Hochschule für
Technik und Wirtschaft
Dresden
University of Applied Sciences

Business Process Modeling
Geschäftsprozessmodellierung

SoSe 2017

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Prüfungsleistungen & Sonstiges

- Prüfung: APL (BGA, 40 %), MP (15 min, 60 %)
- Belegarbeit: Teilaufgaben zu jedem Praktikum, Bearbeitungszeit 7 Tage, 0-3 Punke je Aufgabe, APL Note aus Summe der Teilaufgaben

- Termine:
  - Siehe Vorlesungsverzeichnis

- Unterlagen zur Vorlesung:
  - opal.sachsen.de ➔ Zum Zugriff auf die Unterlagen zur Veranstaltung bitte zunächst für den Kurs einschreiben!

Recommended books & websites

Books:

- Jakob Freund, Praxishandbuch BPMN 2.0 , Hanser, 2014
- Martin Kütz, IT-Steuerung mit Kennzahlensystemen, dpunkt, 2006
- Jochen Göpfert, Geschäftsprozessmodellierung mit BPMN 2.0, De Gruyter Oldenbourg , 2014

Websites:

- www.bpmn.org
- www.kurze-prozesse.org

Objectives

What?

- Get used to state of the art Business Process Modeling and Management
- Understand the techniques and standards to analyze and model business processes
- Enable you to design a business process from scratch
- Gain knowledge and experiences on managing complex business processes scenarios

How?

- Model business process w/ state of the art BPM tools
- Practical assignments
- Discuss, reflect, ask,…

Tooling

- Free ARIS Express Edition (not in scope for this lecture)
  - www.arisexpress.com
  - Free of charge
  - Limited functionality (e.g. reusing objects)

- Signavio
  - Free of charge access to professional BPM modelling tools for academics
  - You will receive an email w/ details on login creation in CW 12
  - Register with you HTW eMail address !

Outline

1. Introduction & Motivation
2. Analyzing and capturing business processes
3. Modeling Business Processes
4. Business Process Management
5. Case Management & Decision Management
6. Business Process Mining
7. Business Process Automation

1. Introduction & Motivation

1.1 Motivation

1.2 History

1.3 Terms and Definitions

1.4 Getting started w/ BPM

1.1 BPM - Motivation

DIGITAL PR-DESASTER 02.05.14

Shell verärgert Tausende Kunden mit Prämienpanne

Shell hatte seinen Kunden einen E-Book-Reader versprochen – wenn sie nur genügend tanken würden. Doch pfiffige Sparfüchse entdeckten eine Hintertür im Prämiensystem. Und zwangen Shell zum Handeln.

SHELL CLUBSMART – RIESENÄRGER WEGEN PRÄMIENAKTION

Shitstorm gegen Ölkonzern

Den E-Reader Kindle Paperwhite gab's so billig wie nie – aber der Webshop stürzte ab

Motivation

Dear Supplier,

Please find attached a copy of Purchase Order for your kind reference.

Important: Please acknowledge the receipt of this Purchase Order within 3 calendar davs from the date of this Purchase Order issued. Please either login to Portal or reply to the whole distribution list via email to acknowledge the PO.

Motivation

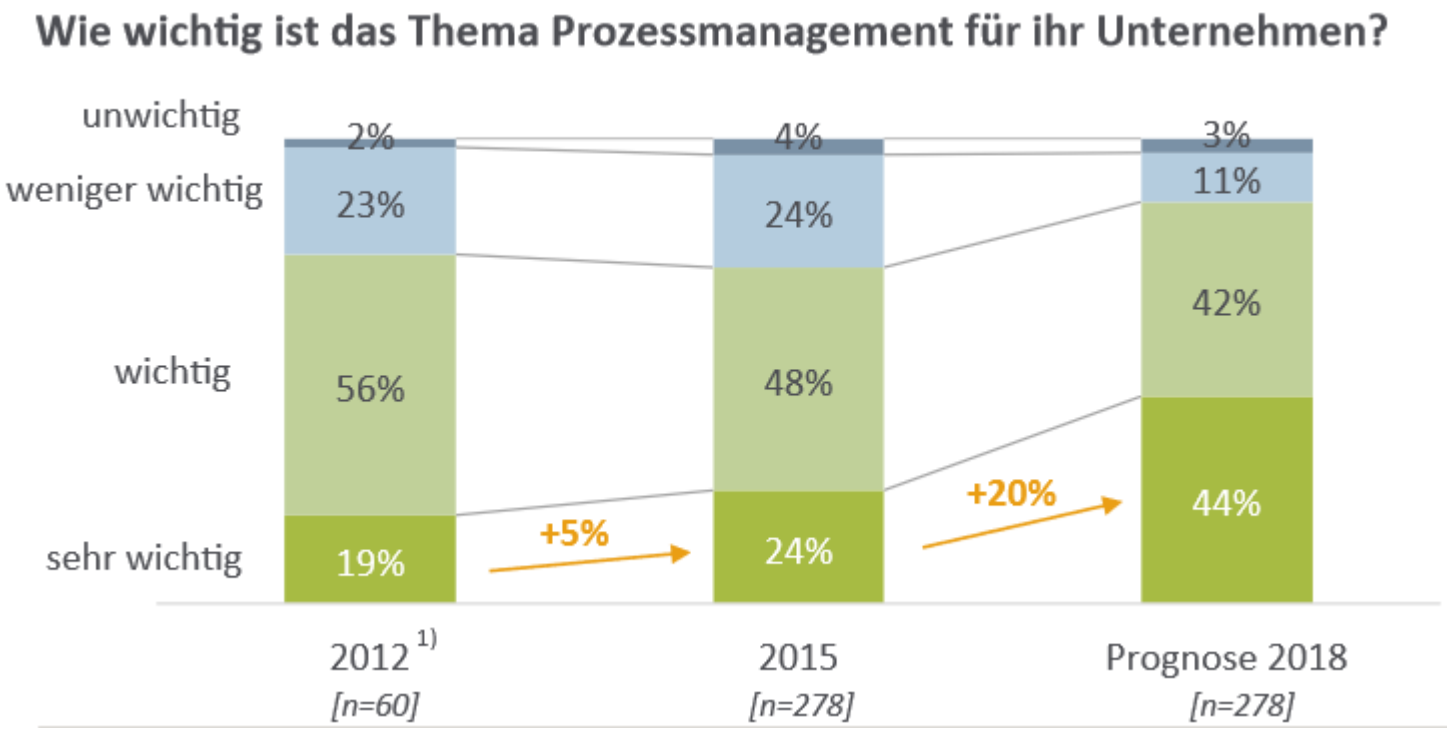
Aufgrund gefälschter Emails: Manager überweist 17 Millionen Dollar an Betrüger

Veröffentlicht am 17. Februar 2015 von Stephan Weinberger 2 Antworten

Foto: Roland Bamberger / pixelio.de

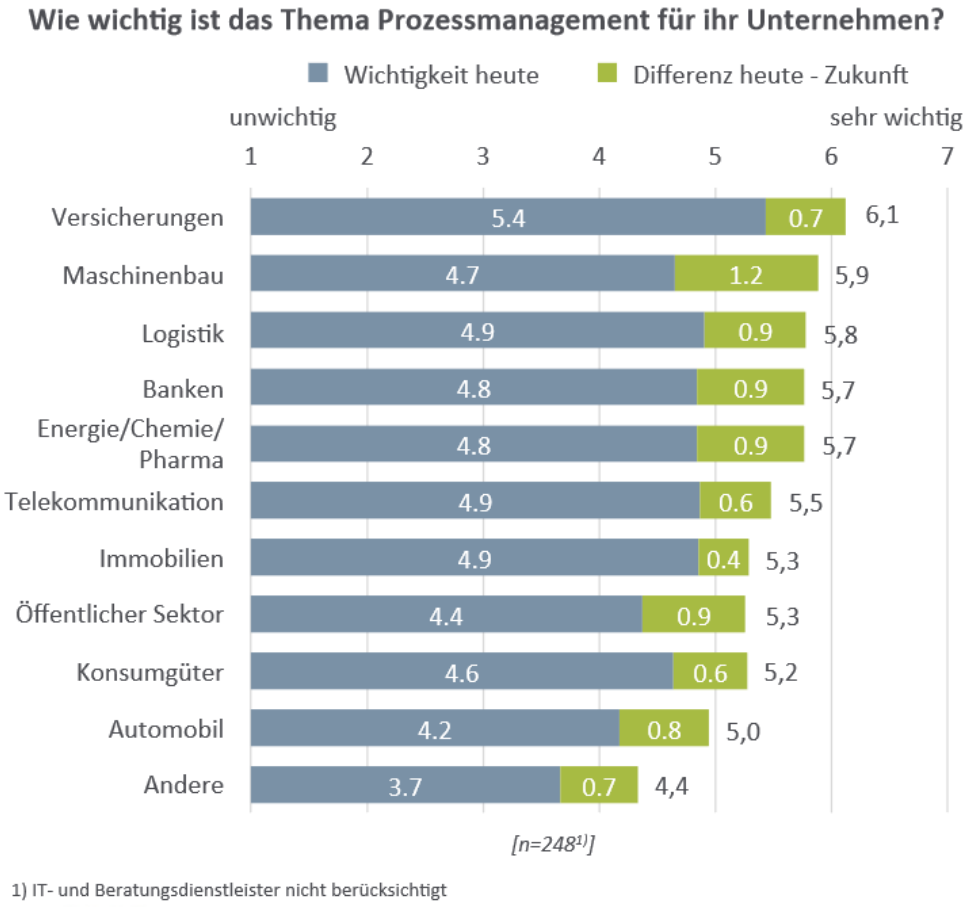
Über eine wahrlich filmreife Story berichtet der "Omaha World Herald": Aufgrund gefälschter Emails wurde ein Manager der amerikanischen Agrar-Management-Firma Scoular Co. dazu bewegt, insgesamt 17,2 Millionen Dollar (umgerechnet 15 Millionen Euro) auf ein chinesisches Bankkonto zu überweisen.

1.1 BPM – Motivation



Source: „ Business Process Management--Studie 2015”, BPM&O BearingPoint

1.1 BPM – Motivation (BPM by industry)



Source: „ Business Process Management--Studie 2015”, BPM&O BearingPoint

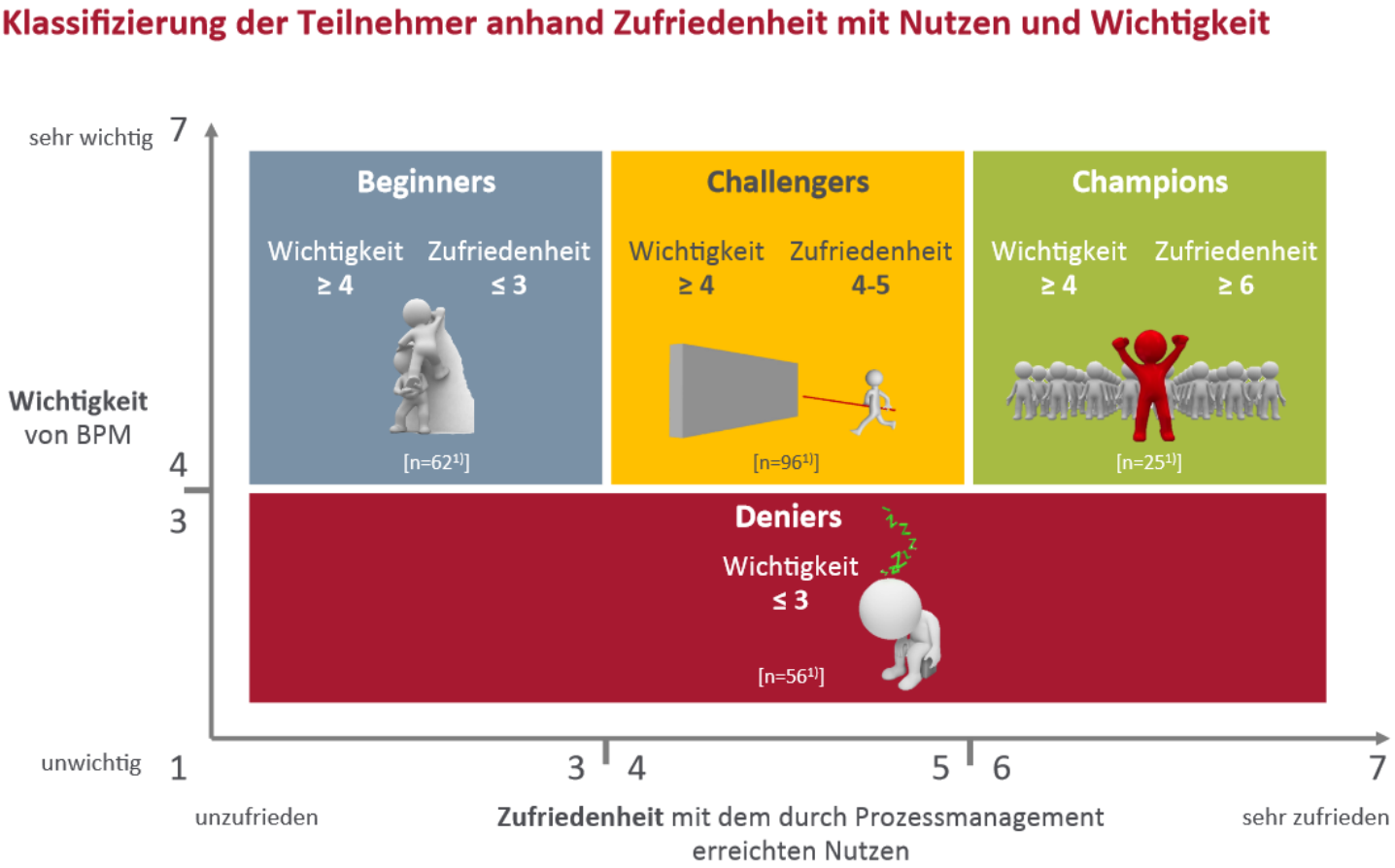
1.1 BPM – Motivation (BPM objectives)

- Die Top 3 Ziele sind die Erhöhung der Transparenz **(78%)**, Einsparung von Kosten **(68%)** und Harmonisierung der Prozesslandschaft **(67%)**
- Die Ziele einer Verbesserung der Qualität **(65%)** und einer Steigerung der Kundenzufriedenheit **(62%)** werden ebenfalls von der Mehrzahl verfolgt
- Etwa die Hälfte der Teilnehmer **(52%)** hat das übergreifende Ziel, eine prozessorientierte Organisation zu entwickeln

Die mit Prozessmanagement verfolgten Ziele gehen weit über Kostensenkungen und höhere Transparenz hinaus

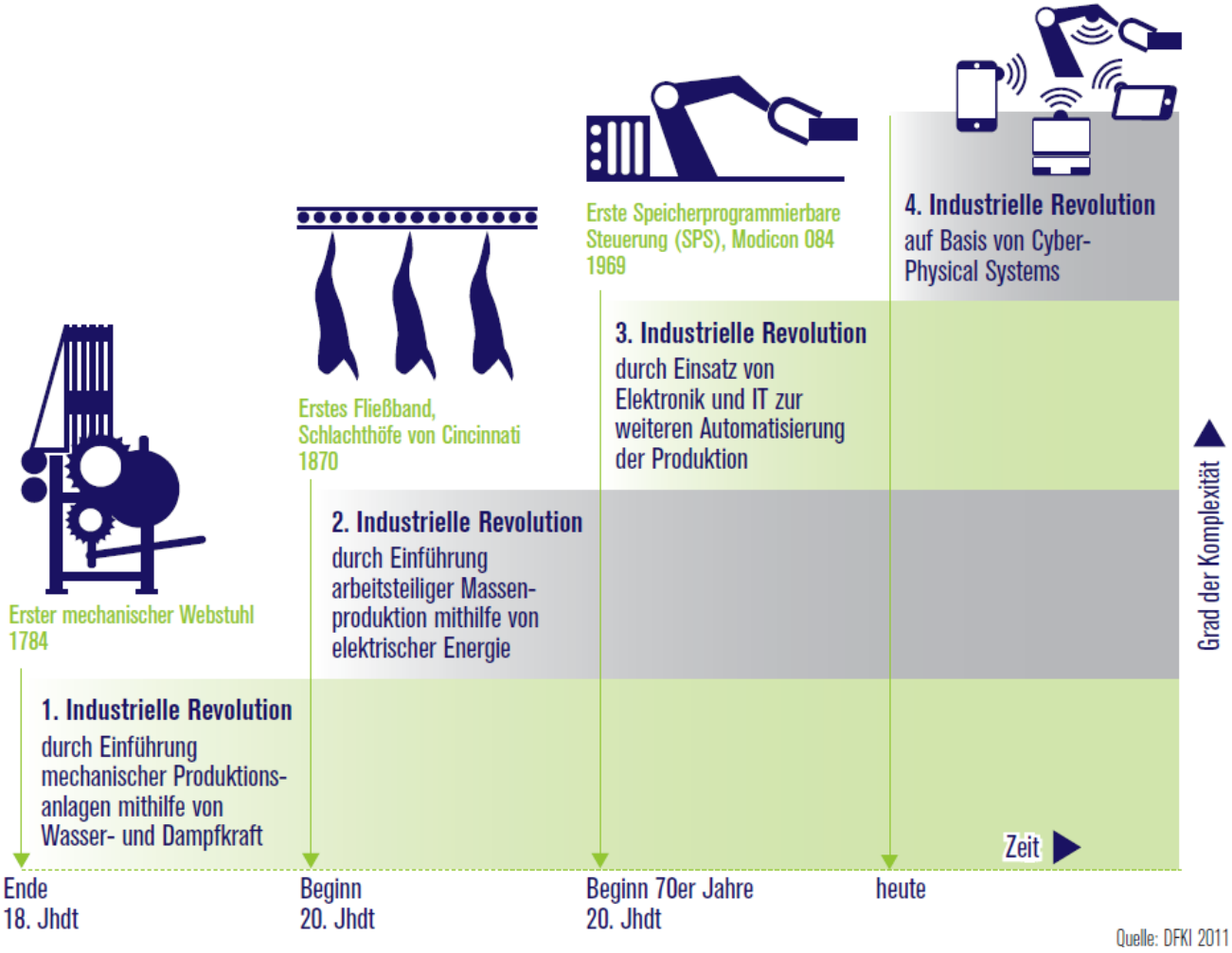
Source: „ Business Process Management--Studie 2015”, BPM&O BearingPoint

1.1 BPM – Motivation

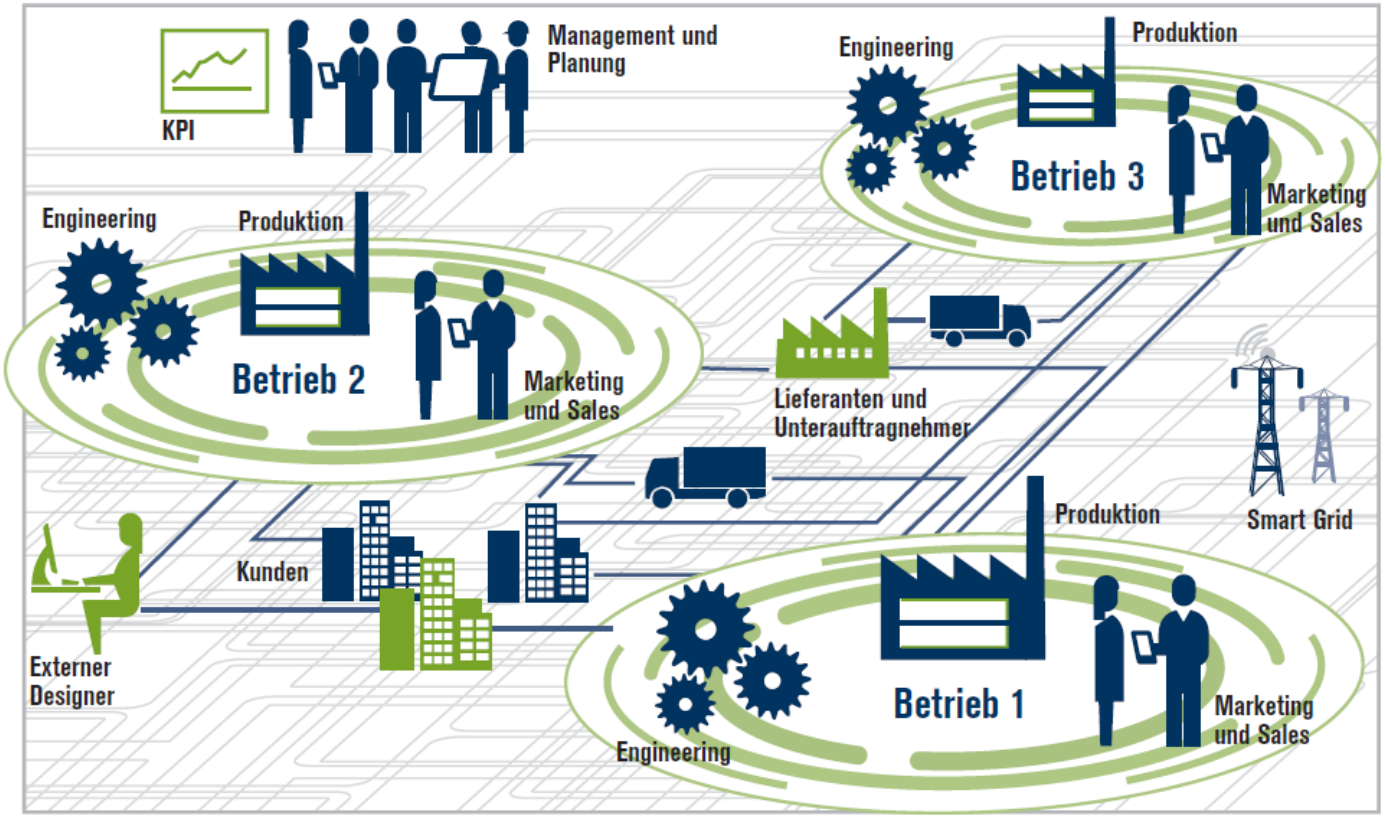


Source: „ Business Process Management--Studie 2015”, BPM&O BearingPoint

1.1 Industrie 4.0 – Industrielle Revolution



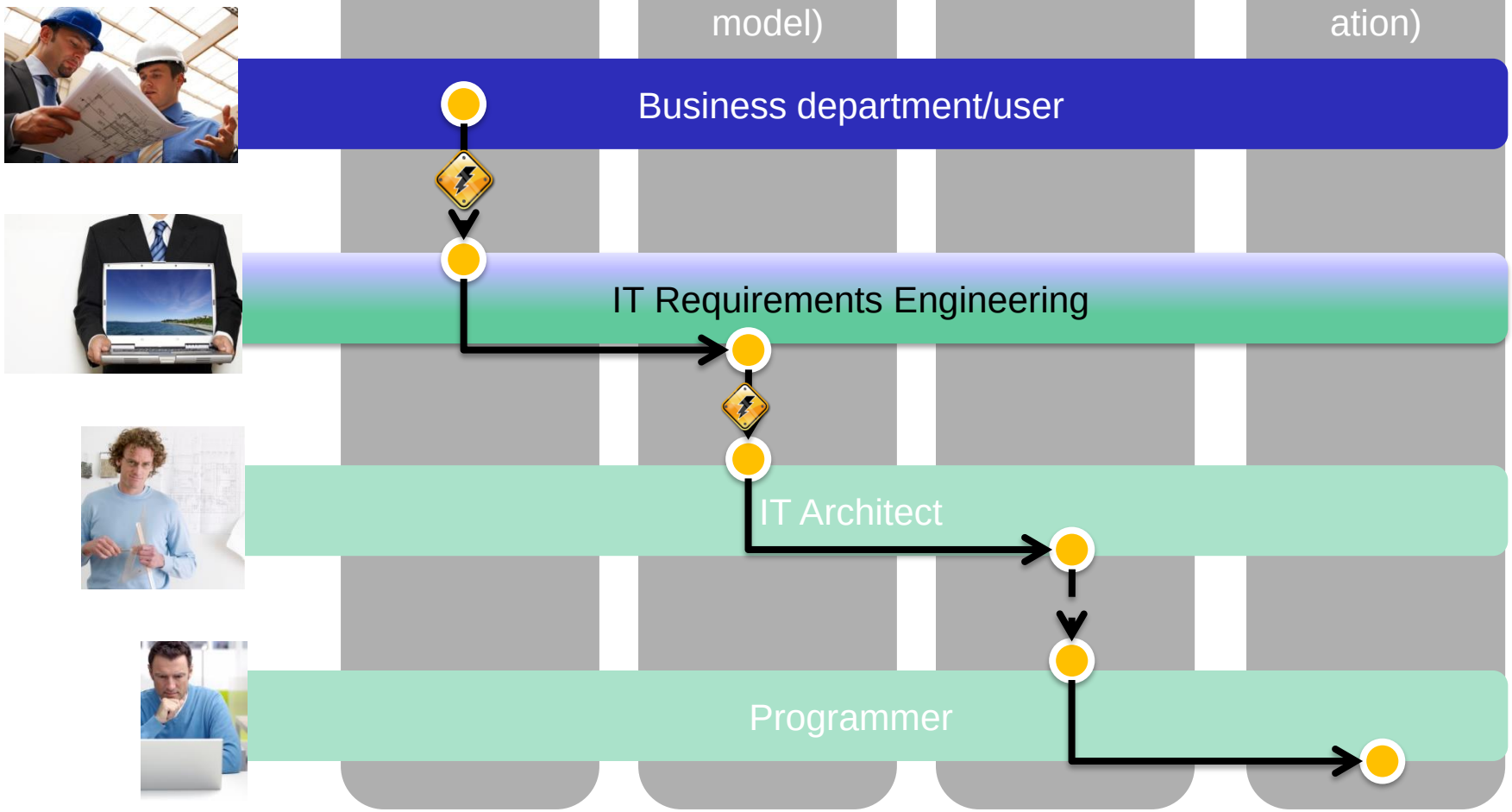
1.1 Industrie 4.0 – Horizontale Werkschöpfungsnetzwerke



Quelle: Hewlett-Packard 2013

1.1 BPM @Dresden

1.1 Motivation – Challenges in BPM



1.1 Motivation – Challenges in BPM

Biz user

Knowledge on process details and insights: high
Knowledge on BPM standards: low-med
Knowledge on process supporting IT systems: low-high
Knowledge on appropriated IT technologies: low

Business Analyst

Knowledge on process details and insights: med
Knowledge on BPM standards: high
Knowledge on process supporting IT systems: high
Knowledge on appropriated IT technologies: mid-high

IT experts

Knowledge on process details and insights: low-med
Knowledge on BPM standards: low-med
Knowledge on process supporting IT systems: high
Knowledge on appropriated IT technologies: high

Business Process Management

1.2 History

The age of the crafts worker

- Before the Industrial Revolution ~1750
- Products were created by Craftsmen
- Craft worker was the single point of contact for the customer
- Products and processes were almost the same thing
- Often, one person accomplished the entire process
- Almost no miscommunication or hands-off between specialists
- Limited output and product quality

1.2 History

The age of the factory

- 1776: Adam Smith “Wealth of Nations”, Watt’s invented the steam engine
- Labor was divided into specialized tasks
- Start of mass production and high output in specific areas
- Factories w/ division of labor
- Higher level of output quantity and quality

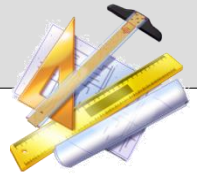
1.2 History

The age of specialist

- Specialization so far only in the area of manufacturing
- Growing number of specialist in various areas (accounting, …)
- Management became a profession
- Focus on tasks and local efficiency
- Large organizations w/ more bureaucracy were born
- Increasing number of white-collar workers, reduced number of blue-collor workers
- People were grouped and managed by specialized fields or functions

Specialization lead to too much fragmented processes. Participants can’t see the entire process anymore → inefficiency, only local optimization, process interface issues

1.2 History



Turn of the 19th century: **Scientific Management (Taylorism , Taylor system)** based on the theories of Frederick Winslow Taylor :

- decision making by manager
- standard methods for performing a task
- find the best way for doing a task
- introduction of incentives

Related literature

- Frederick Winslow Taylor : Shop Management, Harper & Brothers. 1911
- Frederick Winslow Taylor : The Principles of Scientific Management, Harper & Brothers, 1911

1.2 History

Business Process Reengineering (BPR)

- Became popular ~1985
- Addresses the disadvantages of fragmented processed by focusing on the end-to-end process
- Focus on achievement of values (timely delivery, customer satisfaction)
- Re-unifying tasks into coherent, repeatable and visible processes
- Enrollment of common and advanced information technologies
- Greater responsibly and accountability for the outcome (not only the task)

1.2 History

Exiting Business Process Reengineering

- Started ~1994
- Almost everything was reengineering at this point, reports showed BPR project failure rate of 70-80%
- Nevertheless, companies still use BPR to improve there processes (more and more successfully) , without using the term reengineering anymore

1.3 Terms and Defintions

Business Process Management (BPM) covers all activities to design, manage, document and optimize business processes.

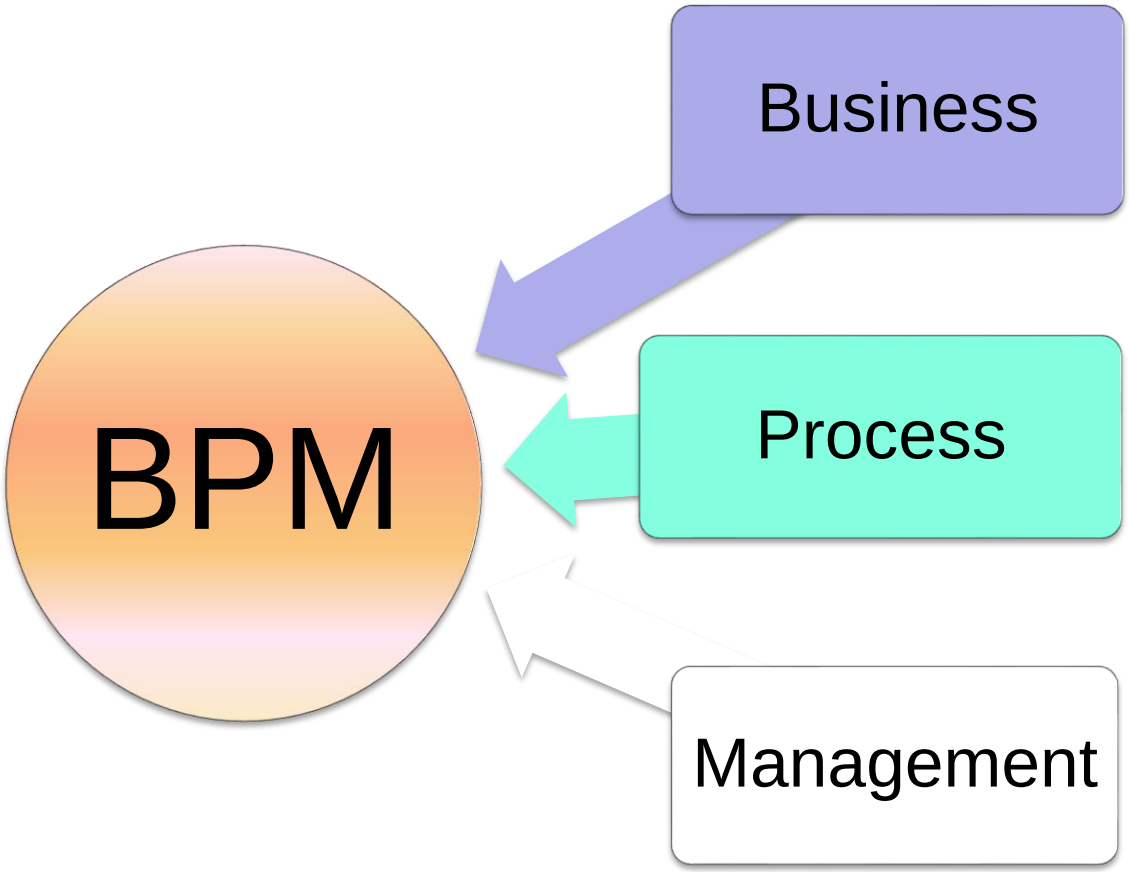
„**Processes** are not just something your business does; processes are your business“ (Rob Davis, Eric Brabänder: ARIS design platform: getting started with BPM , Springer, 2007)

„ … a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer.”
(Michael Hammer, James Champy : *Reengineering the Corporation: A Manifesto for Business Revolution*, Harper Business, 1993)

„ A definition of the tasks, and the sequence of those tasks, necessary to deliver a business objective.“
(Rob Davis and Eric Brabänder: ARIS Design Platform – Getting Started with BPM, Springer, 2007)

A process is a **set of activities** that are **interrelated** or that **interact with one another**. Processes use resources to **transform inputs into outputs**. Processes are interconnected because the output from one process becomes the input for another process. In effect, processes are “glued” together by means of such input output relationships.
(DIN/ISO 9000)

1.4 Getting started w/ BPM – BPM Dimensions



- Creation of value for customers & stakeholders
- Align business activities w/ goals and strategy

- Visualizes the structured activities
- Makes processes more efficient and transparent
- Makes processes agile (what-if analysis)

- Processes are tools to forge business success
- Enroll an unified and unique technique within the company

1.4 Getting started w/ BPM – Business imperatives

Globalization

Customers

Productivity

Commoditization

Company

Innovation

Information

Working environment

Compliance

Speed

1.4 Getting started w/ BPM – Business drivers

(Sub-)Process Improvement

Business Transformation

Company

Continous Process Improvement

Service orientied architectures

1.4 Getting started w/ BPM – Business benefits

Transparency

Agile processes

Visible processes/interface

Process automation

Enables collaboration

Flexible processes

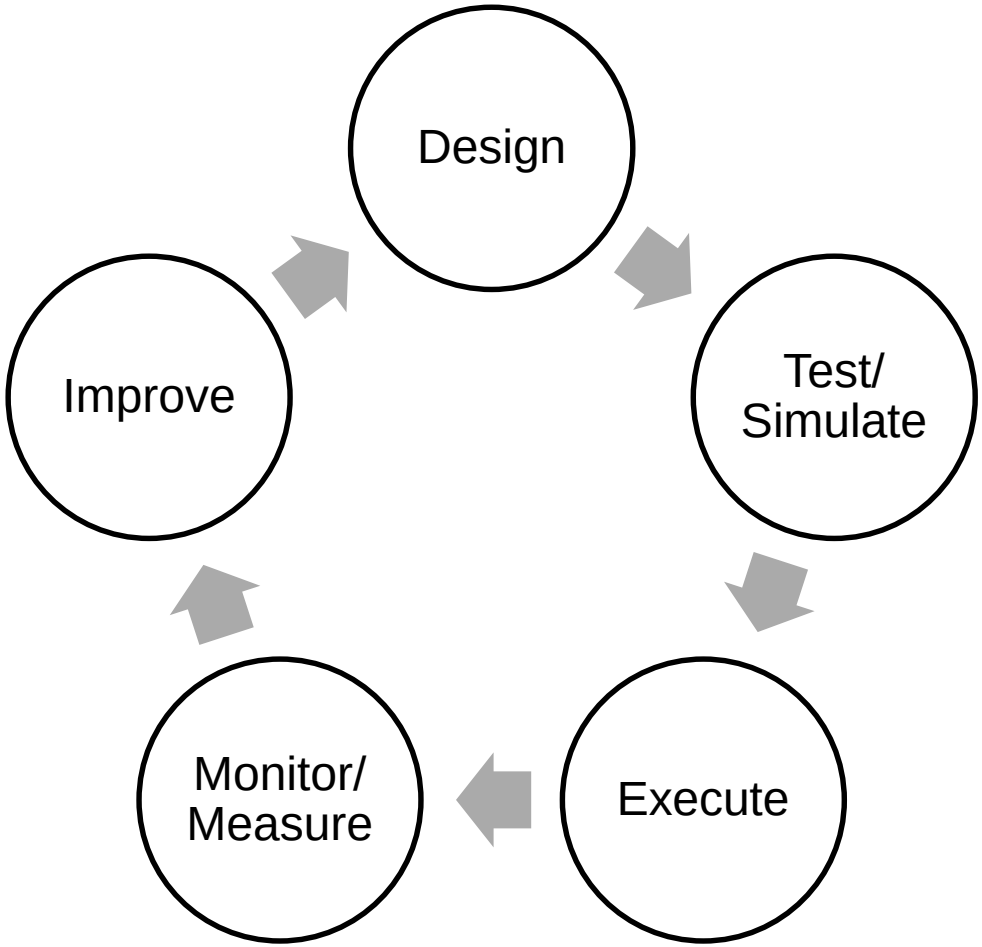
Process Controlling

Process standardization

Process governance

Clear roles and responsibilities

1.4 Getting started w/ BPM – BPM lifecycle



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2. Analyzing and capturing business processes

2.1 Use Cases

2.2 UML Use Cases

2.3. Petri Nets

2.1 Use Cases - Overview

A **use case**

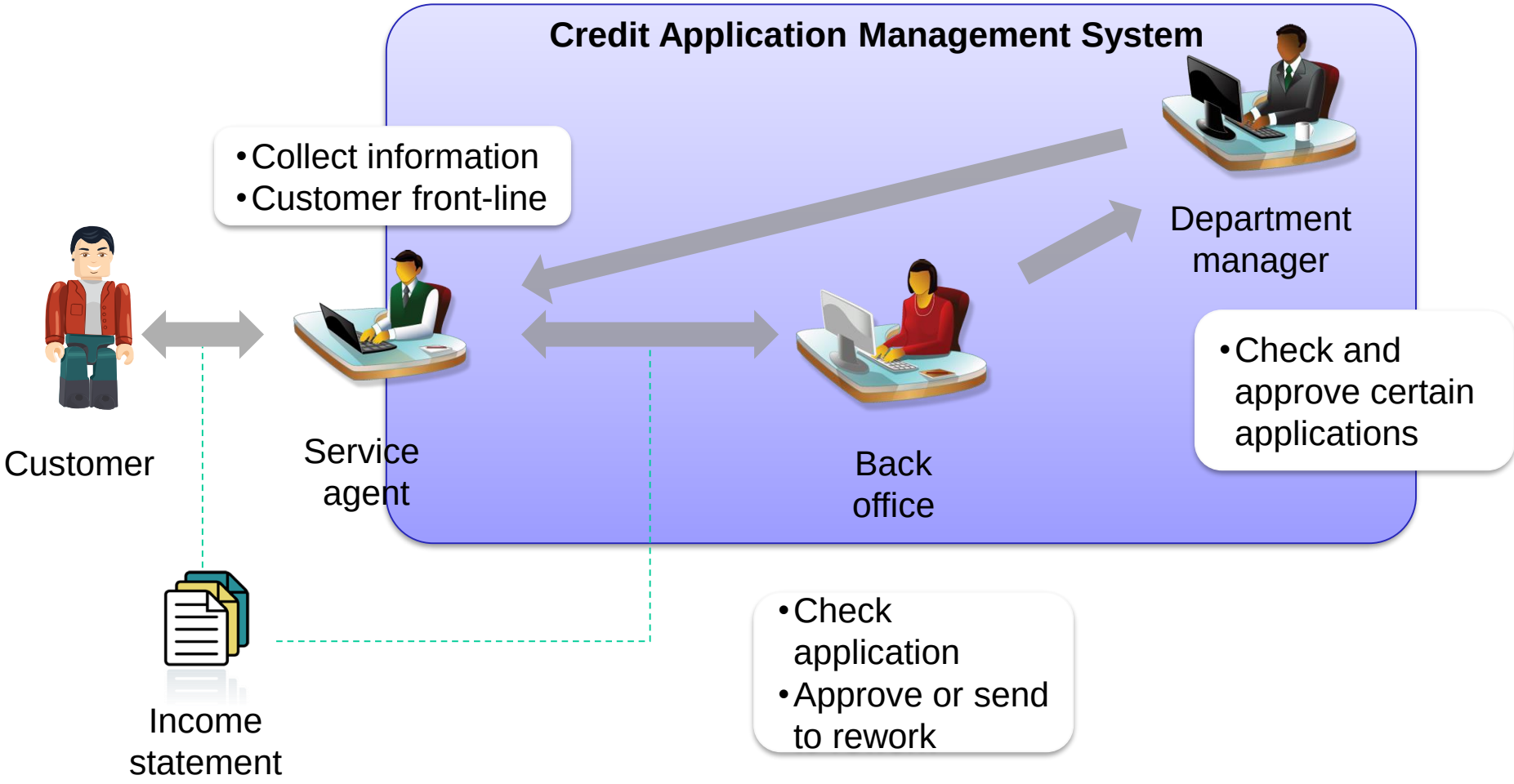
- Captures a contract between the stakeholder of a system about its behavior
- Describes the system behavior under various conditions
- Can be given as text, flow chart, sequence diagram, etc.
- Enables you to model business processes, IT systems, expected system behavior, system internals,…
- Is often used a working base for team discussions during the system design phase
- Tells a very important fraction of the requirements of the system under discussion
- Is one of the bases for the system design
- Is a very good starting point to derive the acceptance criteria and test cases

2.1 Use Cases – UC Typs

- **Business use case** – describes a business processes being used by actors to achieve there specific (business) goals. Treats the system as a black box.
- **System use case** – normally focus on the system functionality level and specifies specific services and functionally for the user.

Literatur: Alistair Cockburn: Writing Effective Use Cases, Addison-Wesley Professional ,2000 (see OPAL Documents)

2.1 Use Cases – UC Typs Example



2.1 Use Cases - Terms and definitions

- **Use case:** A contract for the behavior of the SuD

  Actor: anyone or anything with behavior
- **Primary actor:** the stakeholder that initiates an interaction w/ the SuD to achieve a goal
- **Scope**: identifies the system under discussion (SuD)
- **Stakeholder** and interests: someone or something w/ a vested interest in the behavior of the SuD
- **Main success scenario**: the case in which nothing goes wrong
- **Exceptions**: things that can happen differently during the scenario
- **Precondition** and **guarantees**: what must be true before and after the use case

2.1 Use Cases – Sample UC

Use case: Apply for a credit

Primary actor: Service agent (on behalf of the customer)

Scope: Credit Application Management System (CAMS)

Stakeholder and interests:

- Customer – wants to have a credit from the bank
- Bank – advance money only to creditworthy customers

Main success scenario:

1. Service agent fills the application form and attaches the income statement.
2. Back office agent verifies the application form data and the attached document.
3. Back office agent approves the application.
4. Service agent informs the customer.

Exceptions:

2a) Attached income statement is outdated

2a1) Back office agent sends the application to rework to the service agent

2a2) Service agent attaches a new income statement and send the application for approval

2.1 Use Cases – UC and requirements

Use cases are requirements – They should not be converted into some other form. Properly written, use cases tell you in details what the system must do.

Use cases do not cover all requirements – They don’t deal w/ technical details on interfaces, data formats etc.. They only cover a fraction of all the requirements you need to collect!

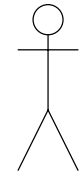
2.2 UML Use Cases

The **Unified Modeling Language** (UML) is a general framework for system architects, software engineers, and software developers for analysis, design, and implementation of software-based systems as well as for modeling business and similar processes. It was created and is maintained by the Object Management Group.

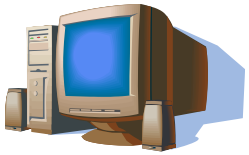
For more information on UML see: www.omg.org

A **use case** is the specification of a set of actions performed by a system, which yields an observable result that is, typically, of value for one or more actors or other stakeholders of the system. “ [OMG Unified Modeling LanguageTM (OMG UML), Superstructure V2.2]

2.2 UML Use Cases - Notation



actor



Actor
(user defined)

Use case

«subsystem»
CRM System

Register customer

Create statistics

Register orders

Package admin

Add user

Delete user