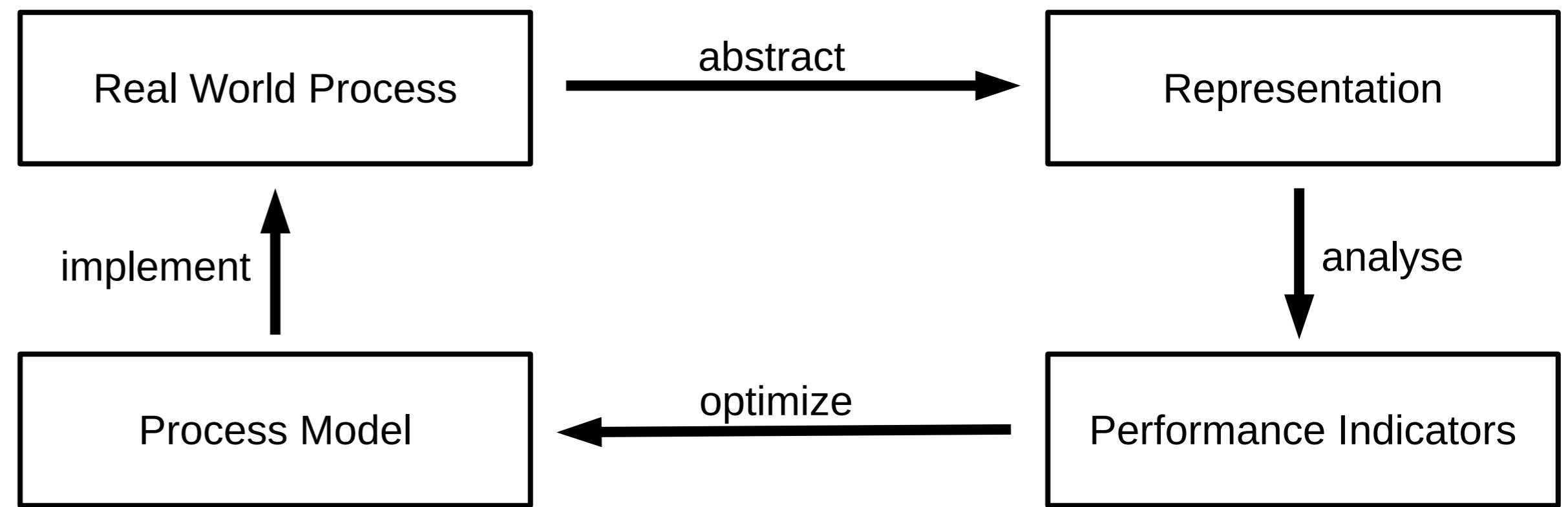


From Sensor Data to Business Value

This poster presents the data engineering process from capturing the **real world** through sensors and giving this low level sensor data a semantic **meaning**, which was originally provided by humans. The focus is on this data ingestion, afterwards usual analysis may be performed.

Objectives

Optimize an existing business process happening in real world by eliminating its inefficiency and saving resources. Use sensors to capture the stream of events and interactions. Use modern data processing tools to analyse the big amount of data. Add domain knowledge and artificial intelligence to save human resources, costs and time.



Examples

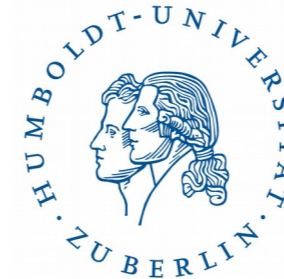
Brand Impact

Maximize impact of logo placements in video streams



Clinical Pathways

Minimize delays for patients and optimize resource utilisation

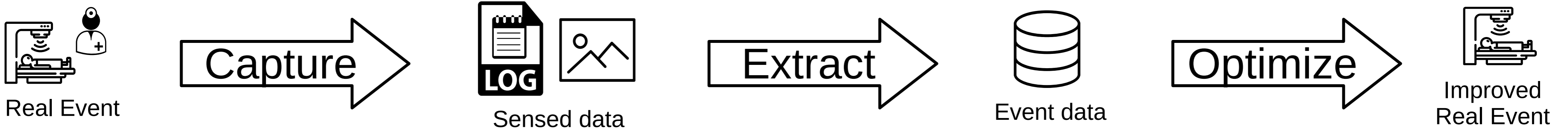


AI-powered checkout

Minimize time of checkout by observing customer behaviour in super markets



Process



For **high quality** real world process events are captured not by manual logging but automatically by **sensors**.



There are several methods to abstract from the low level sensor data and create **semantic meaning**.



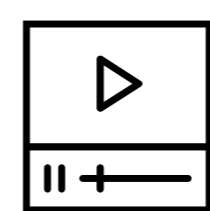
The event data gets analysed to **optimize process models** and improve the real process.

For the checkout and the brand impact systems usual cameras are used. For the clinical pathways a Real-Time Location System (RTLS) is used.

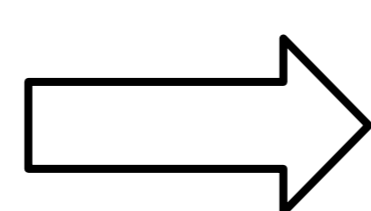
- high density sensor network in building
- personal badges
- equipment tracking
- recordings every 3 seconds



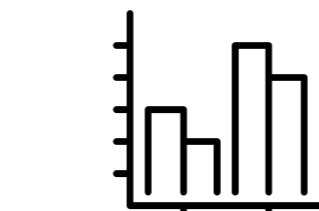
Brand Impact



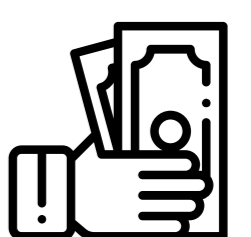
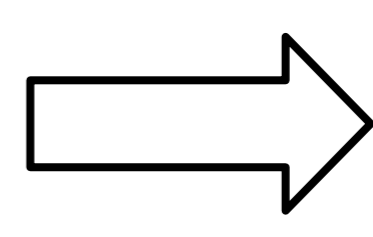
Video Stream



Computer Vision Engine

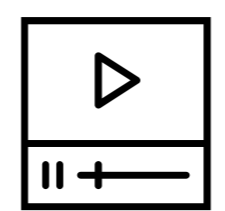


Logo Size and Duration

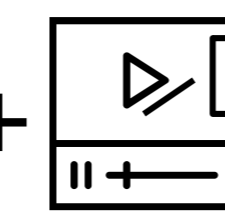


Compare ad costs with impact and use marketing budget for more effective brand impact

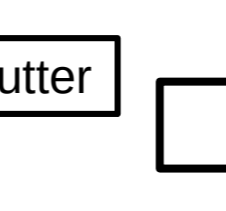
Checkout



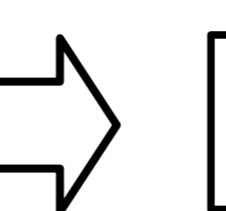
Video Stream



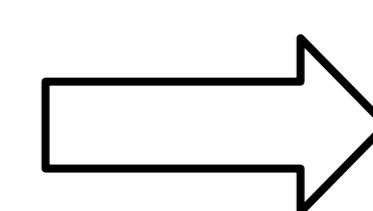
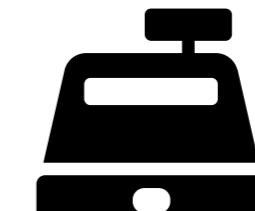
Manually tagged videos



AI



Item interactions



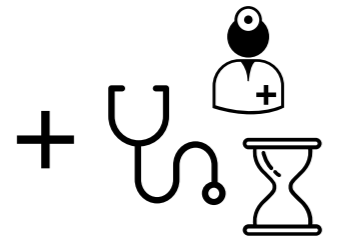
Predict shopping cart content and replace cashiers with automated checkout

Clinical pathways

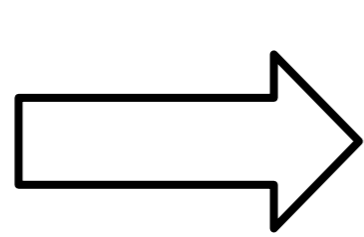
To learn **minimal** and **correct queries**, that recognize a complex event from a series of tracklog entries, knowledge about durations and participants and afterwards **frequent sequence mining** is used.



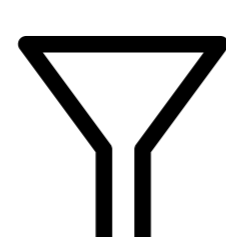
Tagged tracklog



Domain knowledge



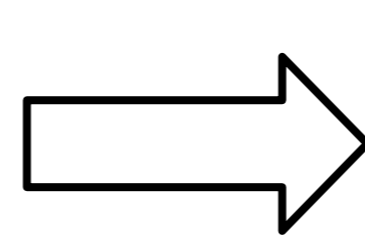
Event Query Mining



Queries



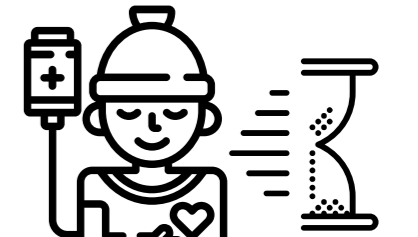
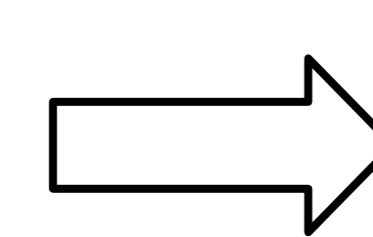
Tracklog



Querying



Pathway Log



Measure resource utilization and average waiting times to change appointments and human resource schedule