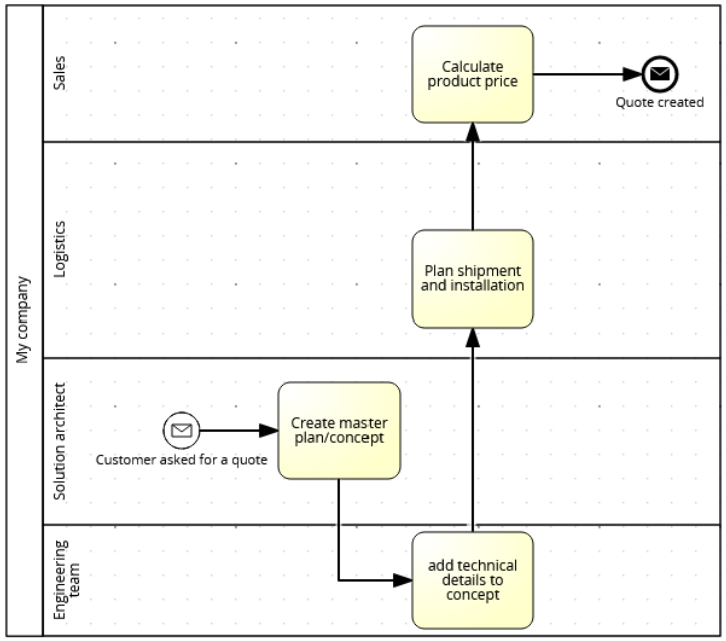
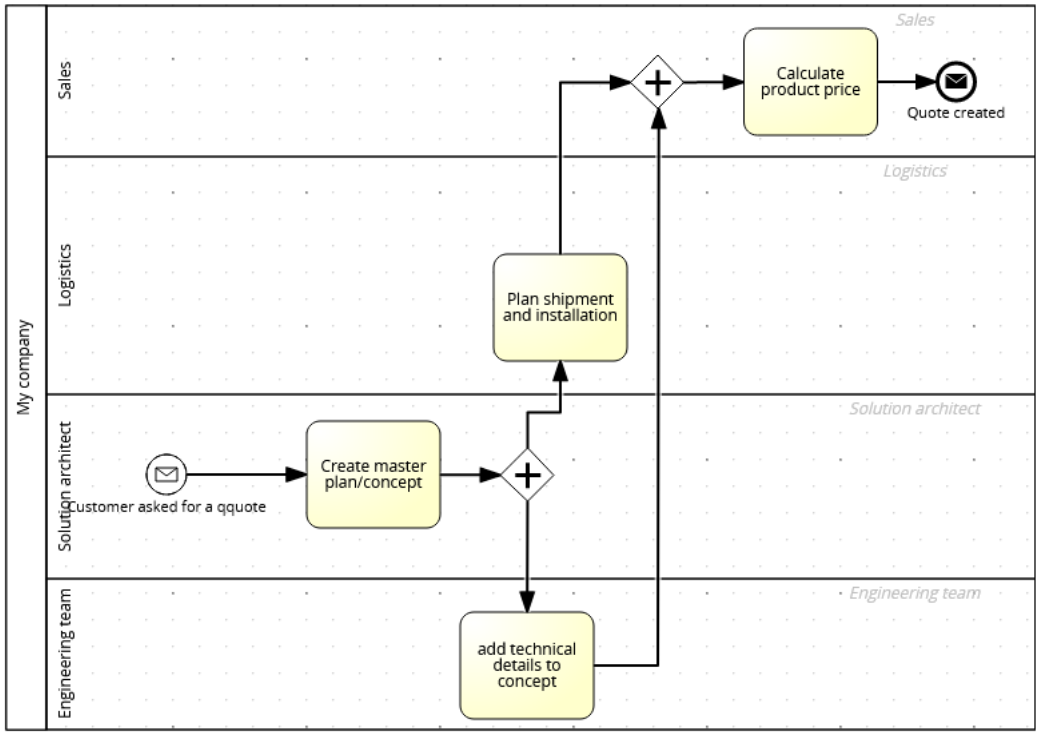
Outline

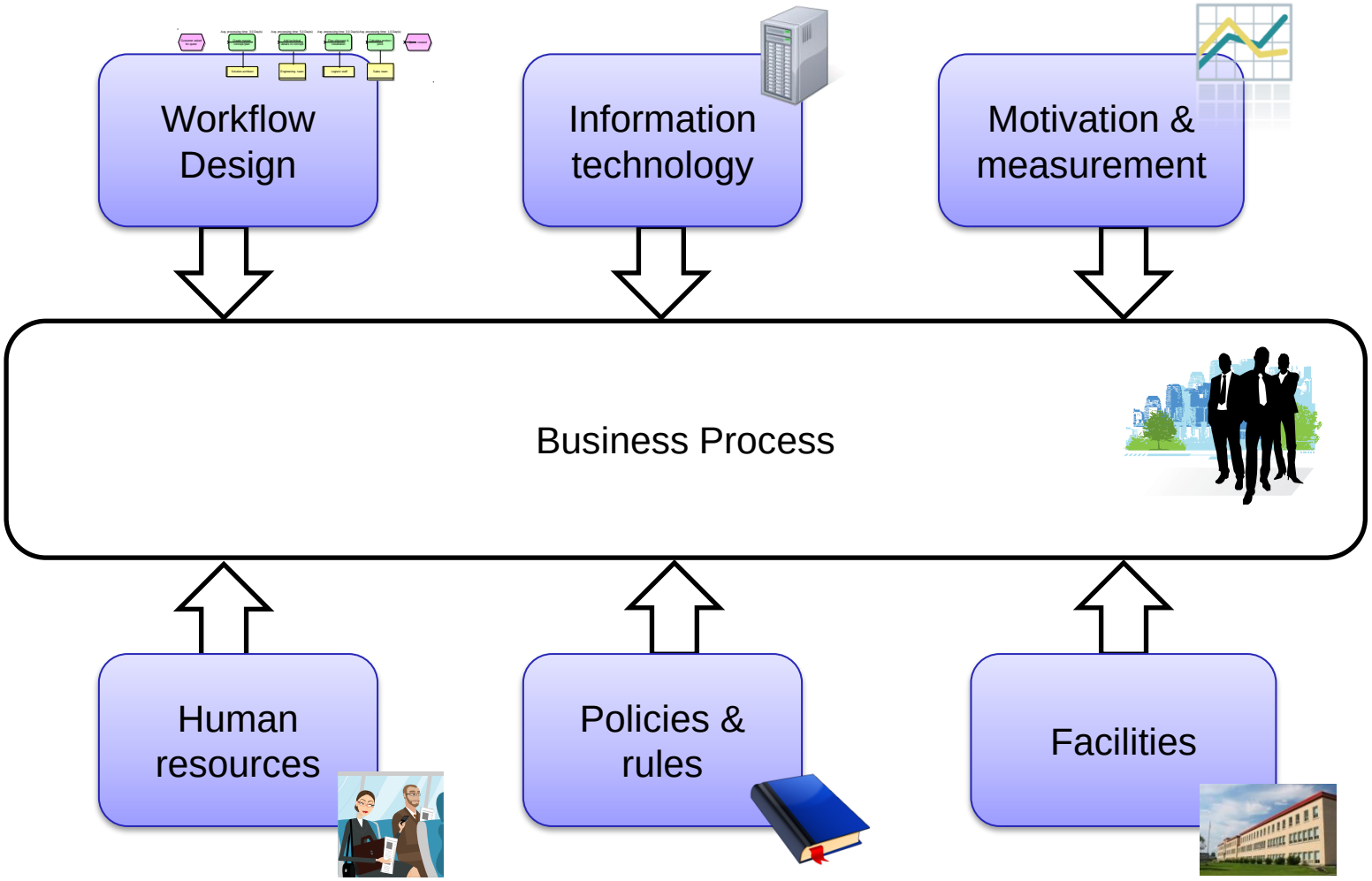
1. Introduction & Motivation
2. Analyzing and capturing business processes
3. Modeling Business Processes
4. Business Process Management
5. Case Management & Decision Management
6. Business Process Mining
7. Business Process Automation

Business Process Management Motivation

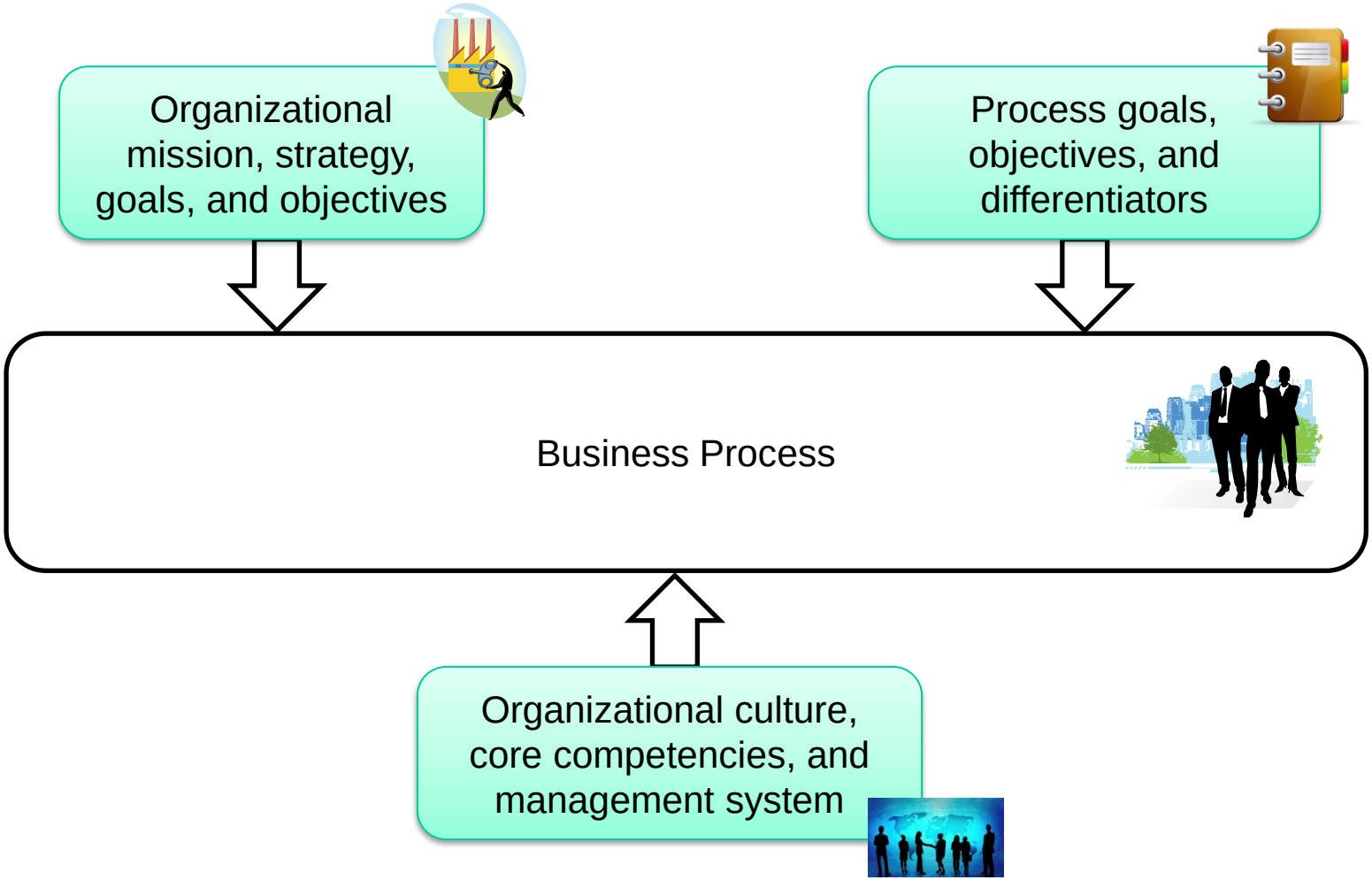




Assessing Business Processes – Process enables



Assessing Business Processes – Process constraints



Assessing Business Processes – Enables & Constraints

Organizational mission, strategy, goals, and objectives

Organizational culture, core competencies, and management system

Process goals, objectives, and differentiators

Business Process

Workflow Design

Information technology

Motivation & measurement

Facilities

Policies & rules

Human resources

Assessing Business Processes – Enables: WF design

Describes how the business process response to an event. It shows a sequence of activities, decisions, decisions, and handoffs carried out by the process actors between the trigger event and the final result.

Assessment criteria:

- Number of actors – Are there too many actors?
- Number of handsoffs – Does the process have to many handsoff?
- Nonvalue-added activities – Does a customer pay to get these jobs done?
- Blocking steps – Are there noncritical activities holding up the main flow?
- Serialization – Are steps being carried out sequentially when they can be done in parallel?
- Bottlenecks – Does the process have understaffed steps?
- Process complexity – Does the process serve all levels of complexity?
- Escalation/Approval – Are there escalation and approval levels?
- Process coordination – Is the process controlled by a central instance?
- Roles – Is there a clear definition on the roles in the process?

Assessing Business Processes – Enables: IT

Information technology (IT) includes information systems, computers and other devices, telecom equipment, and the network components. The main focus is on the information systems and databases that perform specific process functions.

Assessment criteria:

- Information availability – Do the information systems provide all information?
- Data consistency – Does the process access/use redundant data?
- Missing functionality – Does the process require more IT support?
- Interface – Is the screen layout handy?
- Automation – Are there process steps that can be automated?
- New technologies – Is there any new technology that improves the process?

Assessing Business Processes – Enables: Motivation & Measurement

Motivation and measurement includes the explicit and implicit reward system of the organization. It concerns the way how people, organizations and processes get measured and assessed.

Assessment criteria:

• Process outcomes	- What are the desired outcomes?
• Customer view	- What are the outcomes desired by the customer?
• Metrics	- How is the process currently measured?
• Contribution	- How gets the contribution of the individual actors/departments measured?
• Adequacy	- Are the KPIs appropriated? Do we measure the right thing?

Assessing Business Processes – Enables: HR

Human resources covers the knowledge, skills and the experience of the workforce, training, organizational strcuture, job definitions. Each process requires the right people in the right job with the right skills.

Assessment criteria:

- Job definitions — Is the job definition rich enough to motivate people and smart enough to execute all tasks?
- Organization structure — Does the organization setup support the processes?
- Responsibilities — Does the job profile clearly defines the boundaries of the position?
- Skill set — What is the required skill set to carry out the process?

Assessing Business Processes – Enables: Policies & Rules

Includes all policies and rules established in the company to guide and constraint the business processes.

Assessment criteria:

- Process constraints – Why do the policies and rules for the process exist?
- Validations and checks – What is the benefit of doing a certain check?
- Bureaucracy – Is there to much bureaucracy for the process?

Assessing Business Processes – Enables: Facilities

Facilities covers the workplace design and the infrastructure such as equipments, lightning noise, and furniture.

Assessment criteria:

- Collaborative environment – Does you facility setup support collaboration ?
- Workplaces – Does the physical environment make the job difficult or unpleasant?
- Distances – Does distances (for transportation or communication) between people being involved in the process delay it?

Assessing Business Processes – Overall Process

- Assess each individual step in the process in regard to the process enables. Check:
  - Is the step necessary?
  - Are the step results valuable for the outcome?
  - Would a customer pay for it?
  - Is the step executer appropriated ?
  - Does hands-off introduce failure and delays?
  - Is the step triggered in the best way?
  - Is the step order the best sequence to accomplish the result?
  - Is the step implementation and automation done in the best way?
  - Does the process environment support or block the step?
  - Are there company rules and policies a step must follow?
  - …

Assessing Business Processes – To-Be process

To design the to-be process

a) Create a description of the important characteristics of the to-be process considering the process enables.
b) Develop a process model that describes the to-be process in detail.

Ways for designing the to-be process:

1. Improve certain points for the as-is process.
2. Redesign the entire business process.
3. Discontinue the old process and recreate it from scratch.
4. Outsource the process.

Remark: Stay with the current process if the improvement is < 10%.

Assessing Business Processes – Pareto principle

The Pareto principle (also known as the 80-20 rule) says that for many situations, roughly 80% of the effects come from 20% of the causes.
Based on Italian economist V. Pareto. He noted that in (income) distributions 80% of the distribution usually goes to 20% of the observation.

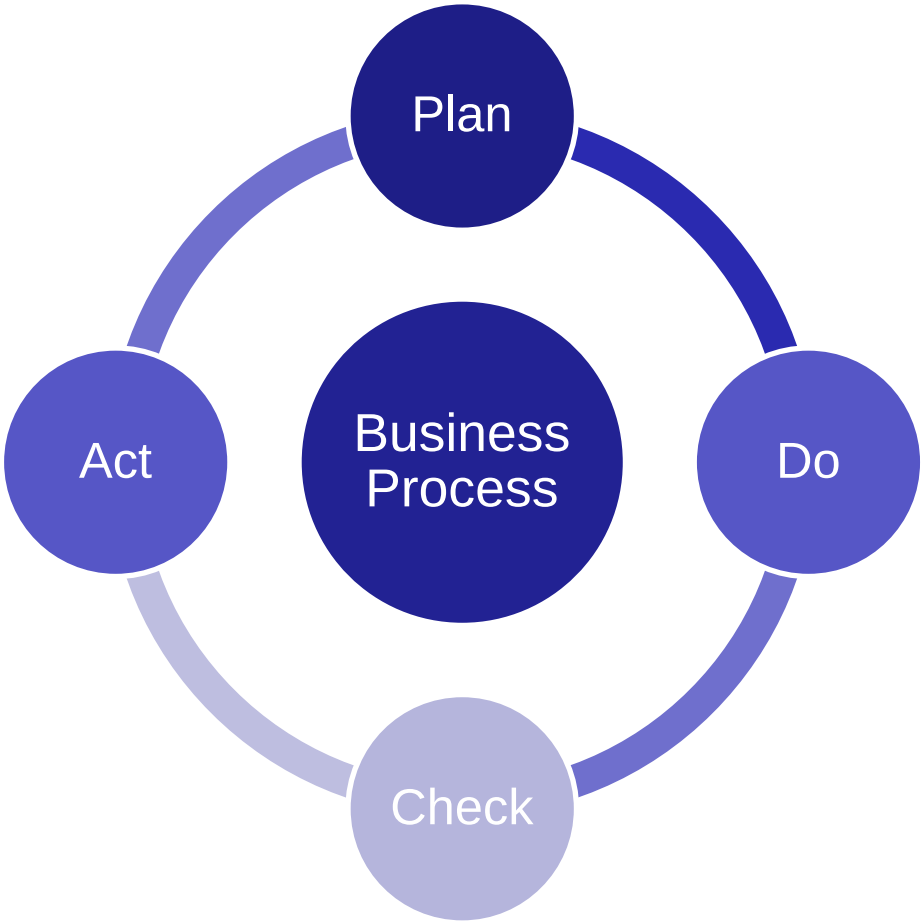
Some examples:
- We wear our 20% most favored clothes about 80% of the time.
- Microsoft also noted that by fixing the top 20% of the most reported bugs, 80% percent of the errors and crashes would be eliminated.
- The richest 20% of the world's population controlling 82.7% of the world's income.
- 80% of your process problems could be caused by 20% of the process steps.

Focus on the 20% not on the trivial 80% !

Assessing Business Processes – Examples

- Arranging a meeting with >5 participants
  – by phone/email vs. eMeeting planner
- Manage and build a queue
  – Fair queuing vs. separate queues
- Processing orders
  – Single processing vs. batching
- Kitchen processes
  – Using process control instances
- Software development
  – Defining appropriated measurements
- Communication
  - eMail vs. snail mail

Assessing Business Processes – Deming cycle



- Business process improvement philosophy published by W. Edwards Deming
- Four simple steps Plan-Do-Check-Act
  - Plan – define objectives
  - Do – implement the new process
  - Check – Measure and compare
  - Act – Analyze the differences and adjust the process
- Requires repeatedly execution of the cycle
- Leads to a continuous improvement of the process

Assessing Business Processes – To-Be Process: New Ideas

Best practices: Frameworks and recommendations for business processes in certain fields and industries. E.g. IT Infrastructure Library , ARIS Healthcare Reference Model

Benchmarks and case studies: Allows to compare process metrics and outcomes with competitors and the market. E.g. International Perspectives of Festivals and Events Paradigms of Analysis, Elsevier

BPM consulting: External experts with a special knowledge on business process design and the companies industry. E.g. Mc Kinsey

Assessing Business Processes – Metrics & KPIs

A **metric** is a standard measure to assess a particular process or process step.

A **Key Performance Indicator (KPI)** is a metric that you have chosen that will give an indication of your performance and can be used as a driver for improvement. In general it's preferred to just chose a few KPIs (say 3 or 4) to focus on.

A **baseline** provides the basis for making KPI based comparisons .

Metrics for specific areas

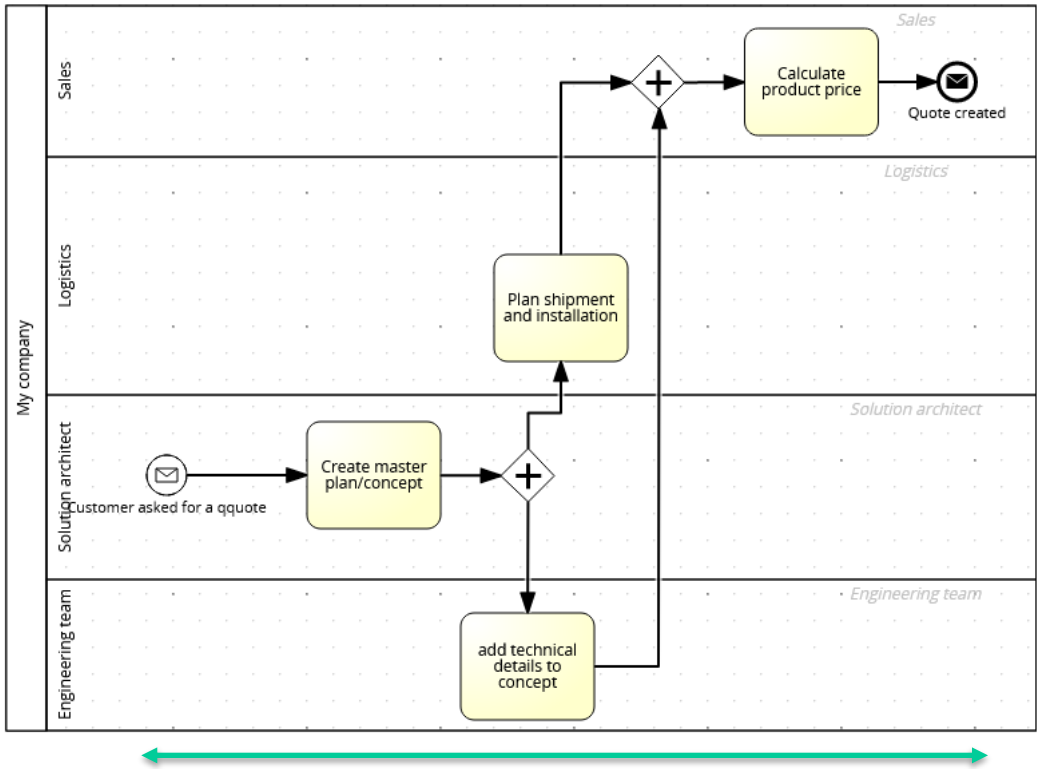
Customer	Processes	Supplier	Financial	Employees
• satisfaction • fullfillment of customer requirements	• Cycle time • Quality • Costs	• Performance of suppliers against requirements	• Profitability • Market share	• team / colleques satisfaction

Assessing Business Processes – SMART metrics

SMART metrics are: **S**pecific**, M**easurable**, A**ctionable**, R**elevant, and **T**imely

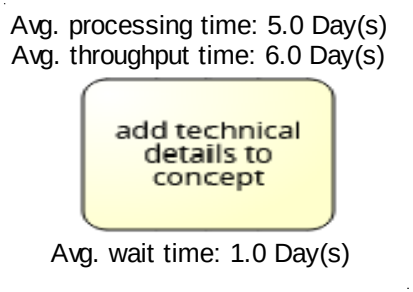
- **S**pecific in that your metrics are specific and targeted to the area you are measuring.
- **M**easurable in that you can collect data that is accurate and complete.
- **A**ctionable in that the metrics are easy-to-understand, and it is clear when you chart your performance over time which direction is "good" and which direction is "bad.
- **R**elevant simply means don't measure things that are not important.
- **T**imely metrics are those for which you can get the data when you need it.

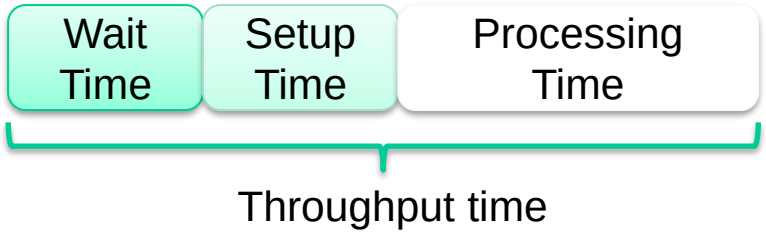
Assessing Business Processes – Process times



Cycle time: total time elapsed from end to end.

Assessing Business Processes – Process times (2)





Processing time: The time that the thing is being worked on by an Operator.

Wait (queue) time: The time between sub-processes that the thing gets shuffled around or sits around waiting for someone to work on it.

Setup time: The time it takes to switch a resource setup from one task to an other.

Throughput time (lead time): Sum of the processing and the wait time and setup times.

Assessing Business Processes – Process KPIs

Product/Service quality: number of incidents, number of returned goods, number of service calls

Process outcomes: cycle time, fulfillment rates, on-time deliveries

Customer oriented: customer satisfaction (survey), turnover

Process internals: queue times, equipment uptimes, workers and equipment utilization, inventory, costs

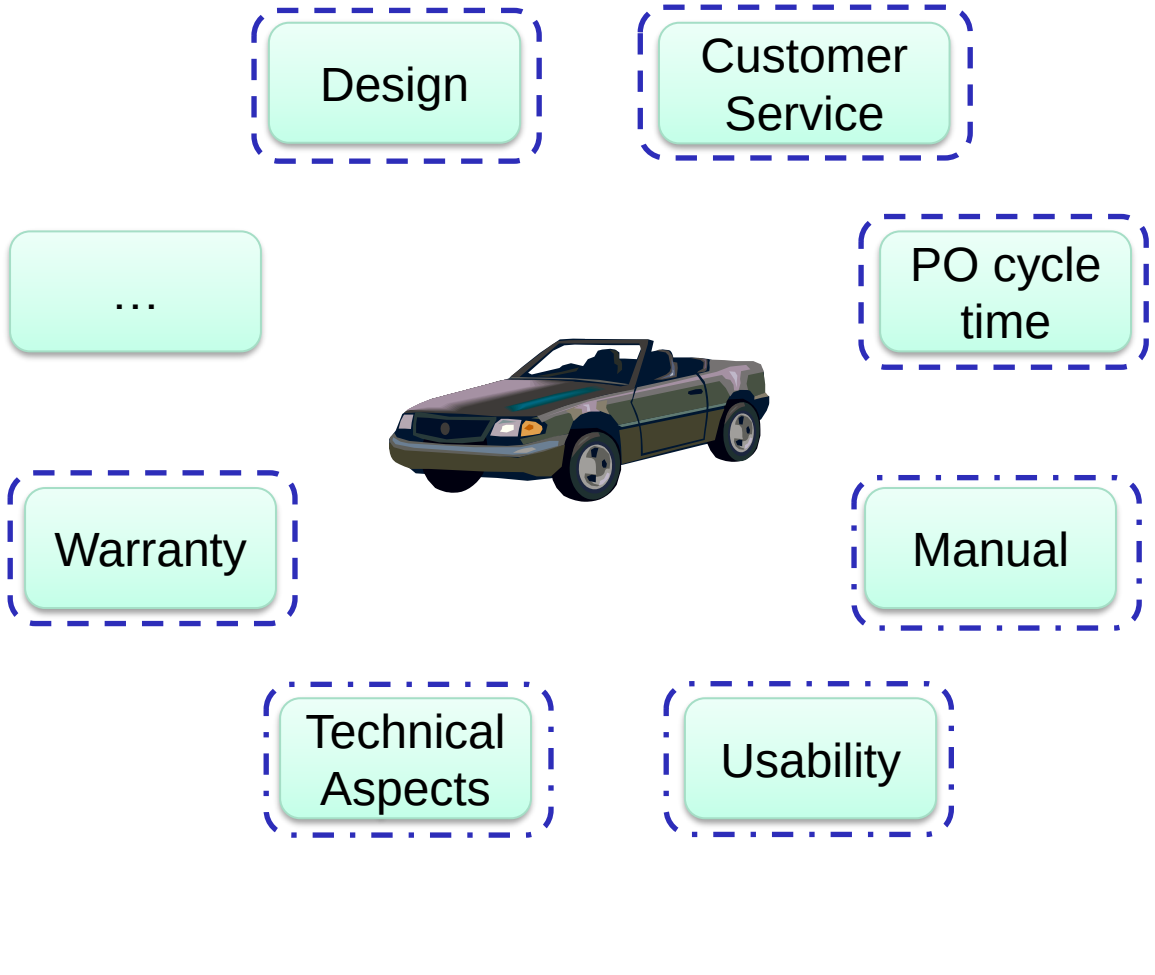
Business Process Quality Management

Quality is the degree to which a set of inherent characteristics fulfils a need or expectation that is stated, general implied or obligatory.

Quality has many meanings:

- A degree of excellence
- Conformance with requirements
- The totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs
- Fitness for use
- Fitness for purpose
- Freedom from defects imperfections or contamination
- Delighting customers

Quality Management and BPM



Business Process Quality Management – QM System

A **Quality Management System (QMS)** includes the policies, plans, practices, and the supporting infrastructure by which an organization aims to reduce and eventually eliminate non-conformance to specifications, standards, and customer expectations in the most cost effective and efficient manner.

Quality Management organizations and awards:

- ISO 9000
- EFQM Excellence Model
- CMMI

Business Process Quality Management – ISO9000

The **ISO 9000** family of standards represents an international consensus on good quality management practices. It consists of standards and guidelines relating to quality management systems and related supporting standards.

- **ISO 9000:xxxx Quality management systems – Fundamentals and vocabulary** Describes the fundamentals of quality management systems, which form the subject of the ISO 9000 family, and defines related terms.
- **ISO 9001:xxxx Quality management systems – Requirements** Specifies requirements for a quality management system where an organization
- **ISO 9004:xxxx Quality management systems - Guidelines for performance improvements** Provides guidance to organizations to support the achievement of sustained success by a quality management approach.

Business Process Quality Management – ISO9000 (2)

Some of the requirements in ISO 9001:2015 are:

- A set of procedures that cover all key processes in the business
- Monitoring processes to ensure they are effective
- Keeping adequate records
- Checking output for defects, with appropriate and corrective action where necessary
- Regularly reviewing individual processes and the quality system itself for effectiveness
- Facilitating continual improvement

Business Process Quality Management – ISO9000 (3)

Pro

- Documented and defined processes
- Defines escalation and error handling scenarios
- KPIs to measure the processes and the process quality
- Reduced QA effort
- Defined quality objectives for the company

Con

- Additional documentation effort
- Hard to implement without management support
- Introduces process „overhead“
- Often not accepted and supported by the employees
- Often focus on audit and certification only, without a real interest on implementing a QMS

Business Process Quality Management – EFQM

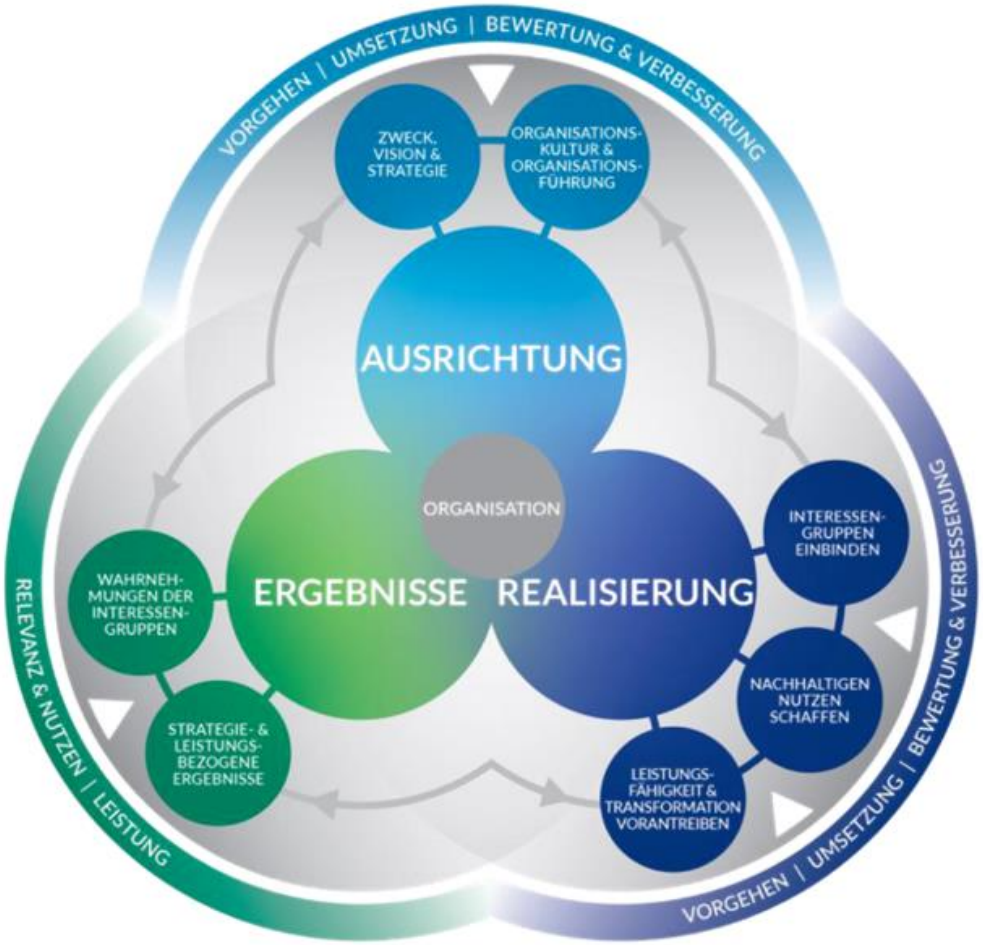
The **Excellence Model** of the **European Foundation for Quality Management (EFQM)** provides a framework to establish and improve an appropriated management system.
It is a practical tool that supports organizations to measure the level of excellence, helping them understand the open issues, and then stimulating solutions.

The EFQM Excellence Model:

- Is a structure for the organization‘s management system
- Can be used as part of a self-assessment
- Provides a holistic framework for comparison with other organizations
- Helps to indentify areas for improvement

More info: www.efqm.org

Business Process Quality Management – EFQM (2)



Business Process Quality Management – CMMI

Capability Maturity Model Integration (CMMI) is a process improvement approach that provides organizations with the essential elements of effective processes that ultimately improve their performance. [Source: www.sei.cmu.edu/cmmi/]

CMMI areas of application:

- Product and service development (CMMI for Development model)
- Service establishment, management, and delivery (CMMI for Services model)
- Product and service acquisition (CMMI Supplier Management)

More info: https://cmmiinstitute.com/cmmi

CMMI 2.0 model