Business Processes Modelling
MPB (6 cfu, 295AA)

Roberto Bruni

http://www.di.unipi.it/~bruni
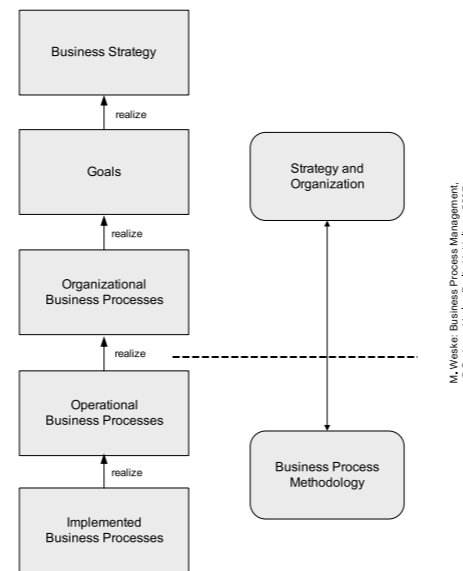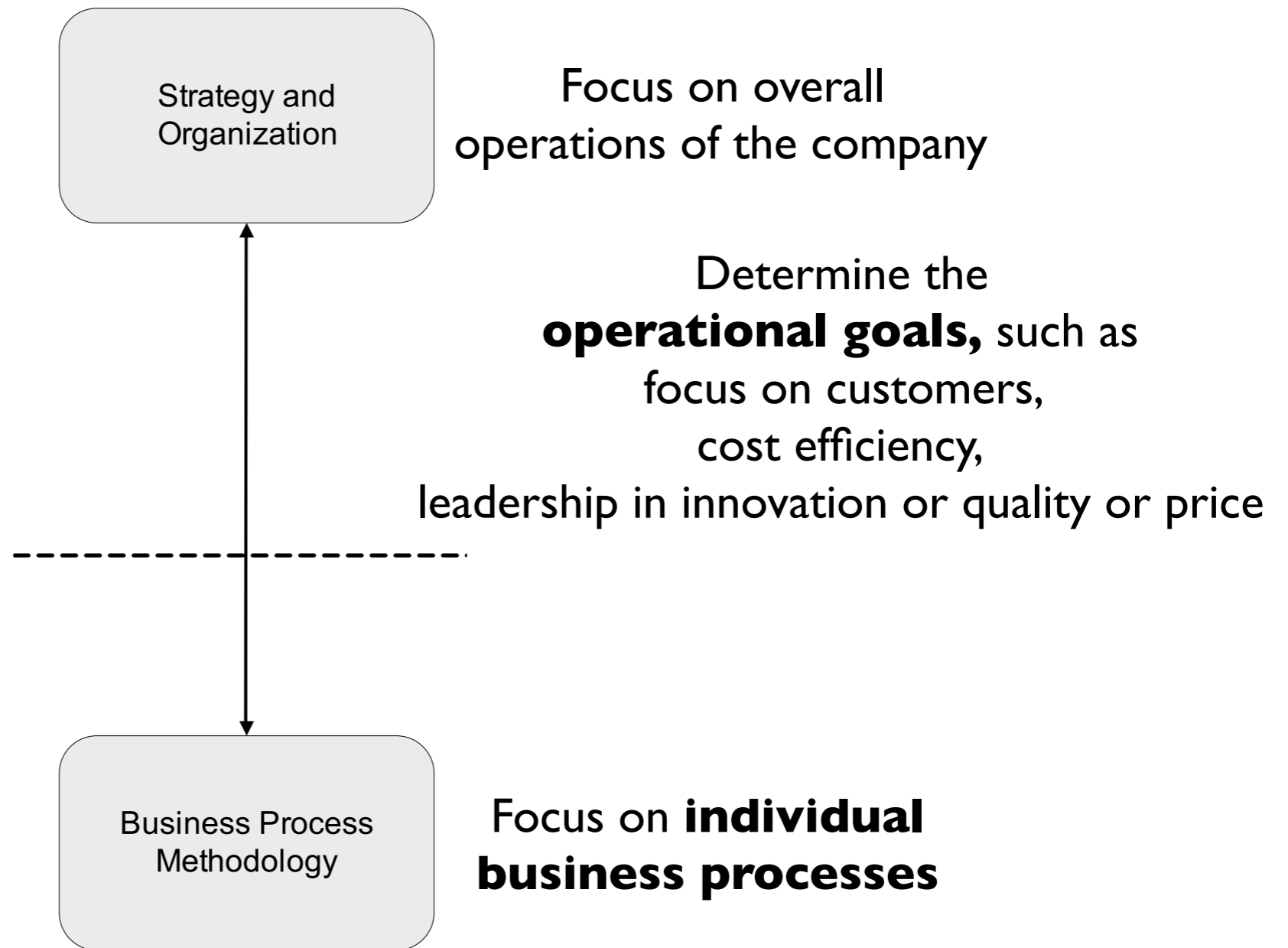
05 - Methodology

Objective

Coarse-grained methodology for developing business process management solutions
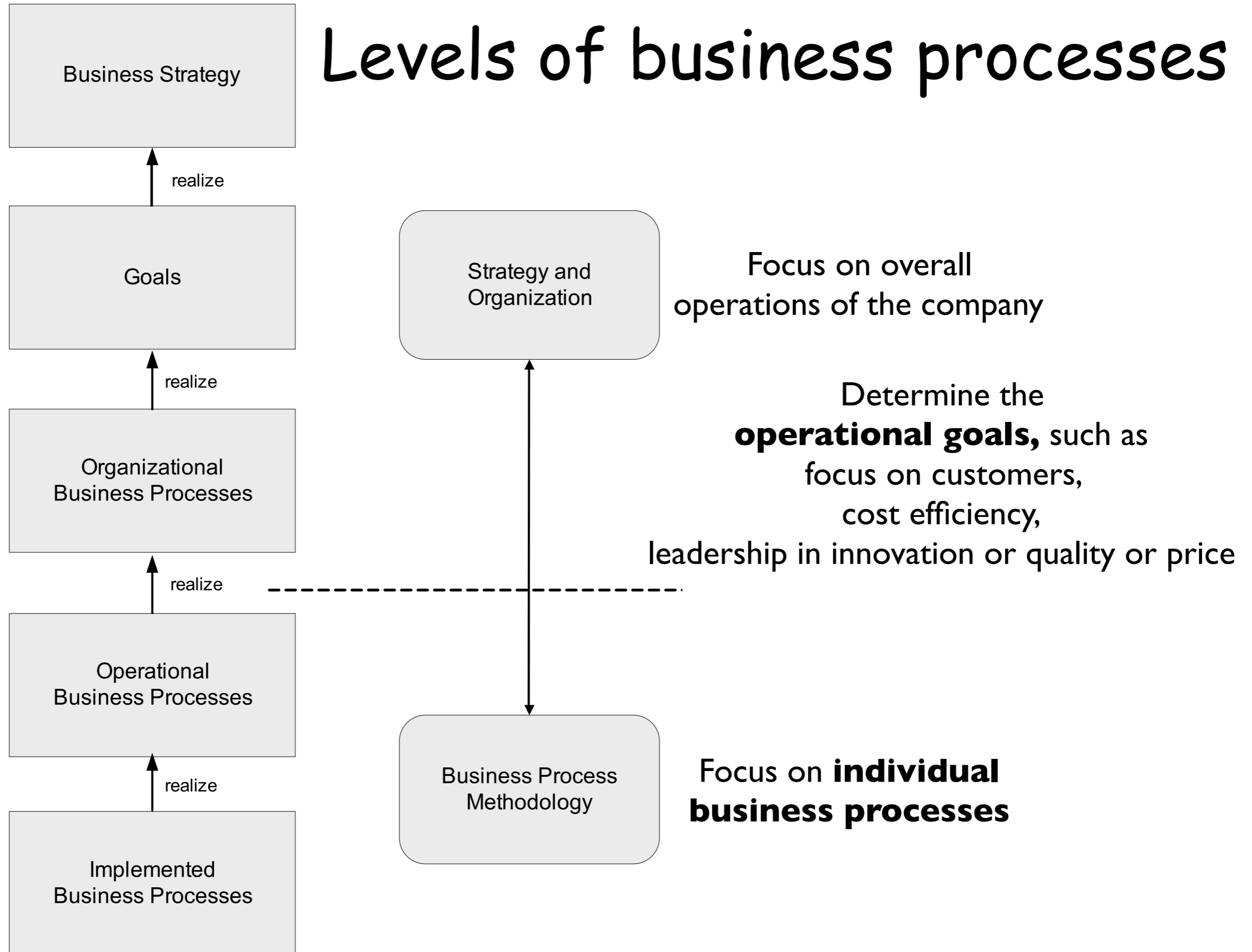
Guidelines for process designers to plan and conduct business process management projects

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

Levels of business processes

Strategy and Organization

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

Business Process Methodology

Focus on **individual 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

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

Business Process Methodology

Focus on **individual business processes**

Levels of business processes

Business Strategy	**long-term company strategies**

determines ↓   ↑ realize

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.
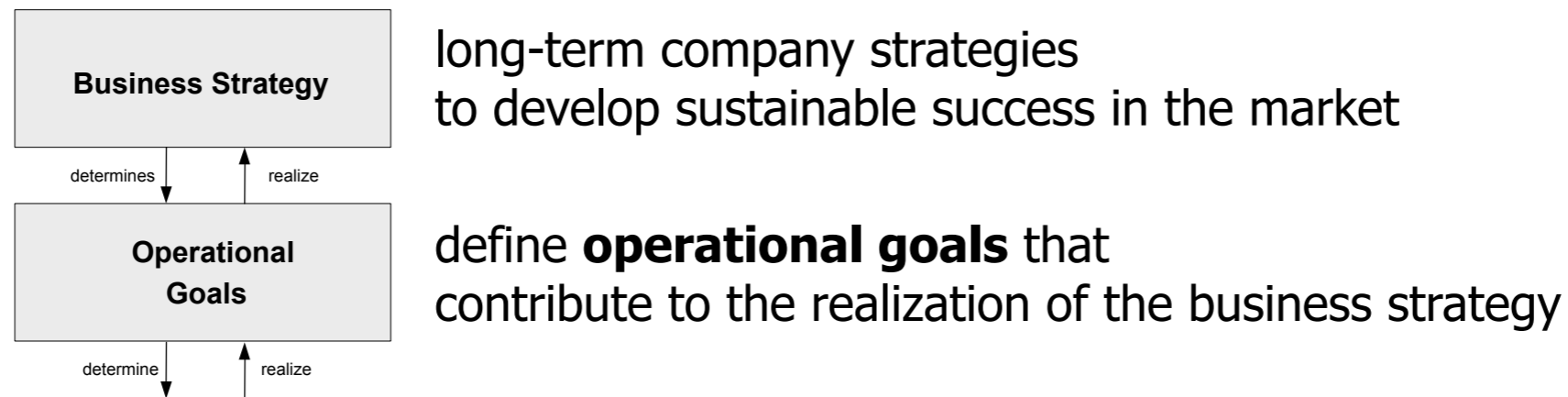
Business strategies

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

Business Strategy

determines ↓   ↑ realize

Operational Goals

determine ↓   ↑ realize

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

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

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

Business Strategy

determines ← *realize*

Operational Goals

determine ← *realize*

Organizational Business Processes

determine ← *realize*

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

M. Weske: Business Process Management,
© Springer-Verlag Berlin Heidelberg 2007

12

Organizational process

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

Process Name: Product Development Process	**Responsible Process Manager:** Dr. Myers
From: Requirements **To:** Rollout	**Type:** Development Project
Process Inputs: Requirements Document, Project Plan, Budget Plan, Prototyps	**Supplier Processes:** Product Planning Process, Innovation Process
Process Results: Integrated and completely tested innovative product with complete documentation	**Customer Processes:** 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
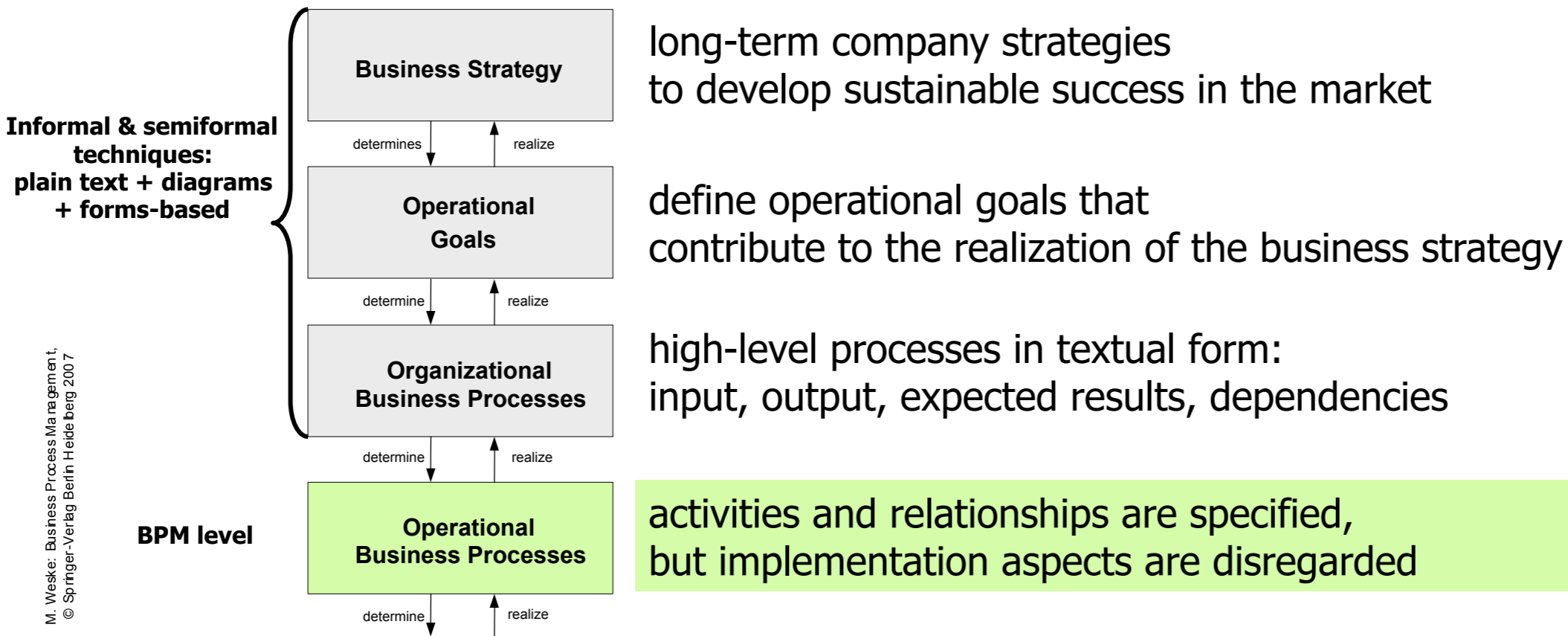and skilled enough

Orchestration!

Inter-organizational process

Business-to-business process
(multiple organizations)

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

Choreographies!

Levels of business processes

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

BPM level

Business Strategy

determines / *realize*

Operational Goals

determine / *realize*

Organizational Business Processes

determine / *realize*

Operational Business Processes

determine / *realize*

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

activities and relationships are specified,
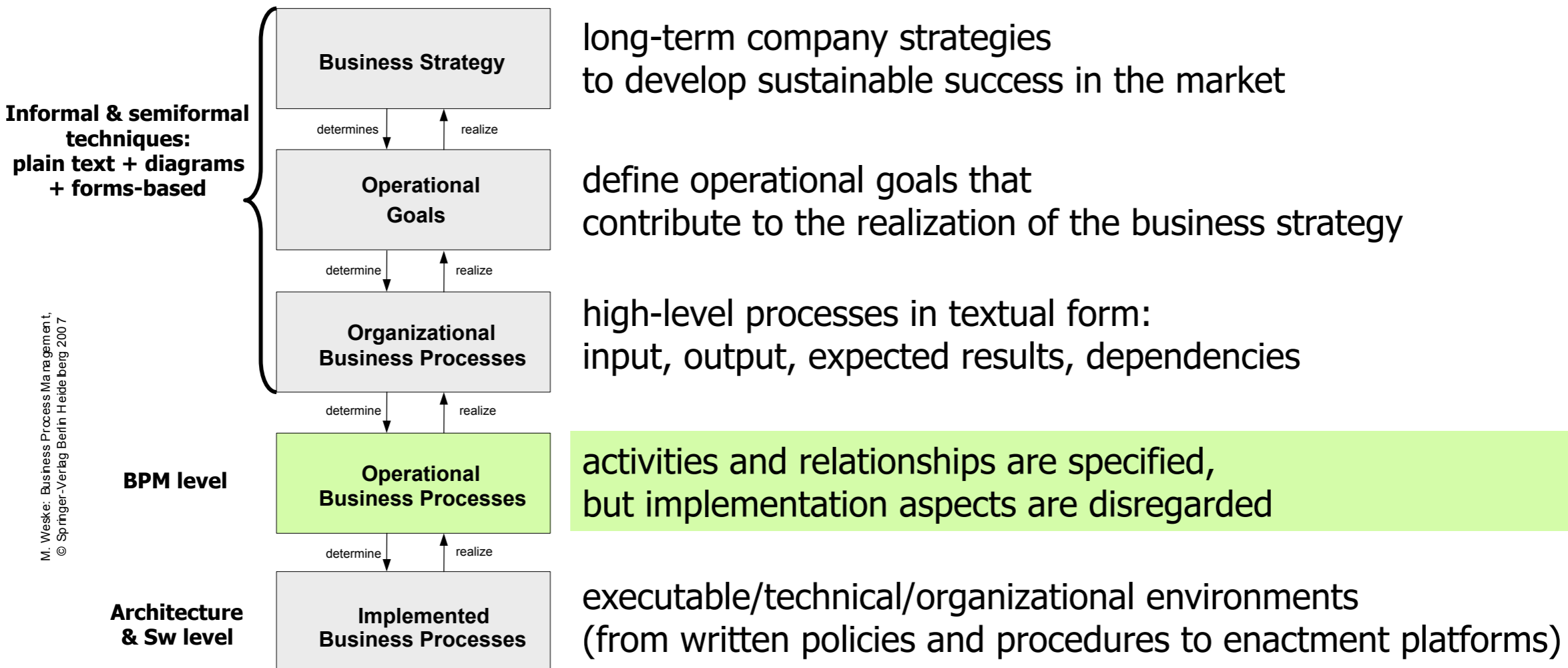but implementation aspects are disregarded

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

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

Business Strategy

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

determines / realize

Operational Goals

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

determine / realize

Organizational Business Processes

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

determine / realize

BPM level

Operational Business Processes

activities and relationships are specified,
but implementation aspects are disregarded

determine / realize

Architecture & Sw level

Implemented Business Processes

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

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

Value System

Supplier Value Chains → Enterprise E → Channel Value Chains

Value Chain

Enterprise E

Business Function

Operations

Marketing and Sales

OrderManagement

GetOrder

CheckOrder

AnalyzeOrder

SimpleCheck

AdvCheck

M. Weske: Business Process Management,
© Springer-Verlag Berlin Heidelberg 2007
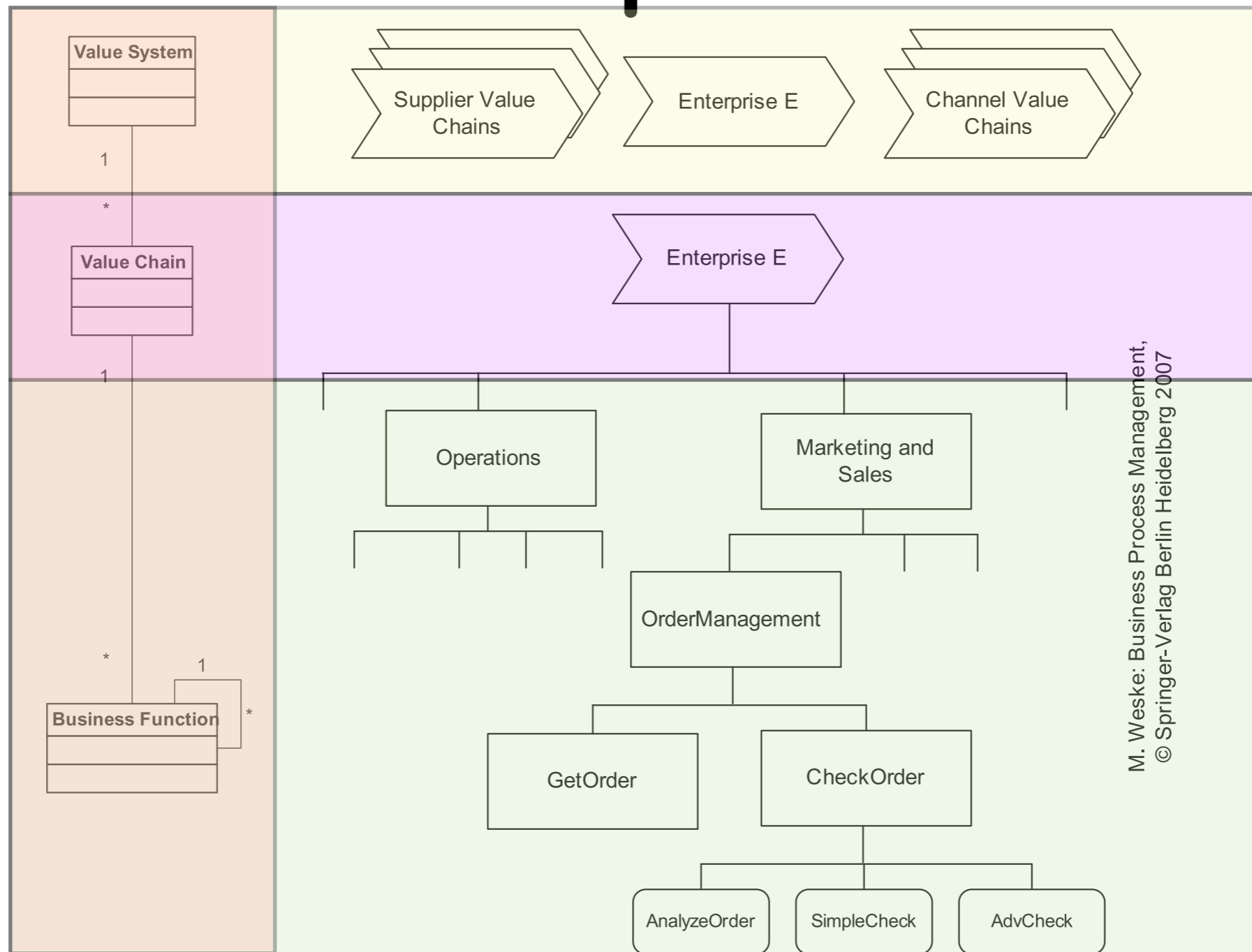
Business functions: activities
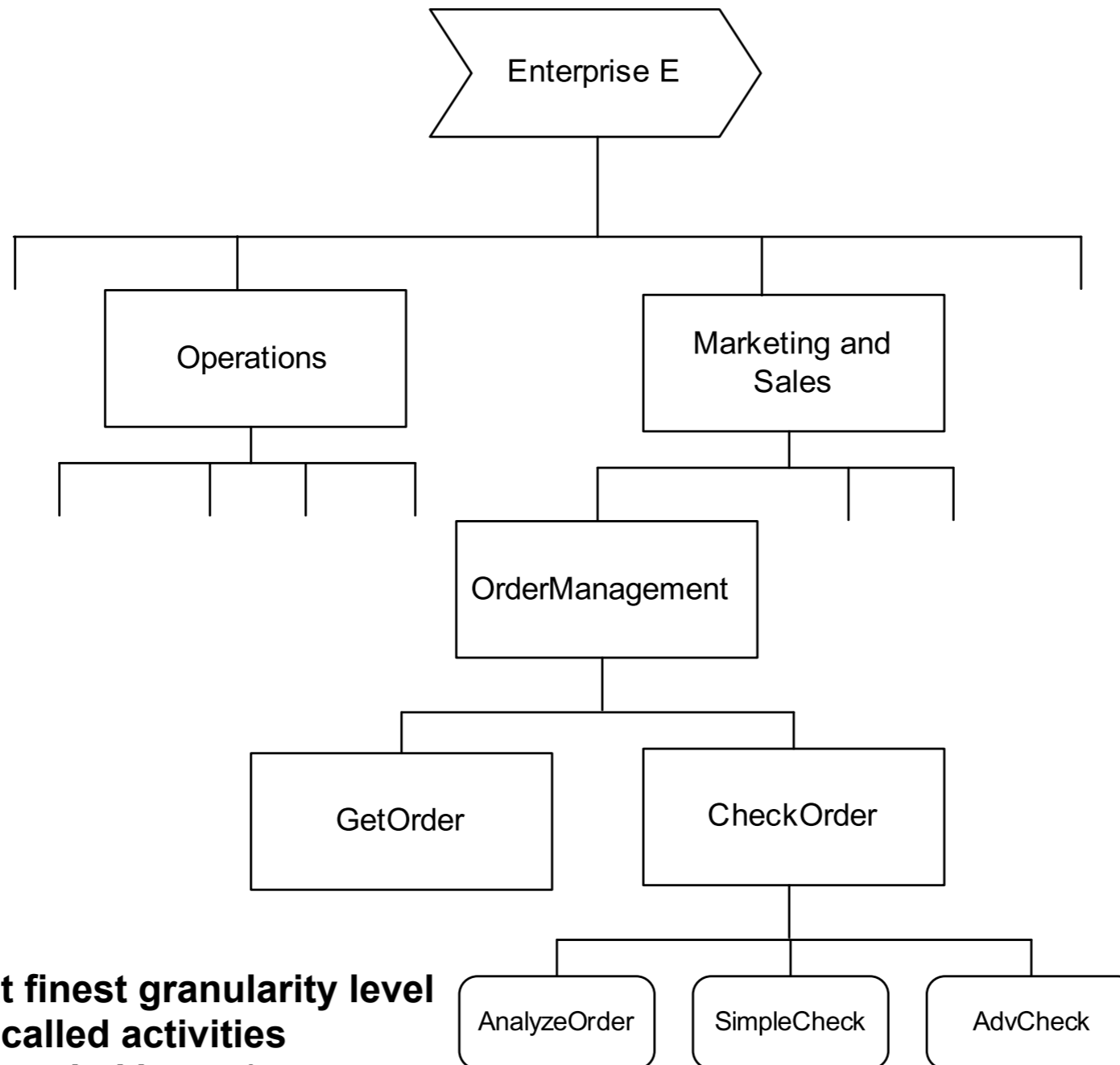
Enterprise E

Operations

Marketing and Sales

OrderManagement

GetOrder

CheckOrder

AnalyzeOrder

SimpleCheck

AdvCheck

**Functions at finest granularity level
are called activities
(rounded boxes)**
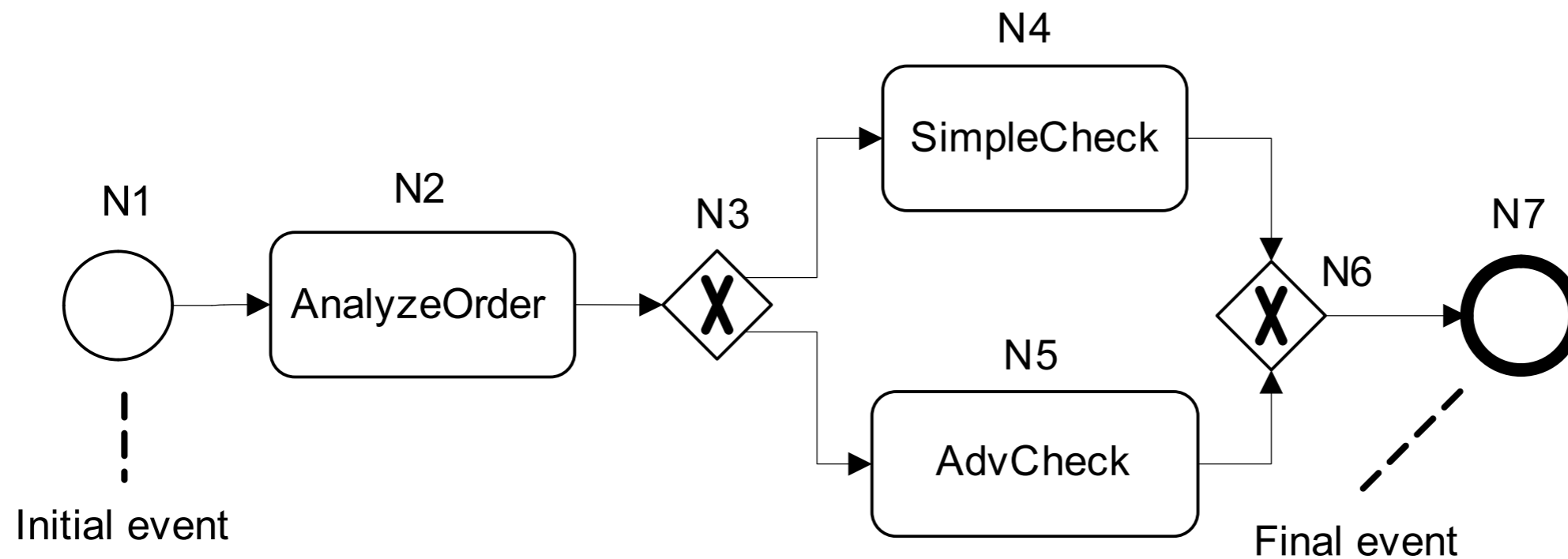
Step 2: Structuring business processes
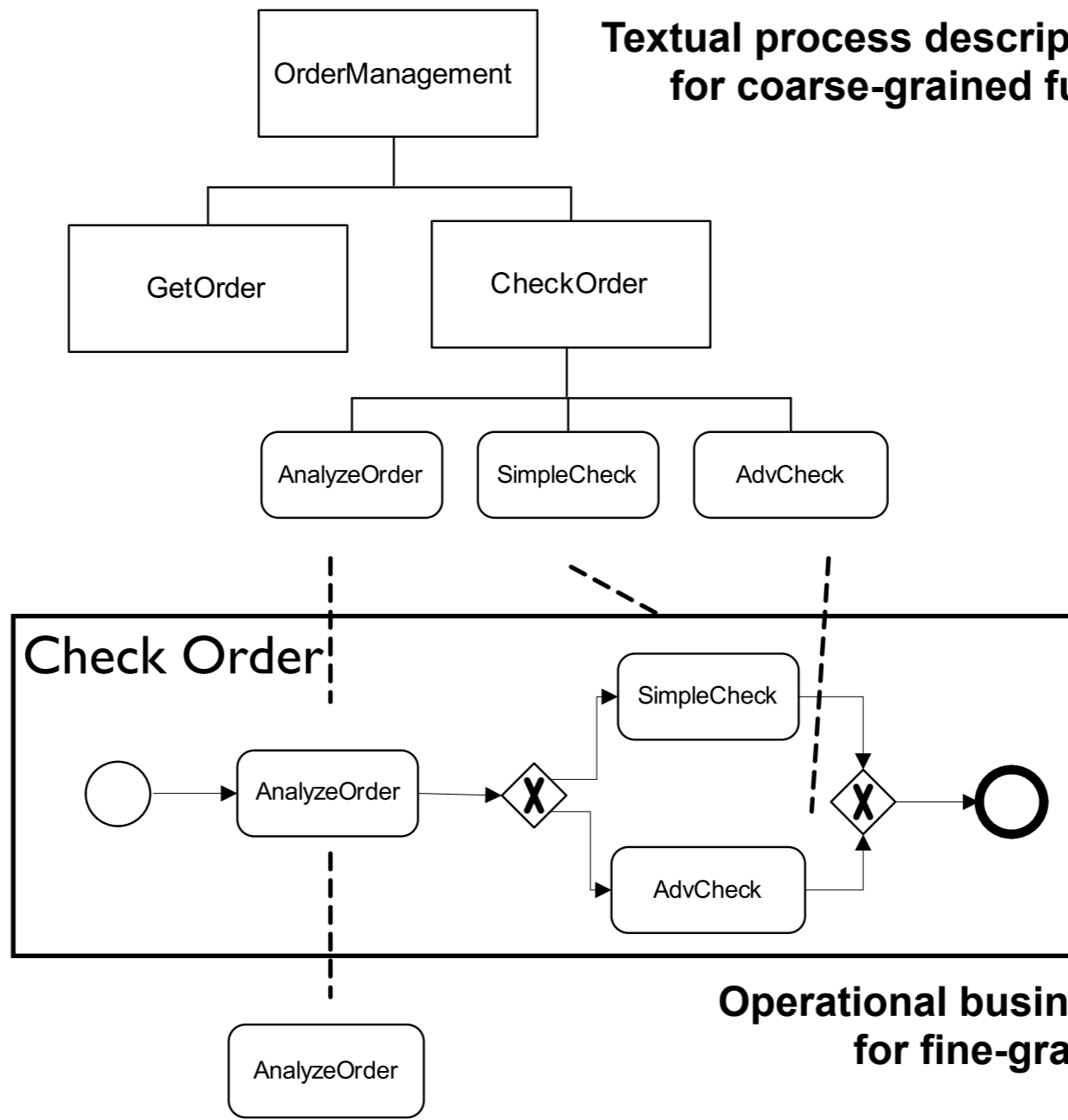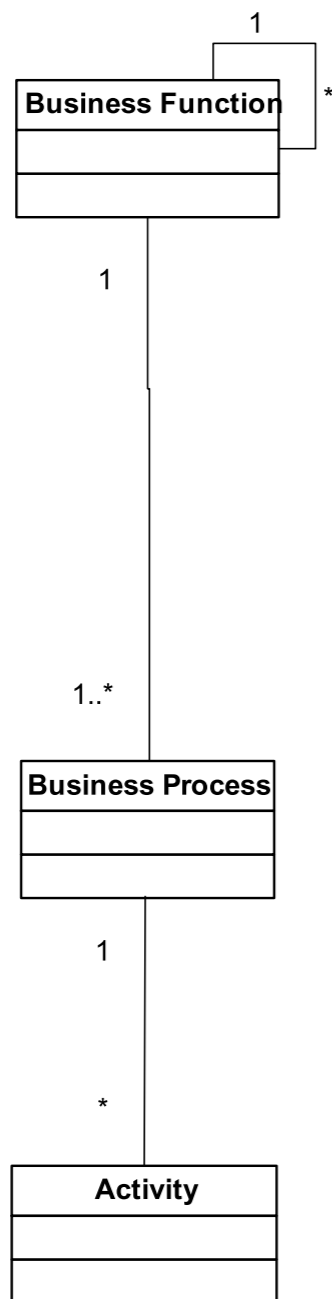
Textual process descriptions are ok for coarse-grained functions
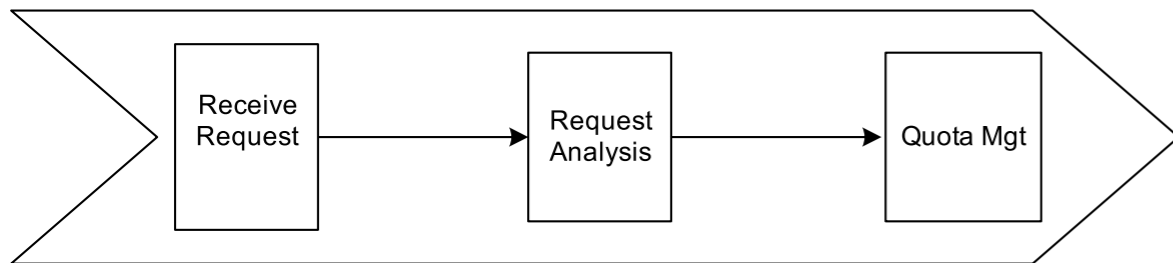
Fix execution constraints

Operational business processes are ok for fine-grained functions

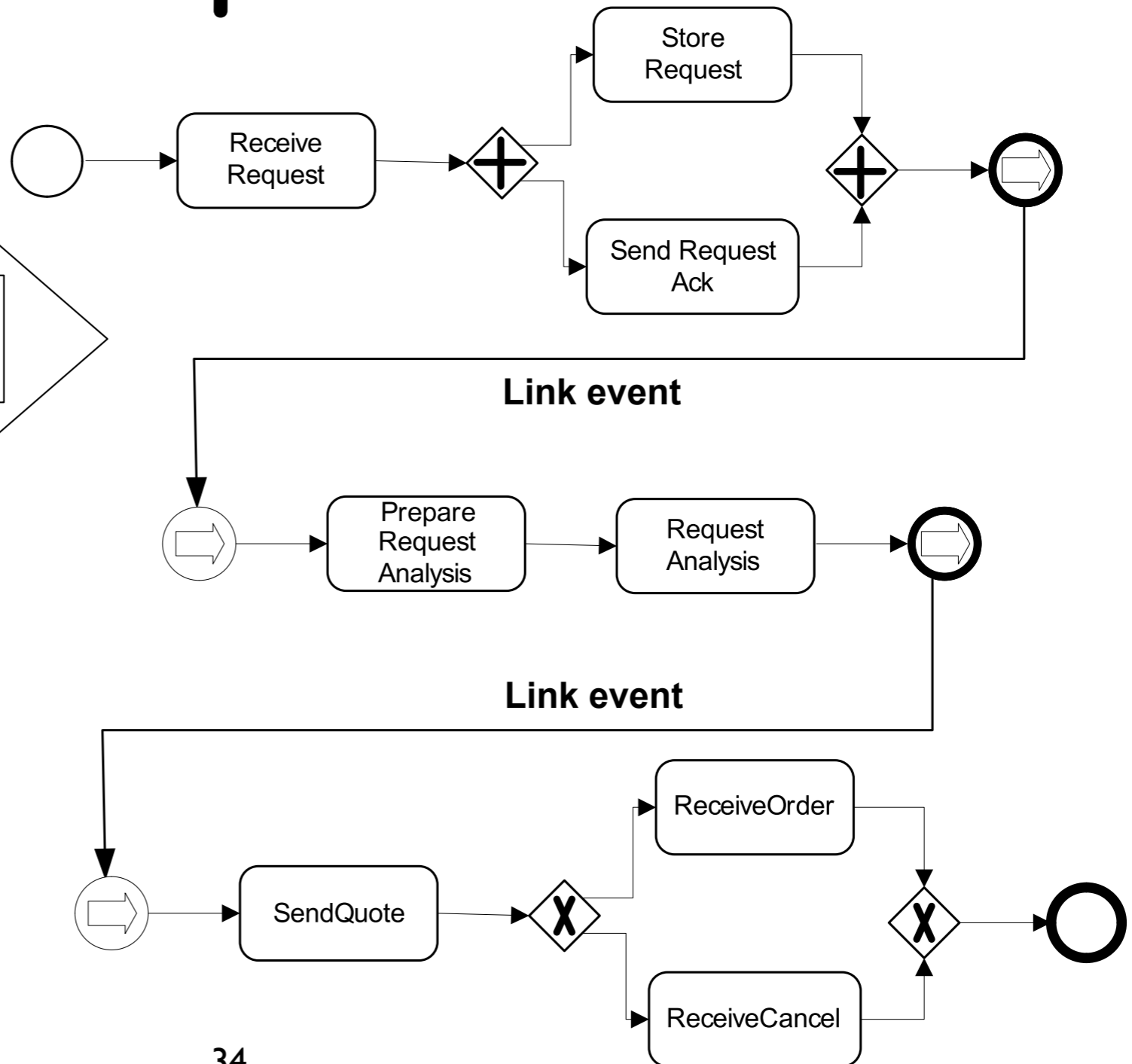M. Weske: Business Process Management, © Springer-Verlag Berlin Heidelberg 2007

Start event / End event

N1 — Initial event
N2 — AnalyzeOrder
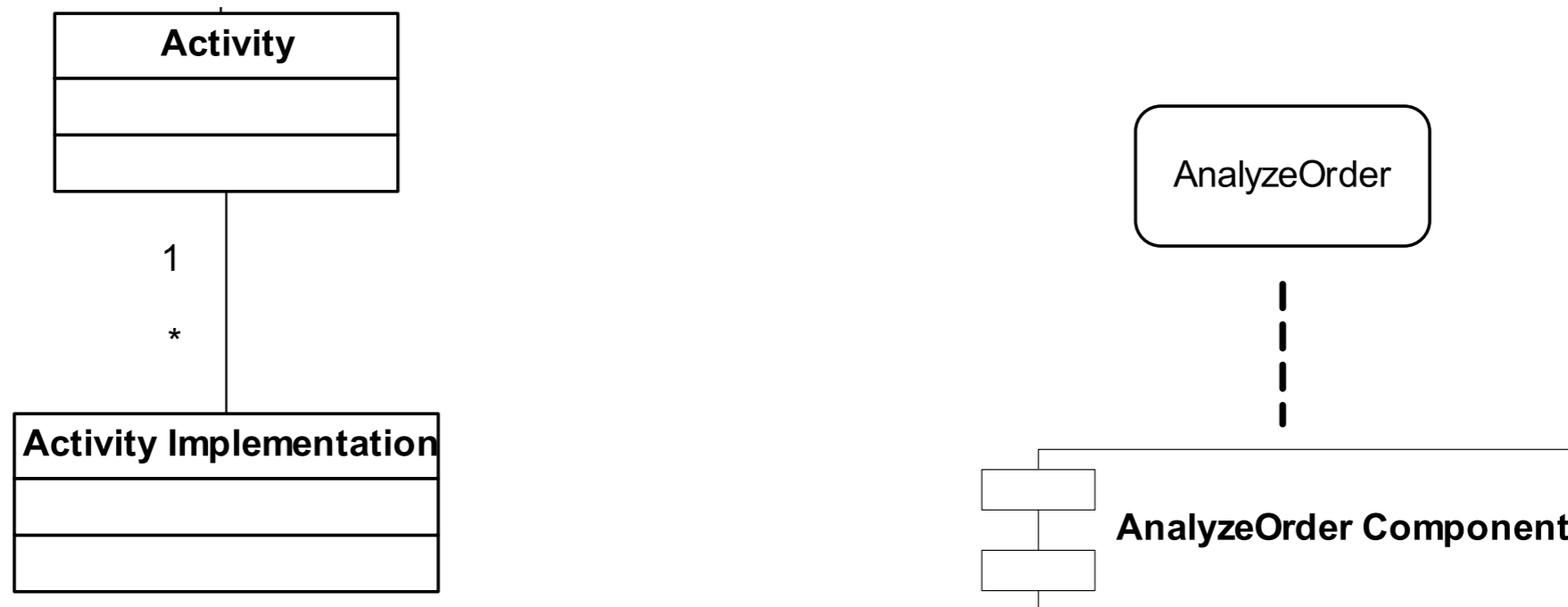N3
N4 — SimpleCheck
N5 — AdvCheck
N6
N7 — Final event

Step 3: Related business processes

Store Request

Receive Request

Send Request Ack

Link event

Receive Request → Request Analysis → Quota Mgt

Value chain with related, high level functions

Prepare Request Analysis → Request Analysis

Link event

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

SendQuote → ReceiveOrder → ReceiveCancel

34

Step 4: Activity implementation

```
┌─────────────────────────┐
│        Activity         │
├─────────────────────────┤
│                         │
├─────────────────────────┤
│                         │
└─────────────────────────┘
            │
            │ 1
            │
            │ *
┌─────────────────────────┐
│ Activity Implementation │
├─────────────────────────┤
│                         │
├─────────────────────────┤
│                         │
└─────────────────────────┘
```

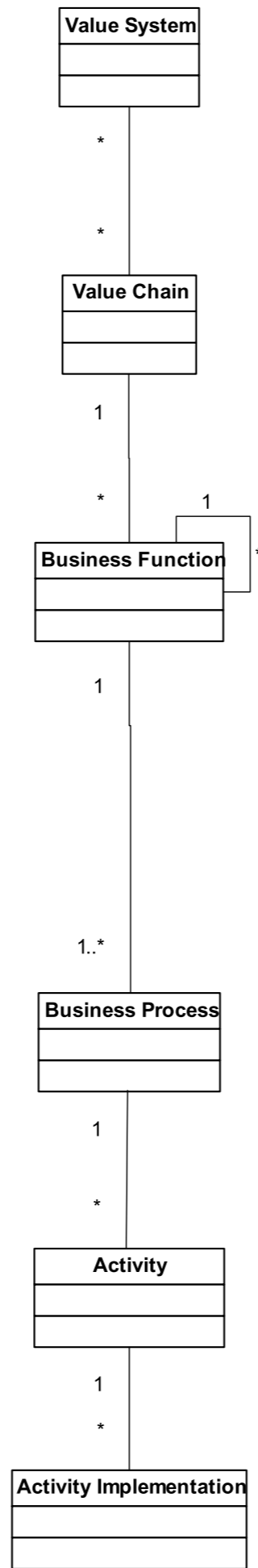AnalyzeOrder

AnalyzeOrder Component

Activities are functions at the finest granularity

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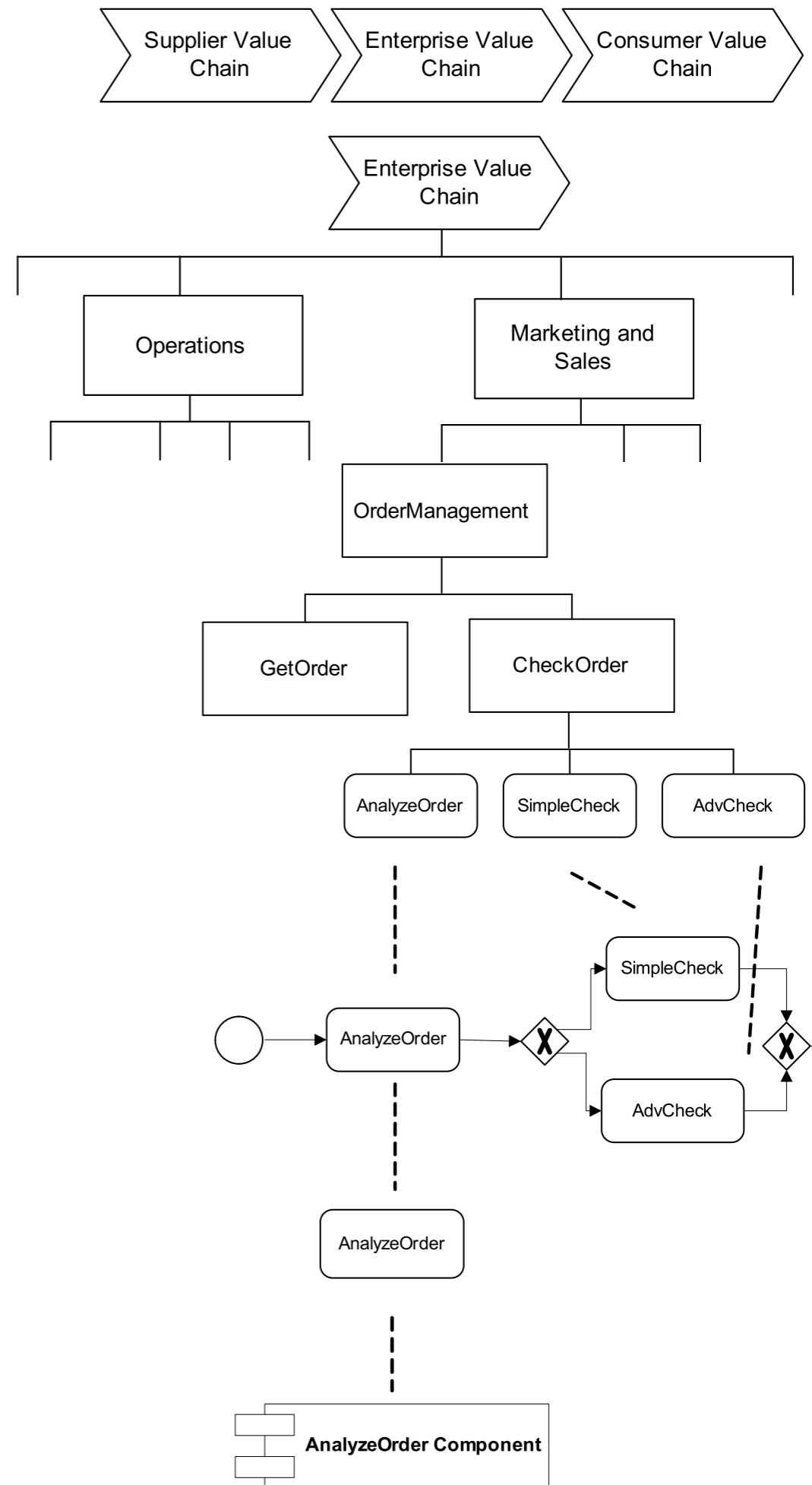**(but sometimes activity implementation can be provided by knowledge worker)**
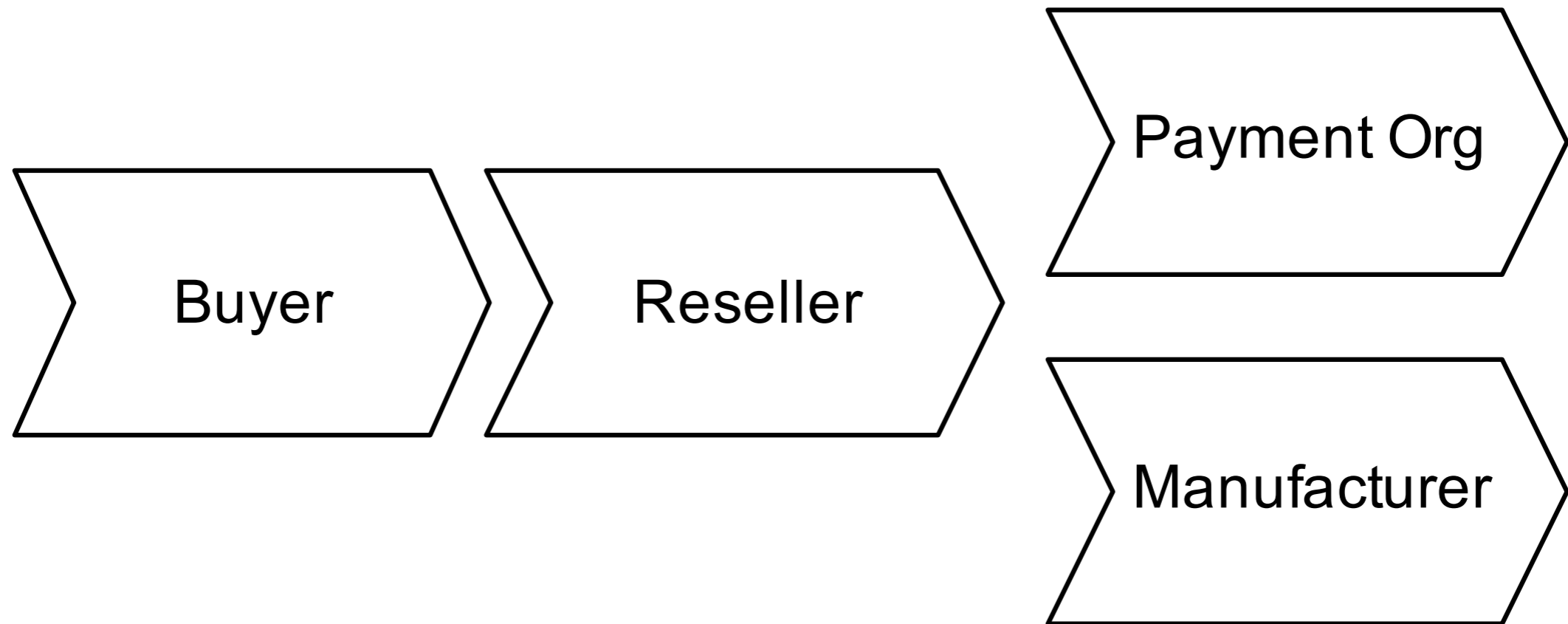
From value system

...

to implementation

Value System

*

*

Value Chain

1

*

1

Business Function

*

1

1..*

Business Process

1

*

Activity

1

*

Activity Implementation

36

Supplier Value Chain

Enterprise Value Chain

Consumer Value Chain

Enterprise Value Chain

Operations

Marketing and Sales

OrderManagement

GetOrder

CheckOrder

AnalyzeOrder

SimpleCheck

AdvCheck

AnalyzeOrder

SimpleCheck

AdvCheck

AnalyzeOrder

AnalyzeOrder Component

Business-to-business value system

Buyer

Reseller

Payment Org

Manufacturer

Business-to-business processes