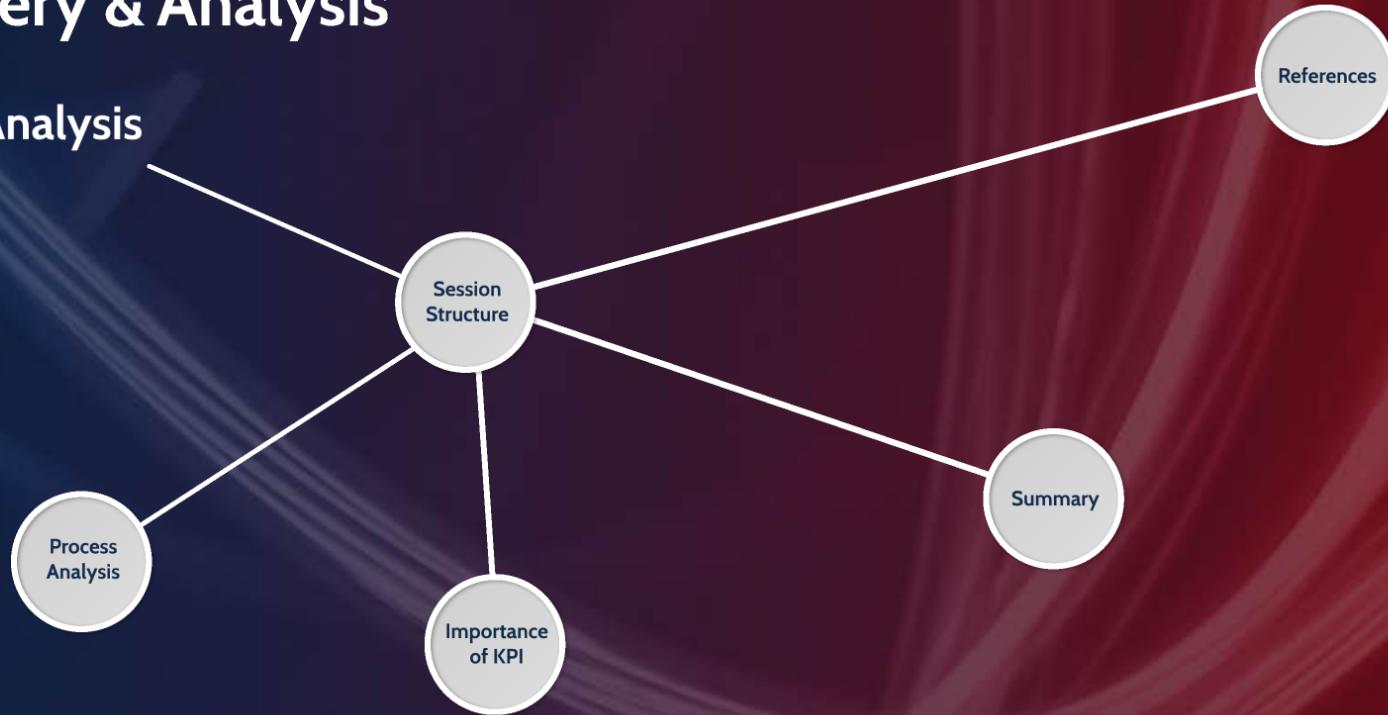


# Discovery & Analysis

## Process Analysis



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## Session Structure

Learning Objectives – Process analysis

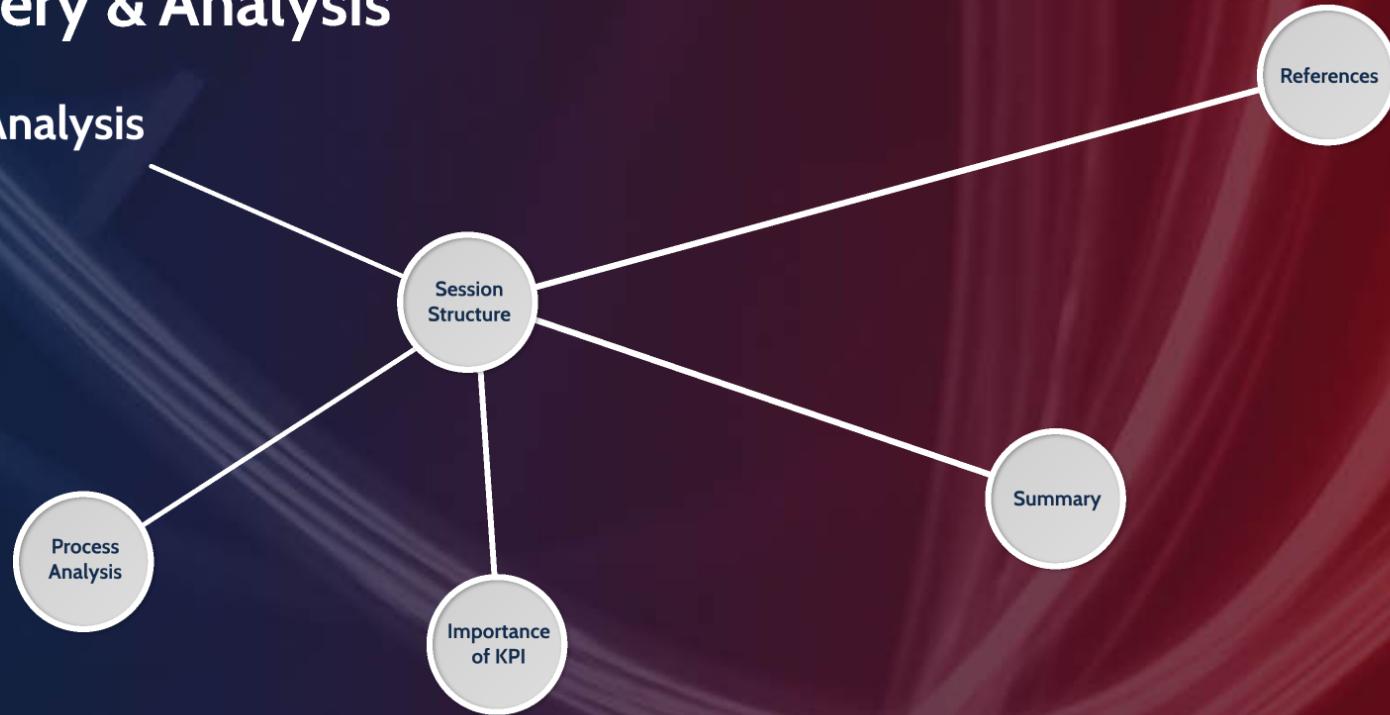
**What are the common dimensions to measure the process performance**

**How to choose the dimension(s) for your analysis**

**How the alignment between the organizational goal and the process performance contribute to the success of a project**

# Discovery & Analysis

## Process Analysis



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## Process Analysis



## Process Analysis

### Process Discovery

- ✓ What the process looks like



# Process Analysis



## Process Discovery

- ✓ What the process looks like



## Process Analysis

- ✓ How well is the process executed

Quality

Time

Flexibility

Cost

# Process Analysis



## Process Discovery

- ✓ What the process looks like



## Process Analysis

- ✓ How well is the process executed

- 1 Common dimensions for process analysis
- 2 Choosing the dimension(s) for your analysis



# Process Analysis

## Process Discovery

- ✓ What the process looks like

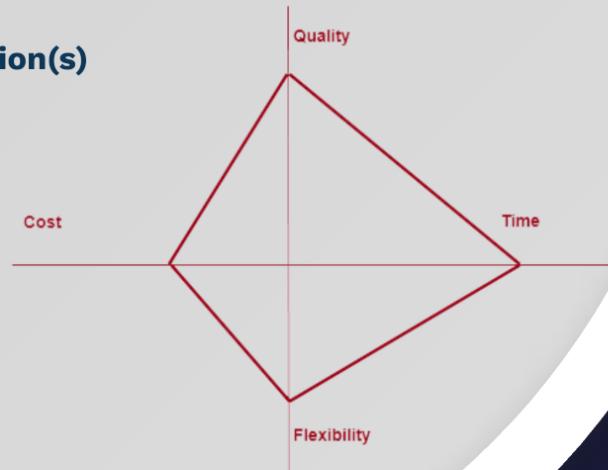
## 1 Common dimensions for process analysis

## 2 Choosing the dimension(s) for your analysis



## Process Analysis

- ✓ How well is the process executed



Quality

Time

Flexibility

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# Process Analysis



## Process Discovery

- ✓ What the process looks like

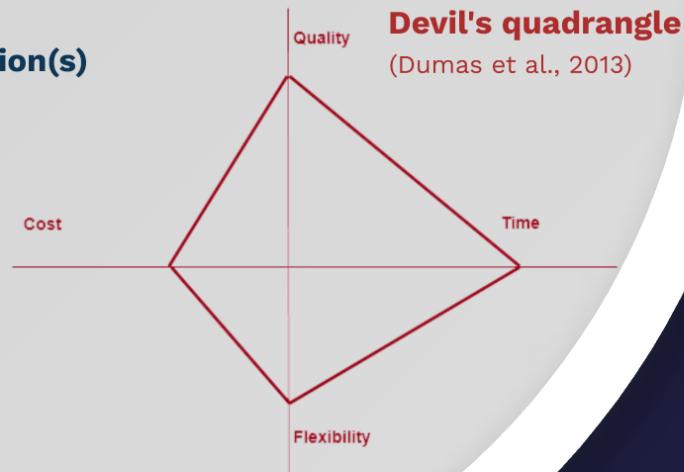


## Process Analysis

- ✓ How well is the process executed

### 1 Common dimensions for process analysis

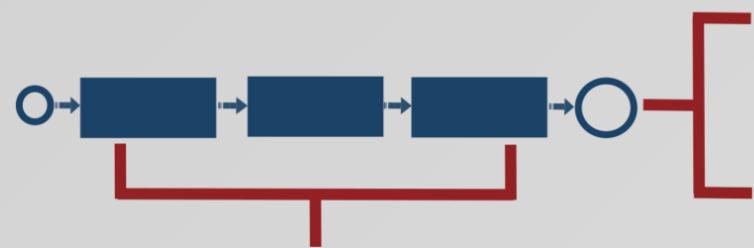
### 2 Choosing the dimension(s) for your analysis



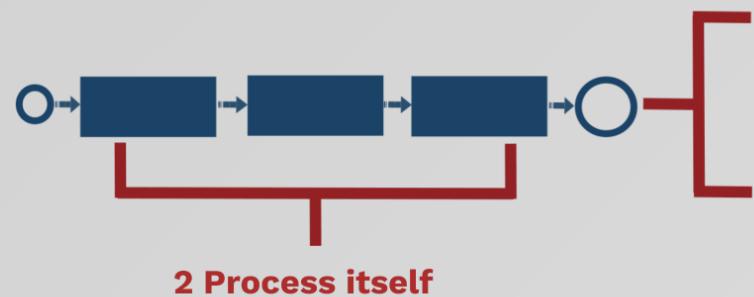


**Quality** (Dumas et al., 2013)

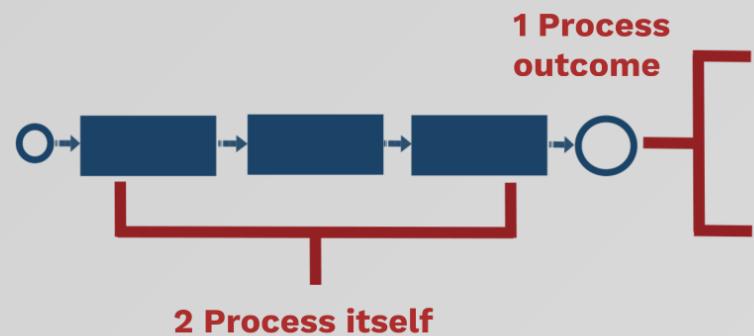
## Quality (Dumas et al., 2013)



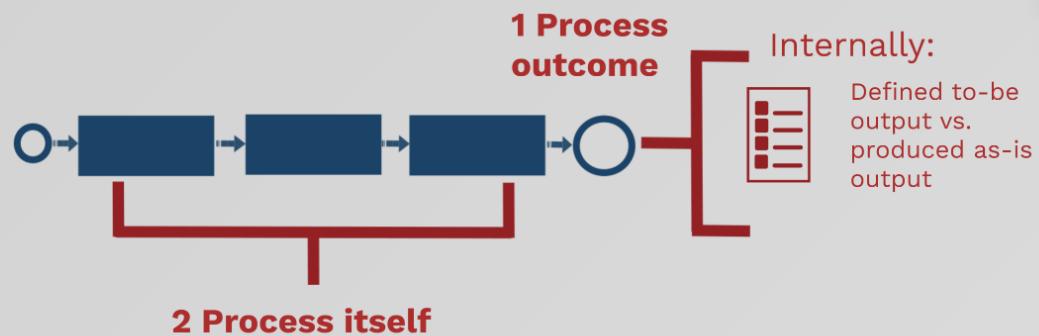
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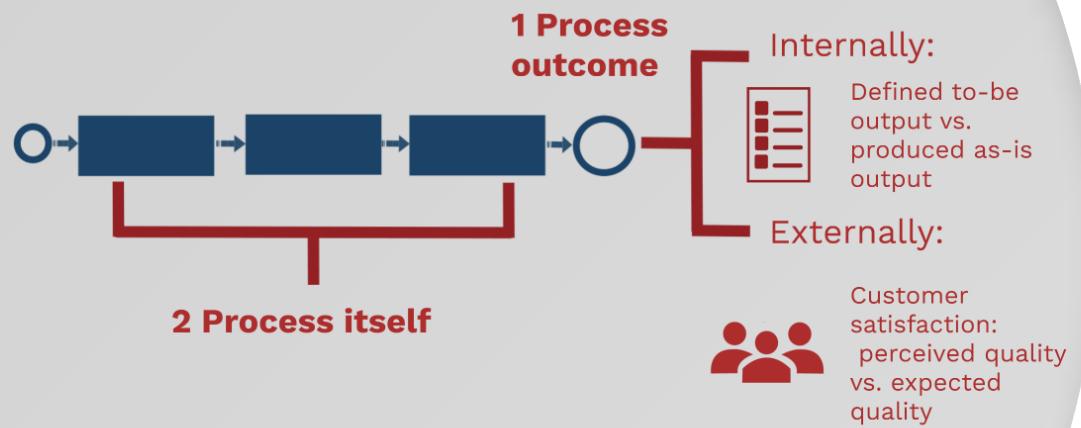
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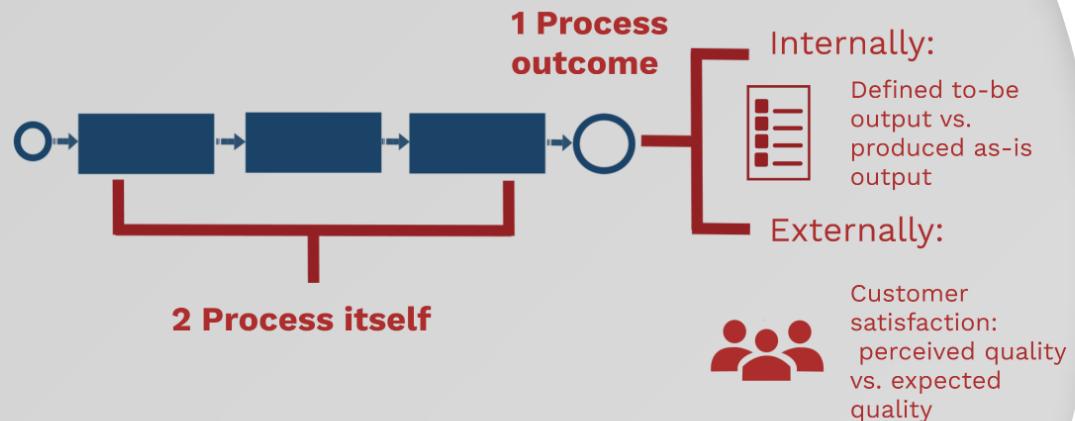
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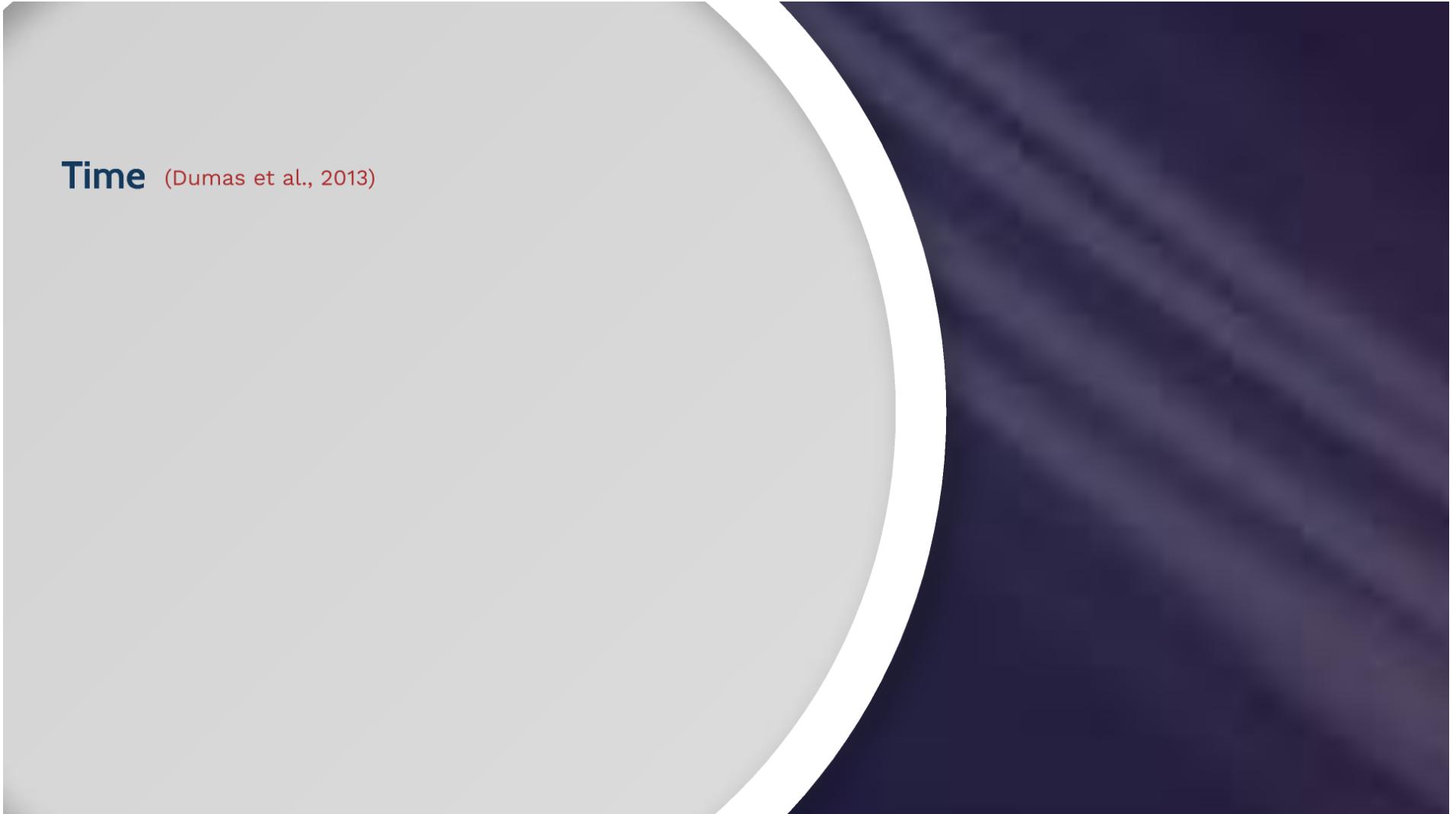
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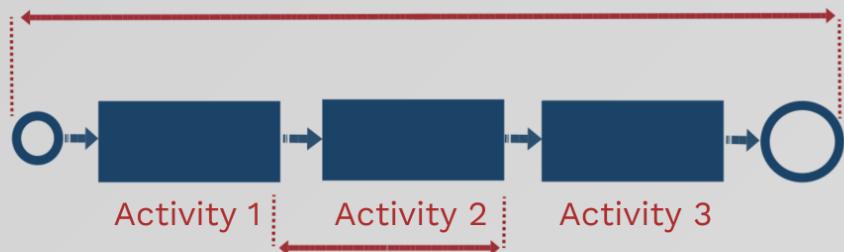
E.g. comparing the execution paths with:

- defined process behavior
- number of different execution paths
- resource utilization

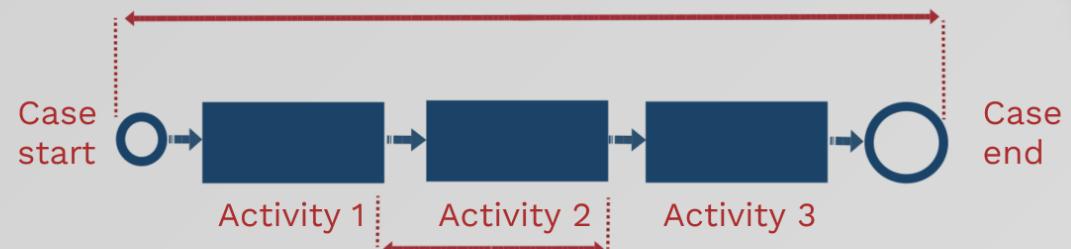
**Time** (Dumas et al., 2013)



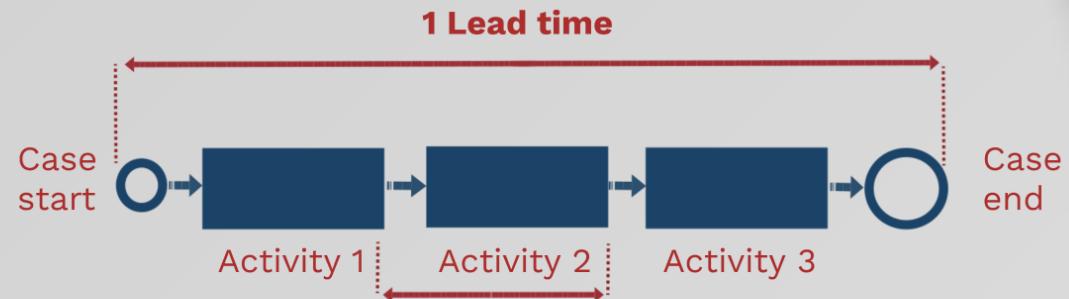
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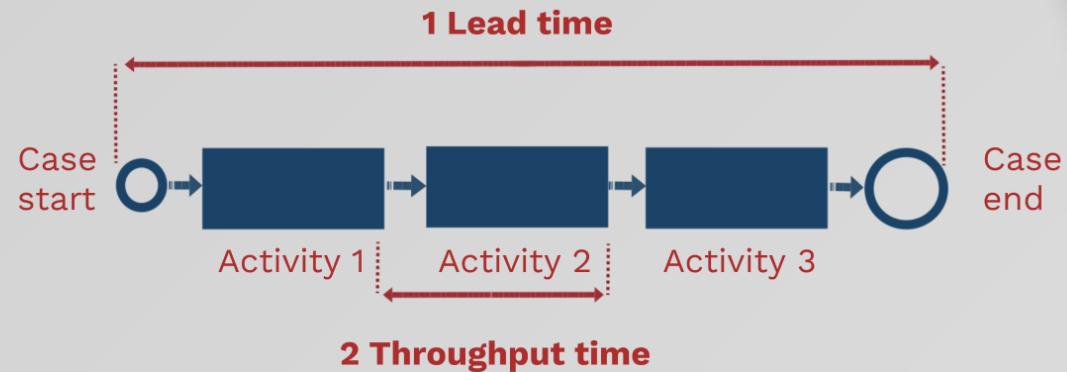
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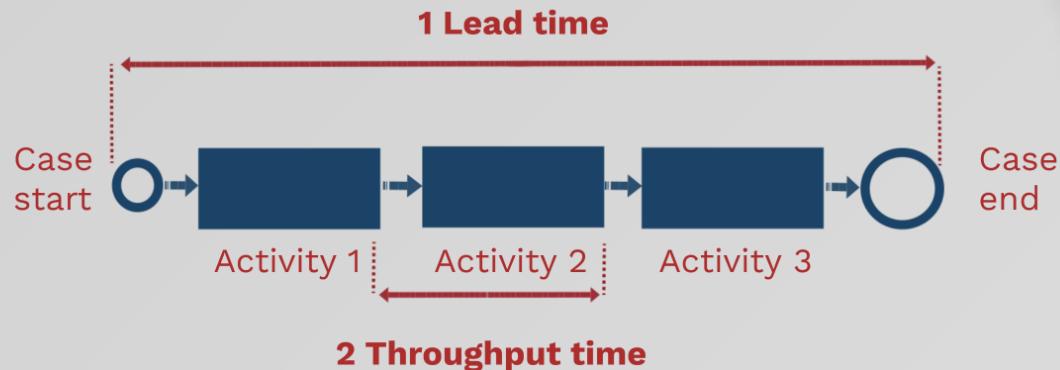
## Time (Dumas et al., 2013)



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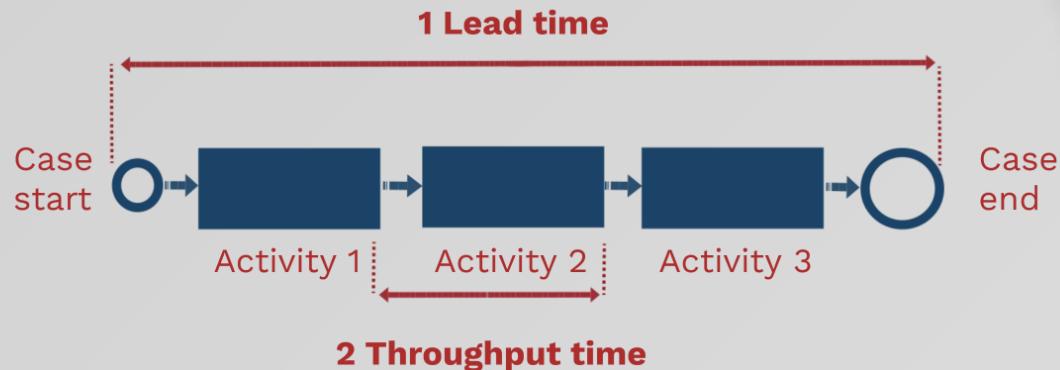


## Time (Dumas et al., 2013)



- Time actually spent on an activity
- Time between activities

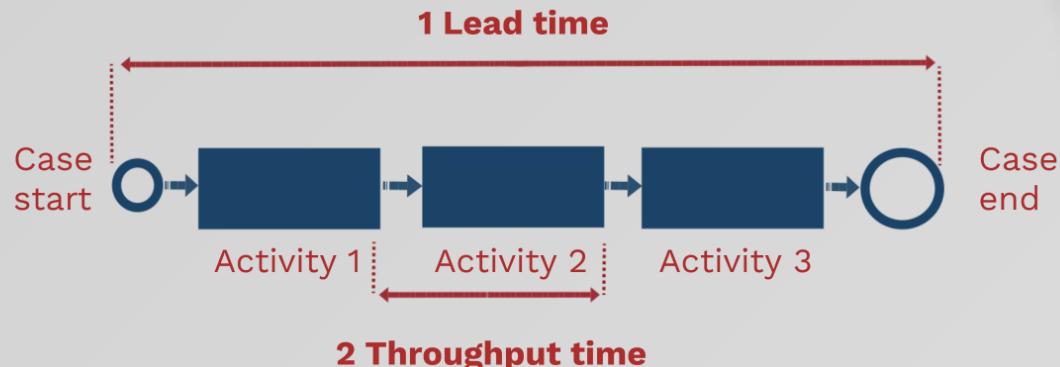
## Time (Dumas et al., 2013)



- Time actually spent on an activity
- Time between activities

e.g.  
logistics for moving  
goods / queue times

## Time (Dumas et al., 2013)



- Time actually spent on an activity
  - Time between activities
- ✓ Reducing time required to execute a process = Speed it up!
- e.g.  
logistics for moving  
goods / queue times



**Flexibility** (Dumas et al., 2013)

## Flexibility (Dumas et al., 2013)



- Fast process
- Low cost
- High quality of process outcome

## Flexibility (Dumas et al., 2013)



- Fast process
  - Low cost
  - High quality of process outcome
- Sudden rise in **demand**

## Flexibility (Dumas et al., 2013)



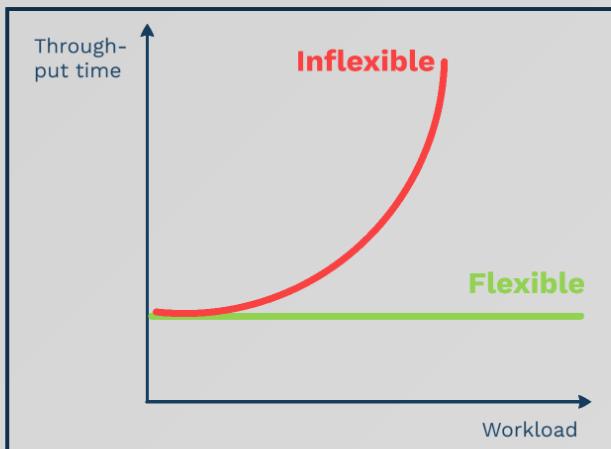
- Fast process
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## Flexibility (Dumas et al., 2013)



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### Example



## Flexibility (Dumas et al., 2013)

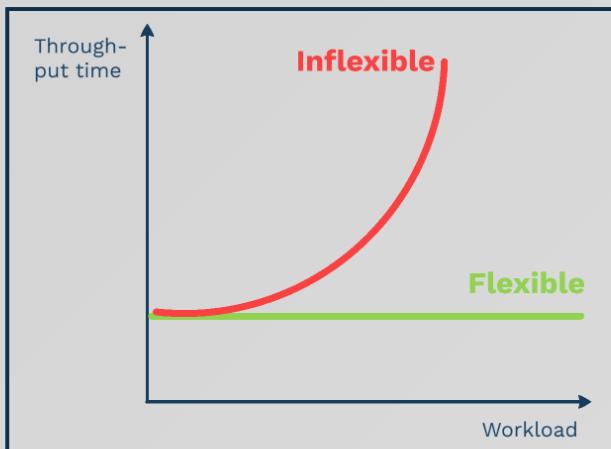


- Fast process
  - Low cost
  - High quality of process outcome
- Sudden rise in **demand** → "We need a lot more resources!"

+

Ability to produce in **different variations**

### Example



## Flexibility (Dumas et al., 2013)

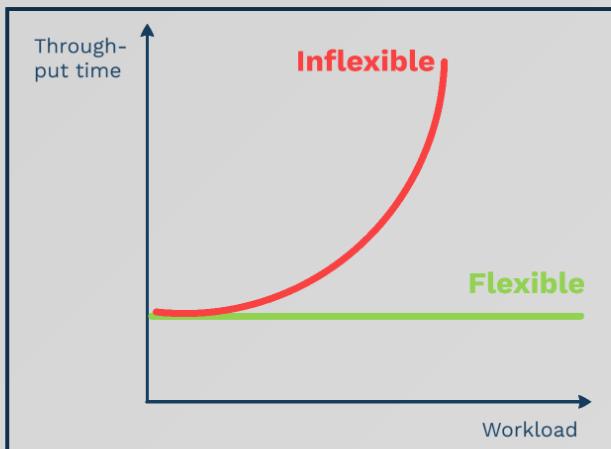


- Fast process
  - Low cost
  - High quality of process outcome
- Sudden rise in **demand** → "We need a lot more resources!"

+

Ability to produce in **different variations**

### Example



- ★ Shorter product lifecycles
- ★ Customization of products

**Cost** (Dumas et al., 2013)

\$

**Cost** (Dumas et al., 2013)

**Running Costs**

- Labour
- Machinery



## **Cost** (Dumas et al., 2013)

### **Material Utilization**

- Manufacturing
- Maintenance

### **Running Costs**

- Labour
- Machinery



## Cost (Dumas et al., 2013)

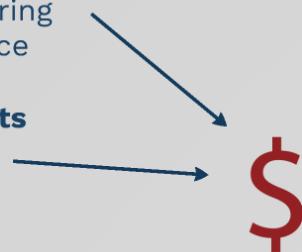
Direct Costs

### Material Utilization

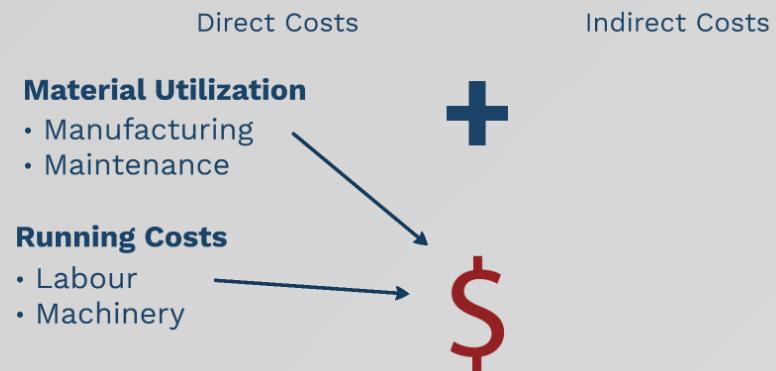
- Manufacturing
- Maintenance

### Running Costs

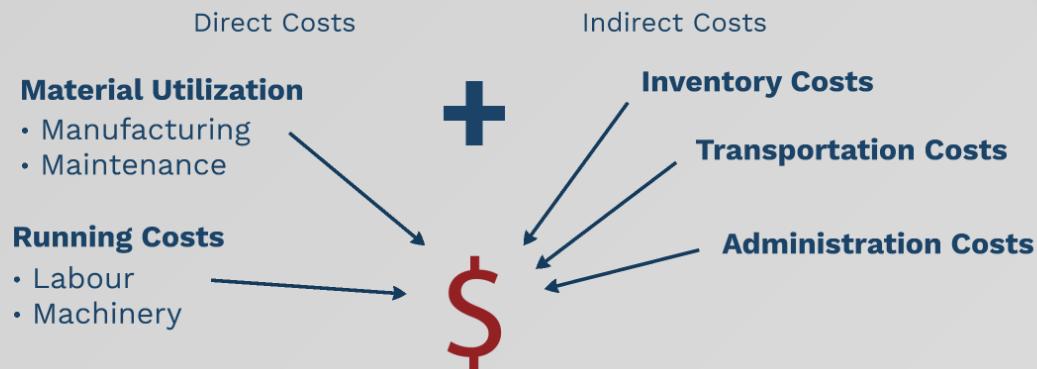
- Labour
- Machinery



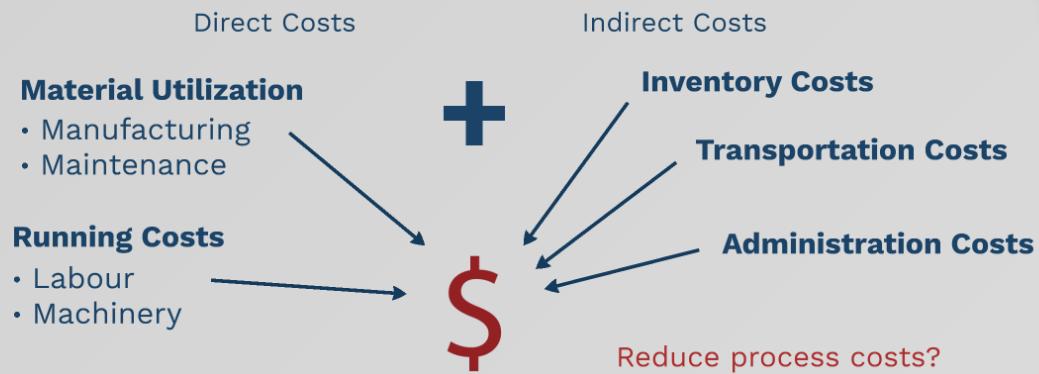
## Cost (Dumas et al., 2013)



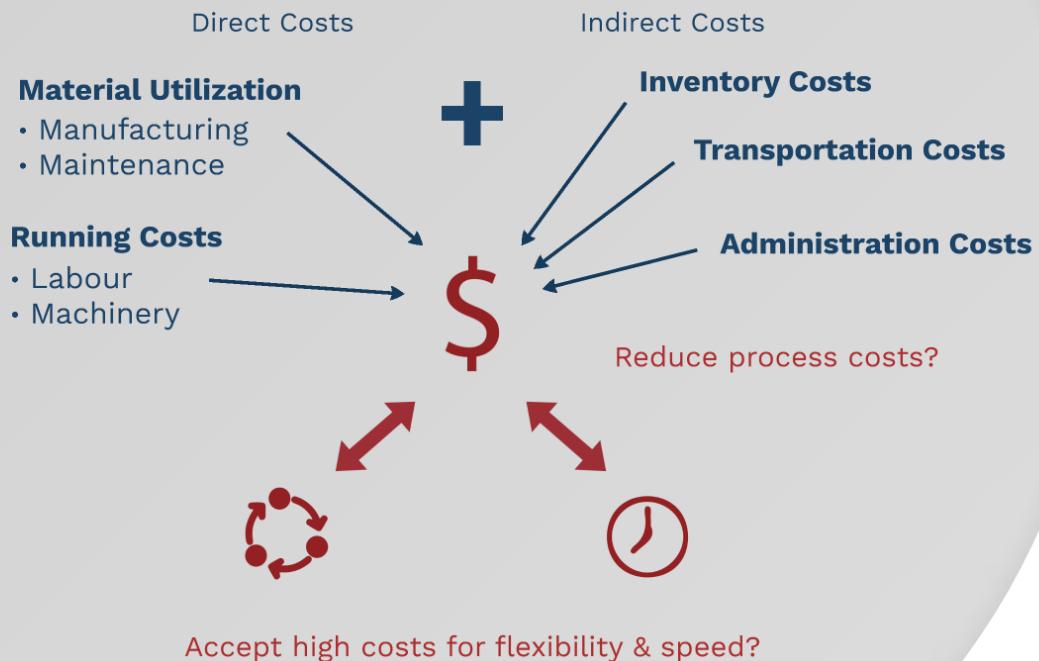
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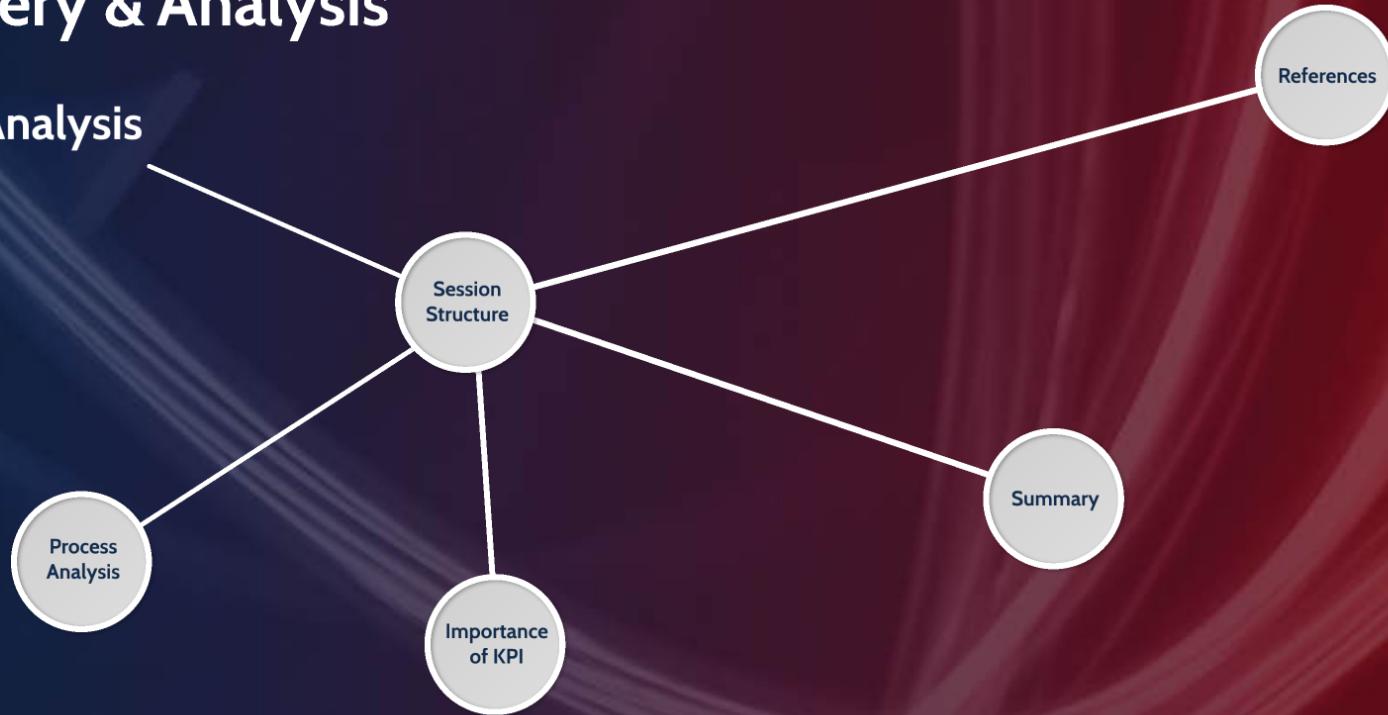


## Cost (Dumas et al., 2013)



# Discovery & Analysis

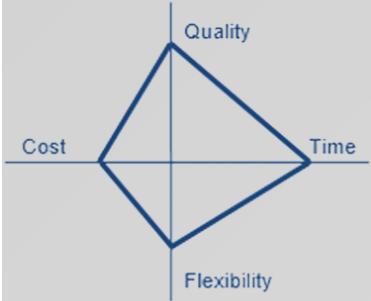
## Process Analysis



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# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



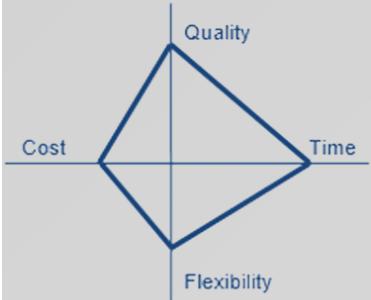
For  
universities

For  
companies

PPIs

# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



Defined target  
measures

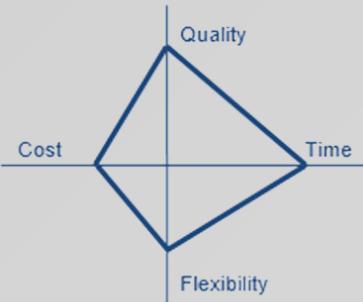
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# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



Defined target  
measures



Key  
Performance  
Indicators



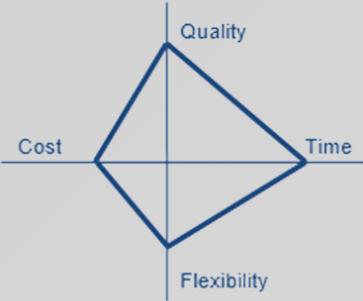
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# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



Defined target  
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Key  
Performance  
Indicators

e.g.  
- Sales revenue  
- Expenses  
- Market coverage

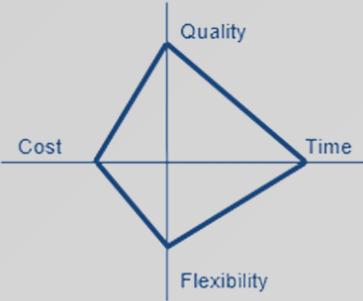
For  
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PPIs

# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



Defined target  
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Key  
Performance  
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- e.g.
- Sales revenue
  - Expenses
  - Market coverage
- No. of publications
- Research funding
  - Teaching quality
  - Student's satisfaction

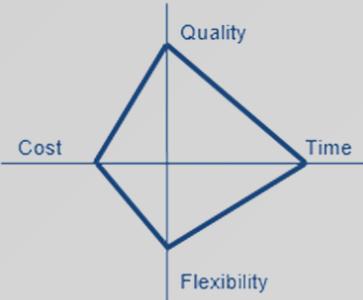
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PPIs

# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



**Defined target measures**



**Key Performance Indicators**



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What if the KPI is changing?

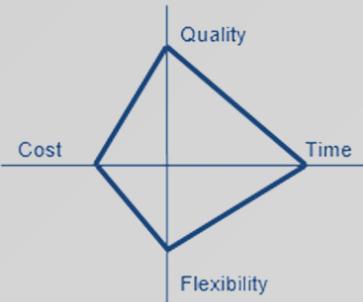
For universities

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PPIs

# Importance of KPI

## 2 Choosing the dimension(s) for your analysis



**Defined target measures**



**Key Performance Indicators**



e.g.  
- Sales revenue  
- Expenses  
- Market coverage

- No. of publications  
- Research funding  
- Teaching quality  
- Student's satisfaction

What if the KPI is changing?

**Root cause?**



For universities

For companies

PPIs

## Process Analysis Example 1

## Process Analysis Example 1



Research funding



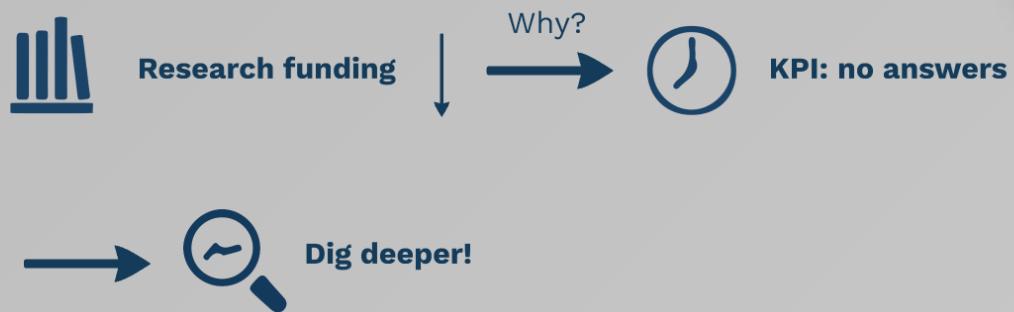
## Process Analysis Example 1



## Process Analysis Example 1



## Process Analysis Example 1

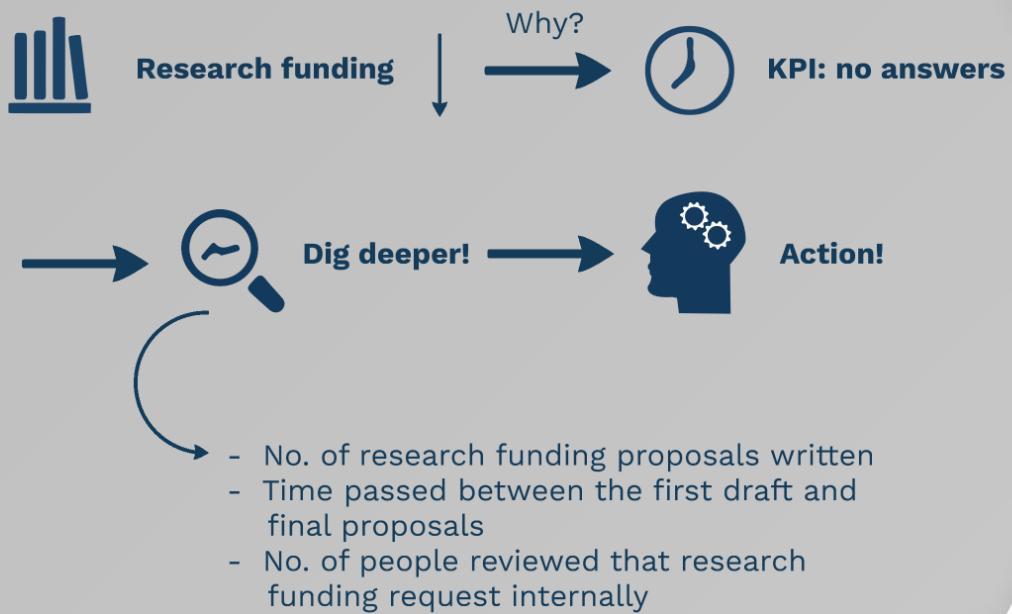


## Process Analysis Example 1



- No. of research funding proposals written
- Time passed between the first draft and final proposals
- No. of people reviewed that research funding request internally

## Process Analysis Example 1



## Process Analysis Example 2

## Process Analysis Example 2



Sales revenue



## Process Analysis Example 2



Sales revenue



## Process Analysis Example 2



Sales revenue



- How many orders were we able to fulfill?
- How many times orders are not delivered in time to the customer?
- How many times did we have the goods available in stock?
- How many times not?

# The Power of Process Mining



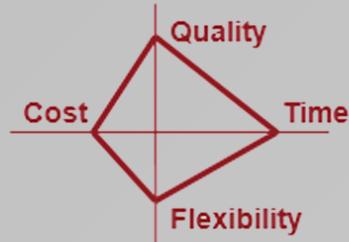
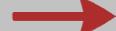
**Process  
Performance  
Indicators**

(Del-Río-  
Ortega, 2013)

## The Power of Process Mining



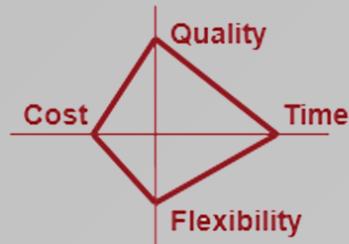
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# The Power of Process Mining



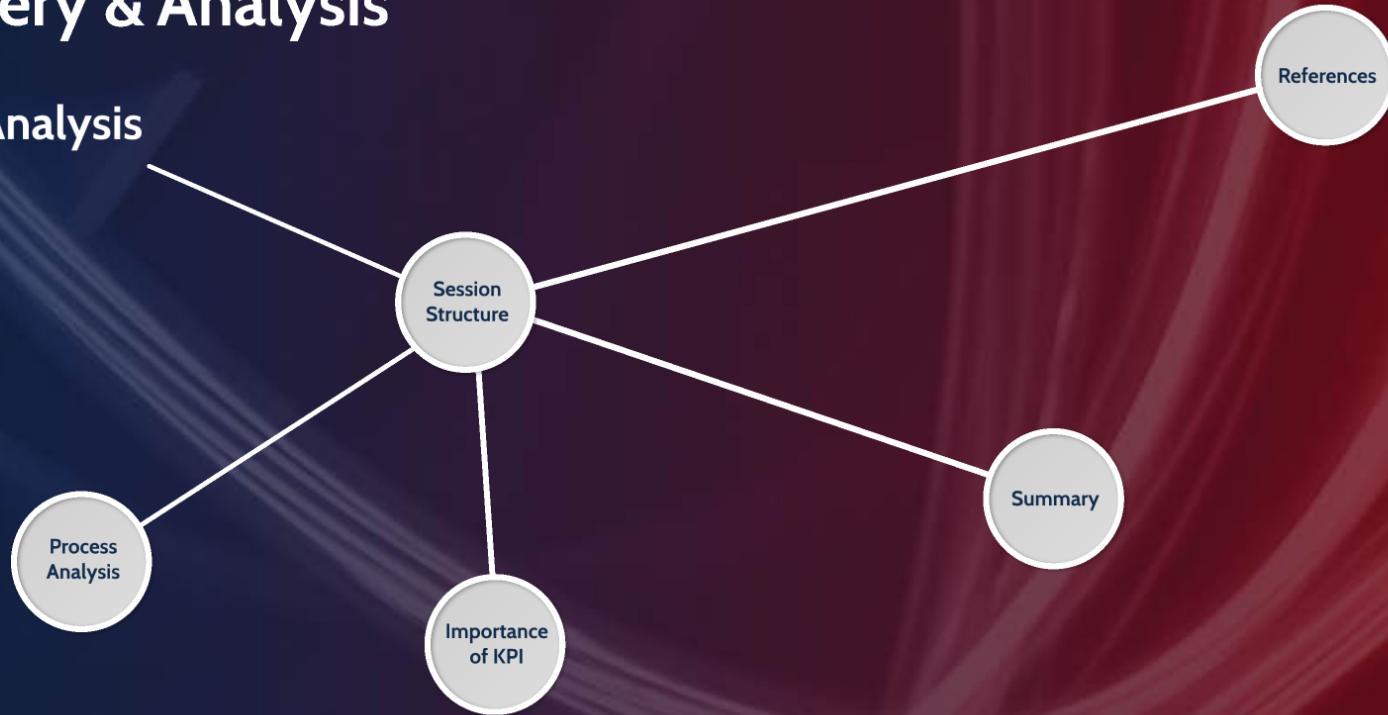
**Process  
Performance  
Indicators**  
(Del-Río-  
Ortega, 2013)



- ★ Understand the performance of your process
- Explain the development of your overall KPIs

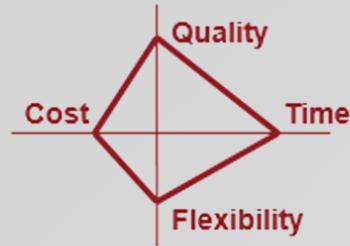
# Discovery & Analysis

## Process Analysis



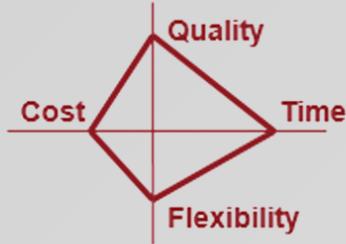
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## Summing Up



## Summing Up

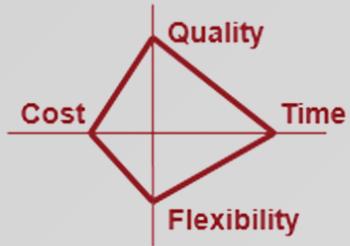
Analyze 4 dimensions



Understand process performance

## Summing Up

Analyze 4 dimensions



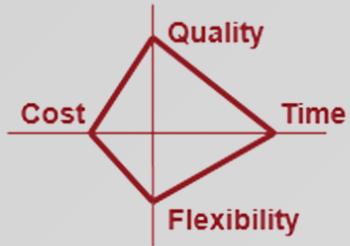
Understand process performance



overall goals of the organization

## Summing Up

Analyze 4 dimensions



Understand process performance



overall goals of the organization

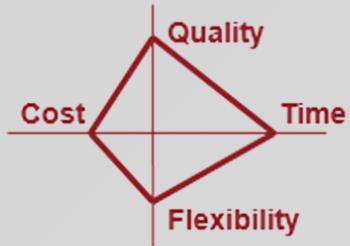
PPI



KPI

## Summing Up

Analyze 4 dimensions



Understand process performance



overall goals of the organization

PPI

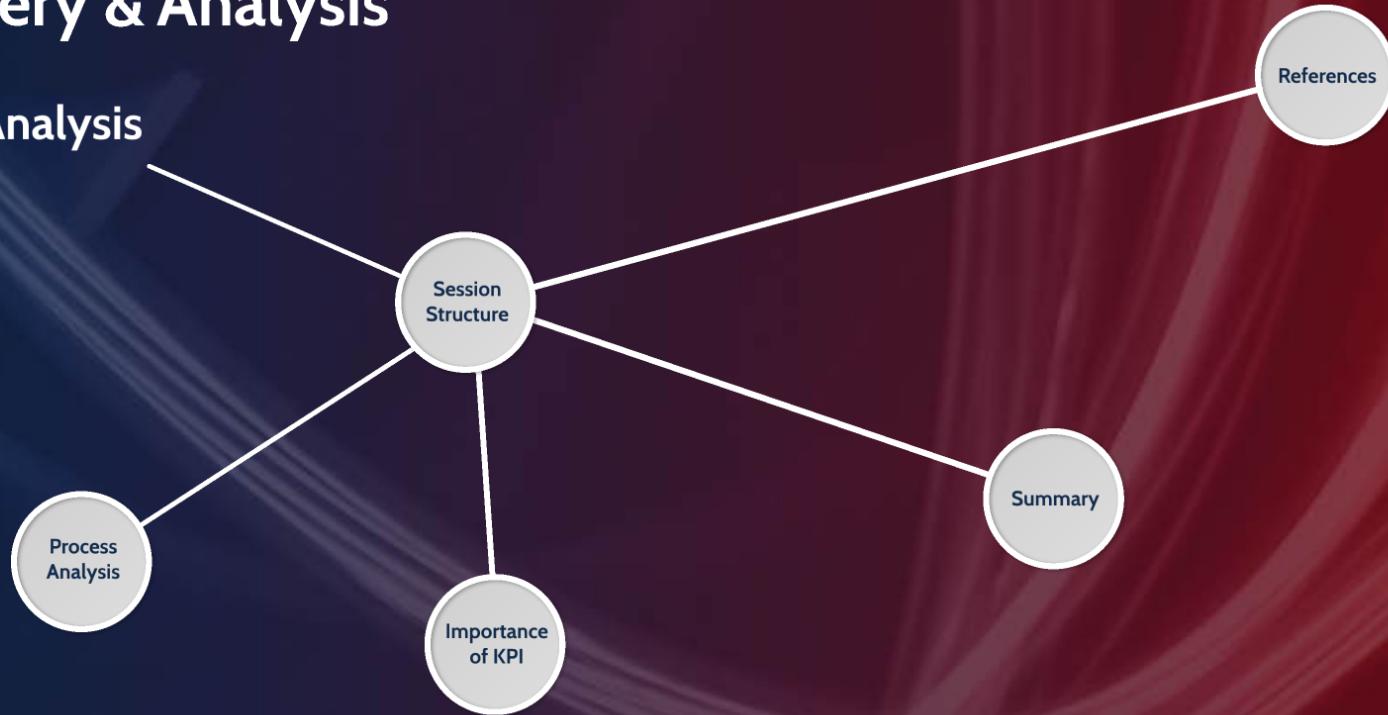


KPI

★ Meaningful insights for the process and the company

# Discovery & Analysis

## Process Analysis



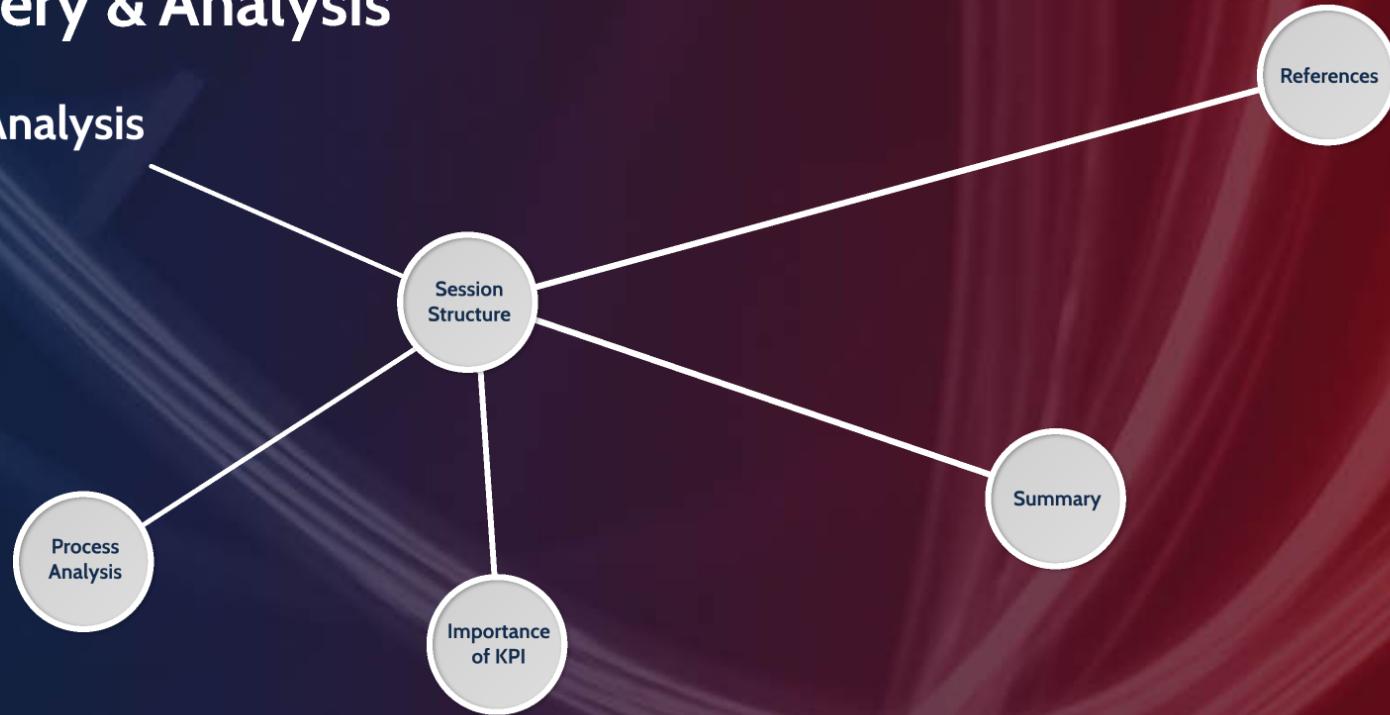
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## References

1. Del-Río-Ortega, A., Resinas, M., Cabanillas, C., & Ruiz-Cortés, A. (2013). On the definition and design-time analysis of process performance indicators. *Information Systems*, 38(4), 470-490.
2. Dumas, M., Rosa, M. L., Mendling, J., & Reijers, H. A. (2013). *Fundamentals of Business Process Management*. Heidelberg: Verlag.
3. Jansen-Vullers, M. H., Looschilder, M. W. N. C., Kleingeld, P. A. M., & Reijers, H. A. (2007). Performance measures to evaluate the impact of best practices. In *Proceedings of Workshops and Doctoral Consortium of the 19th International Conference on Advanced Information Systems Engineering (BPMDS workshop)* (Vol. 1, pp. 359-368). Trondheim: Tapir Academic Press.

# Discovery & Analysis

## Process Analysis



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