features and organizational qualities
- The planning process involves composing the whole architectural solution as the unity of disparate engineering and political components

Architectural Planning with Two Sides

Technical Side of Architectural Planning

Cause of Challenges: Complexity of the external and internal IT environments

Scope of Challenges: Narrow, confined exclusively to the realm of technology

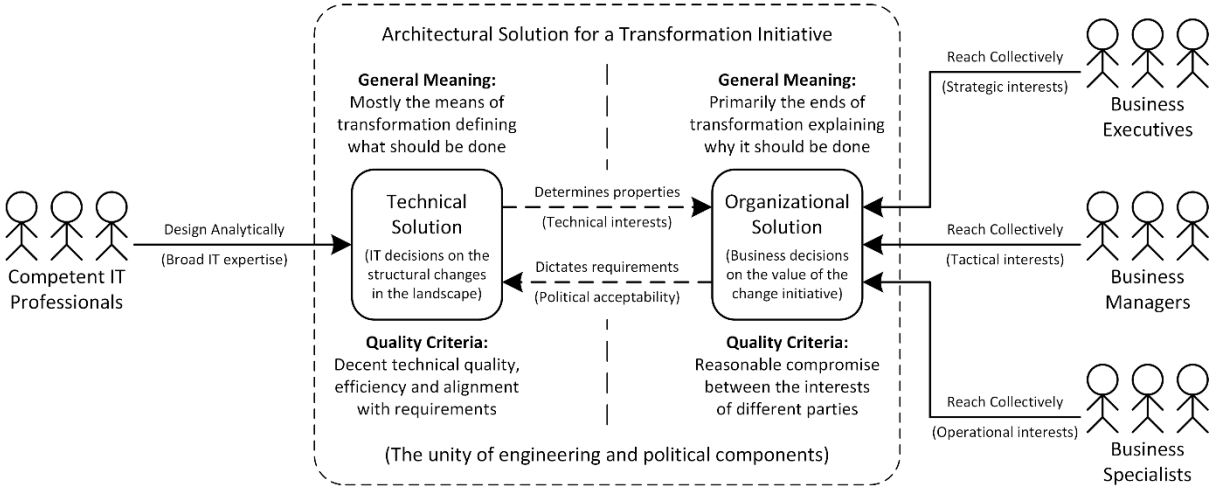
Nature of Challenges: Mostly engineering problems that can be addressed analytically by competent IT experts

Organizational Side of Architectural Planning

Cause of Challenges: Complexity of the relationship between business and IT

Scope of Challenges: Broad, blurred and transcend the realm of technology

Nature of Challenges: Largely political problems that can be settled only through negotiations between stakeholders



Central Question: What solution is feasible technically?

Solution Space: Limited by the specified business requirements and the available technology capabilities

Driving Motives: The common motive of developing adequate, robust and fit-for-purpose information systems

Central Question: What solution is desirable organizationally?

Solution Space: Virtually unlimited and encompasses essentially all imaginable business ideas, or whatever may be wished

Driving Motives: Different stakeholders have different motives, concerns and opinions, often conflicting ones

Organizational Domains

- **Organizational domains** represent coherent, logically distinct areas of concern relevant to digitalization initiatives and their architectural solutions
- Jointly, these domains fully cover the organization with its IT landscape from all viewpoints necessary for composing technical and organizational solutions
- There is no single right or best way to split the organization and its IT infrastructure into domains

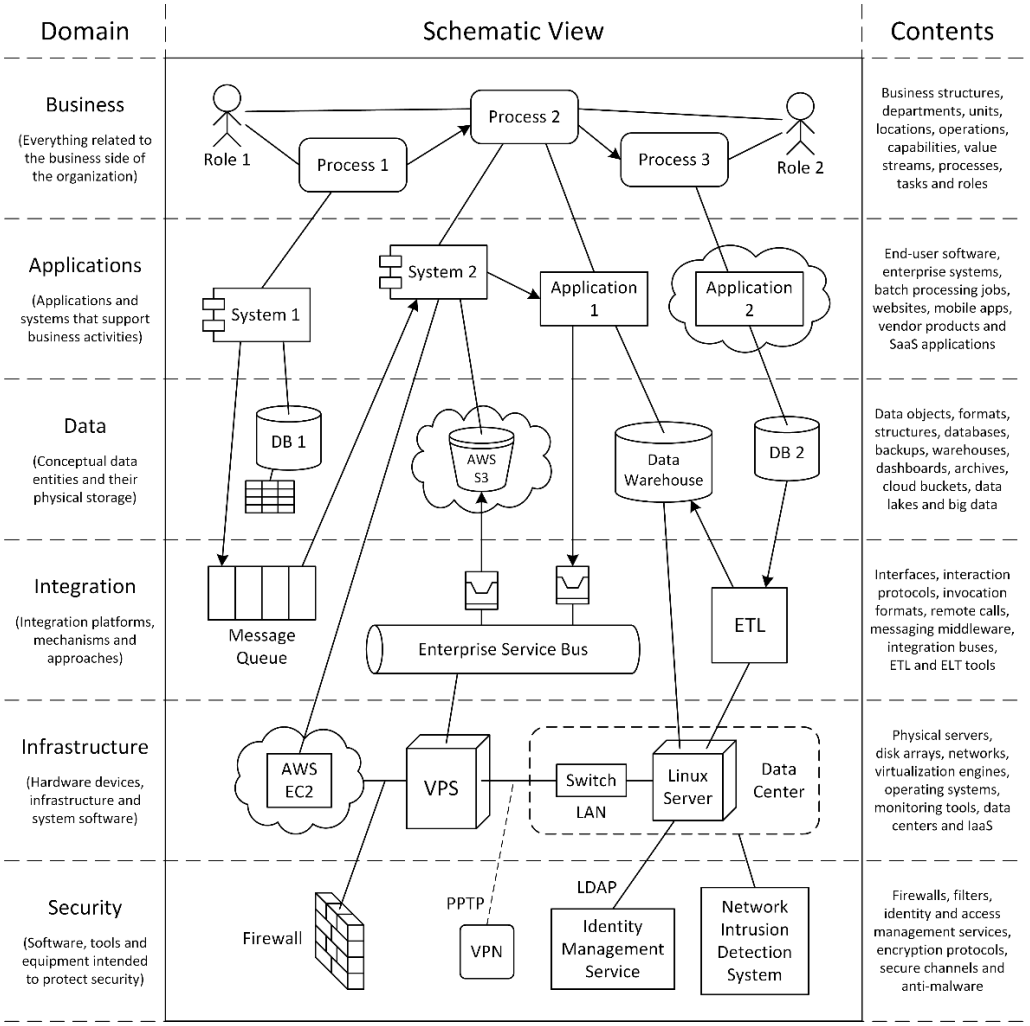
Six Typical Organizational Domains

- In practice, six domains are typically distinguished:
  - The **business domain** encompasses everything that belongs to the business side of the organization, e.g. roles and processes
  - The **applications domain** embraces all software systems, applications and their components
  - The **data domain** comprises all logical data entities and their physical storage
  - The **integration domain** covers all integration platforms, mechanisms and approaches
  - The **infrastructure domain** encompasses all underlying hardware infrastructure and system software
  - The **security domain** comprises all software, devices and equipment intended to protect the organization

Six Organizational Domains as Stack

- Organizational domains can be viewed as a multilayer **domain stack**, where its higher layers are buttressed by its lower layers:
  - The business domain represents the top layer of the stack
  - The applications domain automates business activities
  - The data domain provides information to applications
  - The integration domain offers the means of interlinking various applications and data sources
  - The infrastructure domain hosts all applications, databases and integration platforms
  - The security domain permeates all the above domains by embedding the necessary security measures

Stack of Organizational Domains



Technical and Non-Technical Domains

- First, different relationship to technology: technical domains and non-technical domains
- **Technical domains** are technology-specific and directly relate to some or the other technologies
- Comprehension of technical domains requires highly specialized knowledge missing among business people
- By contrast, **non-technical domains** are technology-neutral and unrelated to any particular technologies
- Understanding of non-technical domains does not require any specialized knowledge, but only general business background

Technical vs. Non-Technical Domains

Classification	Technical domains	Non-technical domains
Technology	Closely related to concrete technologies	Have nothing to do with technology
Knowledge	Highly specialized technical knowledge	General business knowledge and outlook
Six domains	All except business (the IT domain)	Only the business domain

Functional and Non-Functional Domains

- Second, different relevance to business functionality: functional domains and non-functional domains
- **Functional domains** define the functionality provided by IT systems and determine what the business can do
- Planning decisions pertaining to functional domains are immediately relevant to business leaders
- By contrast, **non-functional domains** provide the necessary foundation for IT systems, but do not determine what the business can do functionally
- Planning decisions related to non-functional domains are not particularly relevant to business leaders

Functional vs. Non-Functional Domains

Classification	Functional domains	Non-functional domains
Functionality	Define the functionality of IT systems	Provide the foundation for IT systems
Capabilities	Shape available business capabilities	Do not shape business capabilities directly
Audience	Immediately relevant to business leaders	Mostly irrelevant to business leaders
Six domains	Business, applications and data	Integration, infrastructure and security

Substantive Domains

- Third, different standing in the landscape: substantive domains and non-substantive domains
- **Substantive domains** constitute the very substance of the corporate landscape in terms of its constituents and largely define its fundamental structure
- Metaphorically, substantive domains can be compared to hard bones of the landscape that form its skeleton
- Substantive domains usually represent the prime cause for change initiatives in organizations
- Substantive domains determine whether organizations “do the right things”

Non-Substantive Domains

- By contrast, **non-substantive domains** are necessary for the functioning of the corporate landscape, but do not represent its central substance
- Metaphorically, these domains can be compared to soft tissues of the landscape that cover its skeleton
- They rarely become the stimuli for change, but control that all changes are implemented properly
- Non-substantive domains determine whether organizations “do things in the right way”
- Non-substantive domains are more often affected by modifications occurring in substantive domains

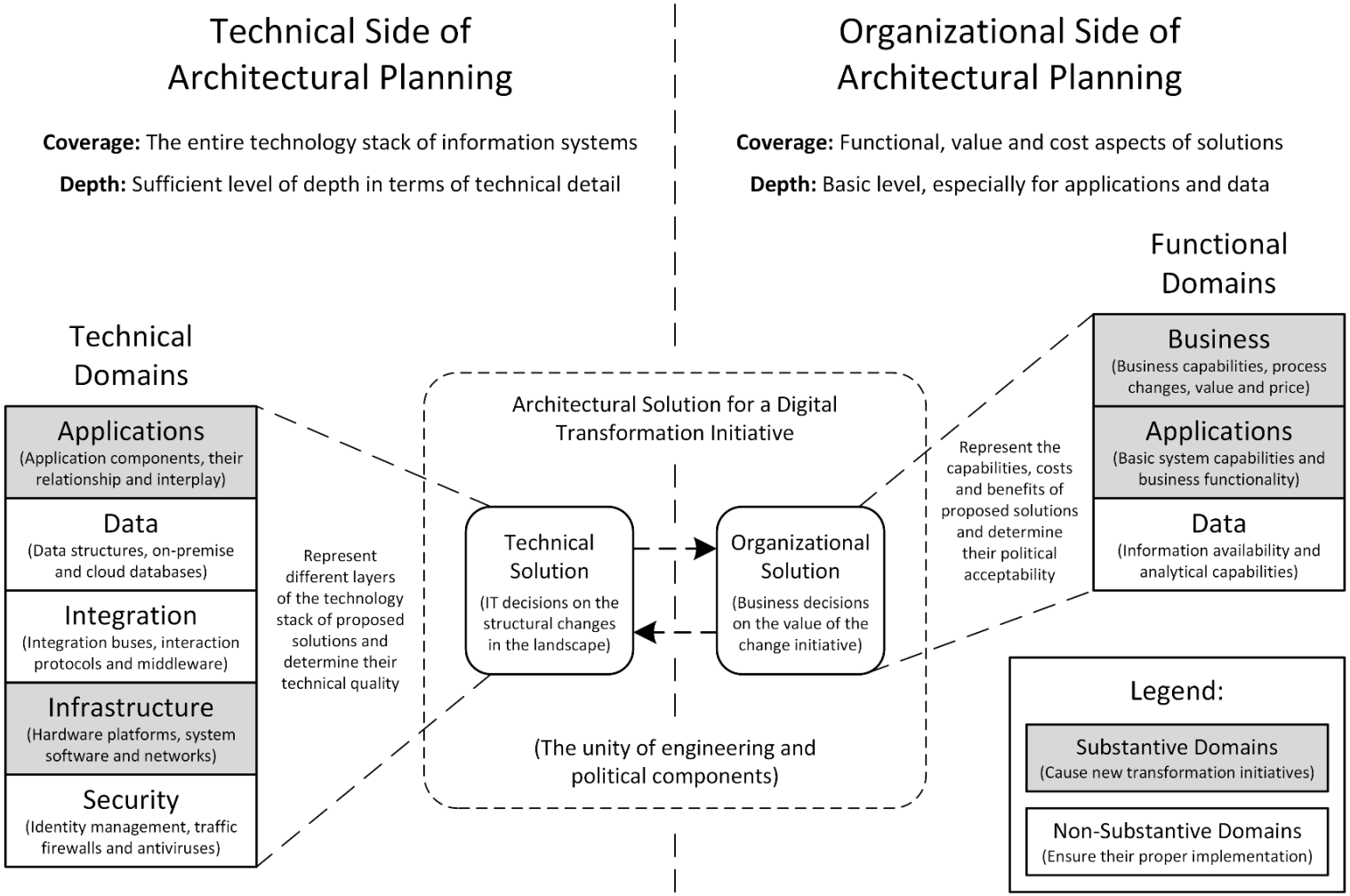
Substantive vs. Non-Substantive Domains

Classification	Substantive domains	Non-substantive domains
Landscape	Constitute the substance of the landscape	Necessary for the landscape functioning
Metaphor	Hard bones forming the landscape skeleton	Soft tissues covering the landscape skeleton
Initiatives	Cause new transformation initiatives	Ensure proper implementation of initiatives
Motive	Doing the right things	Doing things in the right way
Six domains	Business, applications and infrastructure	Data, integration and security

Coverage of Domains in Solutions

- Technical and organizational components of architectural solutions for initiatives cover different domains
- Technical solutions cover all *technical domains* that represent different layers of the technology stack and determine their technical quality
- Organizational solutions cover all *functional domains* that determine the capabilities of proposed solutions, benefits and costs, and ultimately their political acceptability
- The initiatives themselves are usually caused by the demands incoming from substantive domains

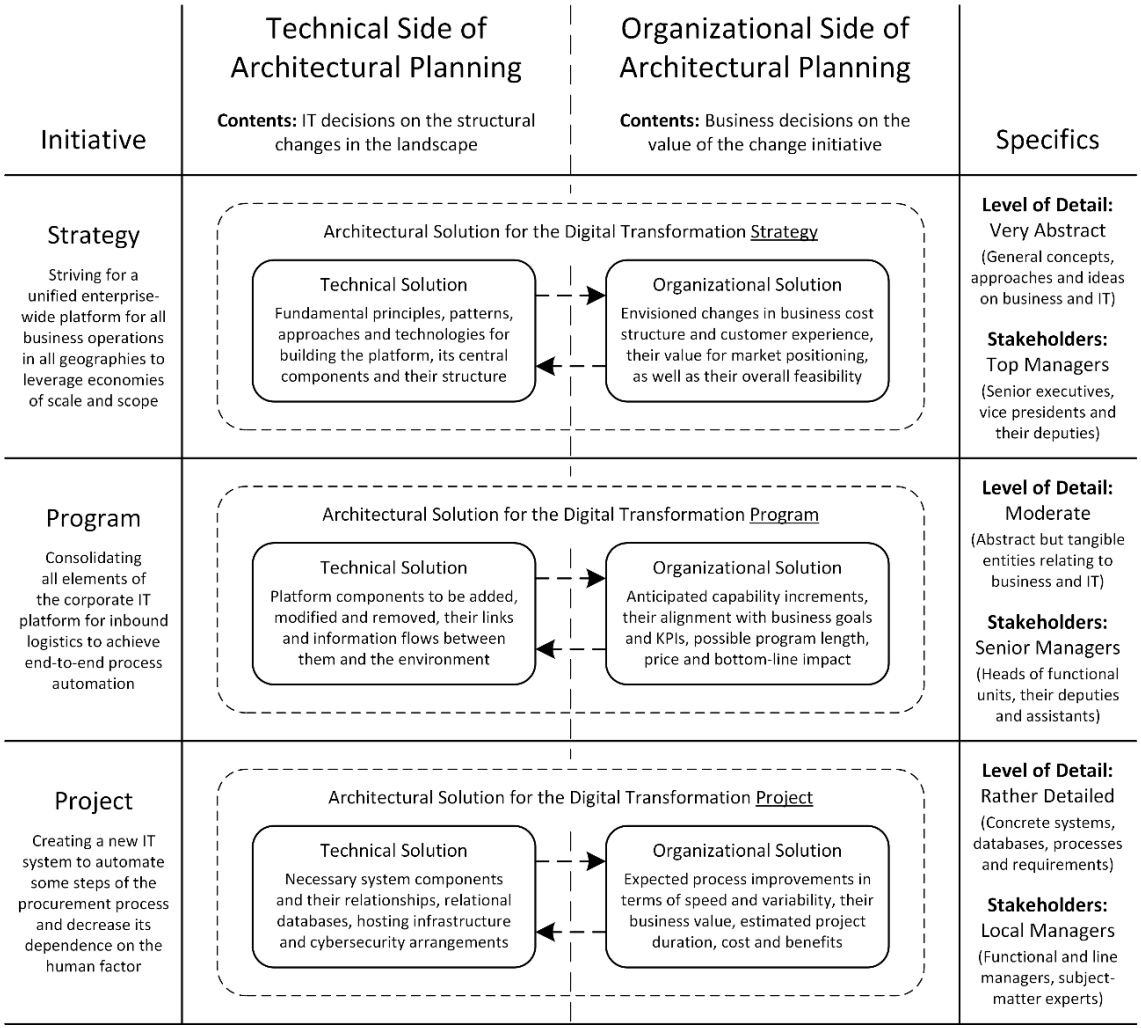
Architectural Solutions and Domains



Architectural Solutions at Different Levels

- The general pattern of technical and organizational solutions stays valid for all initiatives
- However, contents of architectural solutions vary in their granularity for initiatives at different levels, from fine details to sheer generalities
- The seniority of stakeholders involved in the development of architectural solutions also varies
- Architectural solutions for projects describe concrete details and involve local business managers
- Architectural solutions for strategies focus on abstract resources and involve senior executives

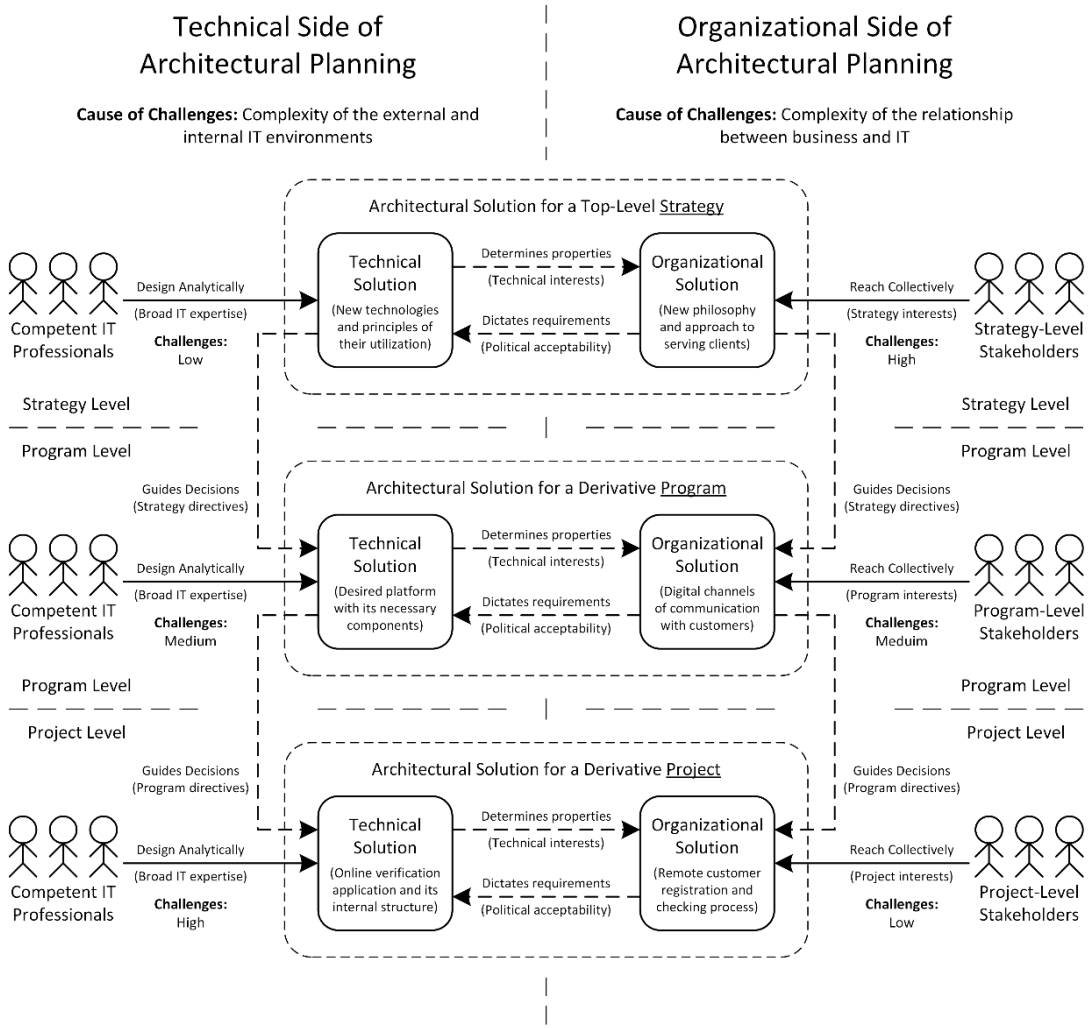
Solutions for Different Types of Initiatives



Architectural Planning at Different Levels

- Architectural solutions for projects, programs and strategies are linked by parent–child relationships
- The linkage of higher- and lower-level plans relates to both the technical and organizational sides of planning
- Higher-order technical and organizational solutions provide *decision premises* for developing the respective "downstream" solutions
- Requirements and constraints imposed by "parent" solutions further complicate architectural planning as they add additional concerns to be taken into account

Linked Architectural Planning of Initiatives



Lecture Summary

- Architectural planning is a complex effort of developing optimal architectural solutions for initiatives addressing both their technical and organizational challenges
- Its technical side involves traditional engineering exercises and develops technical solutions
- Its organizational side requires reaching political compromises and develops organizational solutions
- Architectural planning deals with six interrelated domains, which can be represented as a multilayer stack
- Architectural planning equally applies to strategies, programs and projects, but implies linked planning

In the Next Lecture

- The next lecture will introduce enterprise architects who carry out architectural planning in organizations, propelling their digital transformation

QUESTIONS?

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Full Teaching Pack Available on Request

The full teaching pack based on the books ***The Practice of Enterprise Architecture: A Modern Approach to Business and IT Alignment*** and ***Enterprise Architects: The Agents of Digital Transformation*** is available on request to the author (kotusev@kotusev.com)