

# Business Processes Modelling

## MPB (6 cfu, 295AA)

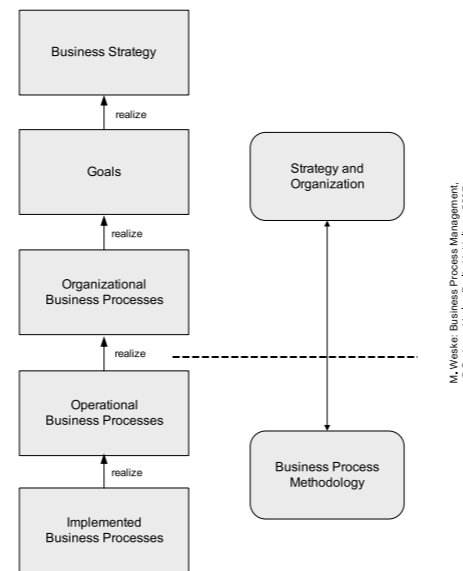
Roberto Bruni

<http://www.di.unipi.it/~bruni>

04 - Methodology



# Objective

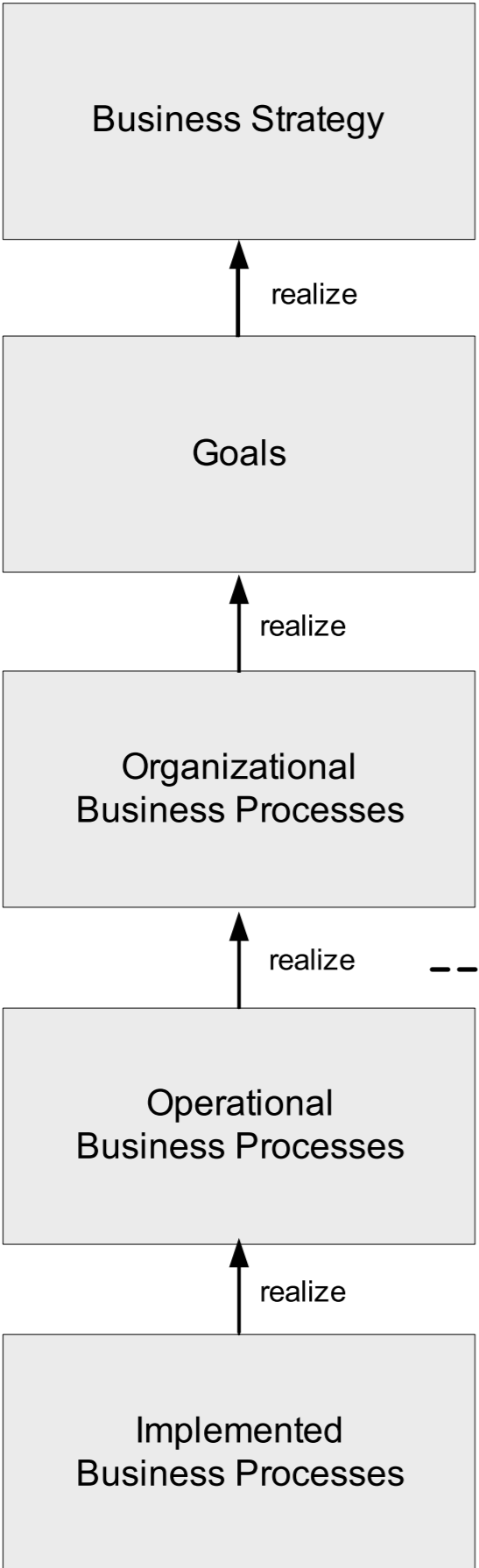


Coarse-grained methodology for developing business process management solutions

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

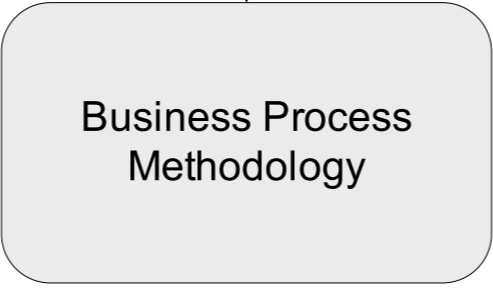
Ch.1.3, 8 of Business Process Management: Concepts, Languages, Architectures

# Levels of Business Processes



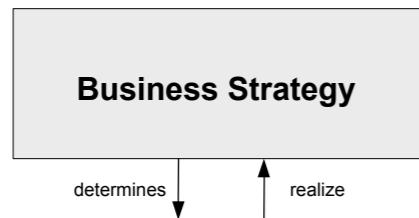
Focus on overall operations of the company

Determine the **operational goals**, such as focus on customers, cost efficiency, leadership in innovation or quality or price



Focus on **individual business processes**

# Levels of business processes



**long-term company strategies**  
to develop sustainable success in the market

# 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

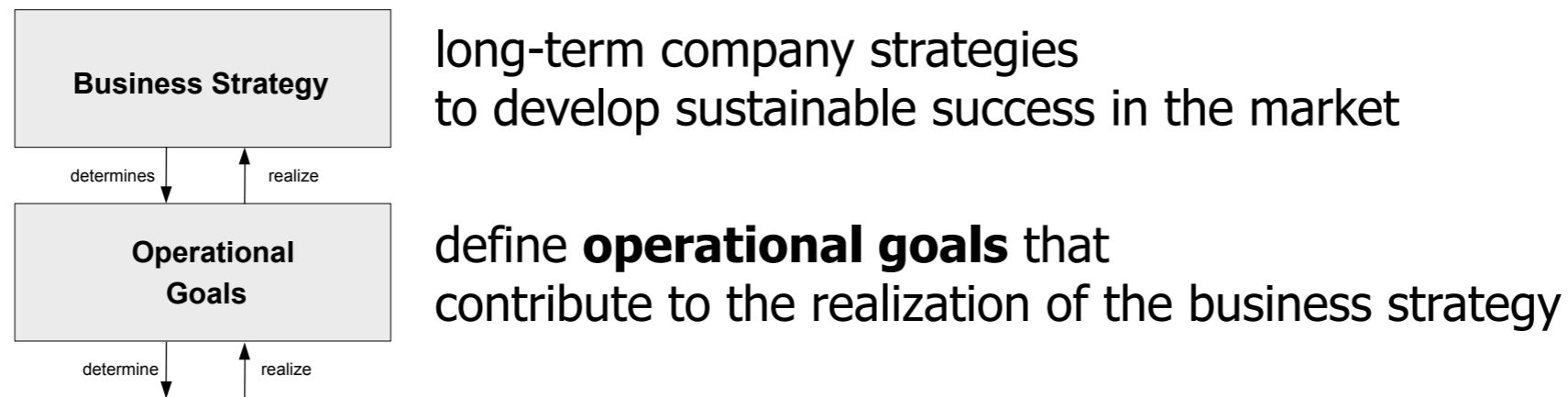
## **Focus Strategy**

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.



# Levels of business processes



# 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

# Levels of business processes

Informal & semiformal techniques:  
plain text + diagrams  
+ forms-based

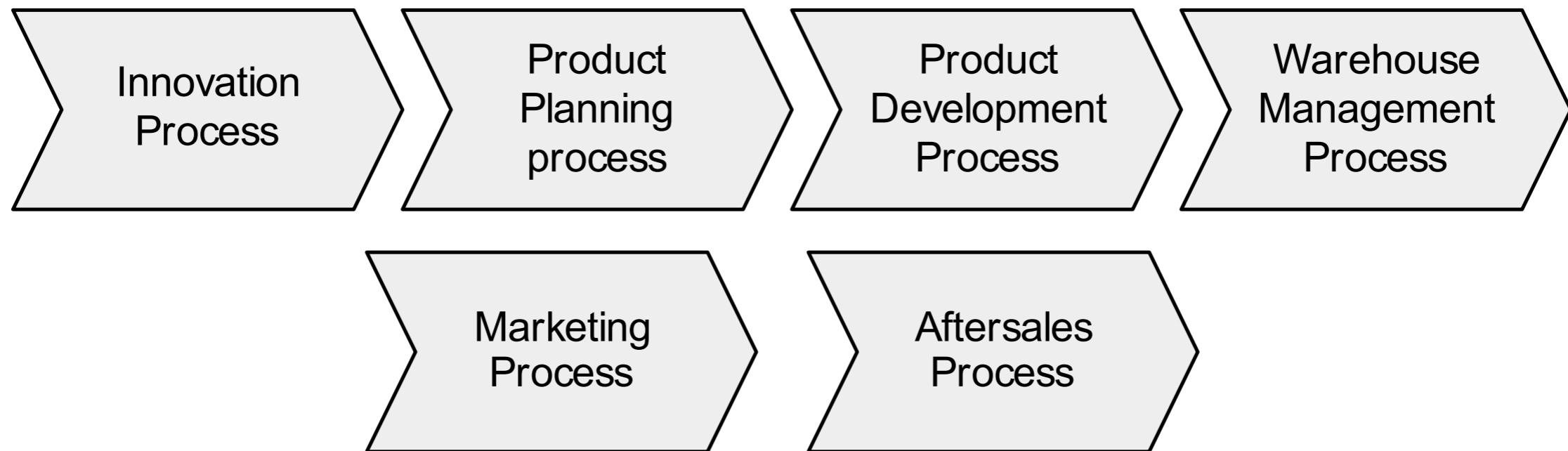


long-term company strategies  
to develop sustainable success in the market

define operational goals that  
contribute to the realization of the business strategy

high-level **processes in textual form:**  
input, output, expected results, dependencies

# Organizational BP (manufacturing company)



# Organizational process



**Top-level: Form-based description of organizational business process  
(black-box view, internal structure not shown)**

<b>Process Name:</b> Product Development Process	<b>Responsible Process Manager:</b> Dr. Myers
<b>From:</b> Requirements <b>To:</b> Rollout	<b>Type:</b> Development Project
<b>Process Inputs:</b> Requirements Document, Project Plan, Budget Plan, Prototyps	<b>Supplier Processes:</b> Product Planning Process, Innovation Process
<b>Process Results:</b>  Integrated and completely tested innovative product with complete documentation	<b>Customer Processes:</b>  Order Management Process, After-Sales Service Process

# Intra-organizational process

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

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

Orchestration!

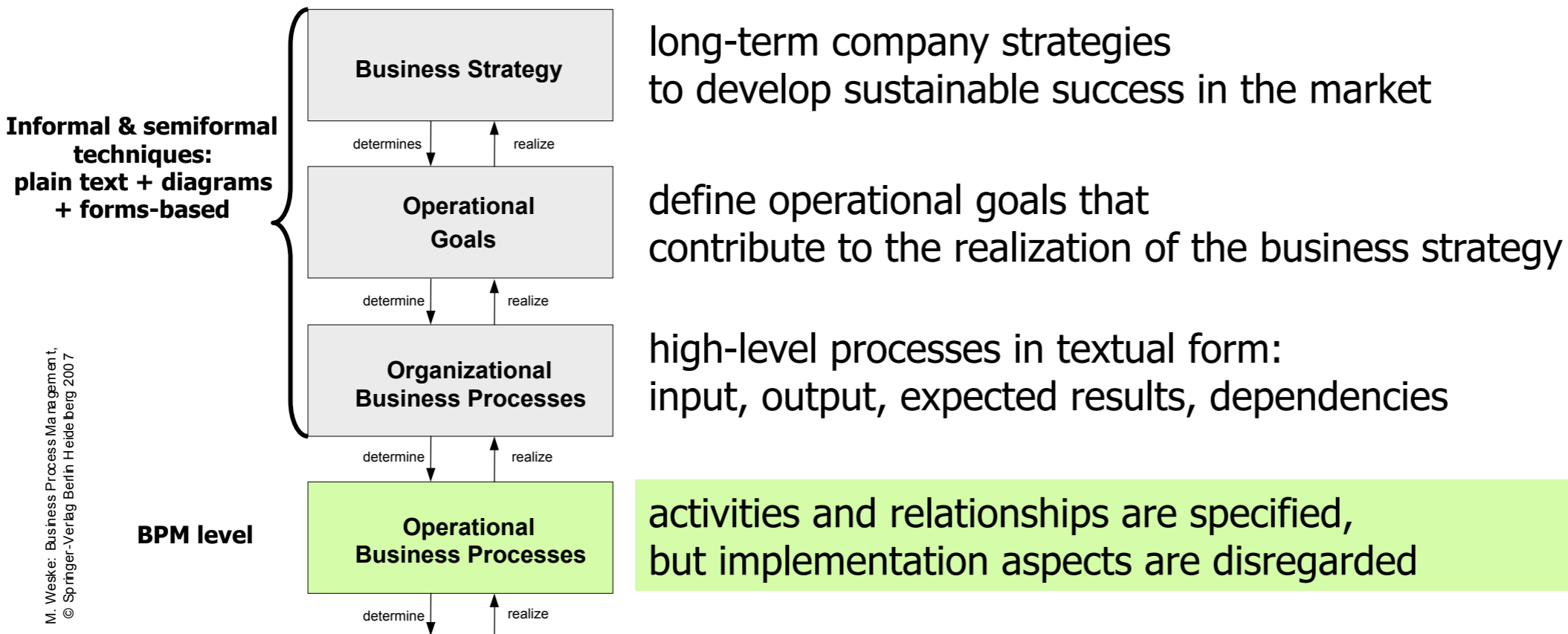
# Inter-organizational process

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

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

Choreographies!

# Levels of business processes





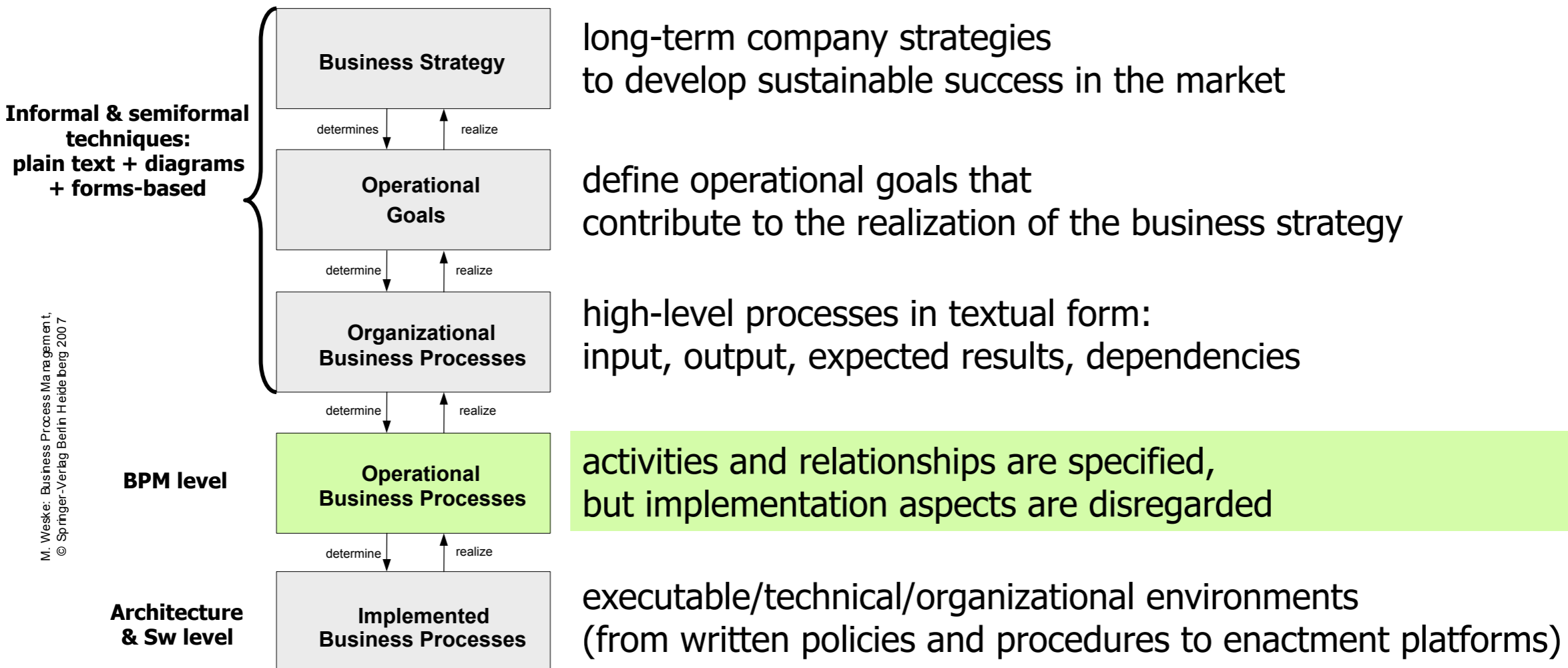
# Repetitive vs collaborative

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 track relationships  
(human activities, no cost for automation)

# Levels of business processes



# Platform selection

**Select** the platform on which the business process will be enacted and possibly **enhance** the process model with additional information to make it executable

It can be a technological platform but also a non-technical one (e.g., written business policies, manual procedures, service-oriented architecture)

Operational business  
processes design:  
Guidelines

# Guideline #1

Recursively:

**Collect** observations

**Classify** information

**Validate** findings with stakeholders

**Refine** artefacts

# Guideline #2

**Gather information** (in textual format) about the business process environment, including project goals, project team and legislative regulations

**Prepare a domain ontology** to fix a common understanding of terms and concepts in the application domain

# Guideline #3

**Represent** the (textual) gathered information as business process model(s)

Exploit the model as a **communication basis** to consolidate findings and improve the organizational/technical environments (e.g., acquire new skills, move to service-orientation)

# Rules for identifying business processes

## **1 - who is the 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 - who is the 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 - which tasks?**

*Each business process comprises a set of activities needed to realize the business goals*

# Rules for identifying business processes

## **4 - which roles?**

*Each task needs some specific abilities  
to be carried out*

# Rules for identifying business processes

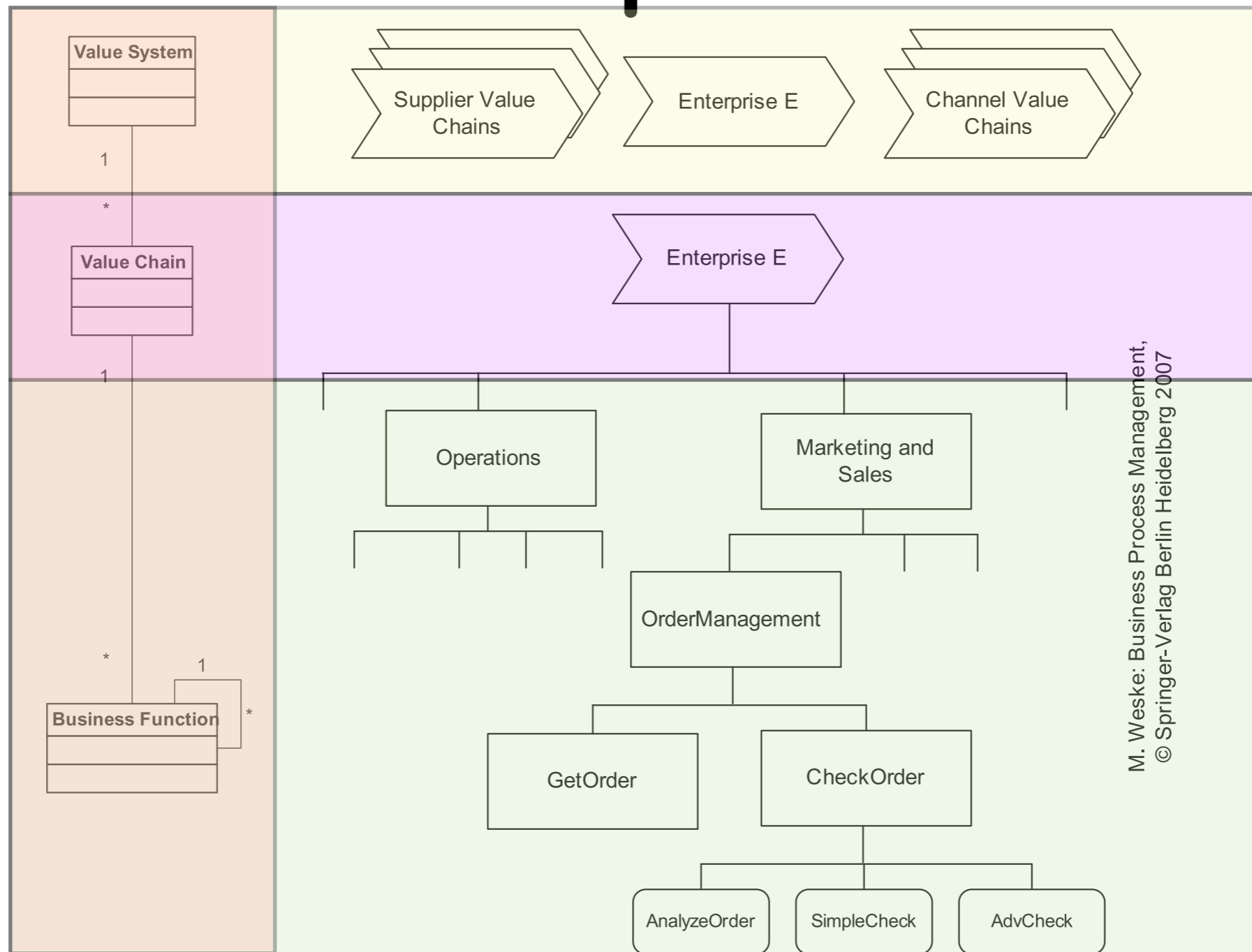
## **5 - which dependencies?**

*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*

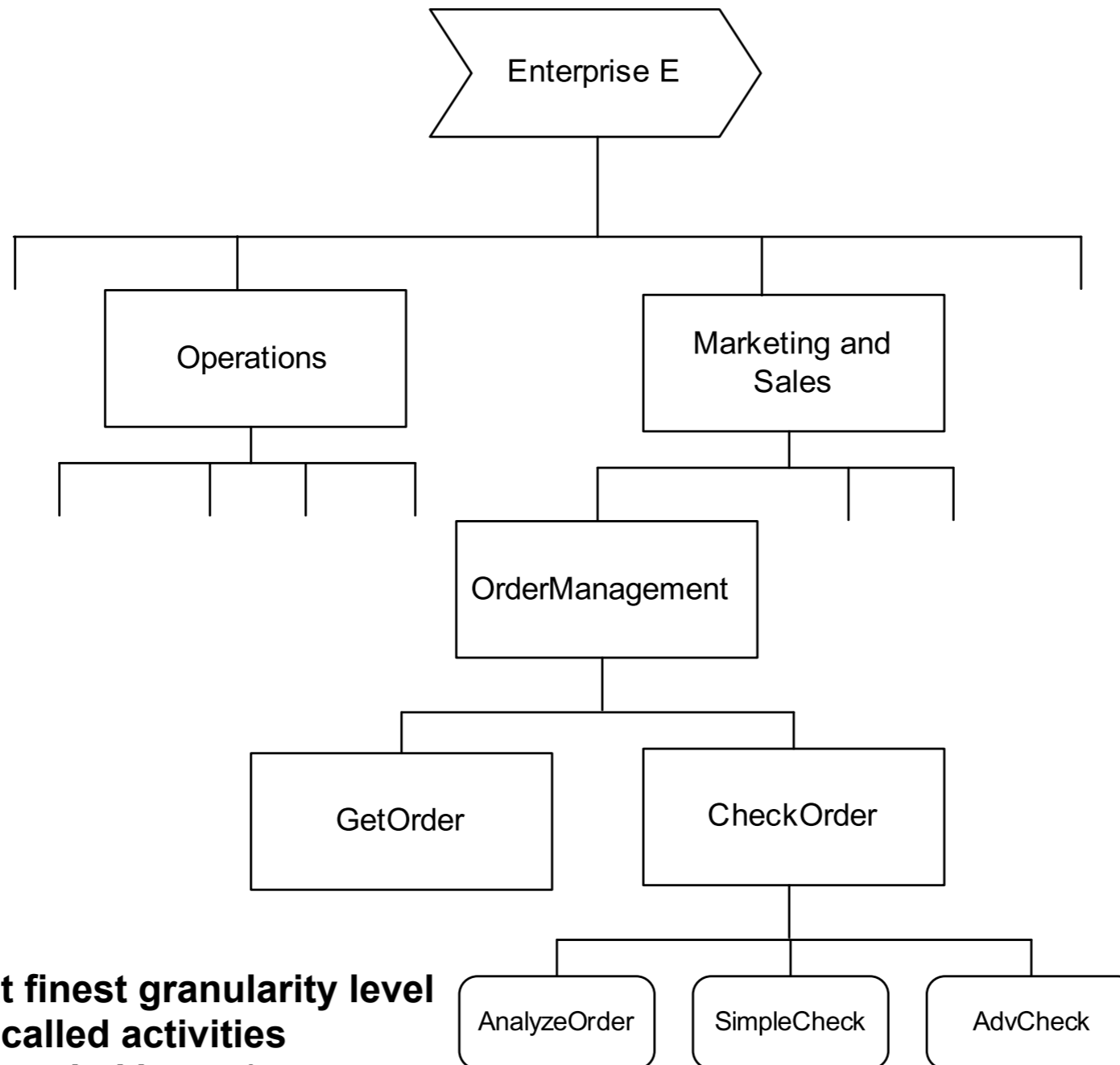
(process orchestration language are used to express process execution constraints)

From business functions  
to business processes  
(and their implementation)

# Step 1: Functional decomposition



# Business functions: activities

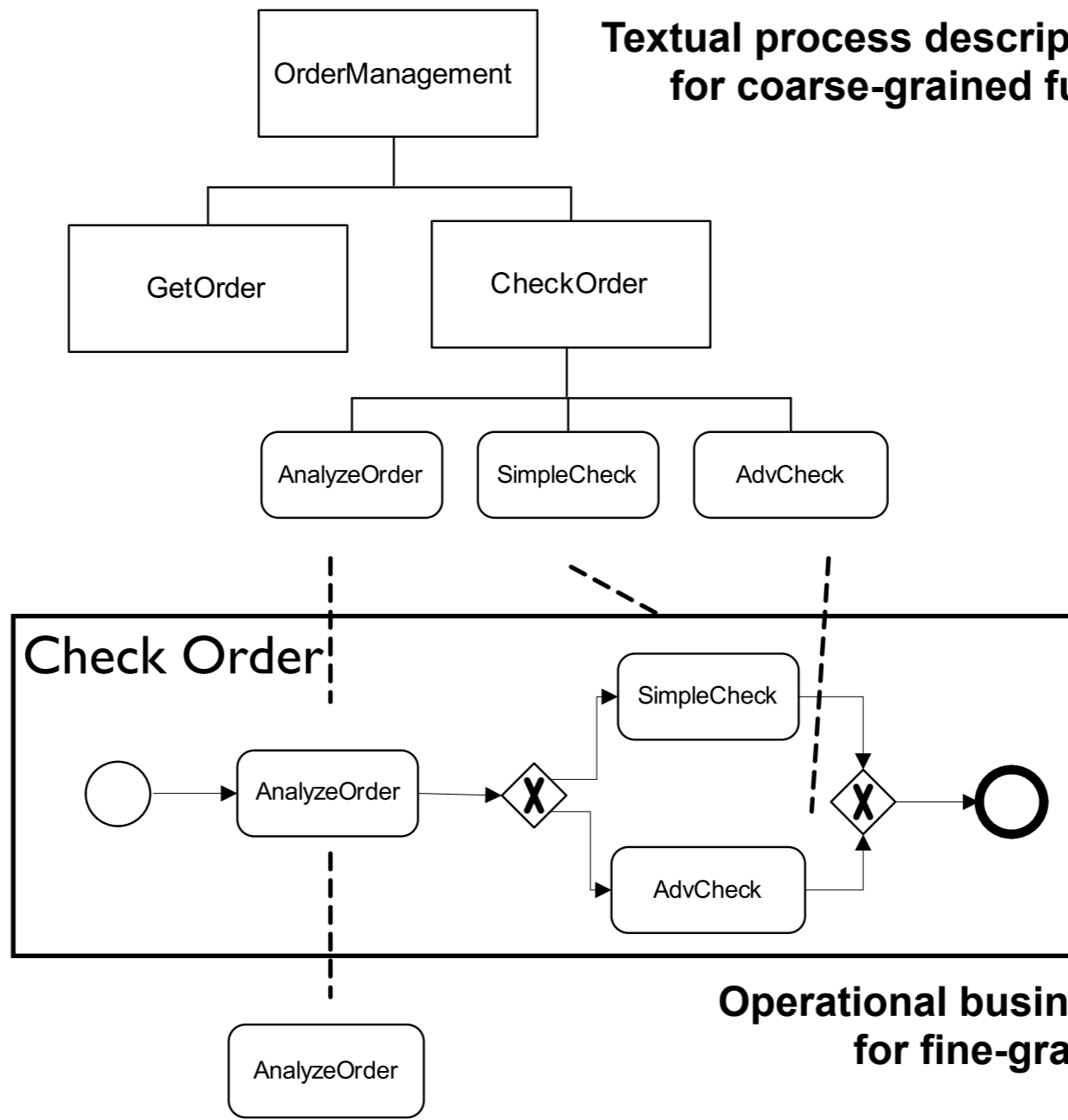
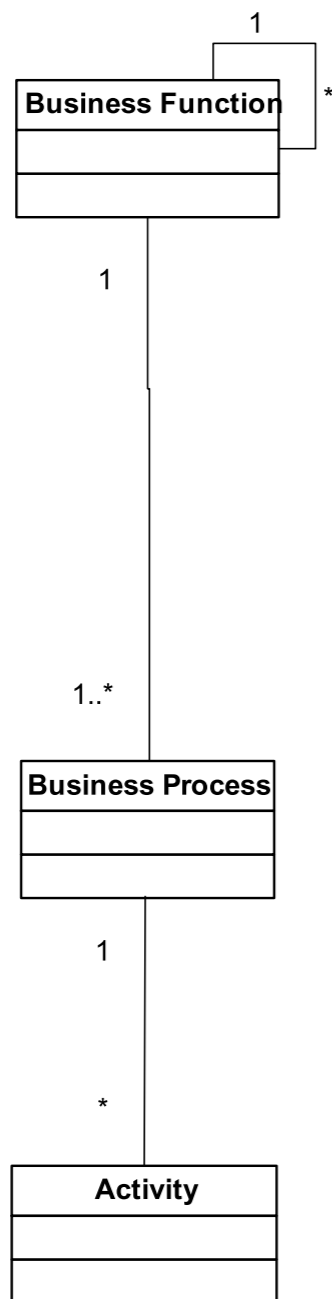


M. Weske: Business Process Management,  
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**Functions at finest granularity level  
are called activities  
(rounded boxes)**

# Step 2: Structuring business processes

Fix execution constraints



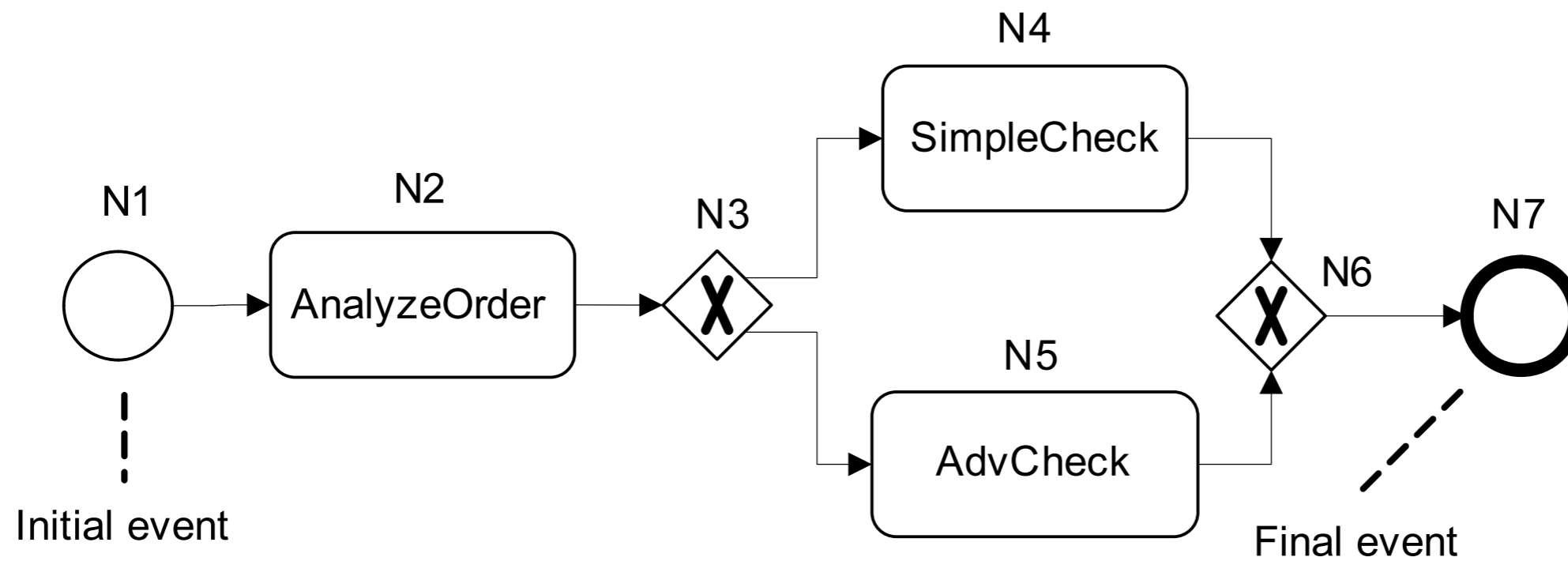
Textual process descriptions are ok for coarse-grained functions

Operational business processes are ok for fine-grained functions

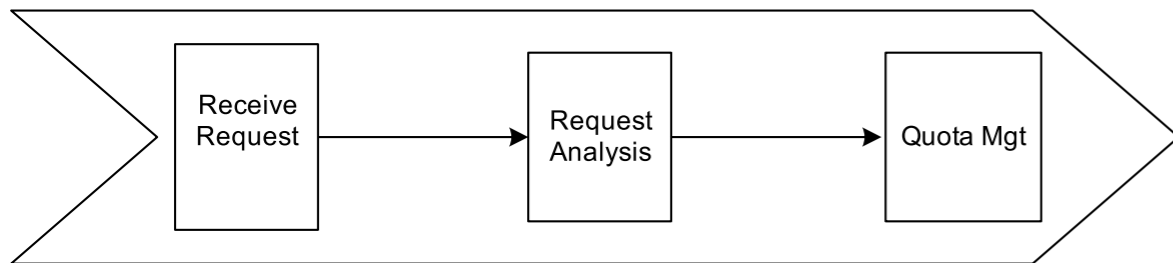
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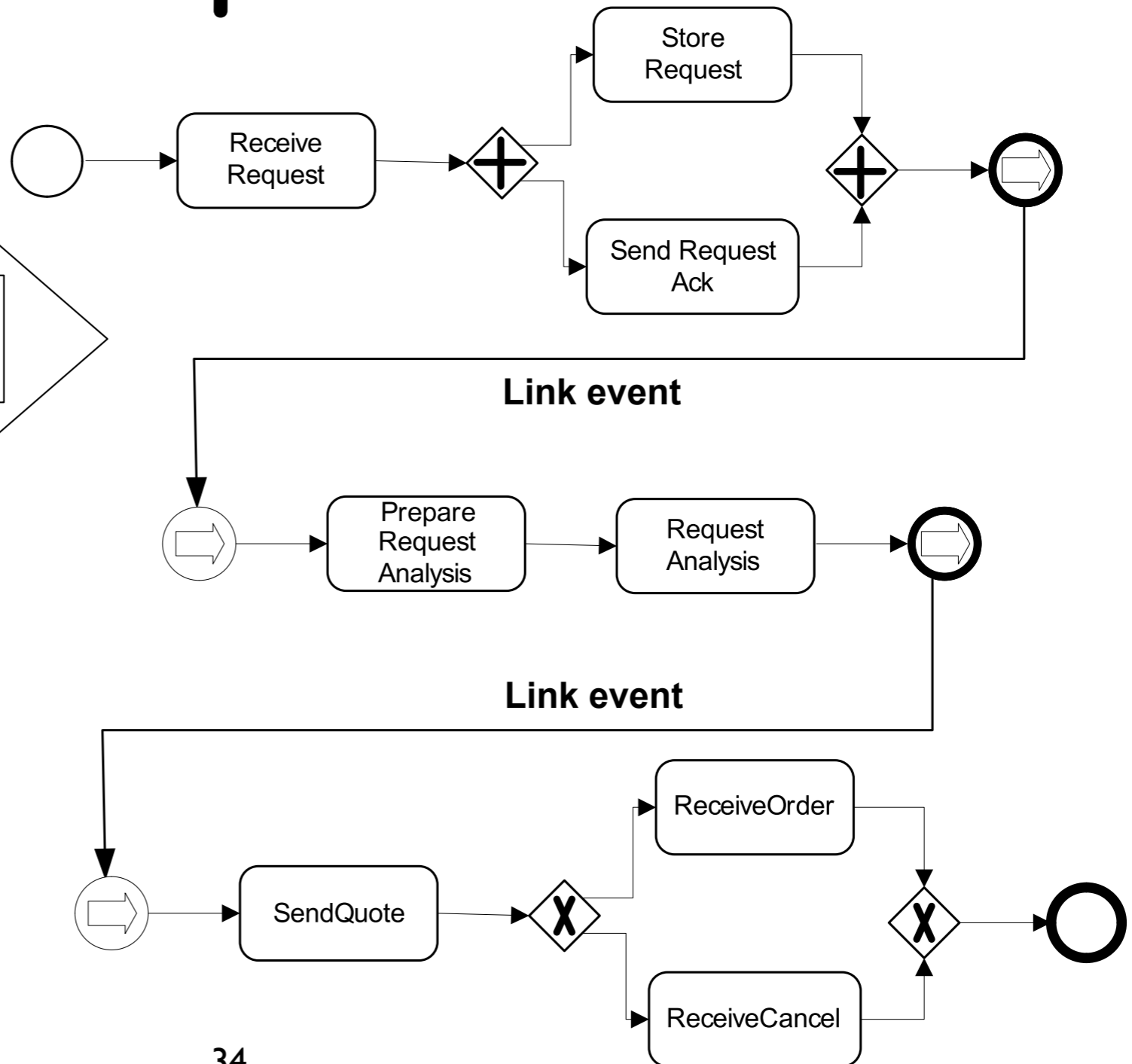
# Start event / End event



# Step 3: Related business processes

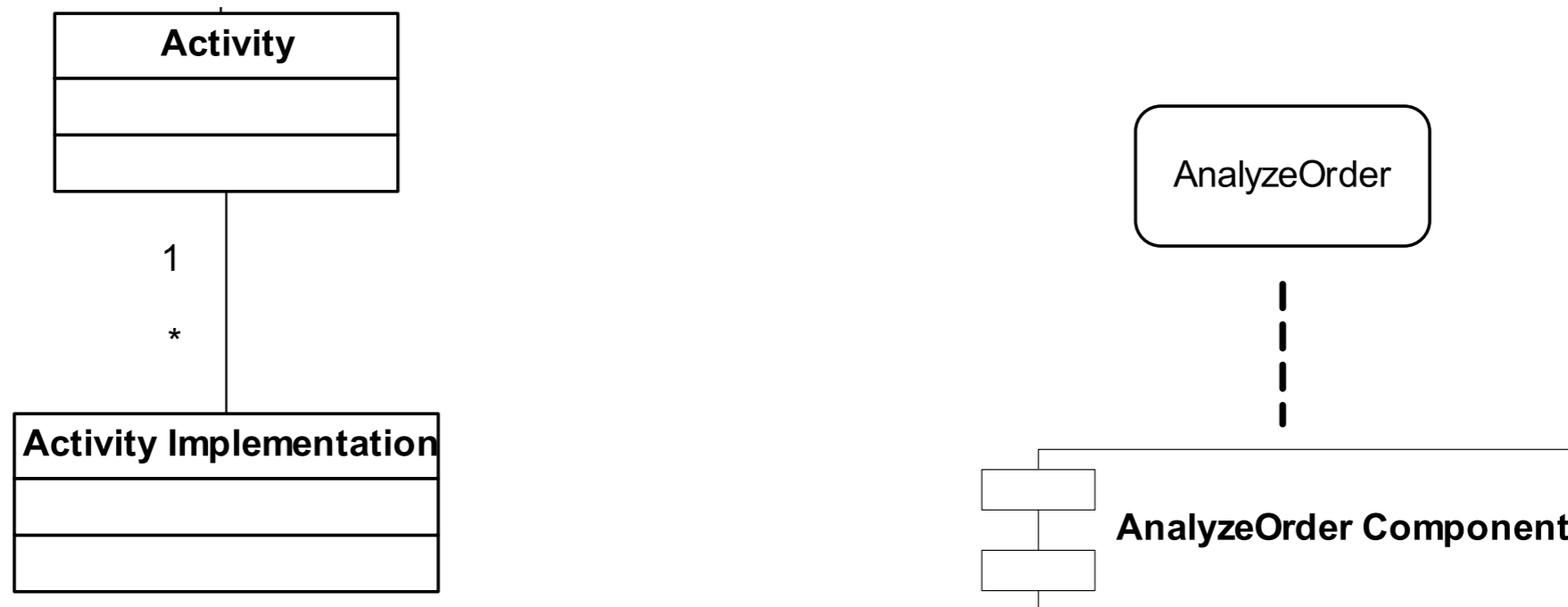


**Value chain with related, high level functions**



**The end event of one process can trigger the start event of another process**

# Step 4: Activity implementation

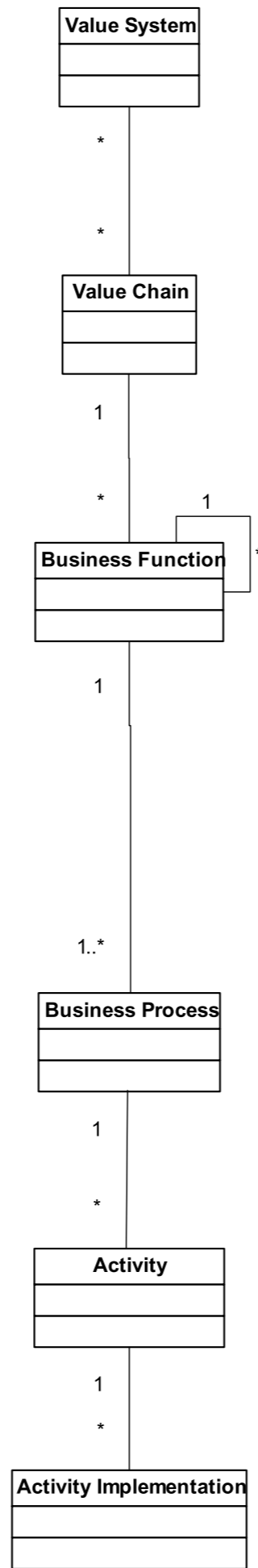


**Activities are functions at the finest granularity**

**They are the building blocks of operational business processes  
(but sometimes activity implementation can be provided by knowledge worker)**

# From value system

...



...

# to implementation

