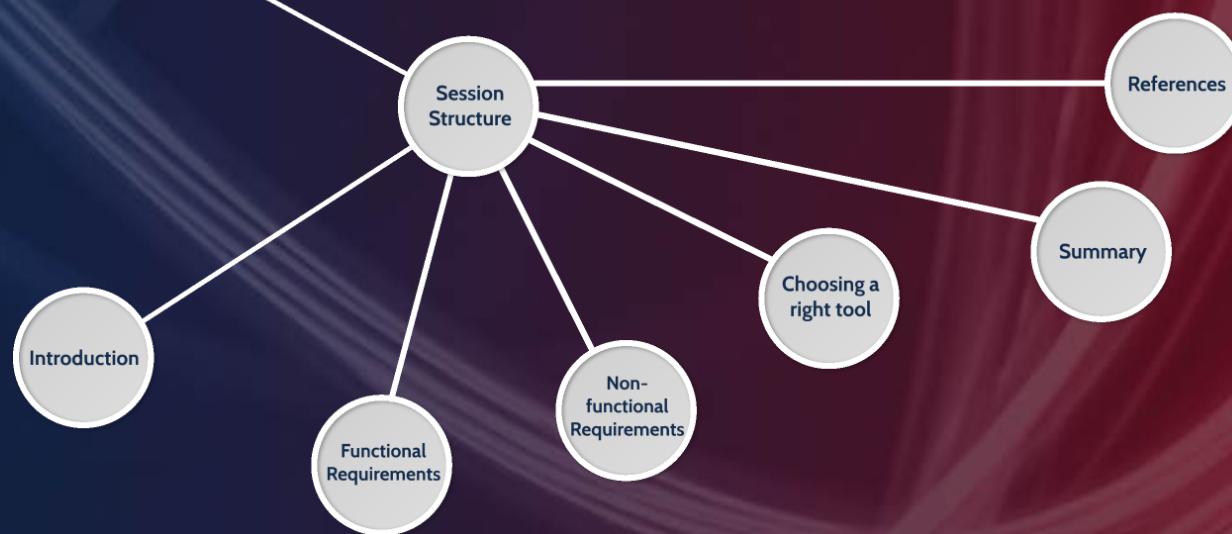


# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

## Session Structure

Learning Objectives –  
The tools dimension of a Process Mining project

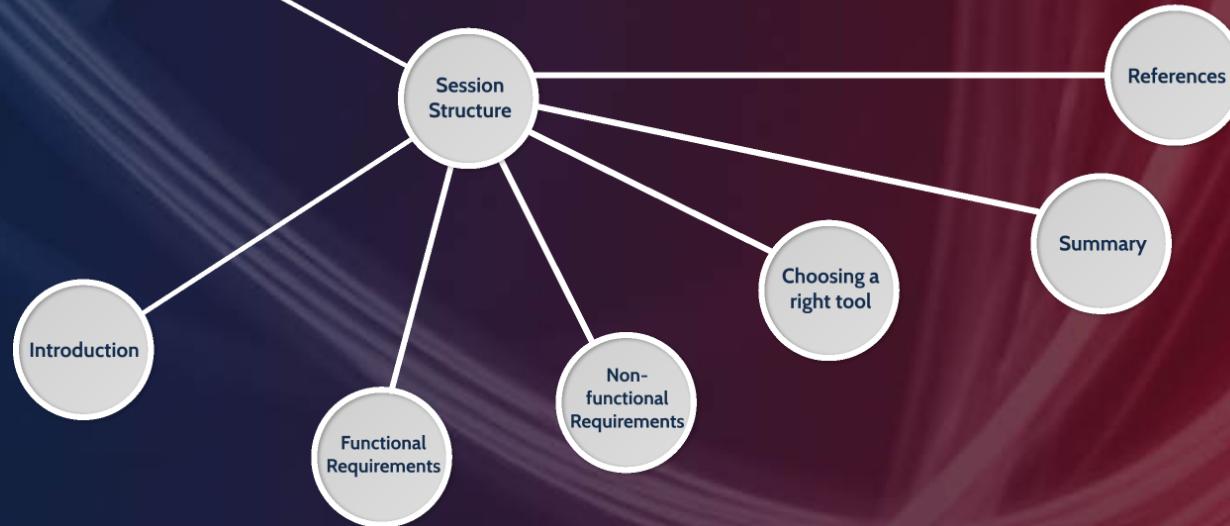
**What are the functional requirements of a Process Mining software**

**What are the functional requirements of a Process Mining software**

**How to choose the right Process Mining software**

# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

# Process Mining Software

Requirements

## Process Mining Software

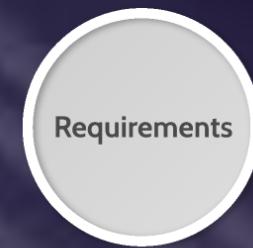


Requirements

## Process Mining Software



**Enterprise  
PM Software**

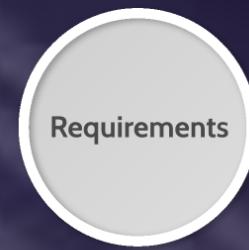


# Process Mining Software

## Functional Requirements



**Enterprise  
PM Software**



# Process Mining Software

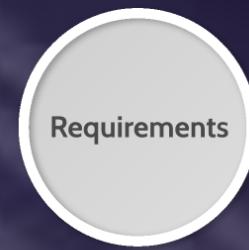
## Functional Requirements



## Non-functional Requirements



**Enterprise  
PM Software**



## Functional & Non-functional



**Functional**



**Non-functional**

(Jadhav & Sonar, 2009)

## Functional & Non-functional



**Functional**



**Non-functional**

Powerful analytical tool

(Jadhav & Sonar, 2009)

## Functional & Non-functional



**Functional**



**Non-functional**

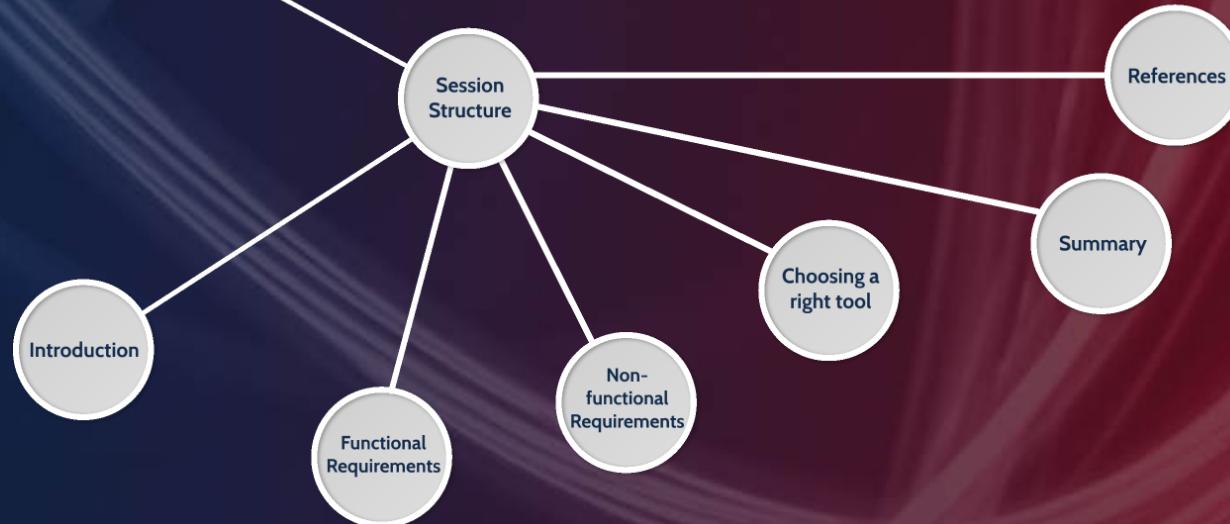
Powerful analytical tool

Manageable in the organization

(Jadhav & Sonar, 2009)

# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

## Functional Requirements



(Jadhav & Sonar, 2009)

## Data Management



**Data Loading**



**Data Transformation**



**Data Security**



## Functional Requirements – Data Loading

Different data sources the software can handle



# Functional Requirements – Data Loading

Different data sources the software can handle

Flatfiles?



# Functional Requirements – Data Loading

Different data sources the software can handle

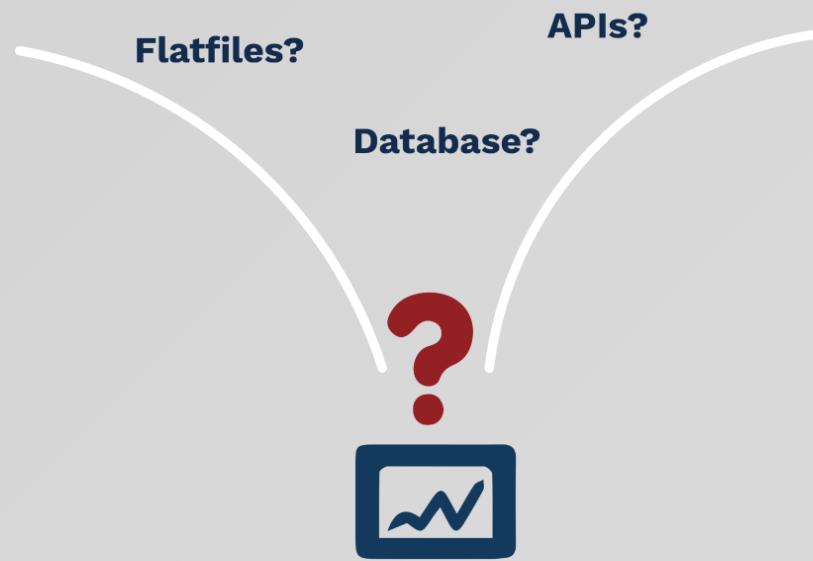
Flatfiles?

Database?



# Functional Requirements – Data Loading

Different data sources the software can handle



## Functional Requirements – Data Transformation



**Create / Rename attributes**



**Connect sources**

## Functional Requirements – Data Security



Access



Visible Data

## Functional Requirements – Data Security



Access



Visible Data

**Only authorized users should be able to access the data**

## Functional Requirements – Data Security



Access



Visible Data

**Only authorized users should be able to access the data**

**Only see the data they have been authorized for**

# Analysis



**Process Mining**



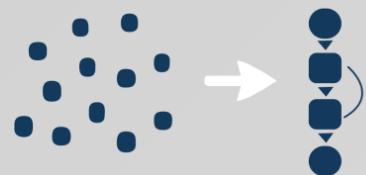
**Charting and Tables**



**Further Analysis**

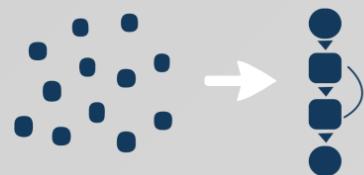


# Functional Requirements – Process Mining



**Discover & Visualize**

# Functional Requirements – Process Mining

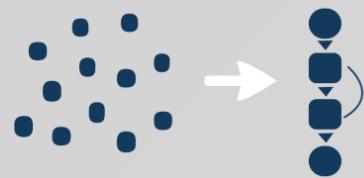


**Discover & Visualize**



**Perspectives**

# Functional Requirements – Process Mining



**Discover & Visualize**



**Perspectives**



**Conformance**

## Functional Requirements – Charting and Tables

## Functional Requirements – Charting and Tables

e.g. Which vendor is responsible for delayed deliveries



## Functional Requirements – Further Analysis

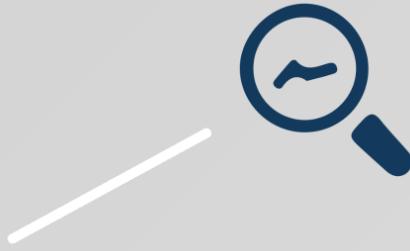


**Machine Learning**

## Functional Requirements – Further Analysis

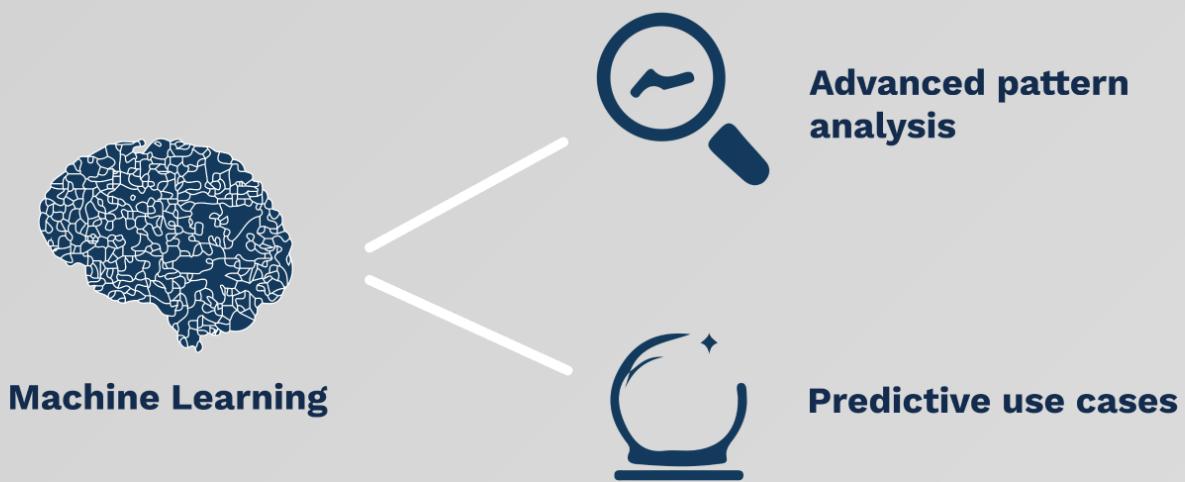


**Machine Learning**



**Advanced pattern  
analysis**

## Functional Requirements – Further Analysis



## Action

## Action



**Collaboration**

## Action



**Collaboration**



**Export & Share**

## Recap

## Recap

### **Functional Requirements**

Conduct powerful analyses of the process

## Recap

### **Functional Requirements**

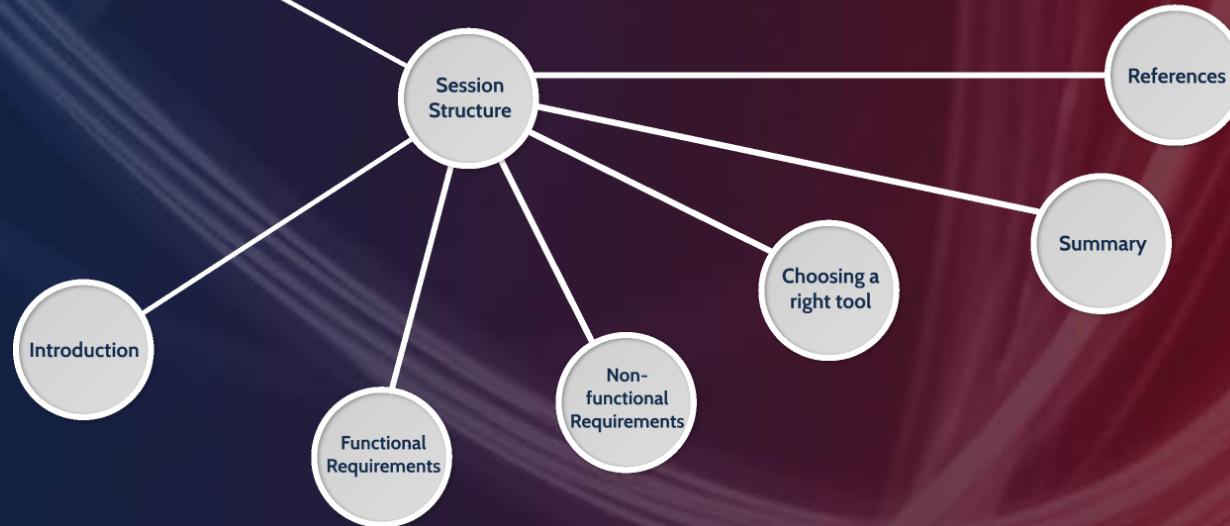
Conduct powerful analyses of the process

### **Non-functional Requirements**

Bring process mining into an organization

# Foundations of Applied Process Mining

## Tools

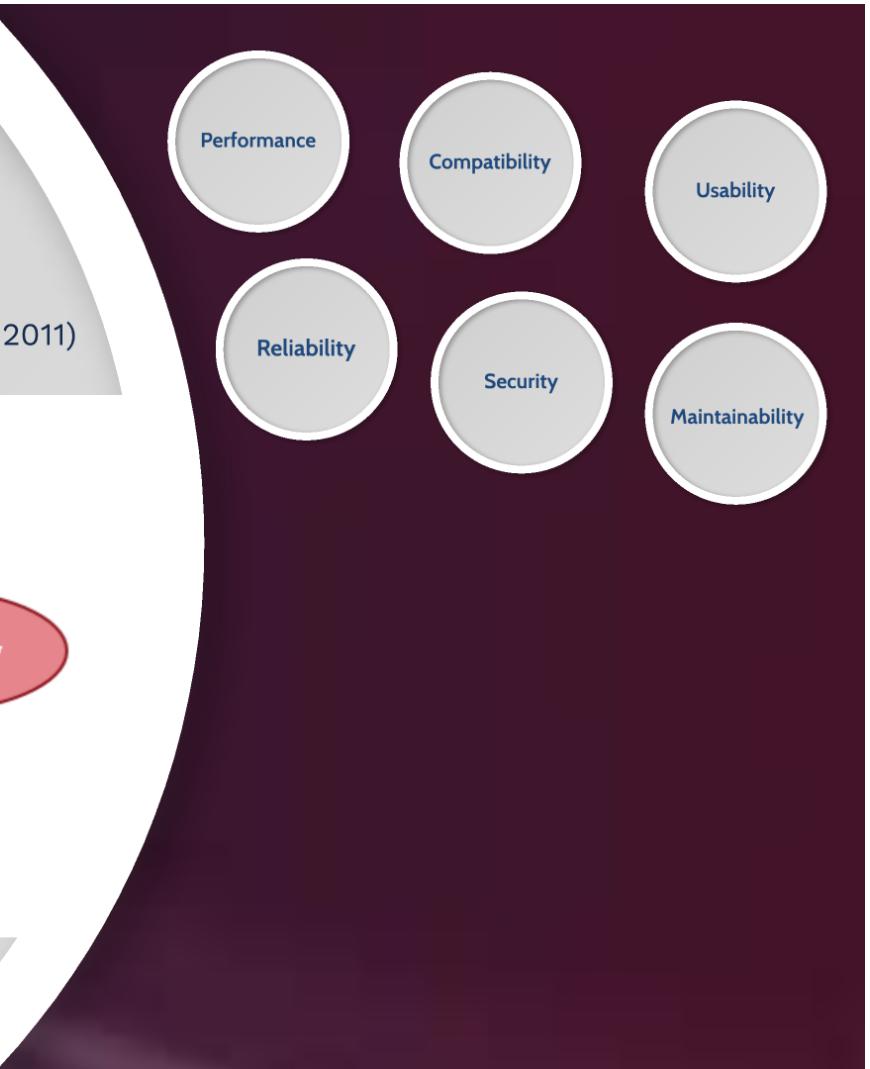
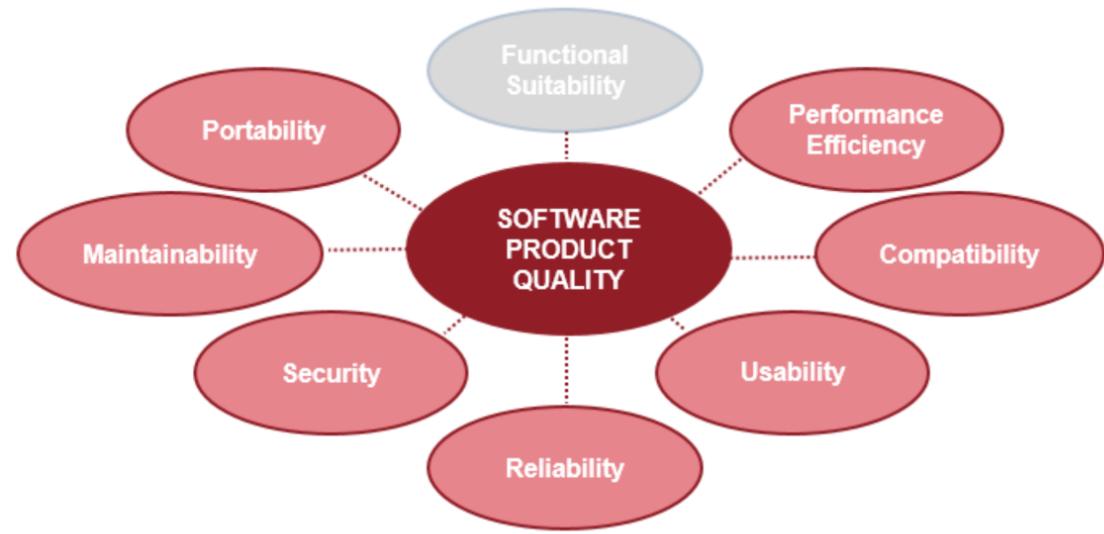


Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

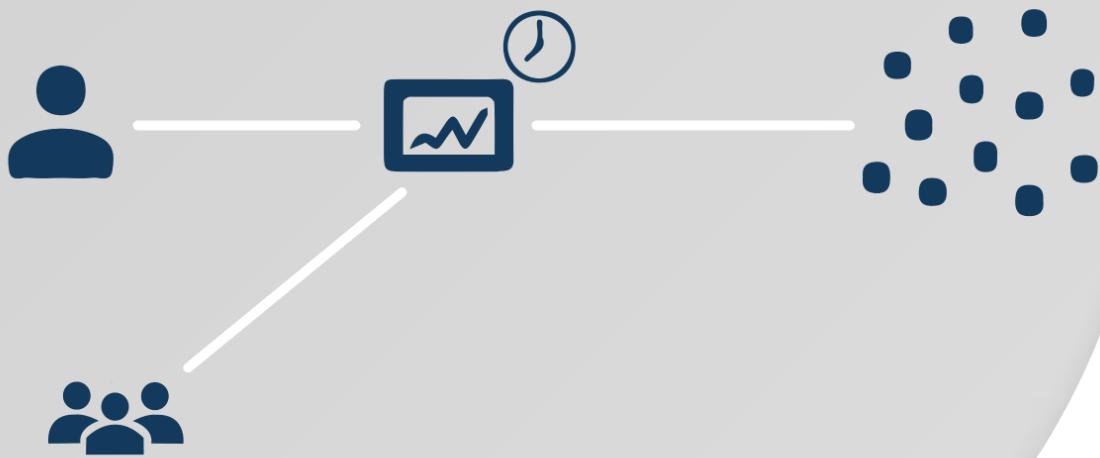
## ISO – Characteristics of Software Quality

Can be applied to Process Mining

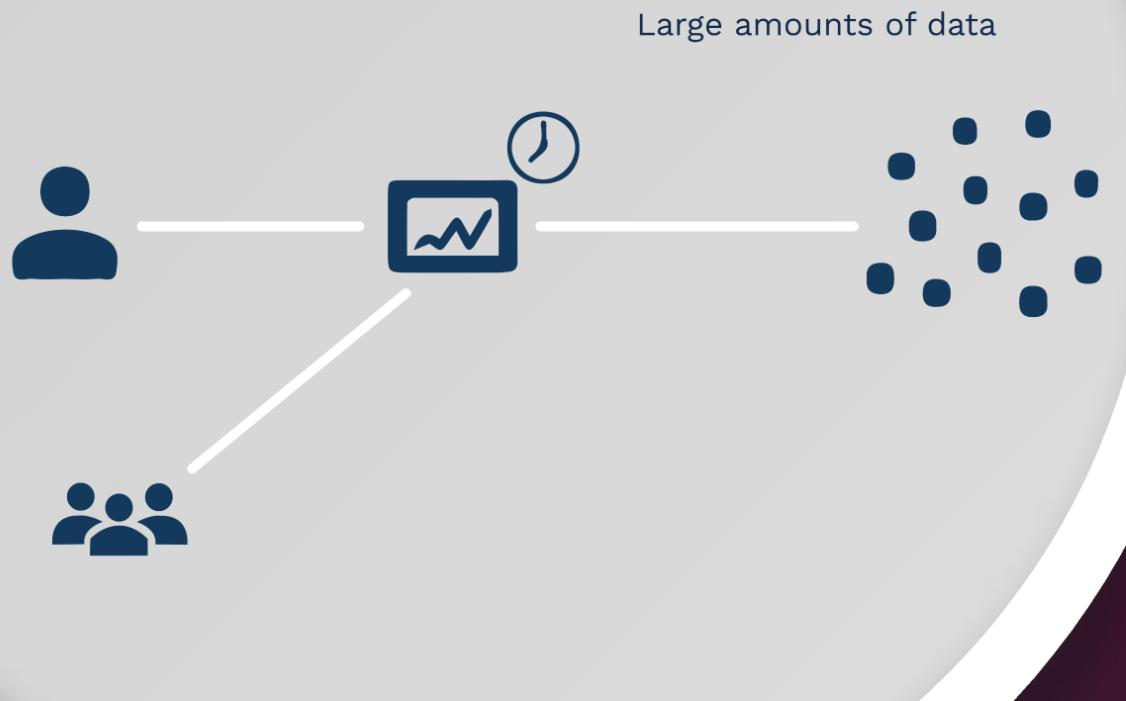
(ISO/IEC-25010, 2011)



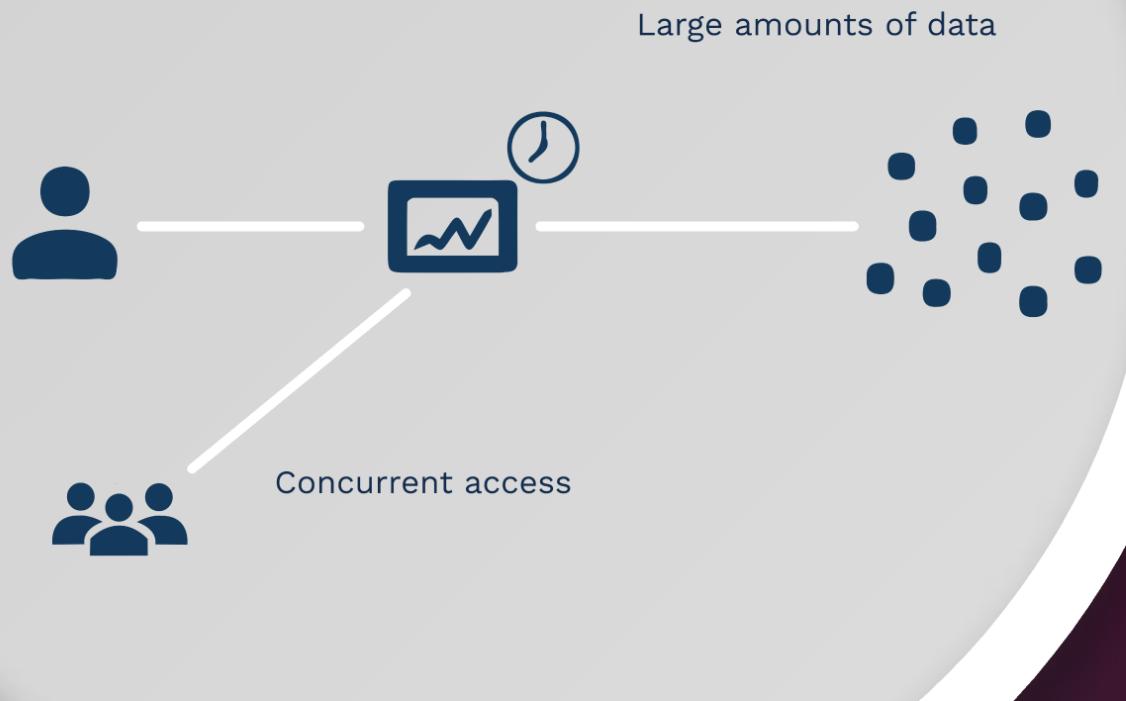
## Non-functional Requirements - Performance



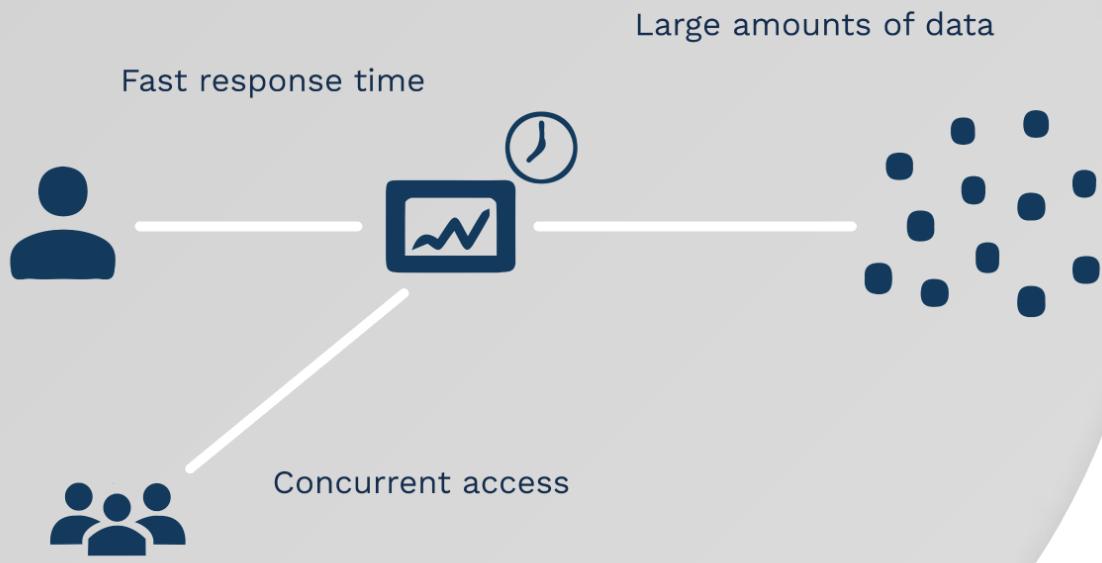
## Non-functional Requirements - Performance



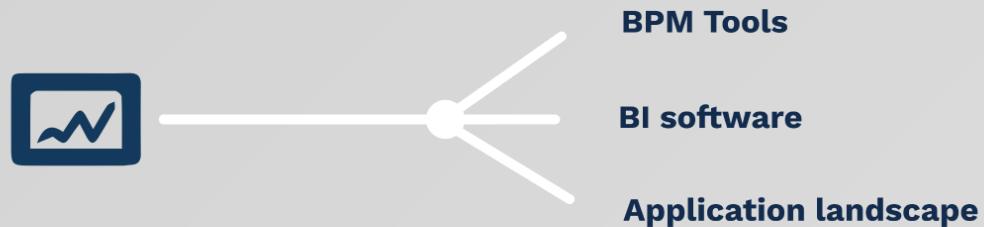
## Non-functional Requirements - Performance



## Non-functional Requirements - Performance



## Non-functional Requirements - Compatibility



## Non-functional Requirements - Usability

Minimal training costs & broad adoption



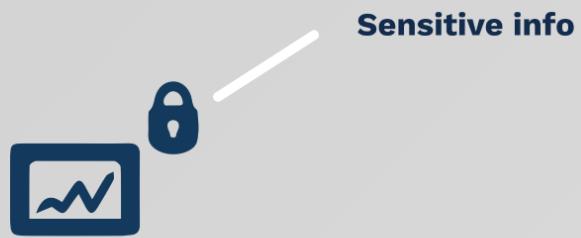
## Non-functional Requirements - Reliability



## Non-functional Requirements - Security



## Non-functional Requirements - Security



## Non-functional Requirements - Security



## Non-functional Requirements - Maintainability

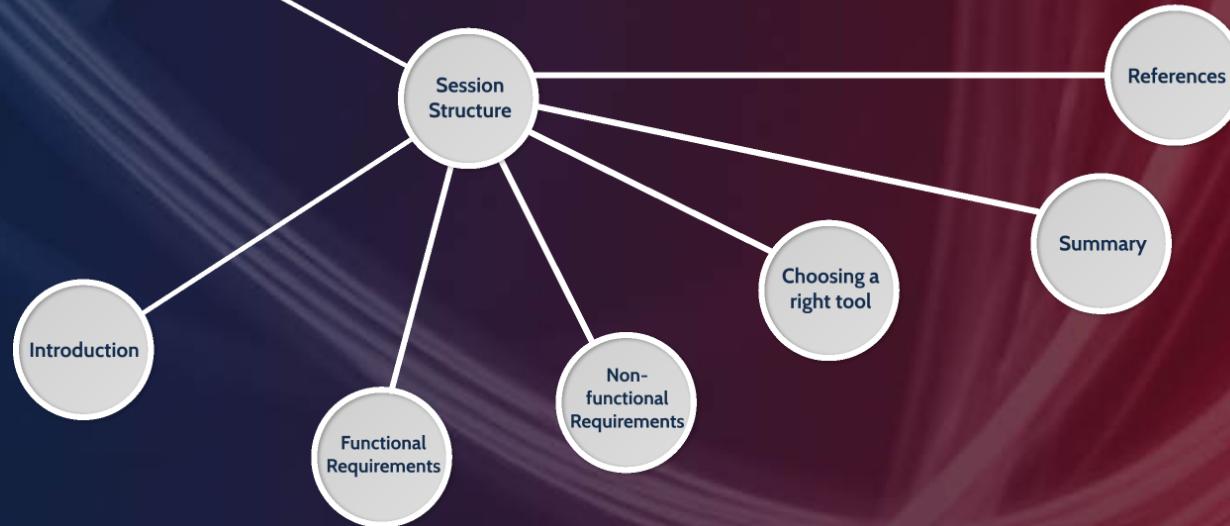


## Non-functional Requirements - Maintainability



# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

## Getting Overview of Process Mining Software

Choosing a  
tool (1)

Choosing a  
tool (2)

## Getting Overview of Process Mining Software



**Researches** (e.g. Gartner market report)

Choosing a  
tool (1)

Choosing a  
tool (2)

## Getting Overview of Process Mining Software



**Researches** (e.g. Gartner market report)



Tools for and from research with an academic purpose

Choosing a tool (1)

Choosing a tool (2)

## Getting Overview of Process Mining Software



**Researches** (e.g. Gartner market report)



Tools for and from research with an academic purpose



Tools used in an enterprise setting

Choosing a tool (1)

Choosing a tool (2)

## Choosing the Right Tool (1)

Purpose



Way to be applied

## Choosing the Right Tool (1)

<b>Purpose</b>	One-time analysis
	
<b>Way to be applied</b>	

## Choosing the Right Tool (1)



## Choosing the Right Tool (2)

Purpose



Way to be applied

## Choosing the Right Tool (2)

### Purpose



Continuous Process Improvement

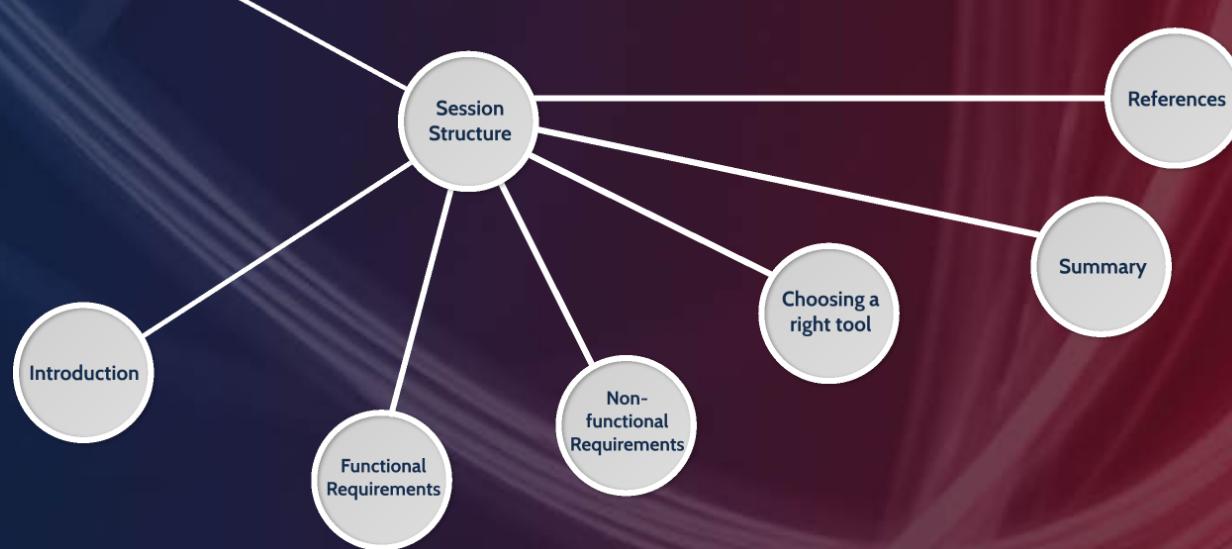
### Way to be applied

## Choosing the Right Tool (2)

Purpose	Continuous Process Improvement
Way to be applied	Continuous data loading
	Collaborative working

# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

## Summing Up



## Summing Up



Functional



## Summing Up



**Functional**



Discovering and  
analyzing the process

## Summing Up



**Functional**



**Non-functional**

Discovering and  
analyzing the process

## Summing Up



### Functional

Discovering and analyzing the process

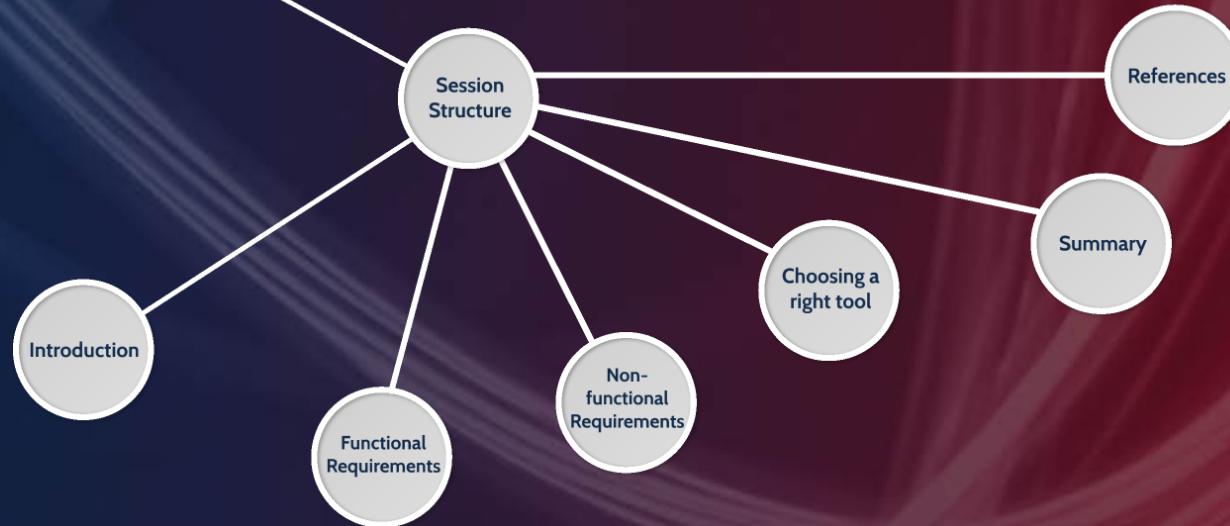


### Non-functional

Capability / performance of the software

# Foundations of Applied Process Mining

## Tools



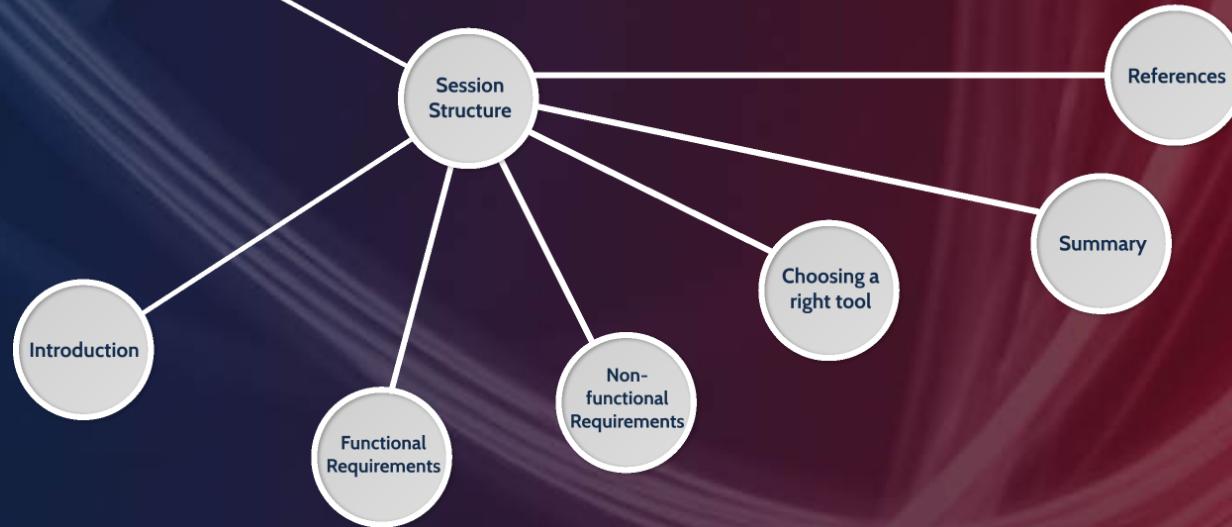
Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems

## References

1. ISO/IEC-25010 (2011). Systems and software engineering – Systems and software Quality Requirements and Evaluation (SQuaRE) – System and software quality models.
2. Jadhav, A. S., & Sonar, R. M. (2009). Evaluating and selecting software packages: A review. *Information and software technology*, 51(3), 555-563

# Foundations of Applied Process Mining

## Tools



Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Chair of Digital Industrial Service Systems