Methods for the specification and verification of business processes

MPB (6 cfu, 295AA)

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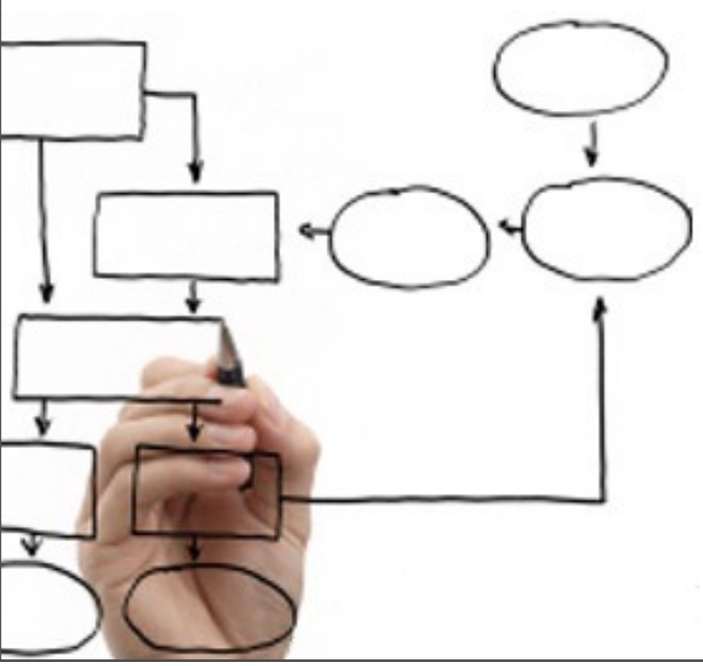


04 - Methodology

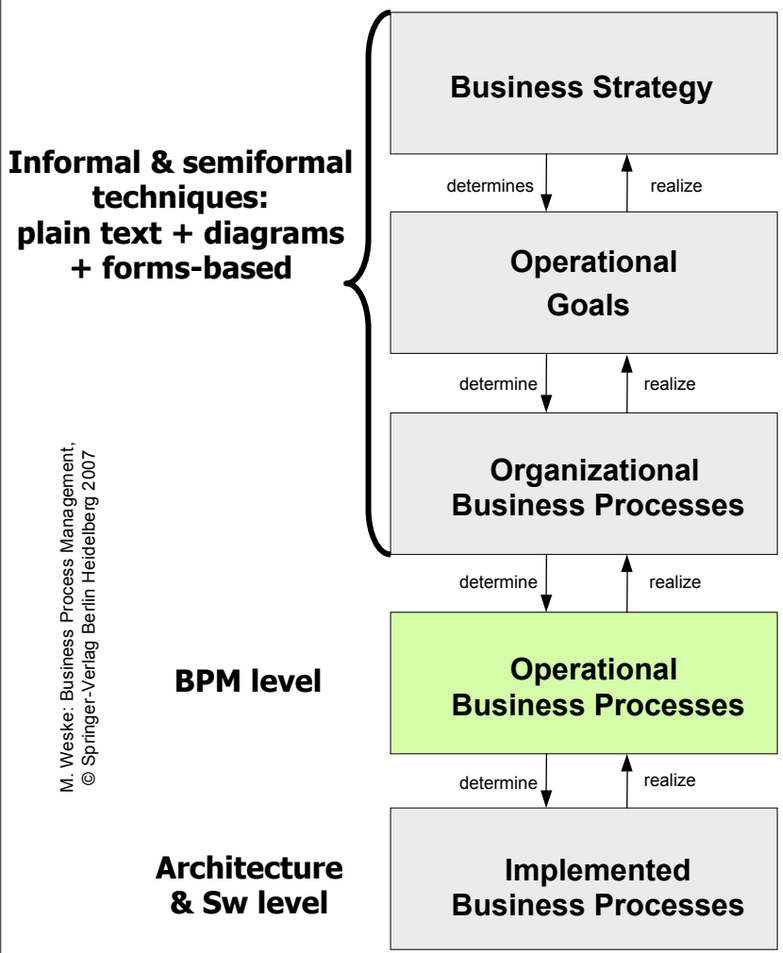
Objective

Coarse-grained methodology for developing business process management solutions

Guidelines for process designers to plan and conduct business process management projects

Ch.1.3, 8 of Business Process Management: Concepts, Languages, Architectures

Levels of business processes



long-term company strategies to develop sustainable competitive advantage in the market (e.g. cost leadership for products in a domain)

define operational goals that contribute to the realization of the business strategy (e.g. reducing the cost for supplied materials)

high-level processes in textual form: input, output, expected results, dependencies (e.g. incoming raw materials provided by a set of suppliers)

activities and relationships are specified, but implementation aspects are disregarded

executable/technical/organizational environments (from written policies and procedures to enactment platforms)

Business strategies

Competitive Advantage

A competitive advantage is one gained over competitors by offering consumers better value.

You increase value by lowering prices or increasing benefits and services to justify the higher price.

Business strategies

Cost Leadership Strategy

To compete for the largest number of customers through price.

Cost leadership pays off when the goods or services are standardized: generic acceptable goods sold at the lowest prices.

Minimize costs to the company and minimize costs to the customer without decreasing profits.

Business strategies

Differentiation Strategy
Provide a product or service with distinctive qualities valued by customers.

Attract customers because products are set apart from the competition.

Leading scientific research needed:
highly skilled and creative product development team; a strong sales and marketing team.

Business strategies

Focus Strategy

Concentrate on a particular customer, product line, geographical area, to serve a limited group of customers better than any competitor who serve a broader range of customers.

A focus strategy works well for small but aggressive businesses.

Operational goals

Management implements the business strategy by defining operational goals.

Profitability: to increase revenue while limiting expenses

Customer Service: to improve response time to customer complaints

Efficiency: to implement a new shipping procedure that improves delivery time

Organizational processes

Innovation process
Conception + Implementation + Marketing

Conception input: Requirement analysis
Conception output: Project planning

Implementation input: Plan
Implementation output: Pilot application

Marketing input: Prototype
Marketing output: Market launch

Other dimensions for classifying processes: Organization spanning

Intra-organizational process

No interaction with business processes performed by other parties (single organization processes)

Primay focus: streamlining of internal processes, eliminating activities that do not provide values, allocating activities to persons who are competent and skilled enough

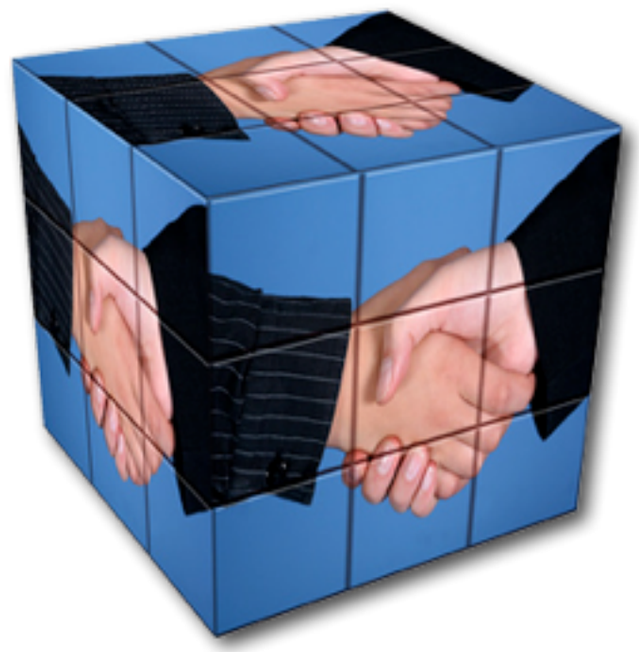
Orchestration!

Interacting process

Business-to-business process, value system (multiple organizations)

Primary focus: communication aspects, legal matters, interoperability of heterogeneous software infrastructures

Choreographies!



Other dimensions for classifying processes:

Degree of automation and repetition

Repetitive vs collaborative

Highly **repetitive processes**, fully automated, no human involvement: process automation can pay off (e.g. online airline ticketing)

On the opposite, **for rarely enacted processes it is questionable if the effort of modeling can pay off** (e.g. vessel design: cost per instance too high)

Collaborative business processes, low degree of repetition, involved persons are at the centre of attention: allow to document and track causal relationships (human activities, no cost for automation)

Other dimensions for classifying processes: Degree of structuring

Production workflow

Well structured and highly repetitive processes
(the activities, their execution constraints and the possible options are fixed at design time)

Can be supported by traditional workflow management system functionality

Case handling

Sometimes, fixed structure is more an obstacle than an asset

Depending on the particular case, process participants can **adapt their working procedures** on the basis of their experience and competence (case handling, ad hoc activities, flexible process)

A less rigid structured process may be convenient (execute activities in different order or multiple times, introduce new activities, skip some activity)

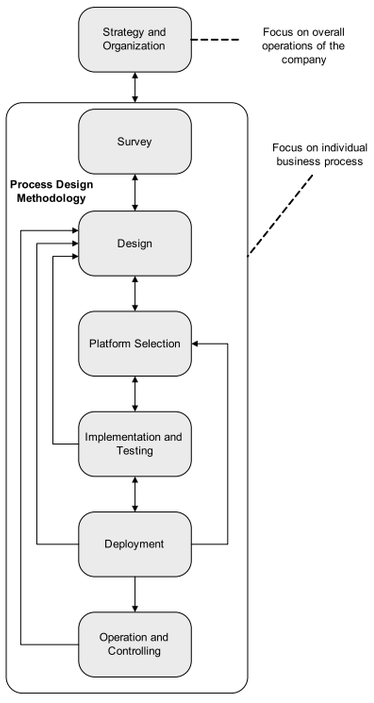
Operational business processes design: A methodology

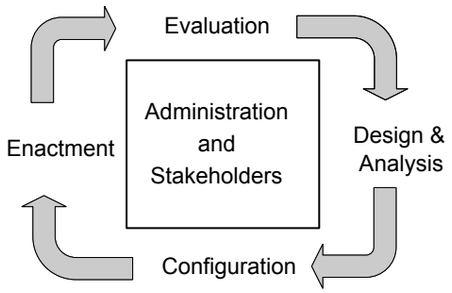
Methodology overview

Described by an informal notation

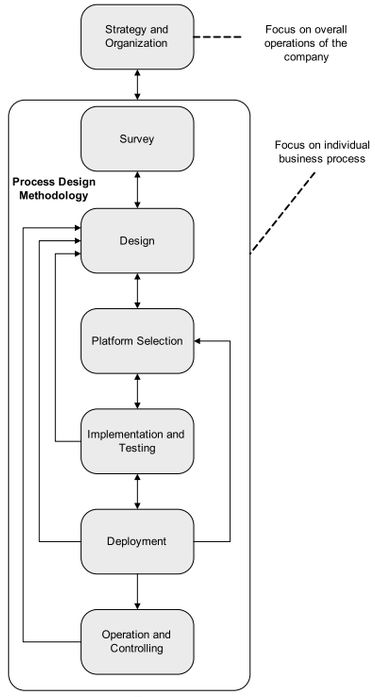
Phases as boxes, can be nested
(subphases are called development activities)

Dependencies between phases as direct arcs





Lifecycle vs methodology



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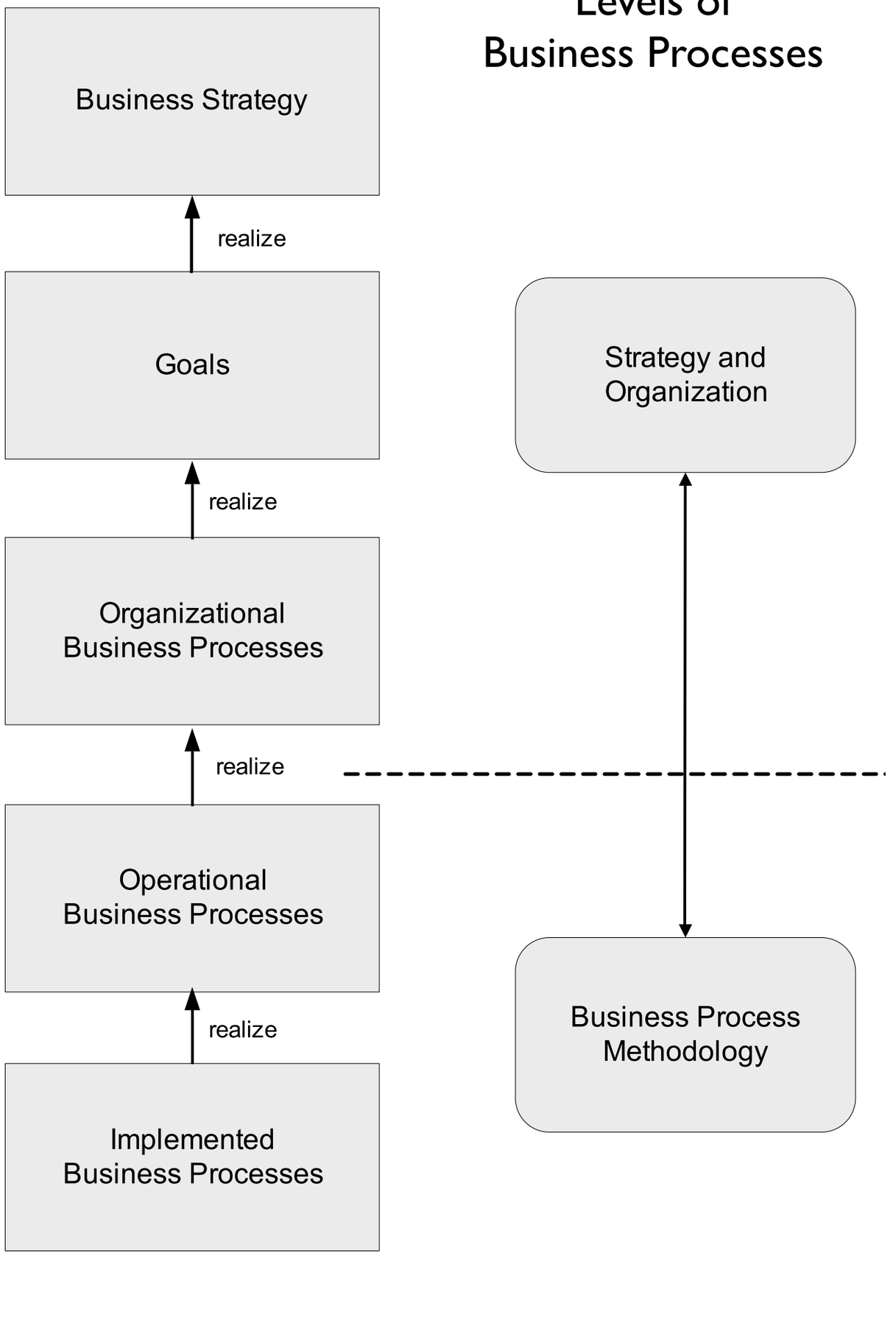
The business process lifecycle takes a rather **technical** view: it addresses technologies used in business process management and relates them to each other

The business process methodology takes a broader, **project-oriented** view by investigating the phases that are required to develop business process applications

Levels of Business Processes



Levels of Business Processes

Business Strategy

realize

Goals

realize

Organizational Business Processes

realize

Operational Business Processes

realize

Implemented Business Processes

Strategy and Organization

Business Process Methodology

Strategy and Organization

Focus on overall operations of the company

Focus on individual business process

Process Design Methodology

Survey

Design

Platform Selection

Implementation and Testing

Deployment

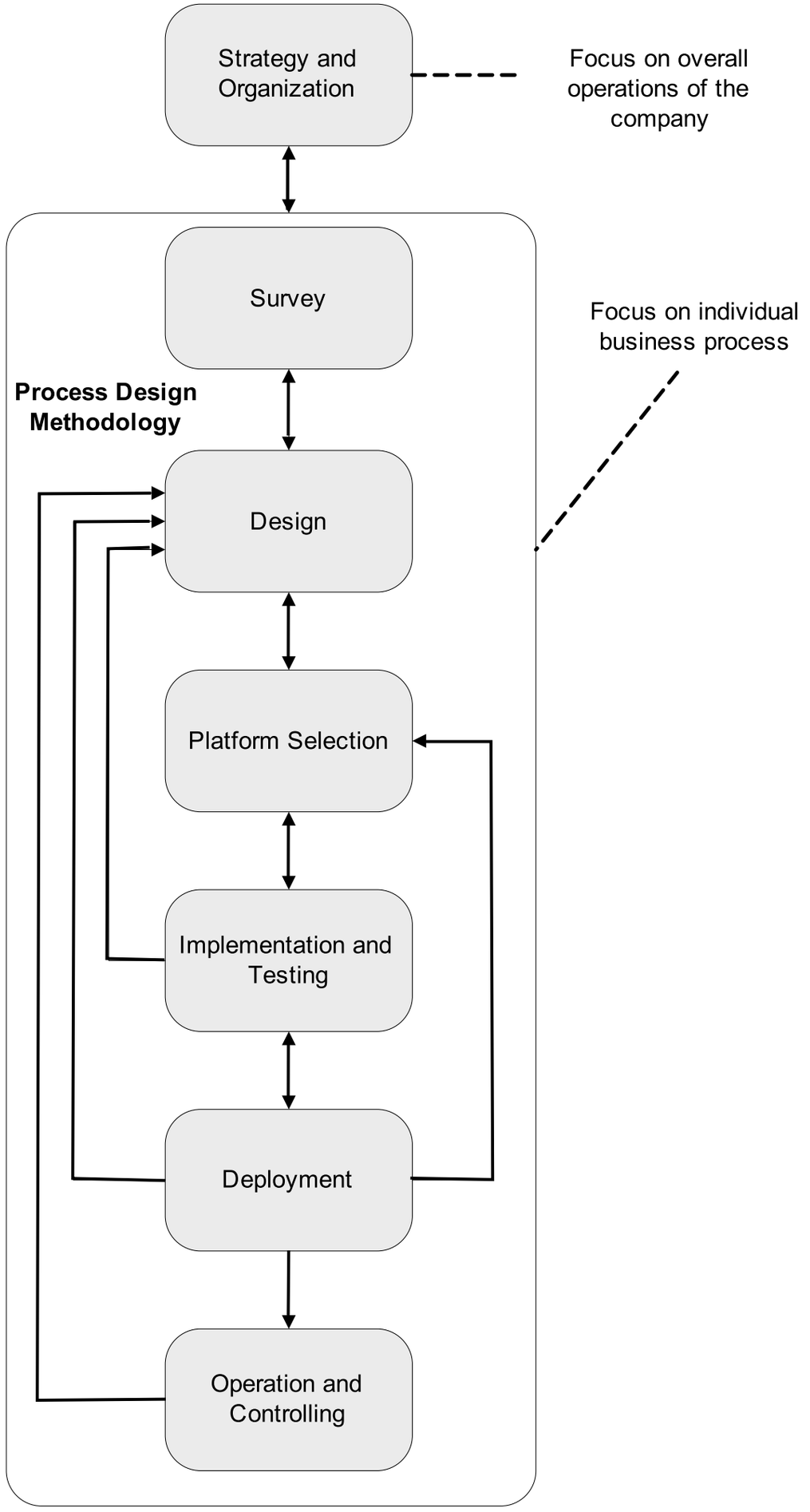
Operation and Controlling

Directed arcs denotes loose dependencies between phases and information transfer between them

They do not specify a strict sequential ordering

The methodology defines an evolutionary approach, in the sense that it is interactive and incremental

Recursively:
Collect observations
Classify information
Validate findings with stakeholders
Refine artefacts



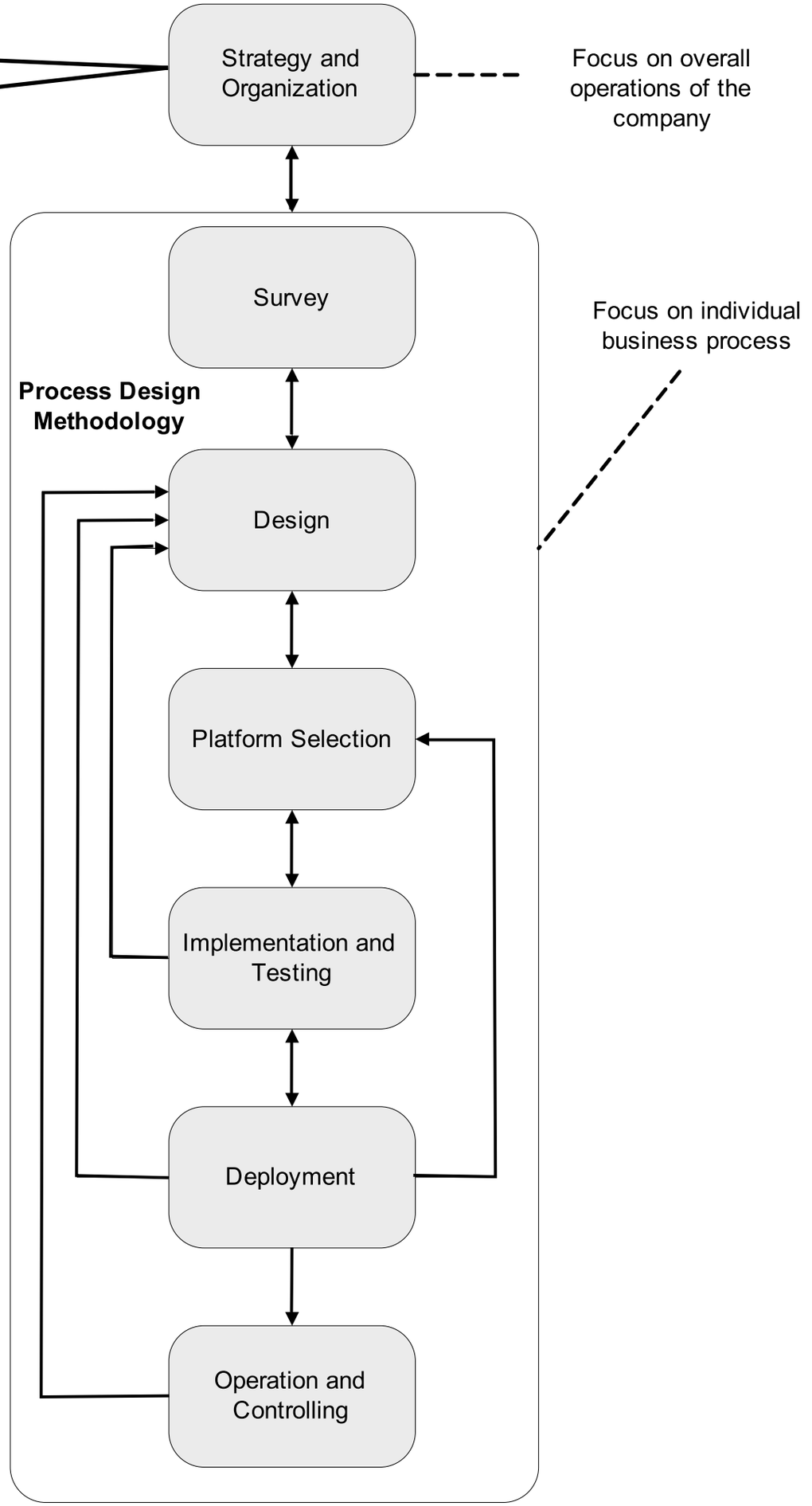
Identification of the overall business strategy and the associated goals

Determines the strategic goals for long-term positioning of the company in the market

Determines the operational goals (e.g. focus of customers, cost efficiency, leadership in innovation or quality or price)

The organization is structured in such a away that business processes can be successfully implemented in the company

Independent of any particular operational business process



Relevant to individual operational business processes

Defines project goals

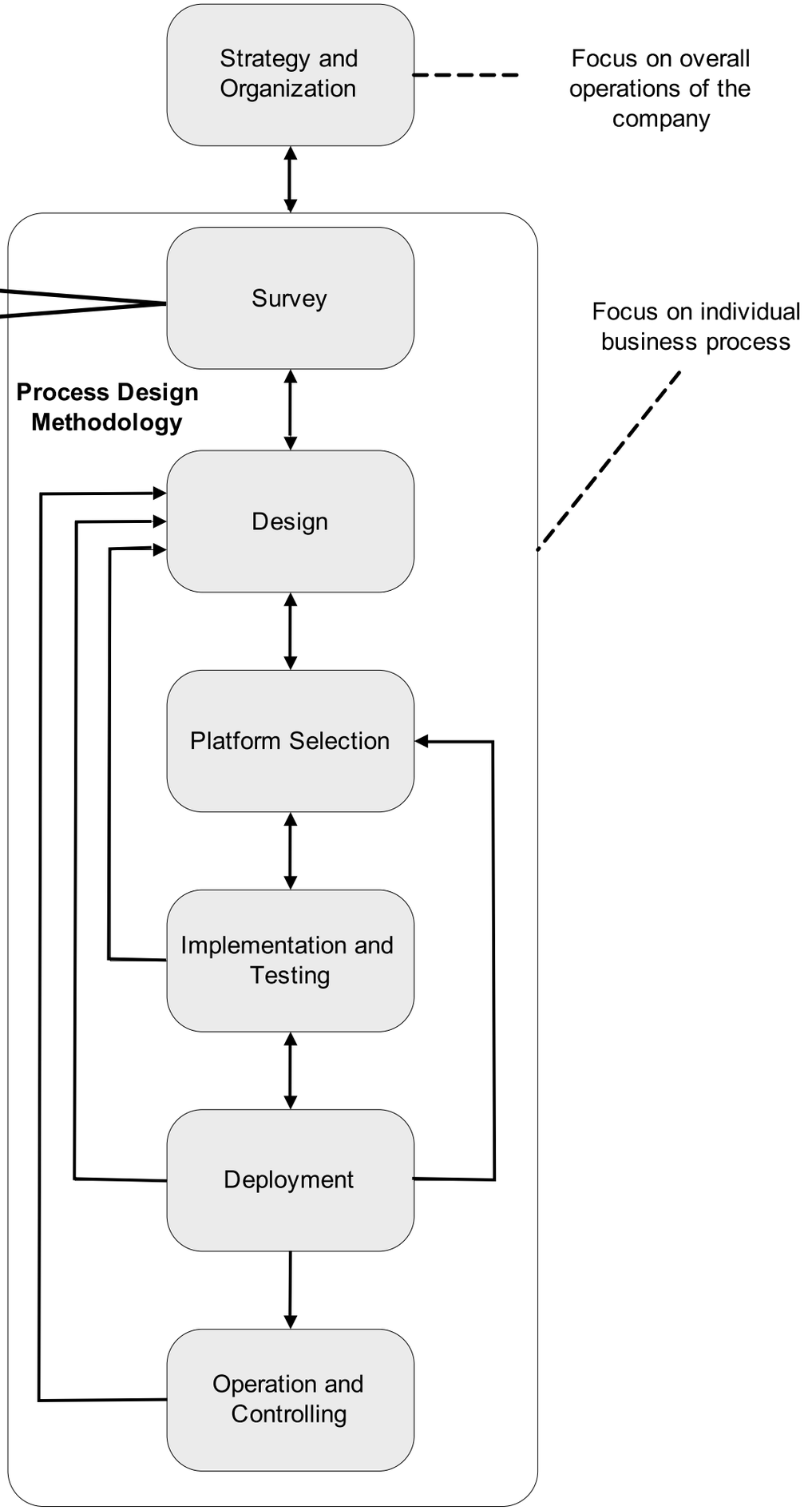
Establishes the project team

Gathers information about the business process environment (in textual format)

Conducts empirical studies based on interviews, analysis of documentation, including legislative regulations

Requires the development of a domain ontology that provides a common understanding of the terms and concepts in the application domain

It serves as a preparation phase for the lifecycle phase “Design & analysis”



Analyzes and consolidates the (textual) information gathered in the survey phase

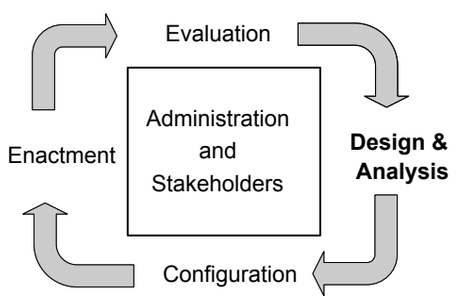
Represents such information as business process models

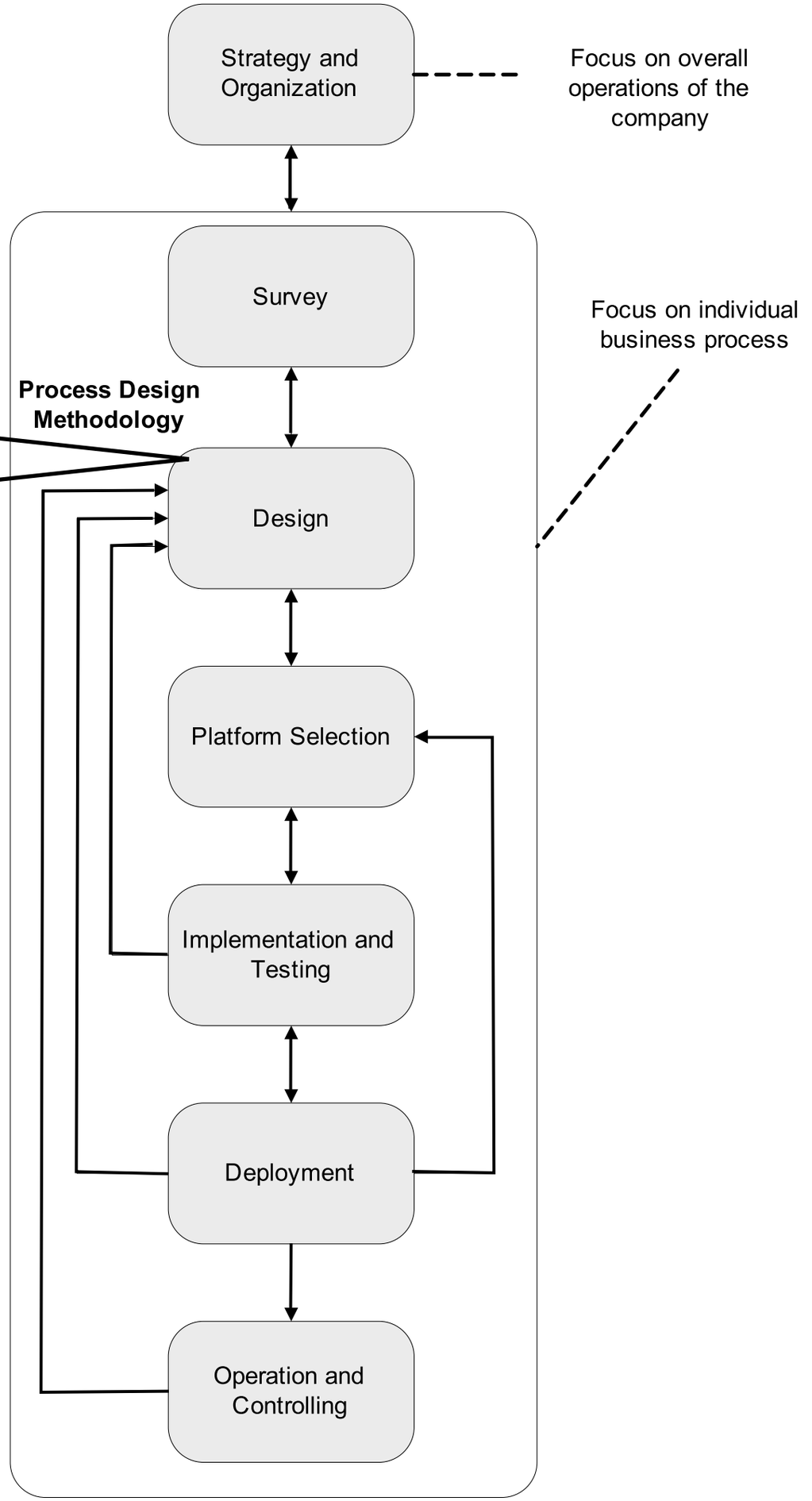
The models serve as a communication basis for different stakeholders to improve the process along the operational goals laid out in the strategy phase

The improvement may be concerned with the actual process, as well as the technical and organizational environment

Examples: move to service-orientation, acquire new skills and competencies

Closely associated to D&A phase





Rules for identifying business processes

1 - customer

Each business process starts and ends with a customer who requests a product and who receives the product as a result of the business process

(remind that a customer can be internal to the organization, e.g. a department)

Rules for identifying business processes

2 - owner

Each business process is assigned a process owner, who is responsible for the process

(individual in charge of making sure that process instances are conducted correctly and that business goals are met)

Rules for identifying business processes

3 - orchestration

Execution constraints are used to order activities in the business process in a way that enterprise resources are used efficiently and at the same time the business goals are met

(process orchestration language are used to express process execution constraints)

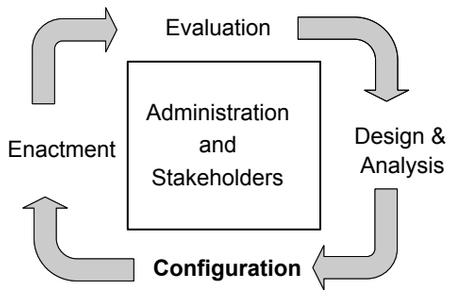
Selects a technological platform on which the business process will be enacted

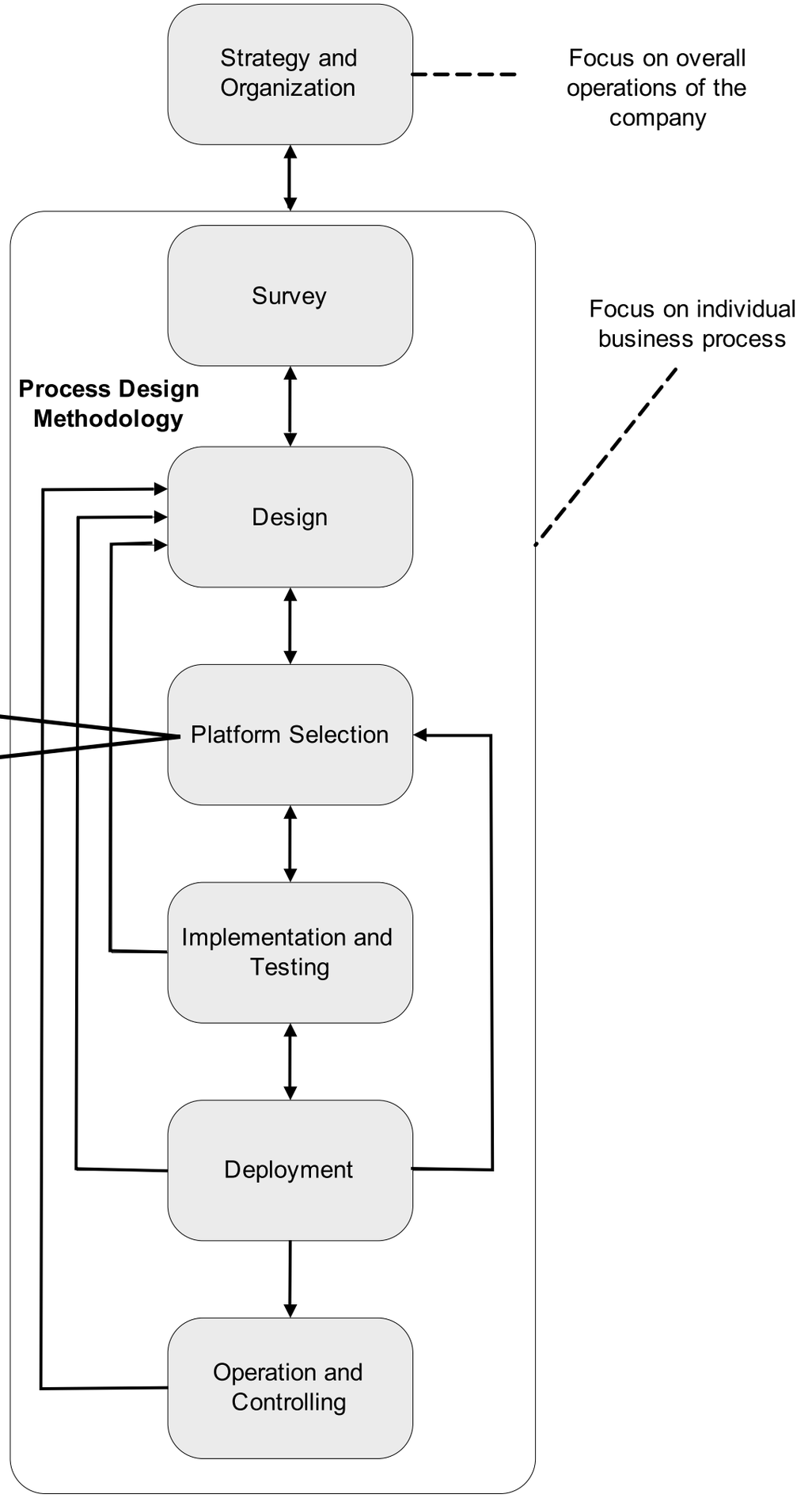
The selection is made on the basis of the business process models and of the technical and organizational environment

Examples: enterprise application integration middleware, service-oriented architectures, workflow management systems

Also non-technical platforms are possible: written business policies, defined procedures

It is part of the “Configuration” phase





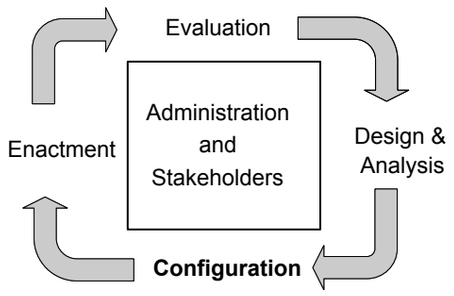
When technical realization are considered, business process models must be enhanced with additional information to make them executable

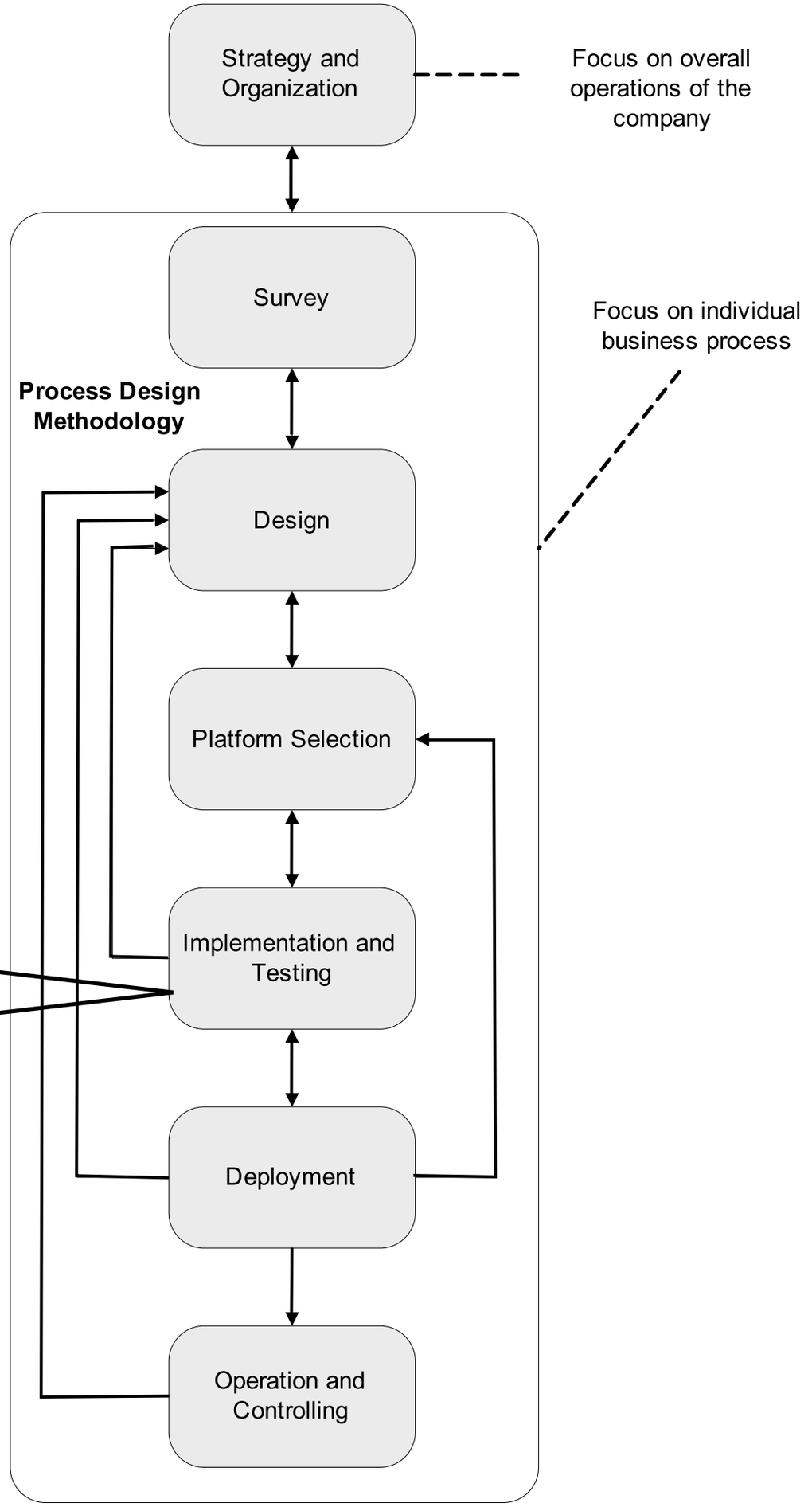
Implementation involves the development of prototypes, invites feedback from knowledge workers, concrete data-type definitions, technical realization of activities, integration of legacy software

Extensive testing is needed to guarantee that the technical solution is effective

Both functional and non-functional aspects must be addressed

It is still part of the “Configuration” phase





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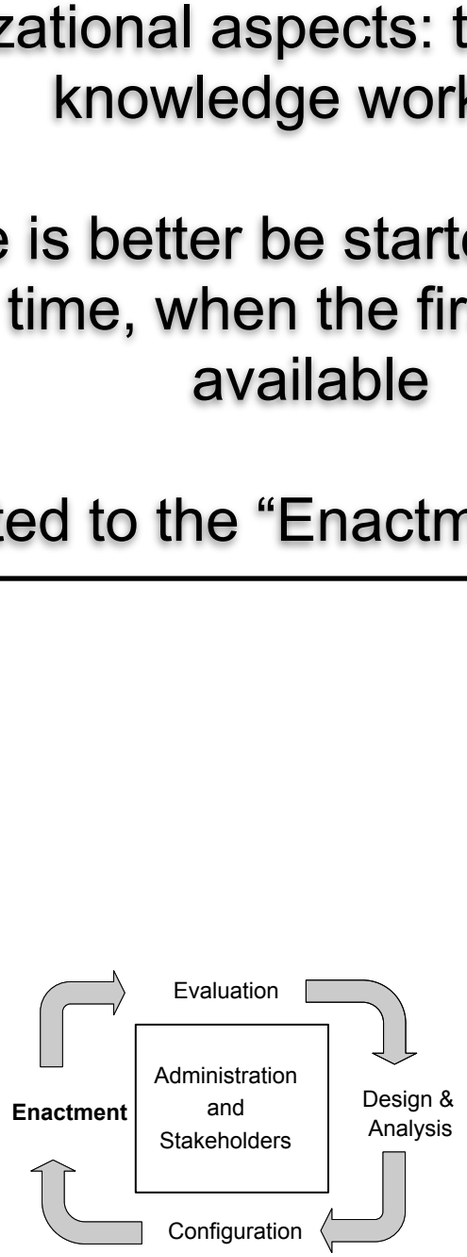
Deploys the implementation of the business process in the target environment

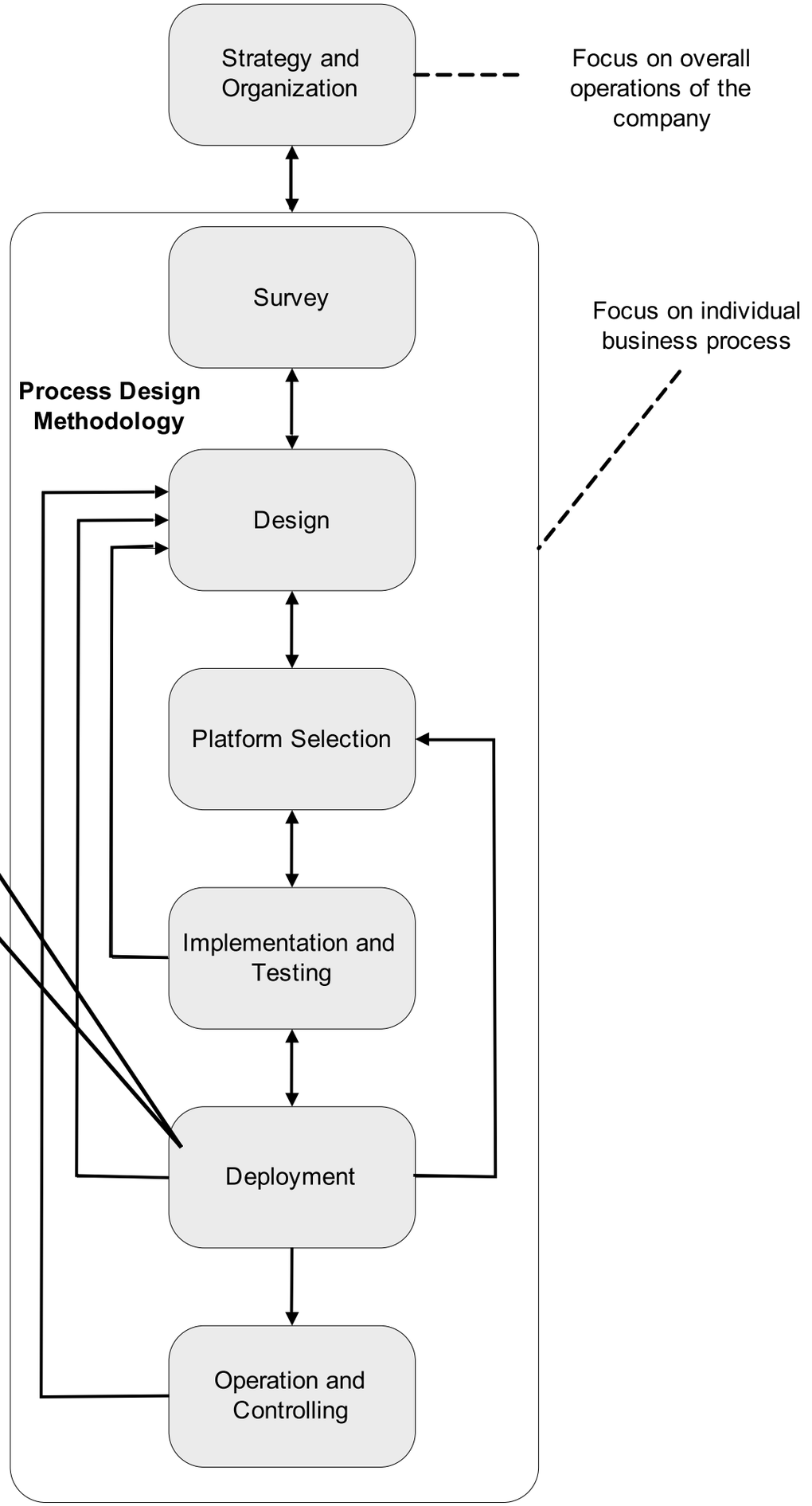
Technical aspects: operations will not suffer during deployment

Organizational aspects: training of the knowledge workers

This phase is better be started at the earliest stage in time, when the first prototype is available

Related to the “Enactment” phase





The business process application runs in the target environment and valuable execution information is gathered

Related to the “Enactment” phase