Engineering Management BMEVITMMB03

Business Process Management

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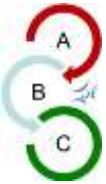


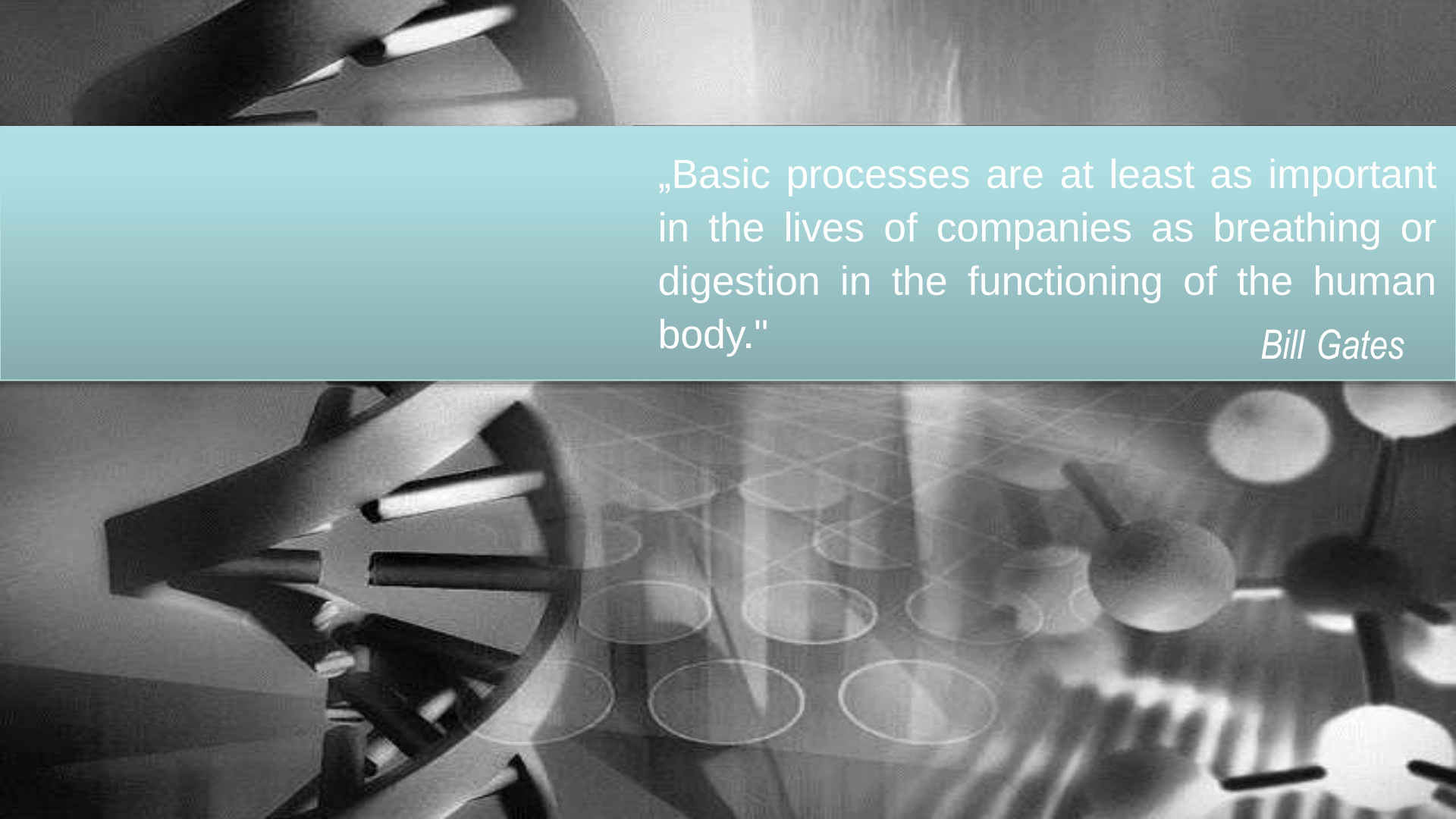
Today’s lecture

Basics

Business Process Reengineering

In practice


Basics



„Basic processes are at least as important in the lives of companies as breathing or digestion in the functioning of the human body."

Bill Gates

Would you have thought??

Eighty-five percent of the reasons for failure are deficiencies in the systems and process rather than the employee. The role of management is to change the process rather than badgering individuals to do better..

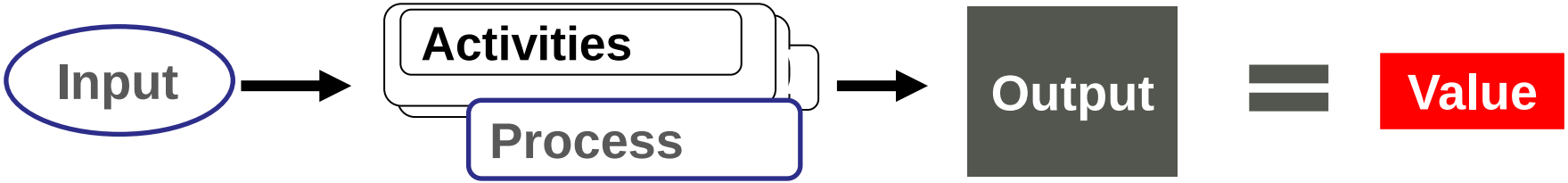
W. Edwards Deming

Keep focusing on the processes!

What's a process?

Business process:

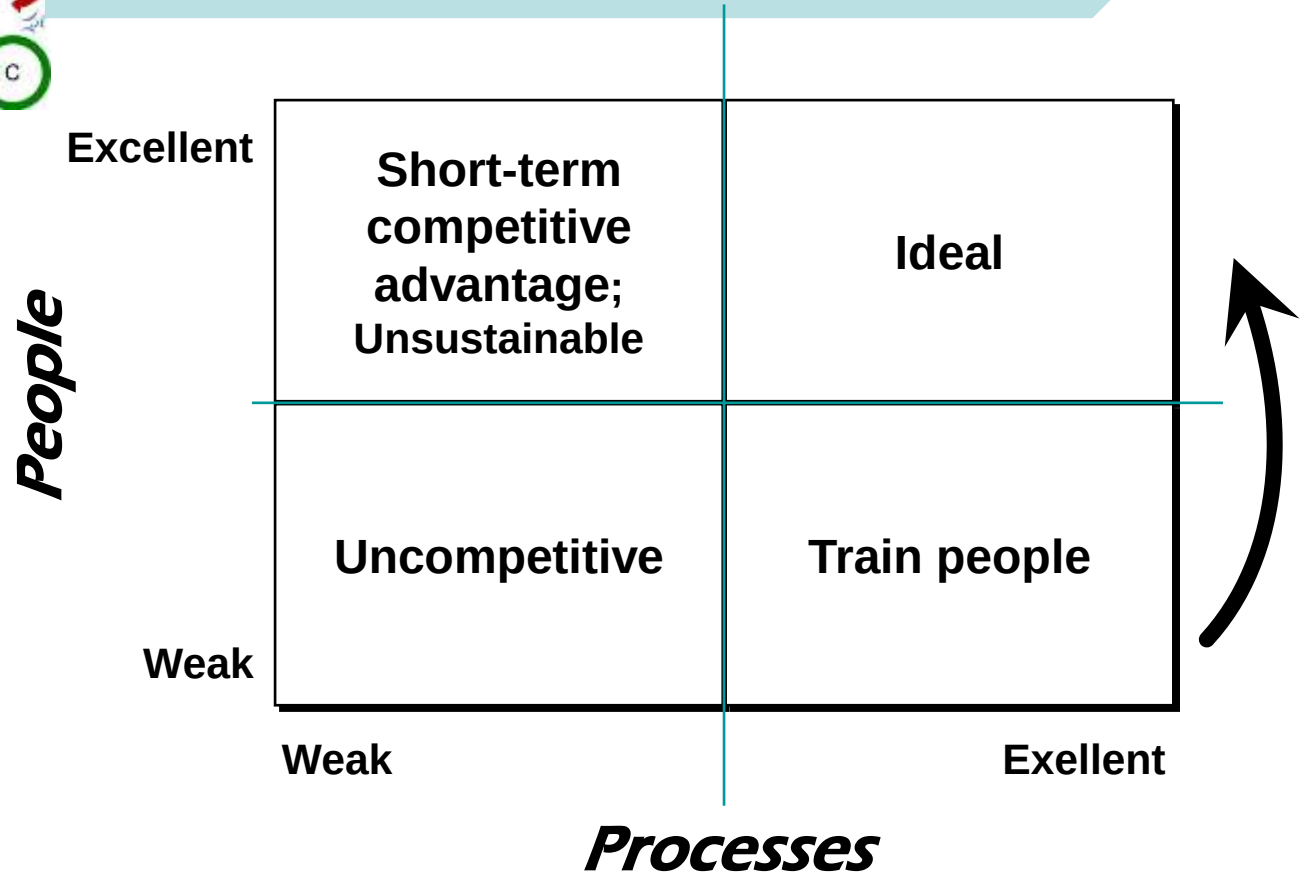
Is a collection of related, structured activites or tasks by people or equipments in which specific sequence produces a service or product for particular customer or customers.



Features of a business process:

- Driven by reoccuring events or activities
- The outputs are relevant to the overall goals and/ or function of the business

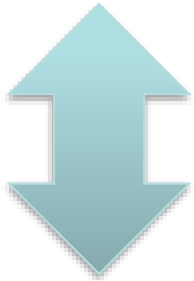
People and processes



Excellent HR processes help build a competitive workforce

Process- oriented and functional approach

Process-oriented approach handles the sequence of activities as a unit. Defines the processes used within the organization and with focus on the control and operation of the processes and their interactions.

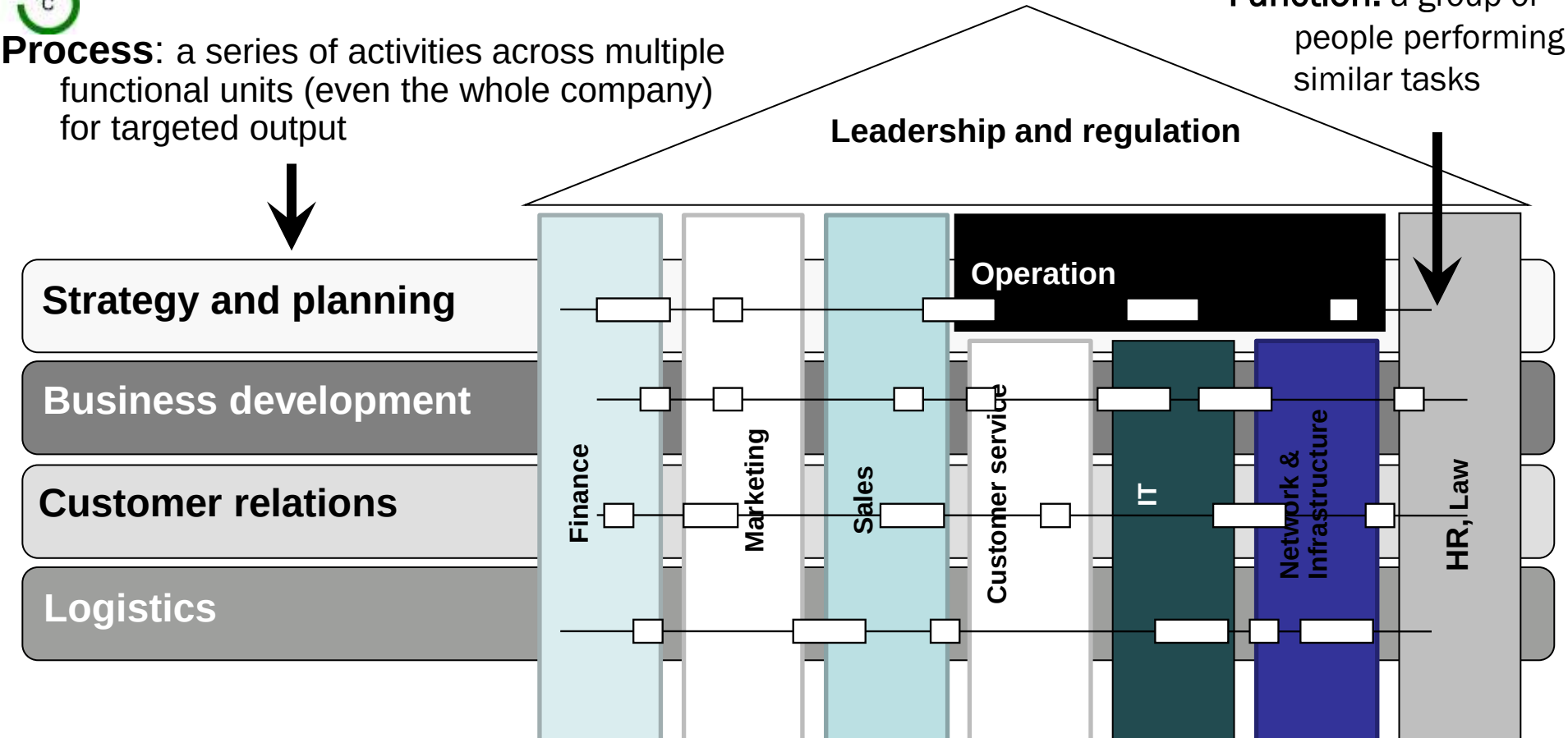


Functional approach builds on the tasks' similar elementary activities and their connecting specialization

Processes vs. functions

Process: a series of activities across multiple functional units (even the whole company) for targeted output

Function: a group of people performing similar tasks



Process categories

Leadership

… control the other processes…

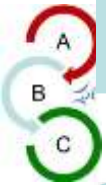
Core

… processes that cover business of the company and create value for the customers…

Support

… support one or more other processes, usually by providing indirect input…

Process performance influencing factors



Processes' internal factors

- Allocation of tasks and decision- making powers
- Work organization
- Attitude, motivation
- Competence
- Used methods
- Supporting technology
- Leadership
- Time-, and taskmanagement
- Communication
- Resources (capacity)
- etc.

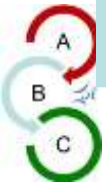
Process influencing factors

Processes' external factors

- Customers' needs
- Competitors
- Strategy
- External and internal regulations
- Control, inspection
- Performance measurement and incentive
- Corporate culture
- Management support
- Competence-development
- etc.

What makes a process work?

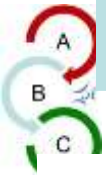
- Knowing the **customers' needs, expectations**
- Education- introduction/ **communication**
- **Support**- follow-up
- Well-defined process responsibilities/ **process owner**
- **Monitoring**- Process audit: report the detected occuring or potenctial problems during the processes
- Deliver **business process development** taking into consideration the change of circumstances



Features of a good process

A good process…

- Maximizes value
- Minimize loss and redundancy
- Easy and flexible
- Its connections to other processes are clear
- The person „in charge” is clear (Owner)
- Measurable



BPM- Business Process Management

… is a management system that achives the goals of the organization through the constant, conscious development, control and management of business process

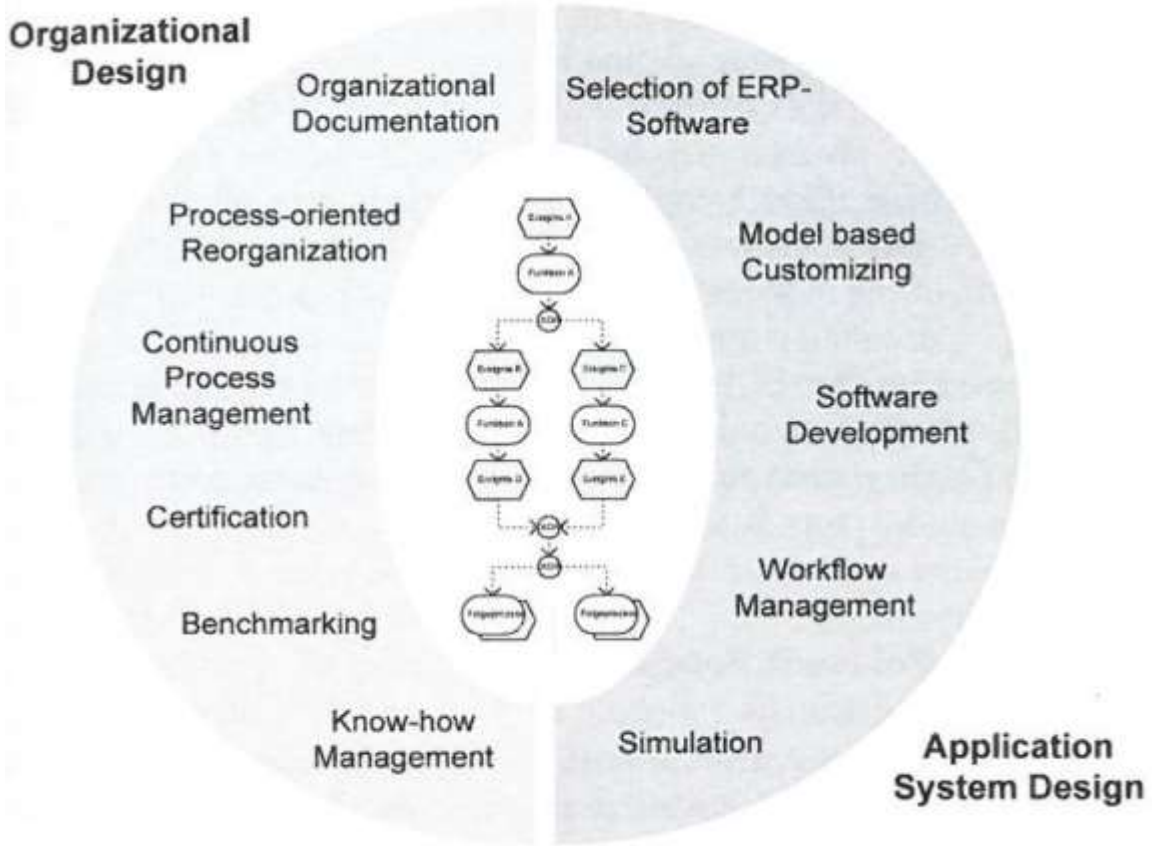
(Forrás: John Heston – Johan Nelis: Business Process Management)

… a management approach that looks at the company's performance through business processes

(Forrás: Paul Harmon – BPM Trends)

Process Modeling

The possible aims of process modeling (Why?)



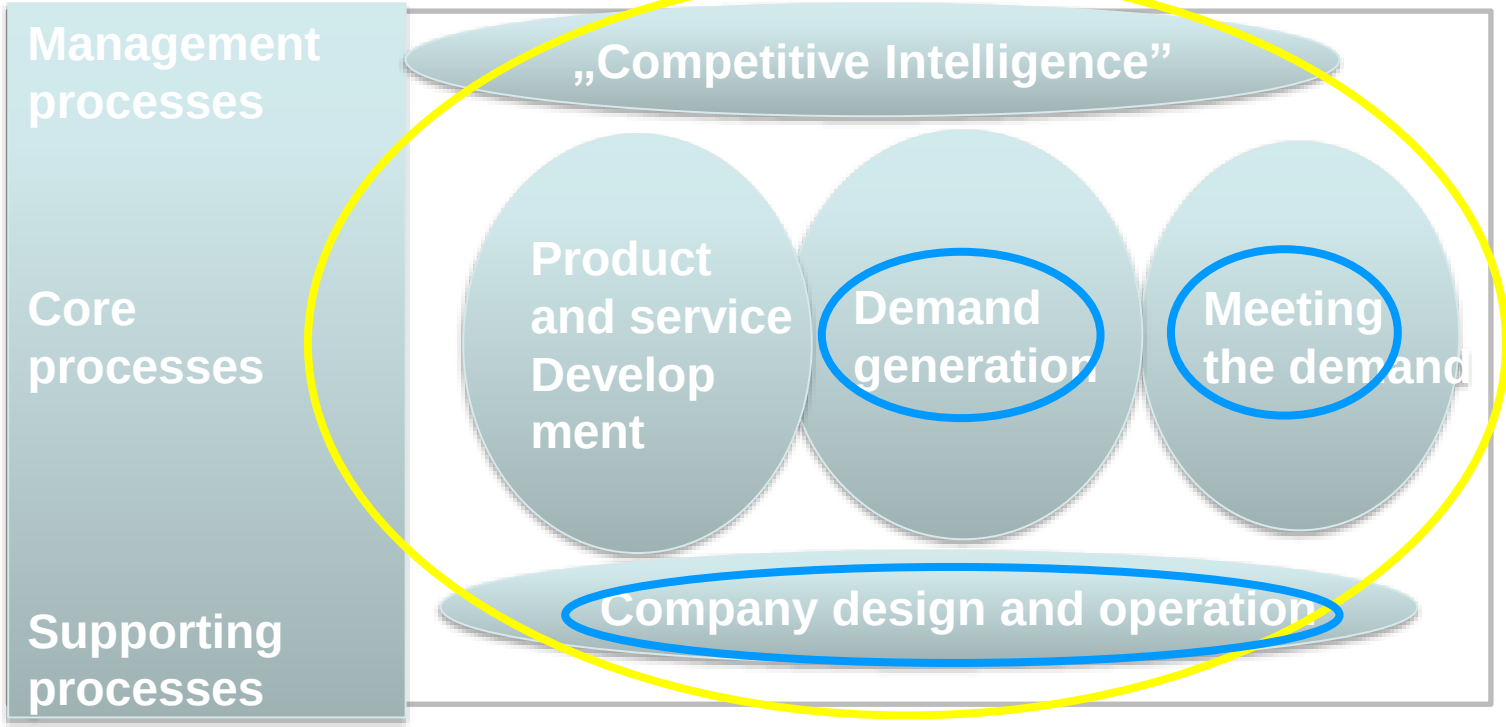
Users of the processes

Scope of process management

Organization-wide

Critical processes

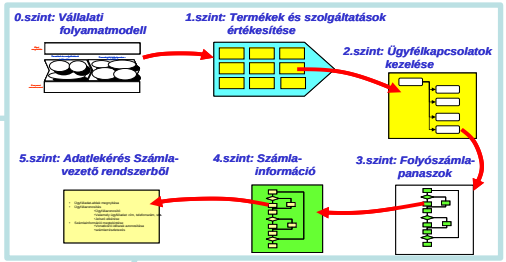
Process related to **specific function (**eg.purchasing)



Dimensions of business process assessment

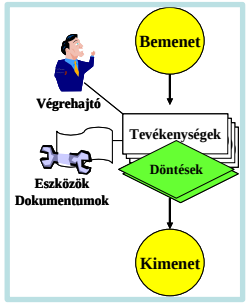
Vertical level: at what high/low level each step describes the process

Horizontal level: how many characteristics of each step are described



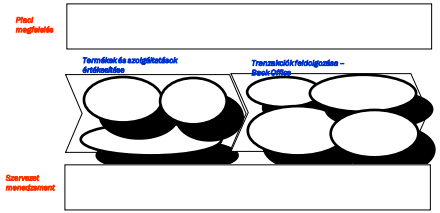
VERTICAL

HORIZONTAL

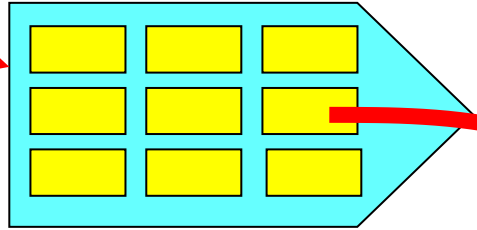


Categories of vertical dimensions

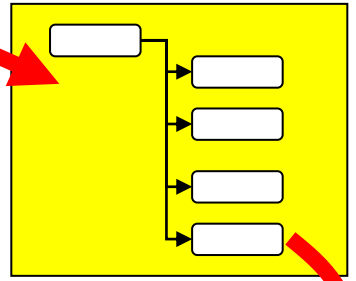
0.level: Business process model



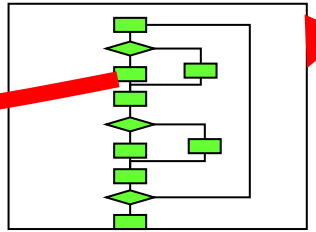
1.level: Sales of products and services



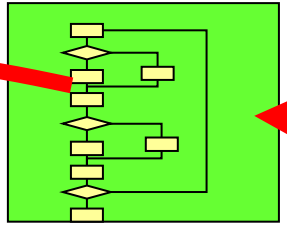
2.level: Customer relationship management



3.level: Current account complains



4.level: Account information



5.level: Retrieval of data from an account management system

- Ügyféladat-ablak megnyitása
- Ügyfélazonosítás
  - Ügyfélazonosító
  - Valamely ügyféladat: cím, telefonszám, stb
  - Jelszó elkérése
- Számlainformáció megtekintése
  - Vonatkozó időszak azonosítása
  - számlarrészletezés

Basics of vertical dimension

- **Function:** A group of people performing similar tasks (such as sales).
- **Process:** A series of activities across multiple functional units (even the whole company) for targeted output
- **Activity:** A task performed by a specific organization or person (such as drafting a contract). If a task is handed over, it is considered a separate activity.
- **Case:** We differentiate between process variants (such as small consumer contracting) due to the way the process is performed or the way the customer is served.

Features of horizontal dimension

Horizontal levels: how many features are described for each step *(it can within a vertical level, according to the purpose of the BPM project, the customer's needs)*

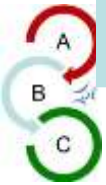
- At the level of process description, we can define the **inputs / outputs** of the subprocesses.
- In the description of the sub-processes, we can also attach **a system and documents** to the activities**.**
- In the description of the activities, we can adapt **roles and regulations** to the tasks.

Supporting systems

- MS Excel
- MS VISIO
- ARIS
- Enterprise Architect
- MEGA
- Provision
- ViFlow
- QPR
- System Architech
- Workflow szoftverek (Oracle workflow, IBM workflow, Siebel workflow, ...)
- ...

Aspects of choosing the tool

- **The aim of the project**
- **Project size:**
  - Number of participants
  - Territorial location
  - Multiplicity of processes
- **Is it necessary to ensure continuous maintenance of the processes?**
- **Process documentation is required in flowcharts and / or descriptions**
- **Intranet, web publication**
- **System deployment support**



Determing the conventions

What is convention?

- Process representation rules (support for intertretation of process models)

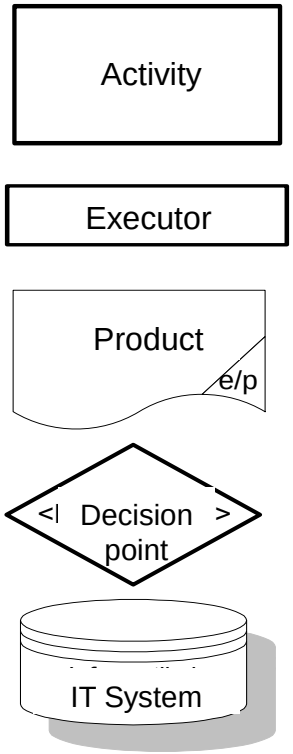
Why conventions are important?

- Common modeling practice, formal appearance
- Common, identical interpretation of models for users

It is recommended to include the conventions in a separate document before starting process modeling.

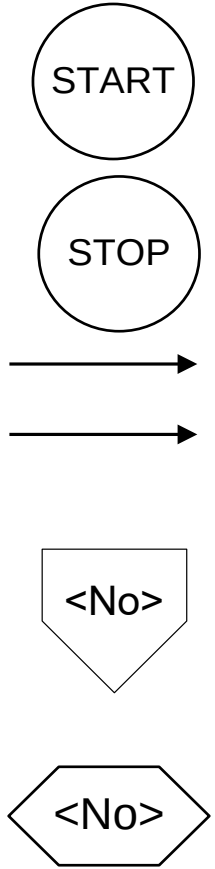
Process modeling conventions-1.

- **Activity**: An event that can be performed without interruption by a group or individual and has a well-identified input and output.
- **Executor**: the executor of the activity
- **Input / output:** Data, documents, receipts related to the process, used in the given activity or generated during the activity. Eg: Minutes, electronic record
- **Decision point / Logic switch:** the activity during which a decision must be made
- **IT system**: An IT system used to extract inputs or record outputs during a given activity



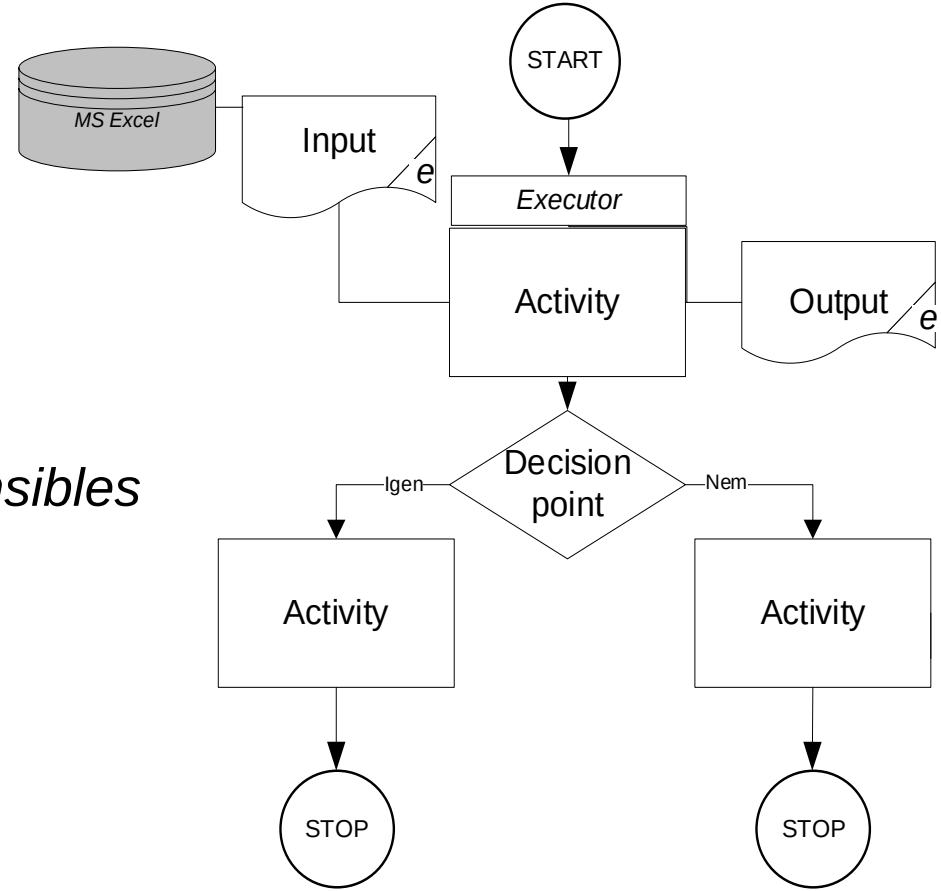
Process modeling conventions-2.

- **START**: Object indicating the start of the process. Every process has to start with that. There can be only one of them in a flowchart.
- **STOP**: Object indicating the end of the process. This is the end of every process.
- It depicts the logical connection of activities
- Shows the relationship between inputs and outputs related to activities.
- Indicates the connection of processes within a process (for example, for multi-page processes). In the case of multiple “breakpoints”, the sequences in the object must be distinguished by increasing the sequence number.
- The object represents other processes related to that process.



Process modeling conventions-3.

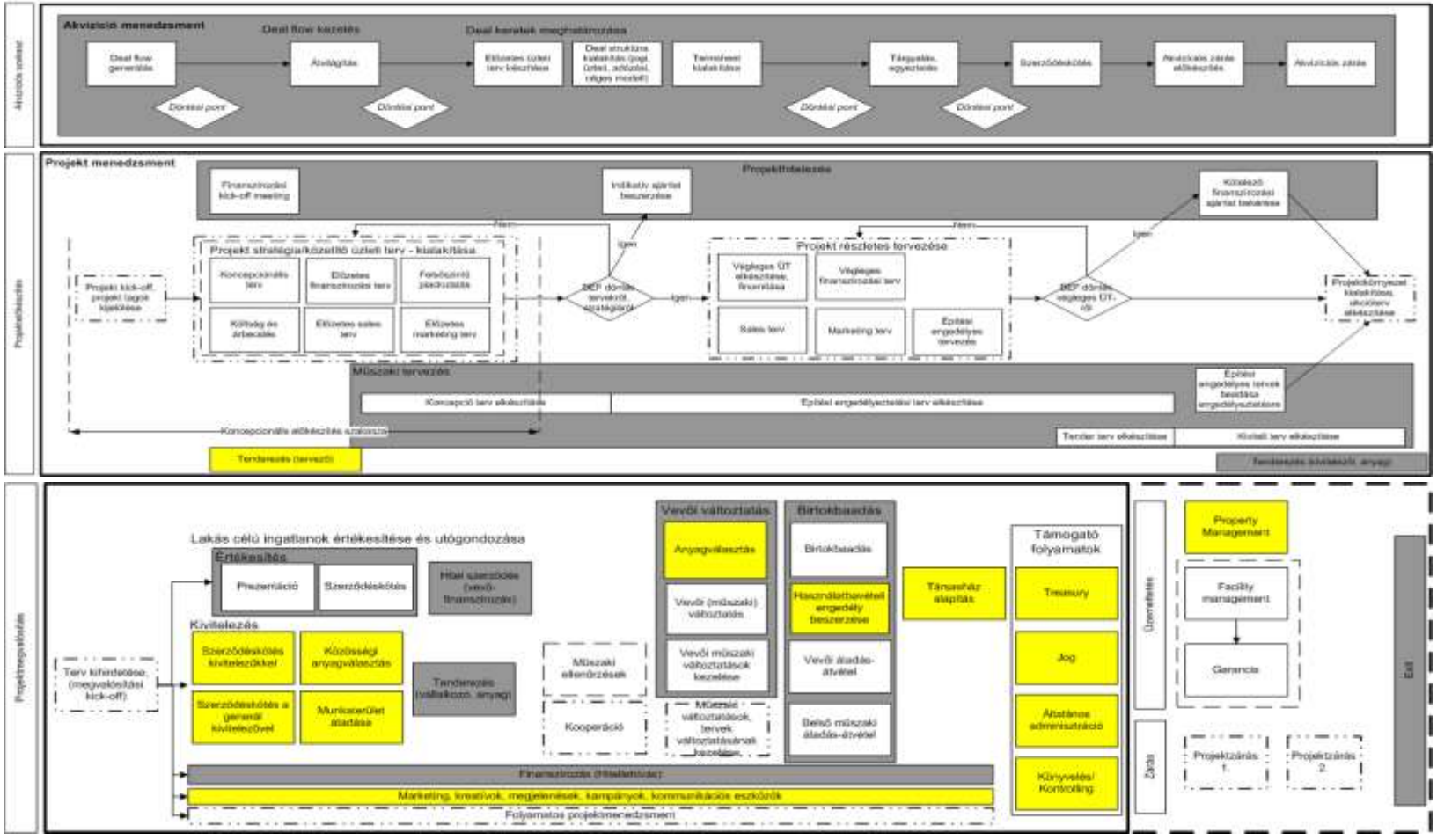
- Input
- Output
- *Activities*
- *Executors / Responsibles*
- *Tools*
- *Documents*



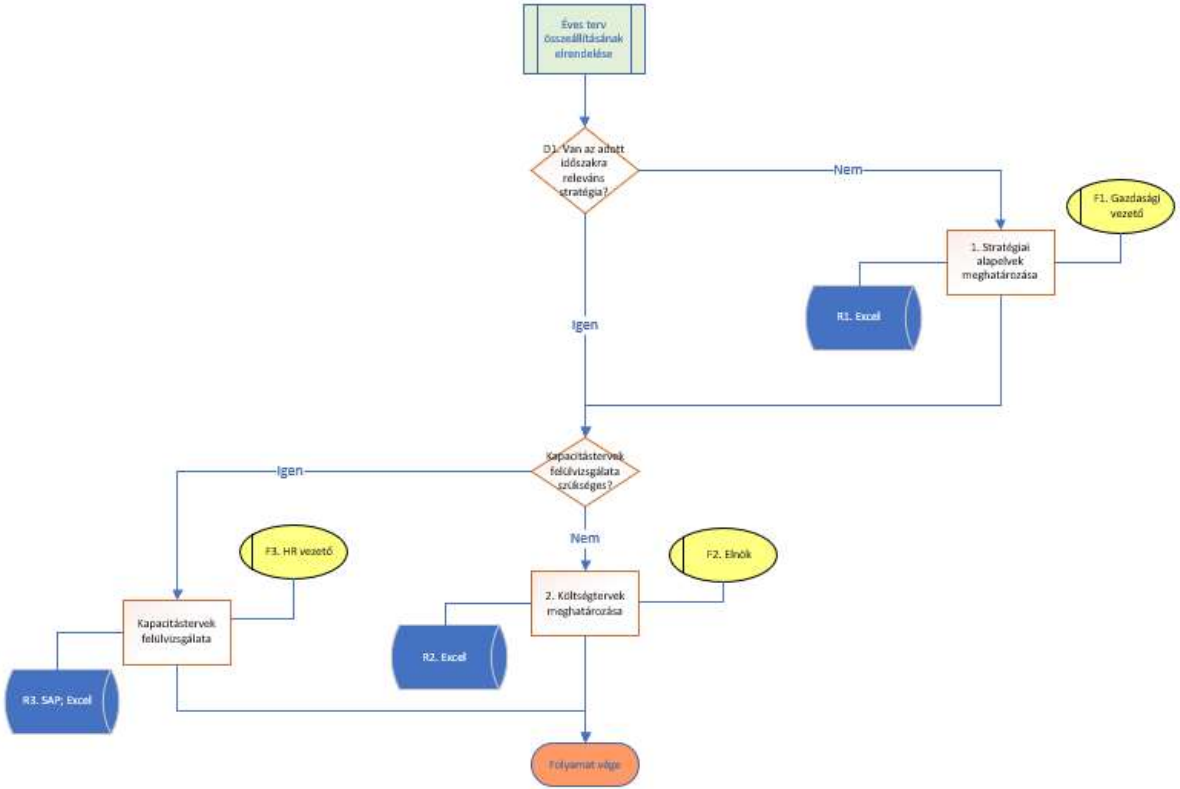
Formal display of process models

- Process map / Context diagram
- Process diagram display types:
  - "Christmas tree"
  - "Swim lane"
- Typical types of flowchart and descriptions:
  - Figure + table (separate)
  - Figure + description (together)
- What is not recommended:
  - Tabular process descriptions only
  - Text-only process descriptions

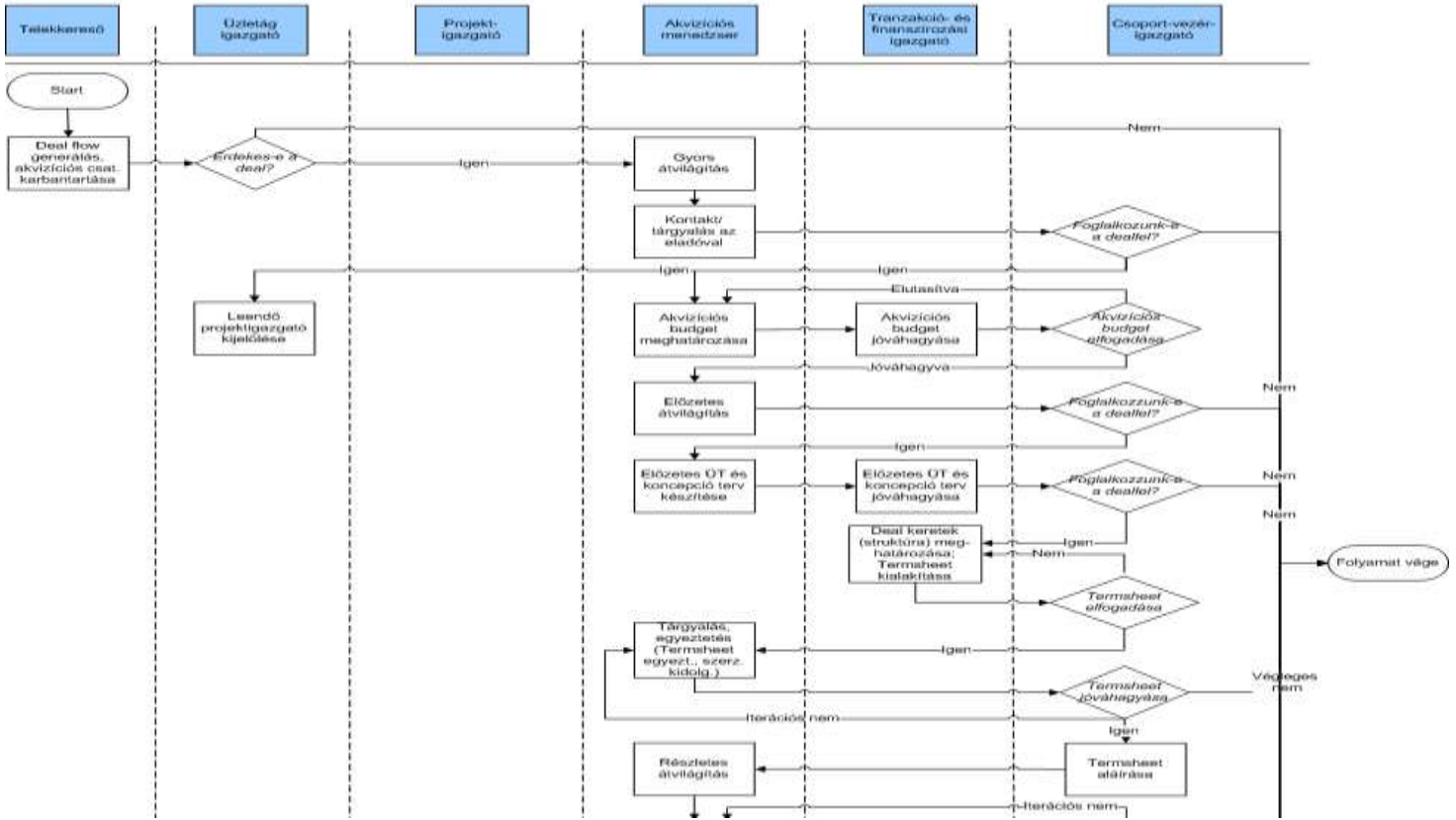
Process map sample (ARIS)



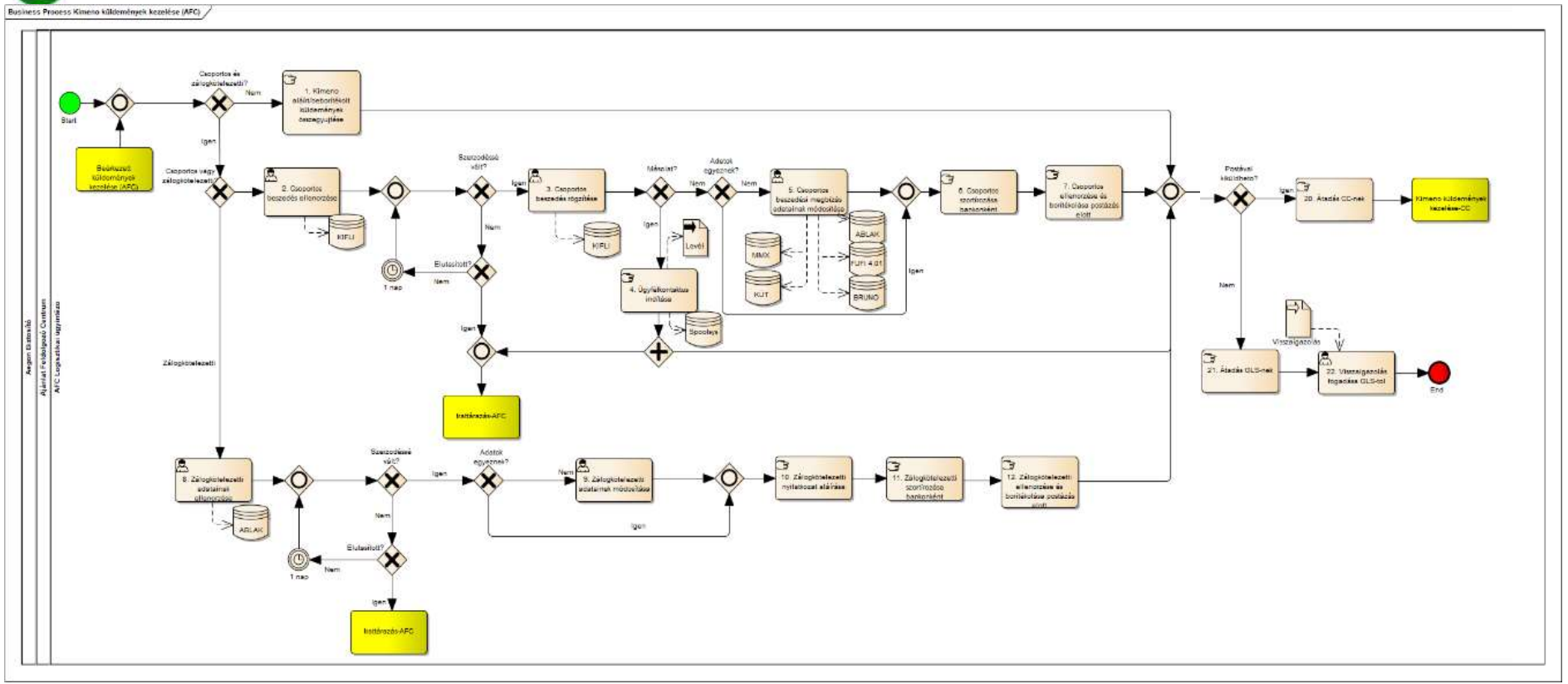
Flow chart sample - christmas tree



Flow chart sample - Swim line



Enterprise architect chart sample



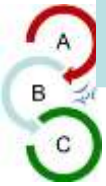
Business Process Reengineering

Expected results of BPR

Eg.: reduction of lead time

Eg.:continuous, reliable fulfillment of customer needs

Eg.: increasing cost efficiency



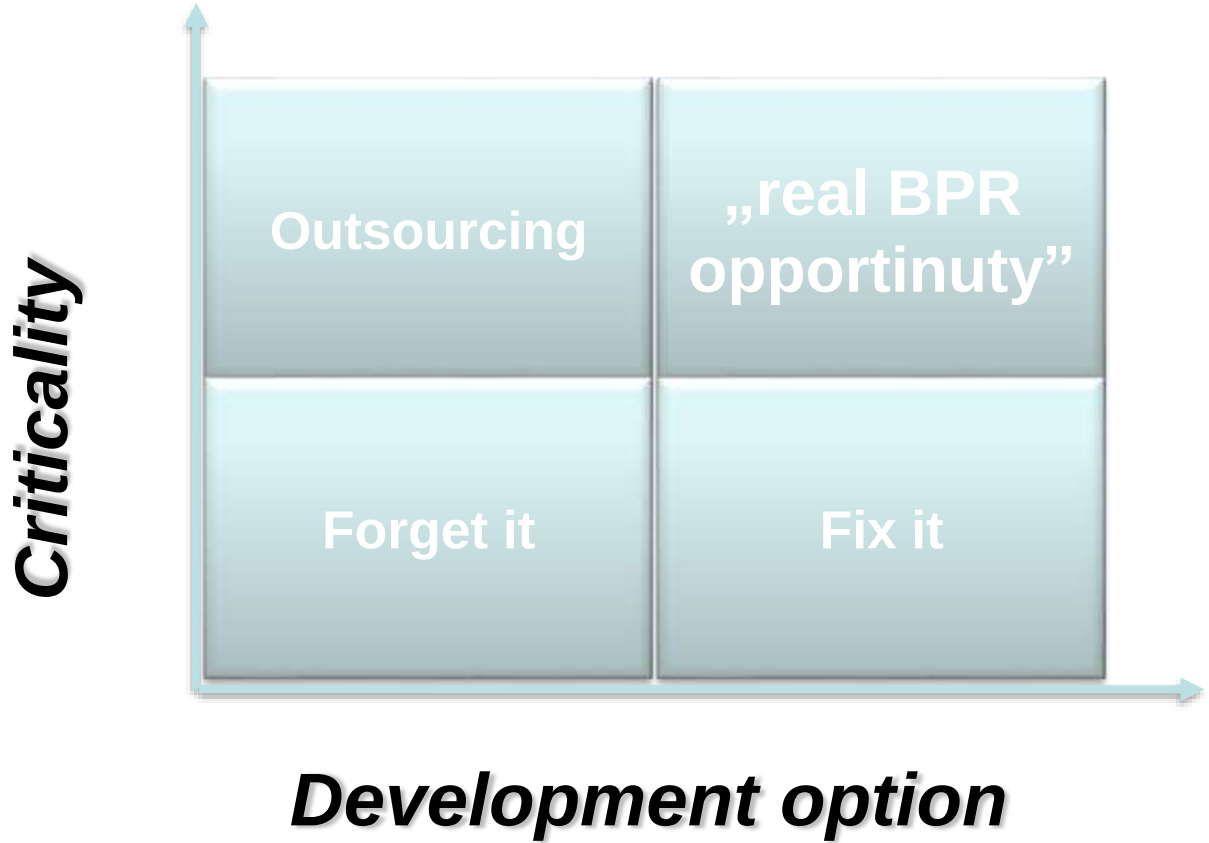
What exactly do we mean by BPR?

Business Process Reengineering:

„„A **fundamental**, in-depth rethinking and **radical** redesign of business processes to deliver significant dramatic improvements in performance by current standards: service, quality, speed, cost. ”

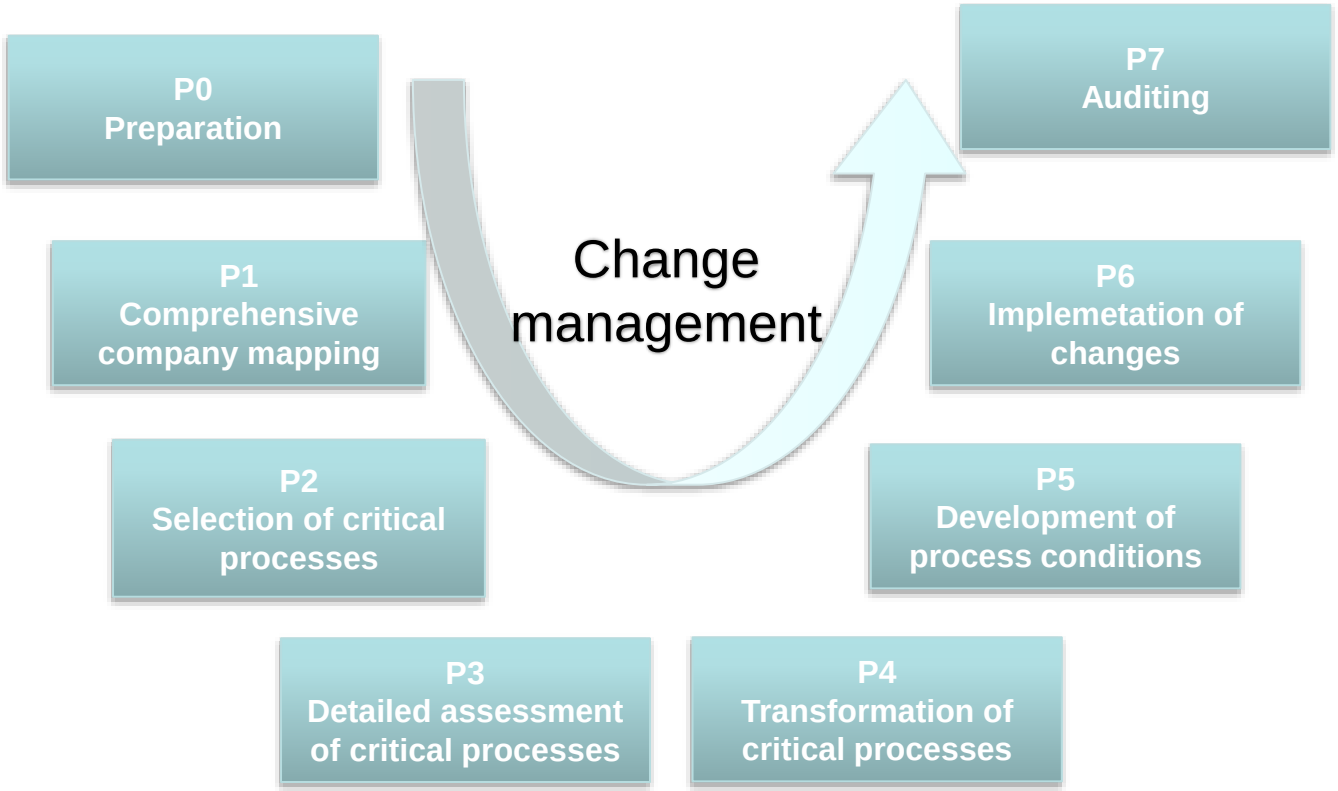
Michael Hammer - James Champy

What are we supposed to do with the processes?



Project phases of BPR

Processes and steps to transform the organization



LEAN - SIX SIGMA

Lean-Six sigma process development

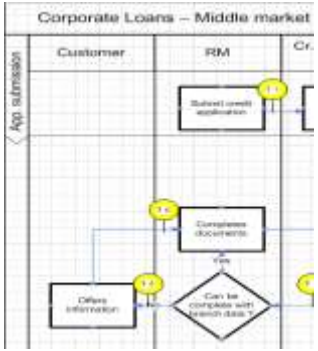
- Preparation of flow chart, determination of scope
- Schematic compilation of PDD

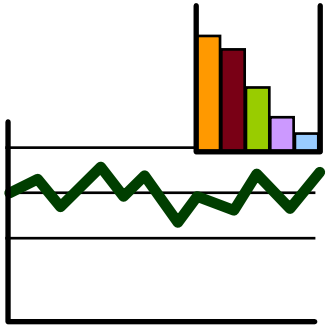
- Defining KPI's
- Determination of current and expected performance levels

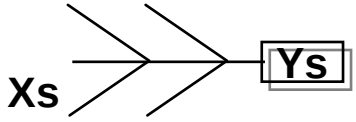
- Problem identification
- Problem analysis, determination of root causes

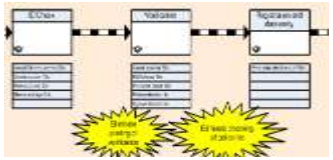
- Generating and prioritizing solutions
- Preparation of cost-benefit analysis
- Approve solutions

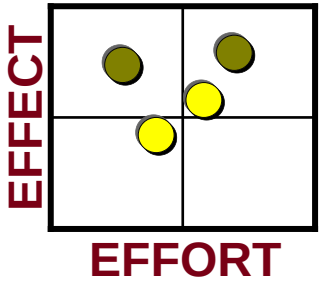
- Introduction of solutions, creation of conditions ensuring constant development of the process

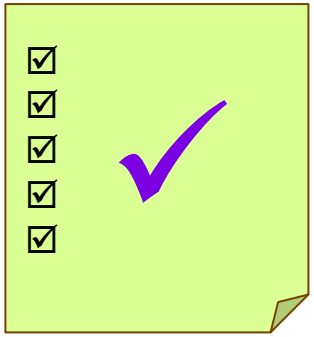












D Define

M Measure

A Analyze

I Improve

C Control

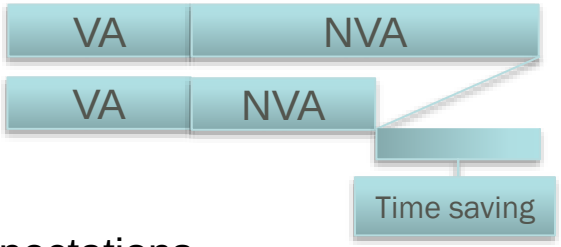
LEAN MANAGEMENT

Lean management principles

Lean management aims to **streamline processes (that is, create value with fast, easy, "cheap" operation)** along the following principles and options:

1. All non-value creating activities are unnecessary waste!

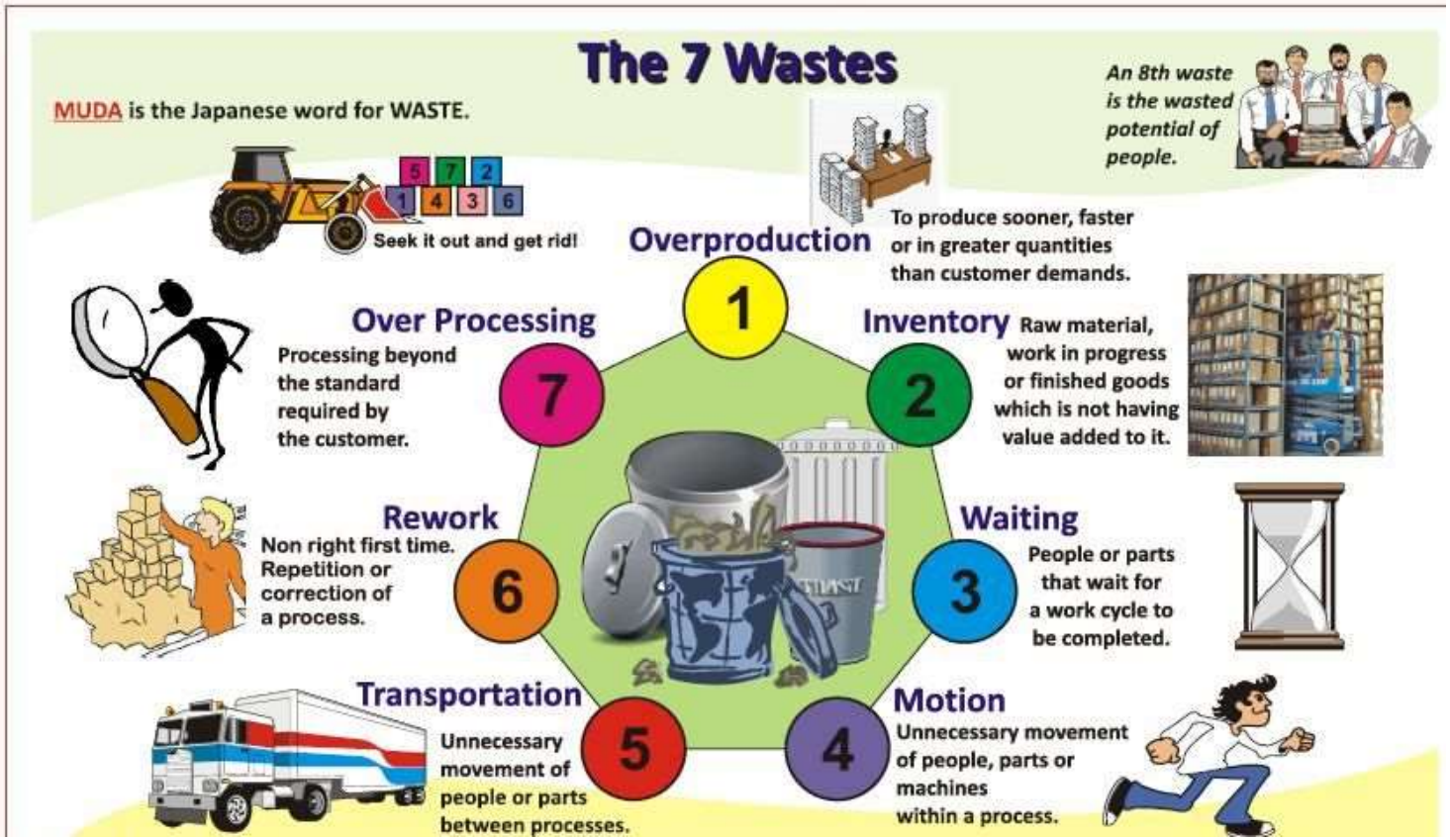
- Indentification and segregation of value added and non-value added activities;Eliminate non-value-added activities (for both customer and company)
- Value is the activity: for which the customer/buyer is willing to pay or which changes the properties of the product/service so that it it closer to the customer expectations
- Minimize losses (7 muda): Waiting, Stocking, Repair/Refuse, Processing, Shipping, Excess production



2. Maximize process speed

3. Optimizing and minimizing the use of tools and resources

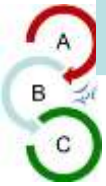
Definition of loss



Loss in the office

	Missing information to get the job done - "chasing" information
	Multiple inspections, protracted decision making
	Frequent interruption of an activity due to another event (such as a phone call)
	Need for frequent relocation (traveling, searching for materials, documents, etc.)
	Waiting for the transaction between different departments
	Multiple recording, overlapping Excel spreadsheets, redundancy

Steps towards Lean organization



It is necessary to determine what is the value to the customer, why she is willing to pay, (ie a specific description of the product / service)

1. Value determination

Development of the value-creating process (identification of value-adding and non-value-adding activities)

2. Value stream mapping

Ensure smooth operattion of the process

3. Ensuring continuous flow of value

The schedule and quantity are determined by the customer's demand

4. Implement a „pull” strategy

Continuous improvement, process streamlining, complete elimination of waste

5. Perfecting

SIX SIGMA

Six sigma principles

Process performance **measurement** based on data (historical or measured data)

Defining **Targets** (SMART- specific, measurable, achievable, realistic and time-bound)

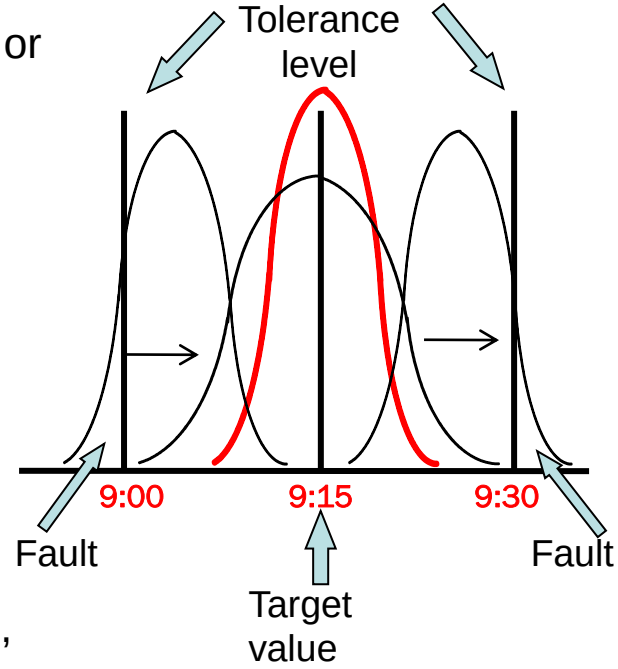
Customer expectations (customer-critical features)

Benchmark data, market, competitors continuous monitoring

Aim to

- **elimination of errors** from all products, processes, operations (process capability)
- keep the process **stable** (can only be a random error)
- Once the goal has been achieved → **continuous tracking**, re-measurement is required

An example of a breakfast buffer car



D	M	A	I	C
Project definition	**Measure**	**Analyze**	**Improve**	**Control**

Six sigma

Sigma capability is a statistical measure of process performance.

	99% = 3,8 σ	99, 99966% = 6 σ
	20.000 lost mail per hour	7 lost mail per hour
	About 7 hrs. of power outage every month	About 1 hour of power outage every 34th year
	200.000 erroneously written prescription per year	68 erroneously written prescription per year
	5.000 medical malpractice during surgery	1.7 medical malpractice during surgery
	5.8 fault landing daily	1 fault landing per year

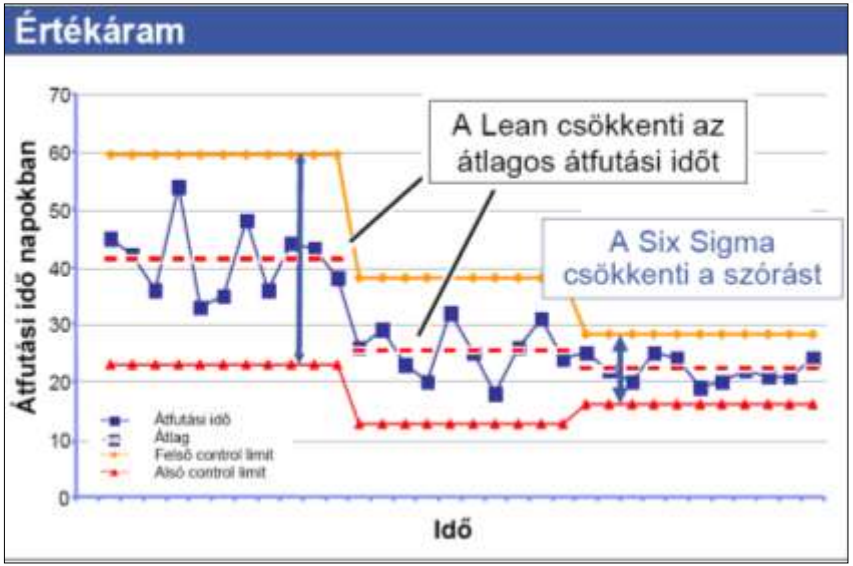
Project phases of Six sigma

1 Define	2 Measure	3 Analyze	4 Improve	5 Control
Which process should we choose for development? Why is the project timely now? Who is the customer and what are his needs? What key performance indicators should be the focus of development? What do we consider to be faulty process performance?	What is the current state of the process (baseline performance)? How do we create a measurement plan? How do we collect data on process performance? What is the current frequency of errors?	Typically, where do errors occur during the process? What problems are causing these errors? What impact do these errors have on the quality of the process, i.e. what are the high priority issues? What are the root causes of the problems?	How do we eliminate the root causes of problems? What improvements are needed to make this happen? What are the low-cost but high-impact development proposals? How should development suggestions be validated? How is the introduction going?	Is it appropriate to improve process performance based on post-deployment back-testing data? How to maintain good process performance? What are the conditions for constant monitoring and development of improved processes?

LEAN - SIX SIGMA

Lean-Six Sigma together

Using Six Sigma and Lean Management together ensures maximum results!

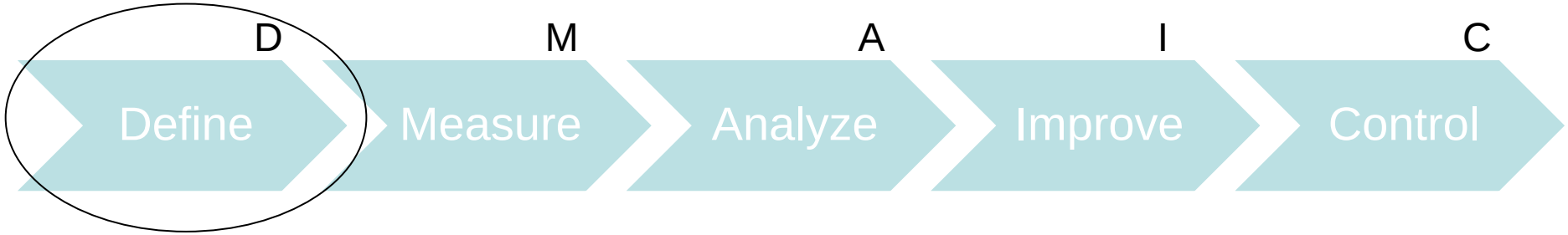


With **Lean Management**, customer processes are streamlined, making them **more cost-effective and faster.**

Both methods have a **positive effect** on customer satisfaction.

With **Six Sigma**, our processes will be error-free, more **stable**, more **predictable**, and more **manageable**.

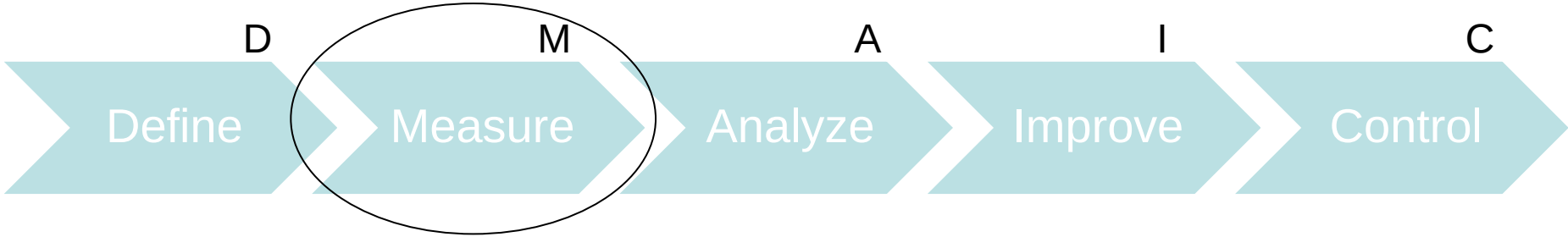
Project definition



Documents to define the project

- **„Contract ”between the stakeholders and the project team** with“ rights ”and numerical expectations for the parameters of the task to be performed.
- It places the process to be examined in a business environment
- It sets **goals and boundaries for the development team** in relation to the task at hand
- It helps to focus on the essential elements of the task → **scope / non-scope**

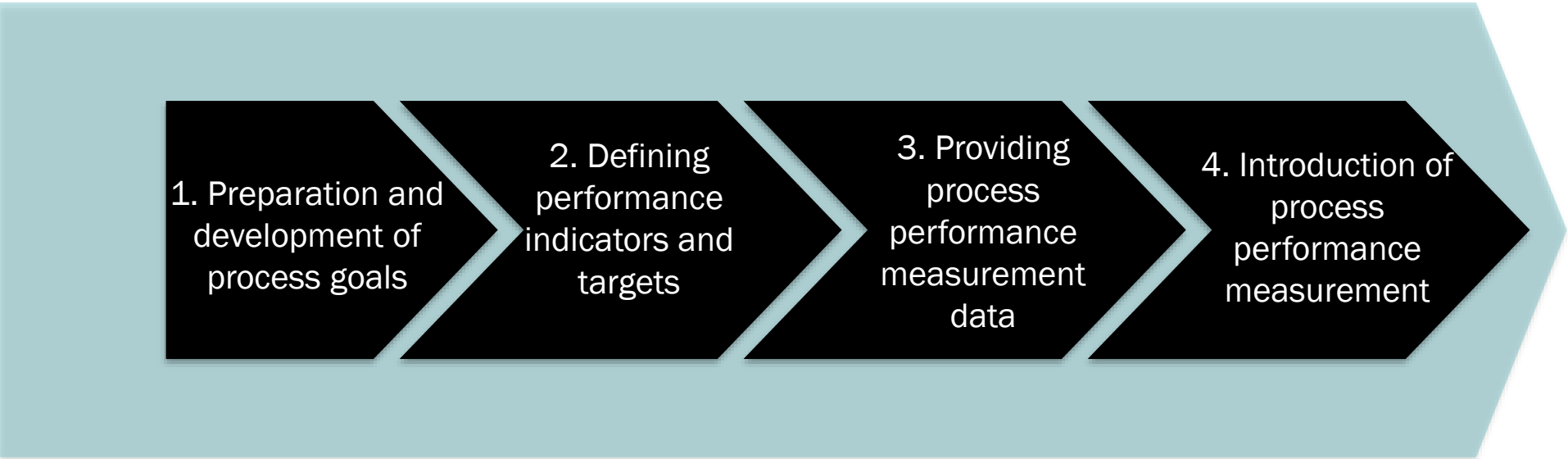
Process optimize measuring phase



What should the measure be based on?

- We have to evaluate our performance based on the customer's judgment: VOC - Voice of Customer.
- Critical To Quality (CTQ) - breaking down the characteristics of a product or service into specific and measurable requirements
- Example: Applying for a loan
  - VOC: speed
  - CTQ: the credit claim will be processed within 4 days from the submission of the documents

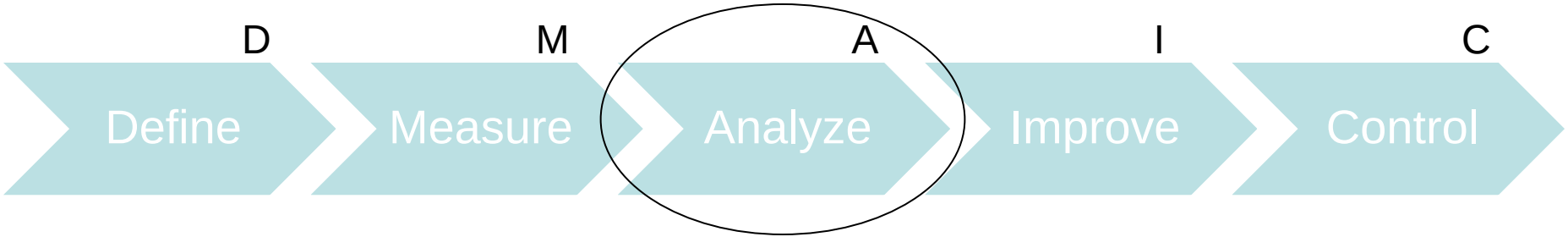
Design of a measurement system



Pitfalls of measurement – What should we pay attention to?

The measurement system covers too many operating processes	• Too much human resources are required to operate the measurement system • Loss of customer / strategic focus, making it difficult to identify the potential for adverse business performance in a multitude of metrics
The performance of a given process is measured by too many indicators	• The measured values may contain conflicting information about the performance of a given process • Managing metrics consumes too many resources
Process measurement goals do not match organizational goals	• Those responsible may become reluctant to measure the performance of processes • They perceive the tasks related to the measurement as merely necessary bad, they are not committed to improving the processes
The procedure for measuring indicators is little or not automated at all	• Measuring metrics consumes too many resources • The indicator is measured late, so the information received may become irrelevant or the necessary steps may be taken late

The analysis phase of process optimization

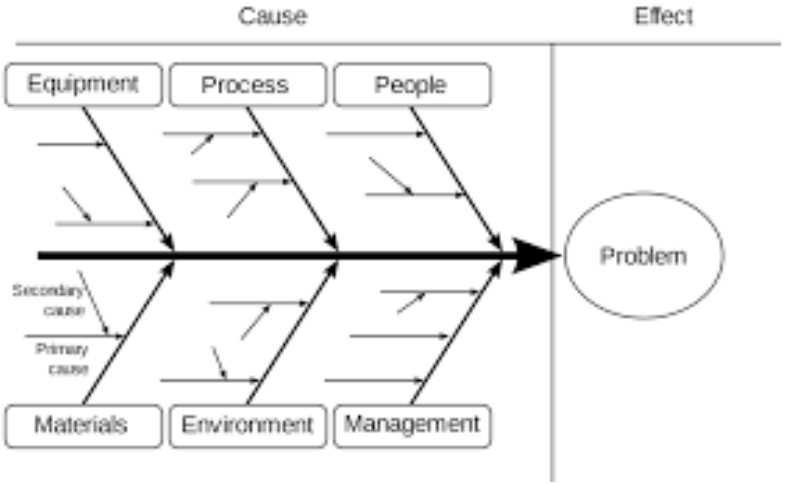


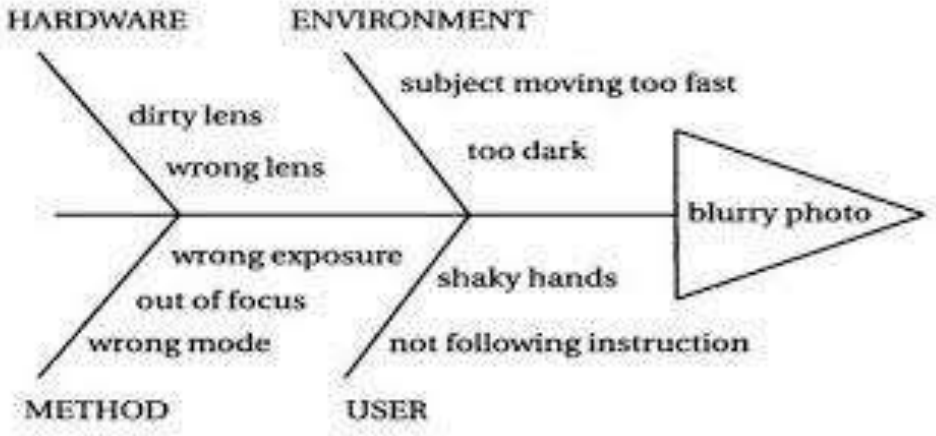
Analysis techniques: Ishikawa diagram

Why do we use it?

It makes it easier to identify, identify, examine, and graphically illustrate the root causes of problems and the circumstances in which they occur.

How it is made?....



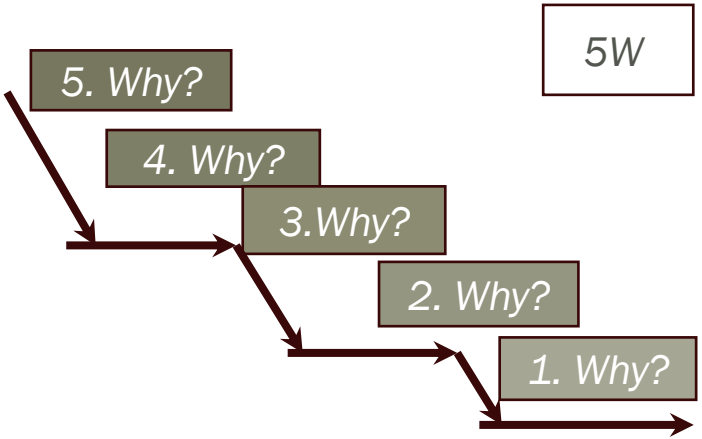


Analyzing techniques: 5 Whys

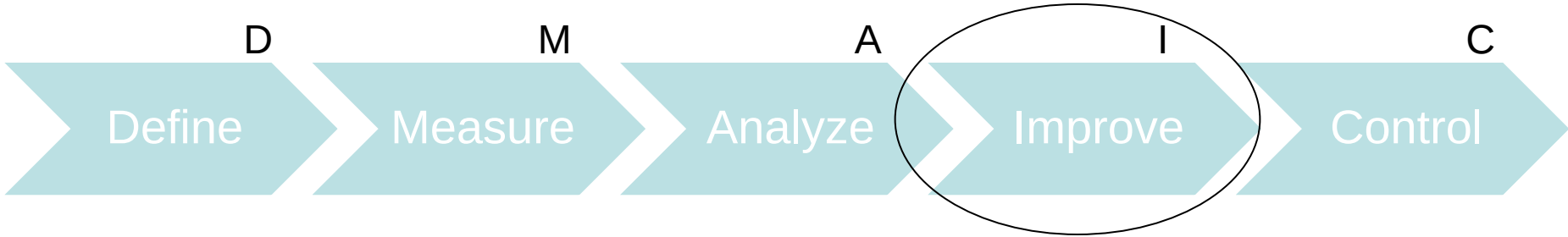
What we use it for: Identifying the root causes of a problem

Application process:

1. Identification of starting point - symptom – identification
2. Mapping problems “below” the starting point using brainstorming
3. For each problem identified, ask the question, "Why is this the cause of the original problem?"
4. After each answer, after the additional condition and answer of the question, we get to the root cause.



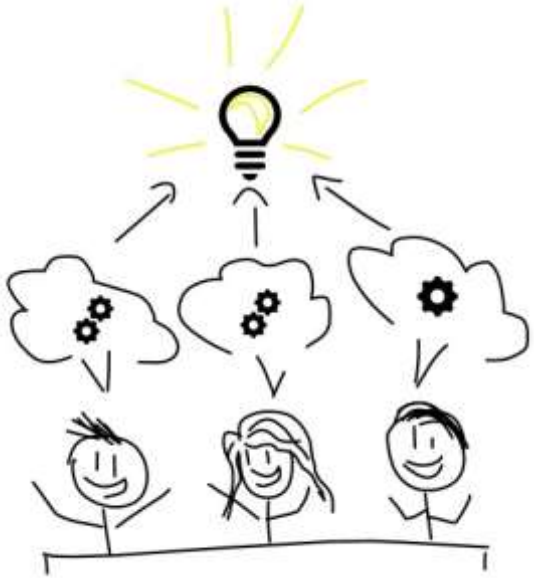
The improve phase of process optimization



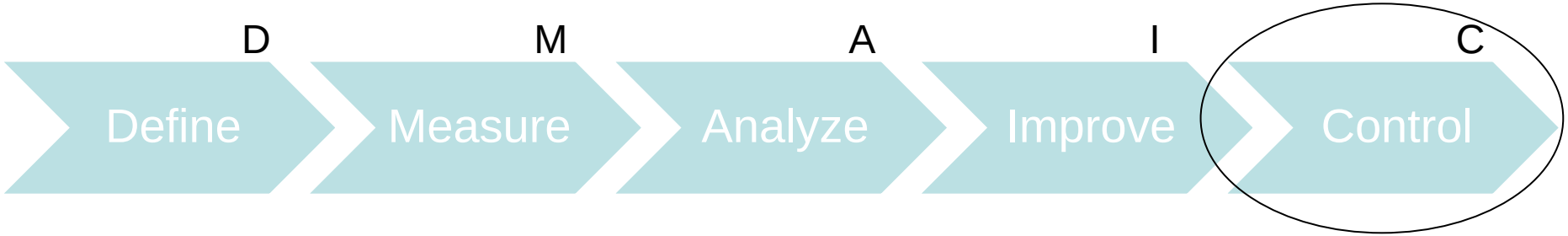
Generate solution suggestions

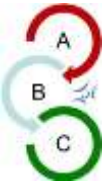
Goal: To eliminate the root causes identified in the analysis phase, thereby stabilizing process performance.

Applied technique: Brainstorming



Process control





Process control

- Identify and document the **new work standard**
- Develop a **quality control plan** which ensures the entire team is working with the same techniques and metrics
- Confirm reduction in failures due to the **targeted cause**
- Use statistical process control (SPC) to **monitor process** execution and identify any issues that arise
- Determine additional improvements, if needed, to meet process objectives
- **Integrate, document, and communicate the lessons learned**

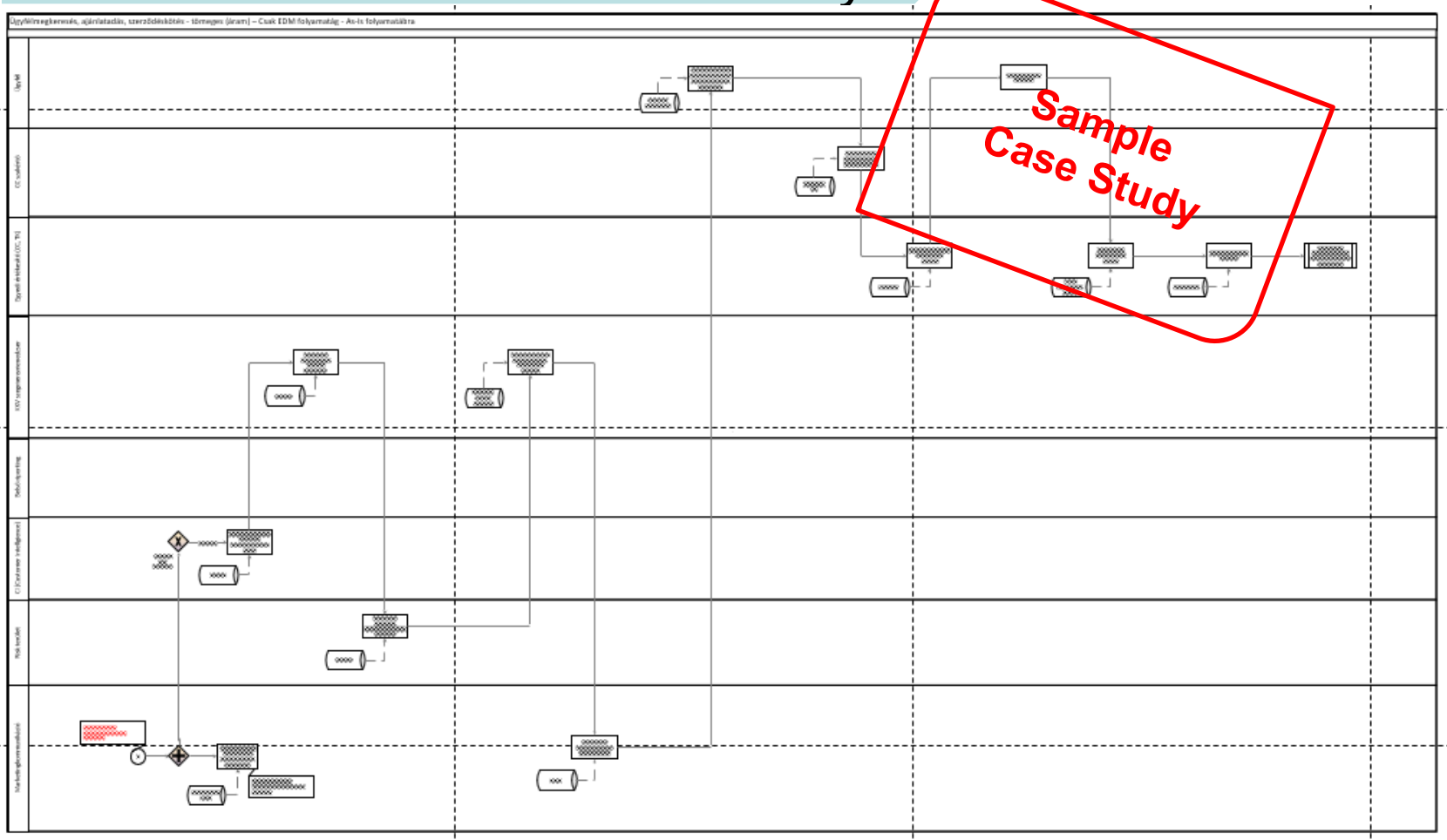
Specific project experience

Process development steps performed

Sample Case Study

Define	Measure	Analyze	Improve	Control
1. Higher lewel flow chart preparation, scope definition ✓	4. Defining process metrics ✓	7. List of problems - brainstorming ✓	10. Effort effect matrix preparation of the root causes ✓	
2. Define definitions for a flowchart ✓	5. Current power level definition ✓	8. Categorization of problems, priorization – N/3 method ✓	11. Generating solutions to eliminate the selected problems ✓	
3. Schematic compilation of a project plan ✓	6. Future expectations, target values recording ✓	9. Herringbone chart preparation, identification of root causes ✓	12. Determining process perforrmanci improvment ✓	

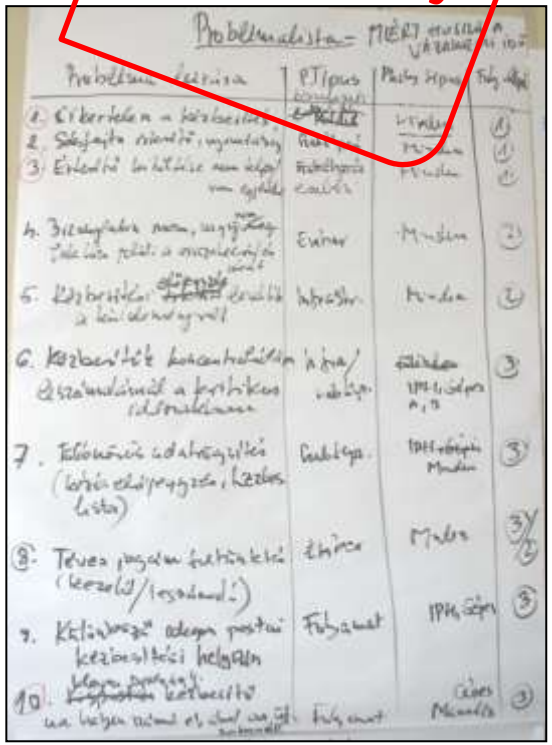
Flowchart – Post Office Custody



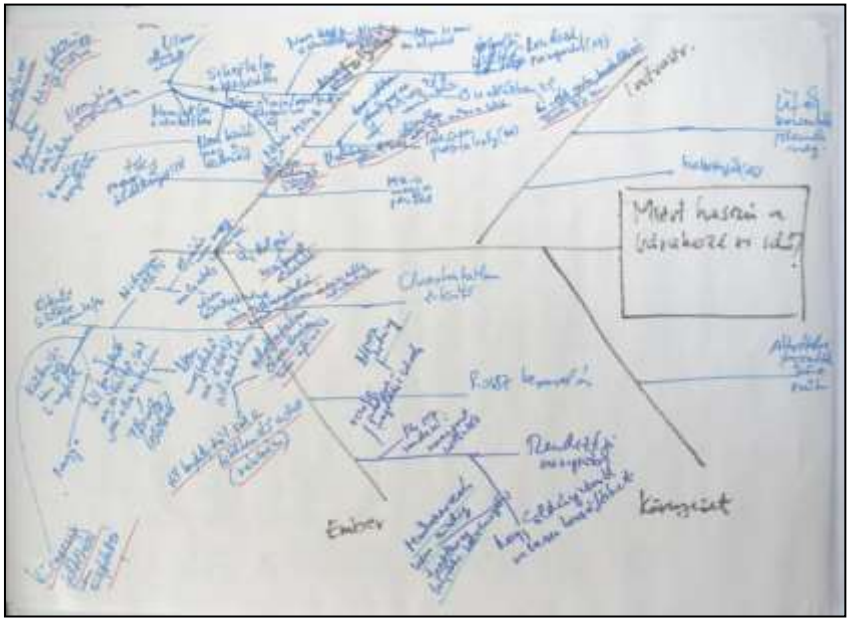
Process List - Brainstorming

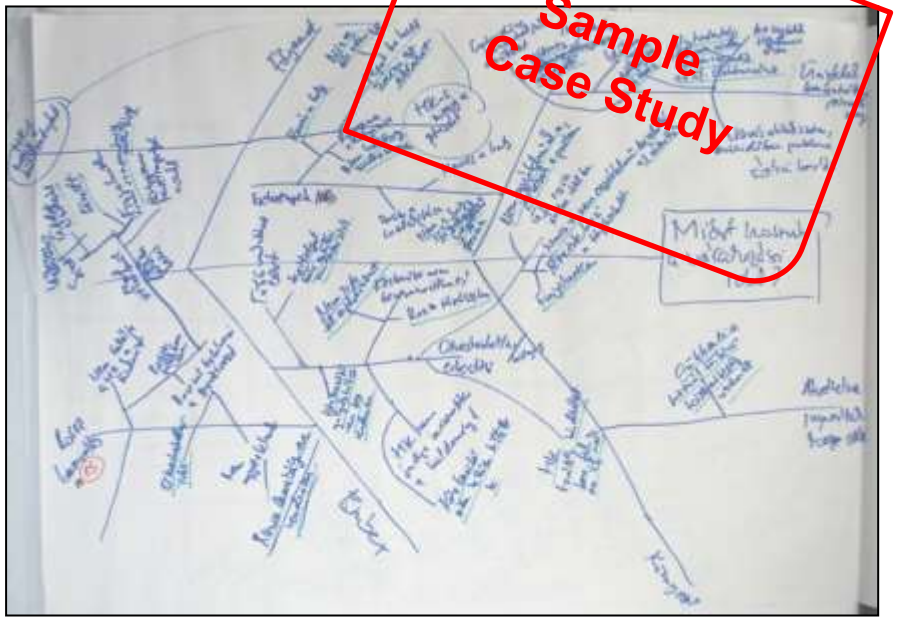
Ssz.	Problem description	Problem group	Post office type	Affected process step
1.	Failed delivery at the address (too many)	Environmental	All	1
2.	Too many types of delivery notification forms	Process-related	All	1
3.	Incomplete or unclear completion of the notification	Human	All	1
4.	Reason for return not indicated or not properly marked on the delivery reservation	Human	All	2
5.	Delivery reservation detached from the shipment	Infrastructural	All	2
6.	Concentration of delivery personnel during settlement in critical periods	Infrastructural/ Process-related	IPH-FO, IPH, A, B	3
7.	Multiple data entry (delivery reservation, delivery list)	Process-related	All	3
8.	Incorrect legal basis indicated (operator/settlement officer)	Human	All	2,3
9.	Different foreign postal delivery locations	Process-related	IPH-FO, IPH	3
10.	At smaller post offices, the delivery person settles at the window during peak hours at the foreign post office	Process-related	Automated, Manual	3
11.	The customer does not read the notification properly (misinterprets)	Environmental, Process-related	All	All
12.	HK goes to the settlement officers for the shipments	Process-related	IPH-FO, IPH	4

Sample Case Study



Ishikawa diagram





Problems defined as critical by the solution generation team through prioritization (identification of root causes)

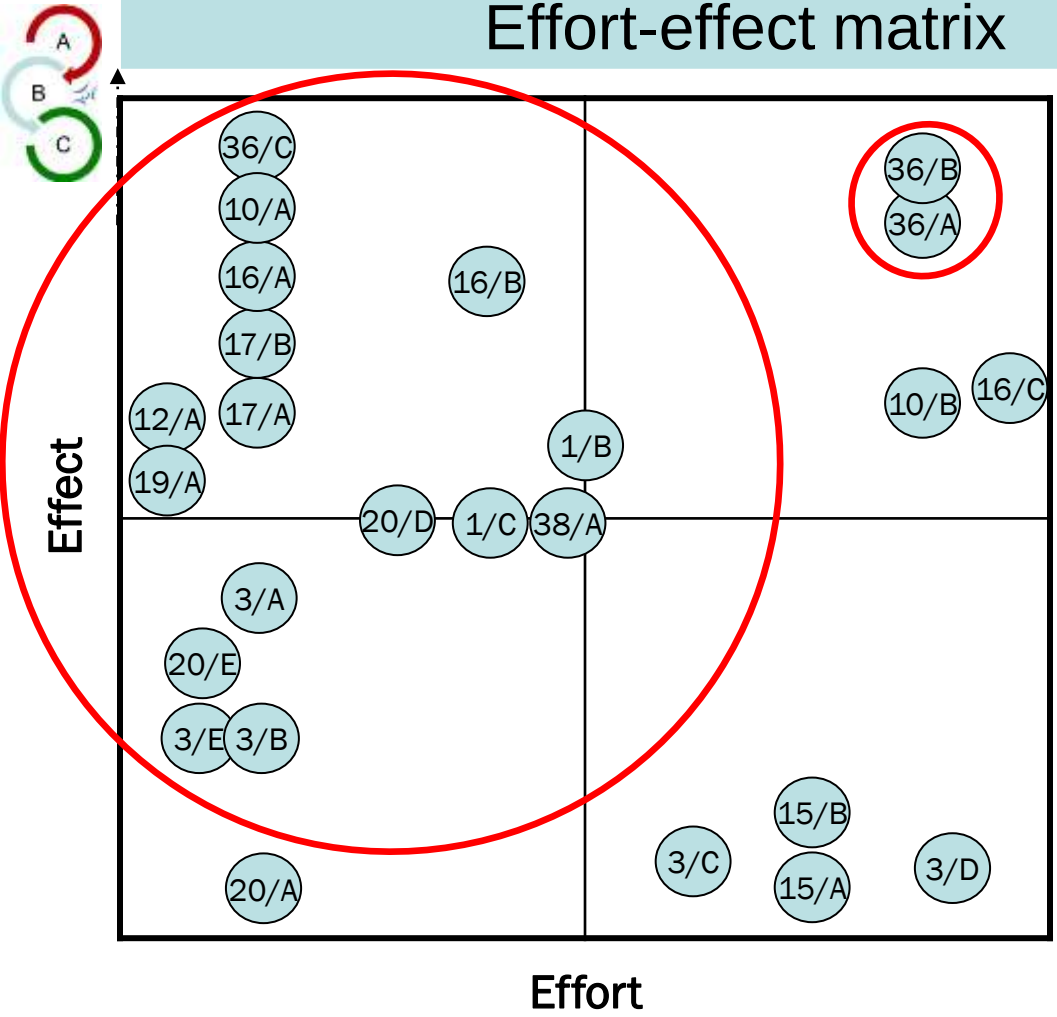
Problems that did not receive any votes during prioritization are not listed in the table below.

List of identified root causes

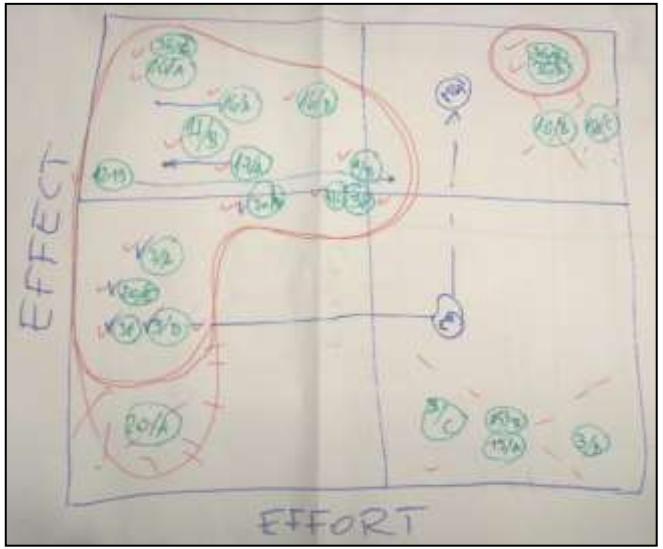
Sample Case Study

Ssz	Probléma leírása	Probléma csoport	Szavazat (N/3/fő)*	Ssz	Gyökér-ok
1.	Failed delivery at the address (too many)	Environmental	10	1/a	The customer's name is not written down
				1/b	The delivery person is not properly incentivized for successful delivery
				1/c	Limited scope of authorized recipients
3.	Incomplete or unclear completion of the notification	Human	7	3/a	The delivery person lacks proper procedural knowledge
				3/b	Lack of feedback (notification is not filled out properly) from HK to the delivery person because the minimum data content is on the notification
				3/c	Suboptimal layout of data content on the form
				3/d	Too much, complex data (e.g., tracking number)
				3/e	Poor environmental conditions
5.	Delivery reservation detached from the shipment	Infrastr.	2	-	-
6.	Concentration of delivery personnel during settlement in critical periods	Infrastr./ Process	1	-	-
9.	Different foreign postal delivery locations	Process	1	-	-

Effort-effect matrix



Sample Case Study



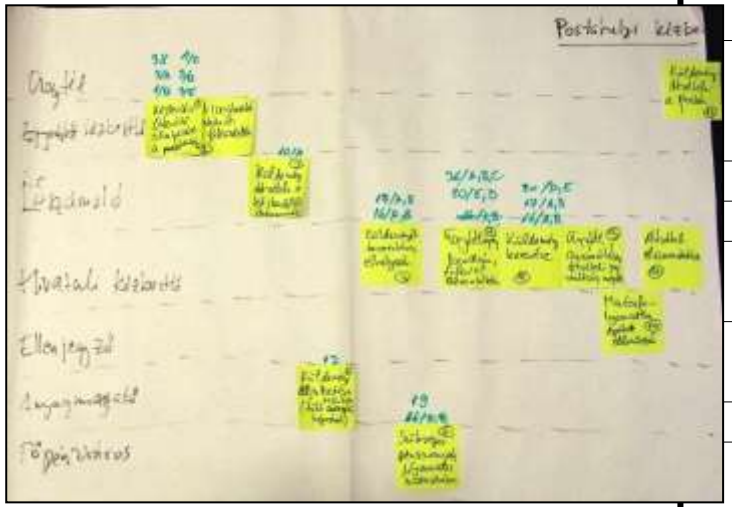
Generating solutions

Sample Case Study

Problem	Reason	Suggestion
3. Notification is incomplete or unclear	3 / a The supplier is not sufficiently familiar with the relevant procedures	M1: Training of deliverers on how to complete the notification M2: In-process control of deliverers (separation of bad fills and management review) M3: Preprinting Fixed Data Content on Delivery Notification (Delivery Only x) M4: Printing a recommendation number on the notification, linking it to a director code during F / O scanning, so the shipment can be found immediately M5: The return receipt is in duplicate, one side of which functions as a delivery note and is already in advance on both receipts in the relevant data content, so only the date and signature need to be entered. M6: Abandonment of the second delivery attempt for an official shipment M7: In the case of an unofficial consignment, discontinue use of the second notification form
	3 / b There is no feedback from HK to the deliverer about the incomplete filling, because the minimum required data content is included in the notification	
	3 / e Bad environmental conditions	
20. Unreadable or incomplete notice (for HK)	20 / e The type designation of the consignment is not or is not clear	
20. Unreadable or incomplete notice (for HK)	20 / d It is not clear to guide customers in the post office (which queue to take)	M8: The current markings are not clear, taking into account local specificities (for counting counters with the same function). -> a standard announcement must be suspended from the ceiling (taking into account the different post office space types)
1. Failed to deliver to address (too many)	1 / c The scope of persons entitled to receive the consignment is narrow	M9: Initiate amendment of legislation to expand the range of substitute recipients (eg residents, people living in the same household, relatives) regarding universal services
	1 / b The courier is not properly encouraged to deliver successfully	M10: Reorganization and revision of the basic wage structure.Performance and efficiency-based pay (already developed for parcel delivery) ☐ It is still present for the other two types, but it is so small that its impact is not significant

Process performance

Sample Case Study

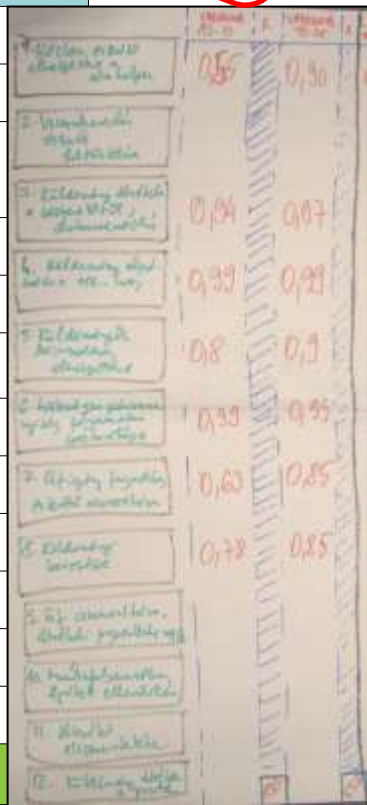


Problem	Effect on waiting time(%)	Root causes	Effect on waiting time(%)
1.	25%	1/b	15%
		1/c	10%
3.	5%	3/a	3%
		3/b	1%
		3/e	1%
10.	6%	10/a	6%
12.	1%	12/a	1%
16.	15%	16/a	10%
		16/b	5%
17.	5%	17/a	3%
		17/b	2%
19.	1%	19	1%
20.	2%	20/d	1%
		20/e	1%
36.	35%	36/a	14%
		36/b	11%
		36/c	10%
38.	5%	38	5%

Process performance

Sample Case Study

Problem	AS-IS process performance (ratio of managed error-free runs)	TO-BE process performance (error rate)
1) Placing a delivery notice at the address	65%	90%
2) Indication of the reason for return	N/A	N/A
3) Receipt of the shipment from the delivery person, documentation	94%	97%
4) Delivery of the shipment to the central warehouse	99%	99%
5) Sorting and placement of shipments	80%	90%
6) Continuous provision of necessary amount of money	99%	99%
7) Reception of the customer, identification of the notice	63%	85%
8) Searching for a shipment	78%	85%
9) Customer identification, determination of receiving rights	N/A	N/A
10) Built-in checks in the workflow	N/A	N/A
11) Acknowledgment of receipt	N/A	N/A
12) Receipt of the shipment at the post office	N/A	N/A
Overall process performance	23,3%	55,6%




Thank
You!!