Business Process Technologies (BPT, ST)
Automatisierung von Geschäftsprozessen (AGP, DPT)

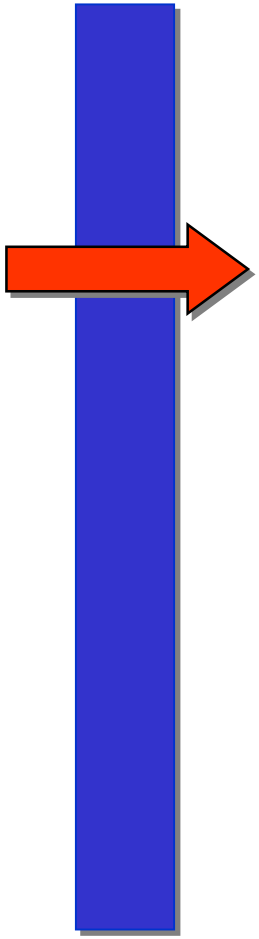
Winter Term 2024 / 2025 (Master ST and Master DPT)

Hochschule
für Technik
Stuttgart

Chapter 8 / Process Mining

Prof. Dr. Oliver Höß
oliver.hoess@hft-stuttgart.de

Agenda

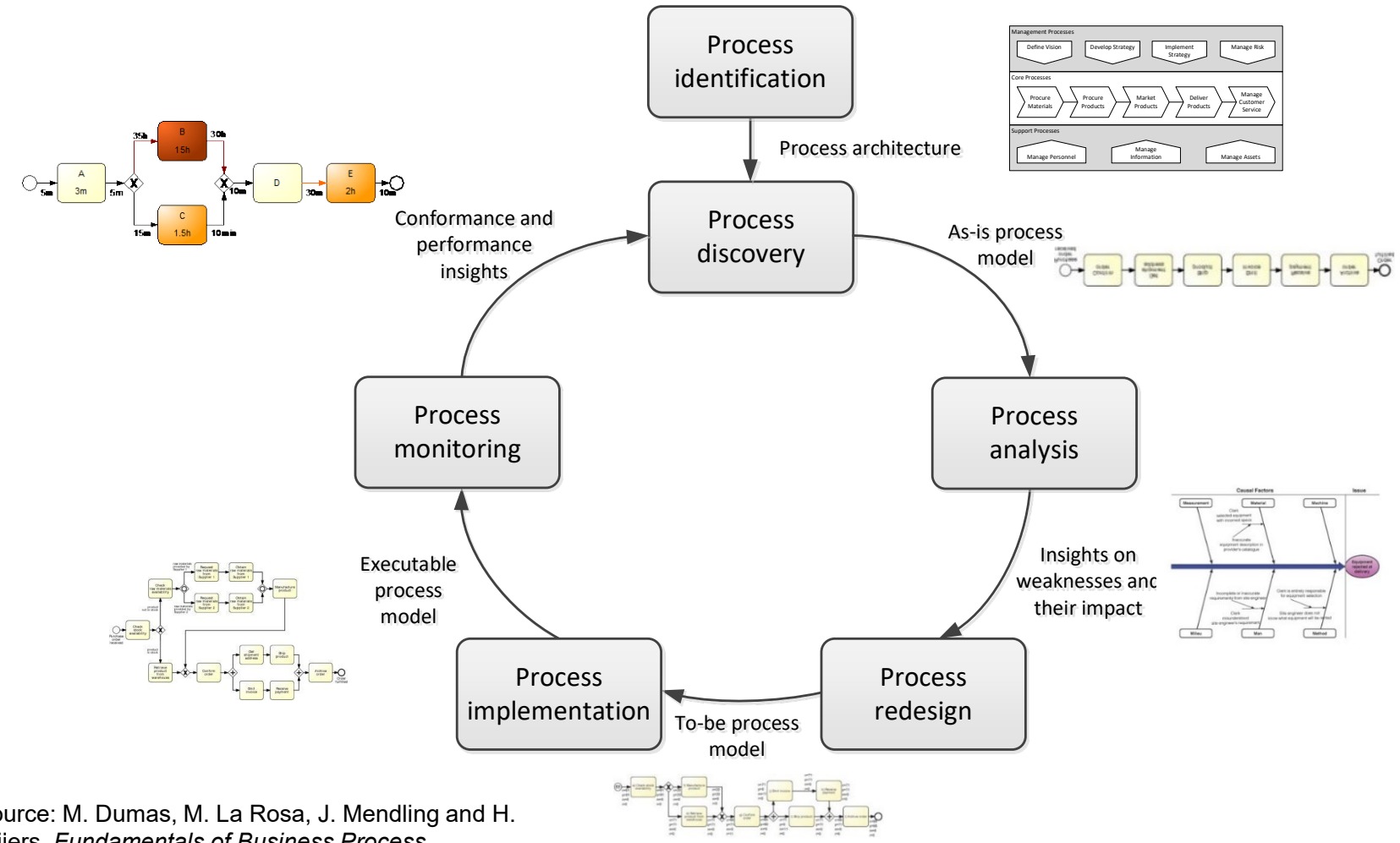


Initial Situation / Motivation

Process Mining Fundamentals

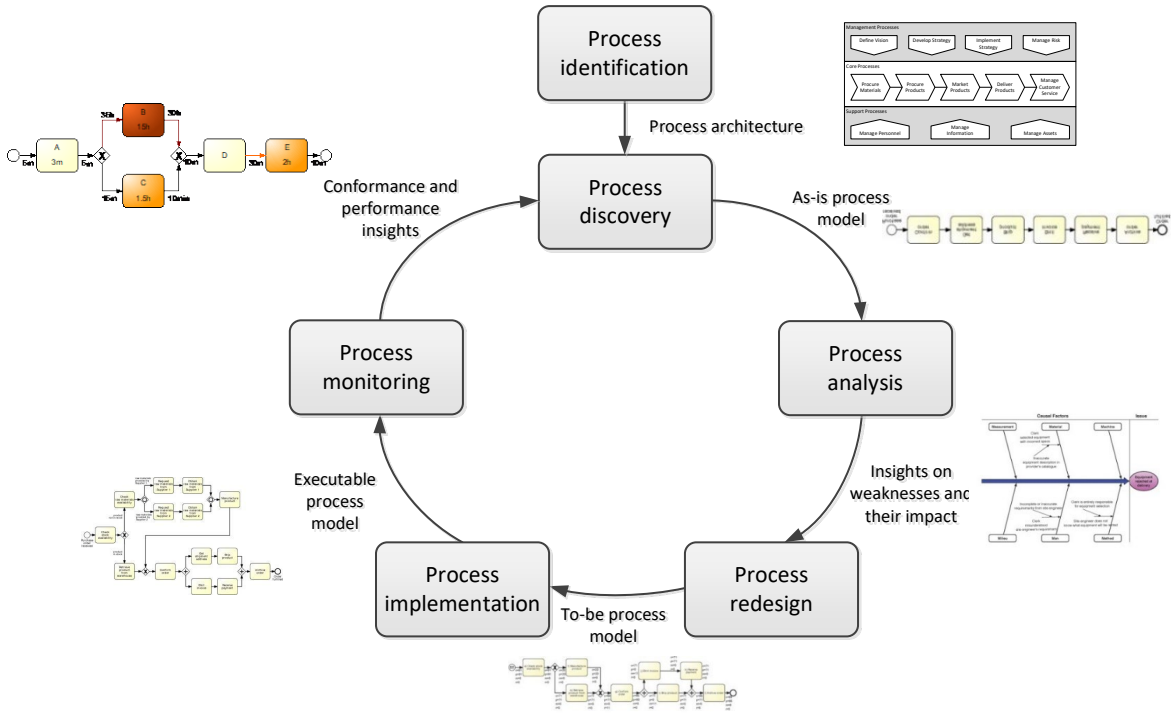
Process Mining with Celonis

Motivation



"Source: M. Dumas, M. La Rosa, J. Mendling and H. Reijers, *Fundamentals of Business Process Management*, 2nd edition, Springer, 2018".

Questions



- How is the As-Is process really working ?
- Is the To-Be-Process working as planned ?
- How can we get insights how to improve the processes ?

"Source: M. Dumas, M. La Rosa, J. Mendling and H. Reijers, *Fundamentals of Business Process Management*, 2nd edition, Springer, 2018".

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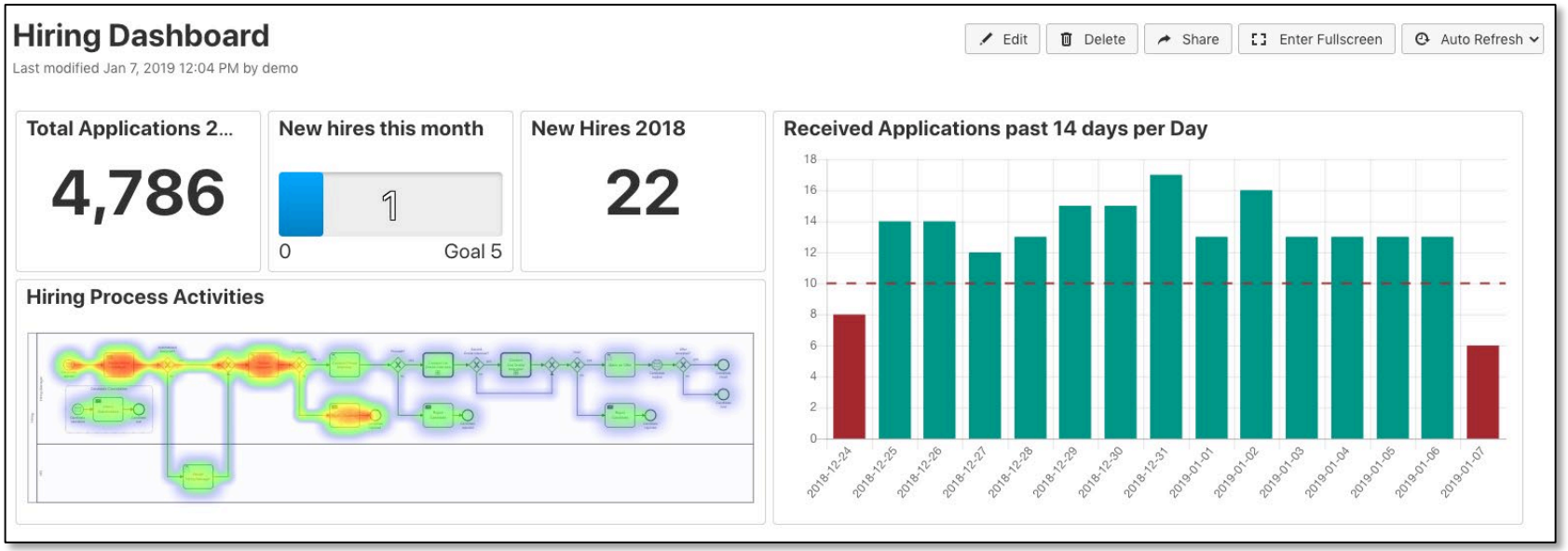
Use of a central Workflow System with integrated monitoring

e.g. Camunda / Camunda Optimize



Analysis of Key Performance Indicators (KPIs) and comparison with goals

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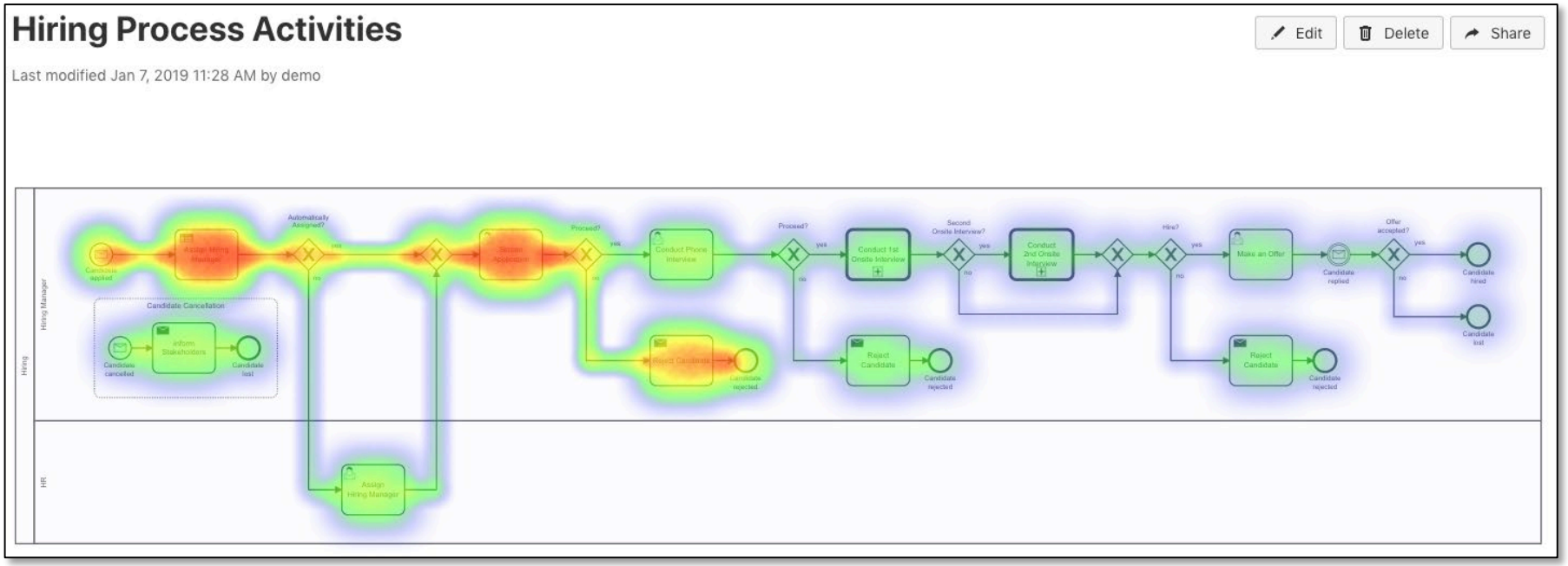
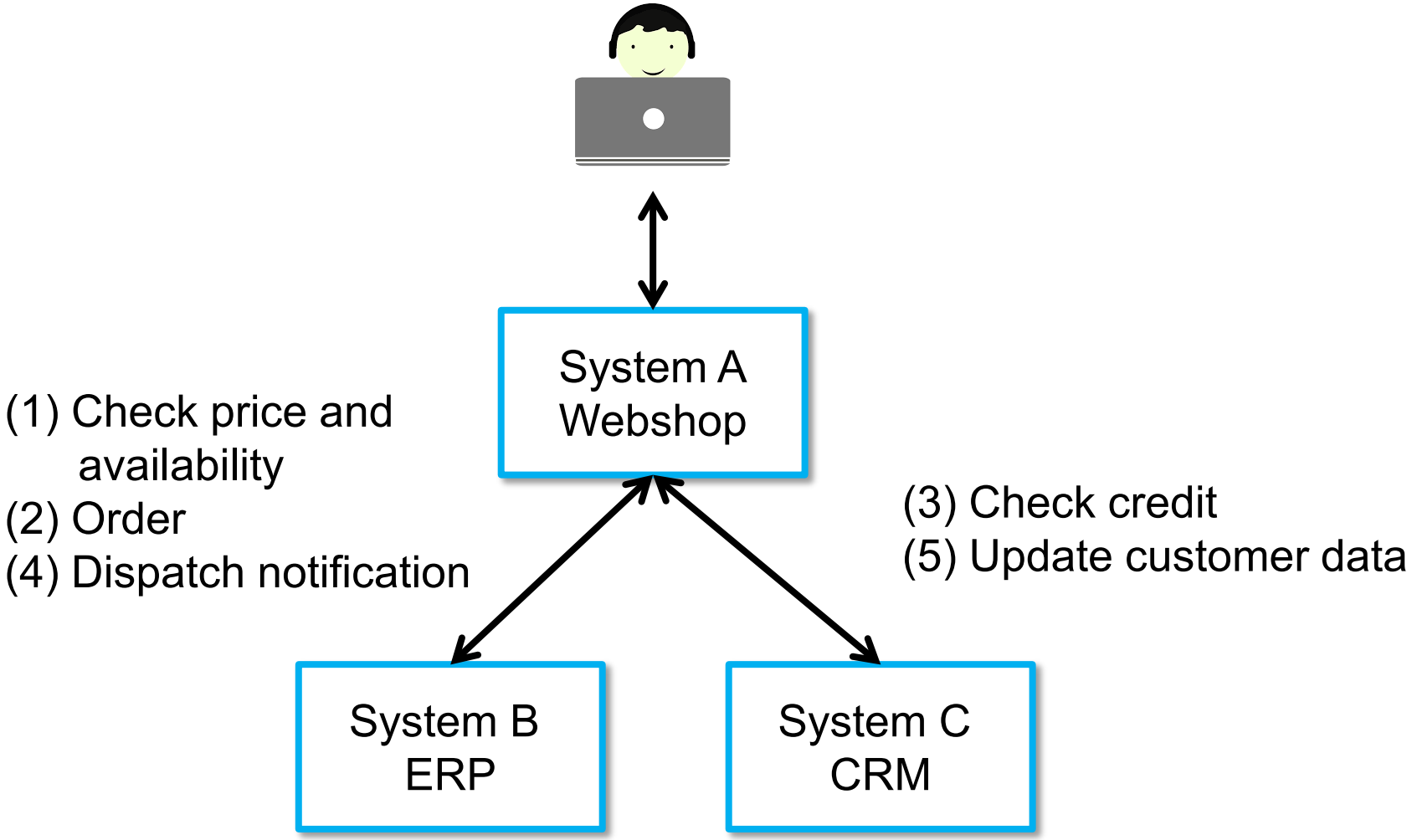
Use of a central Workflow System with integrated monitoring

e.g. Camunda / Camunda Optimize

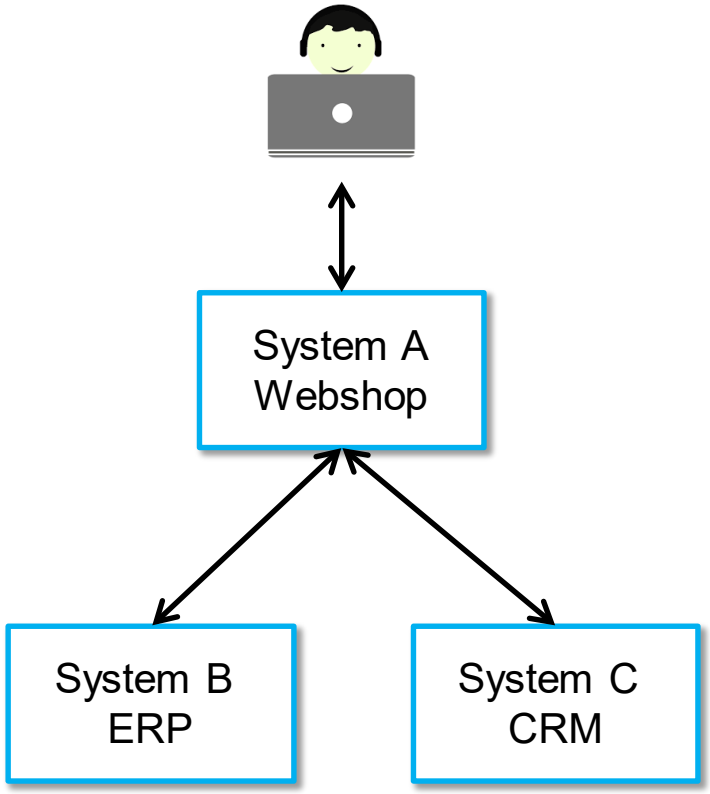


Analysis of process paths (Heat Map)

Reality: No central Workflow, processes run over multiple systems which communicate directly



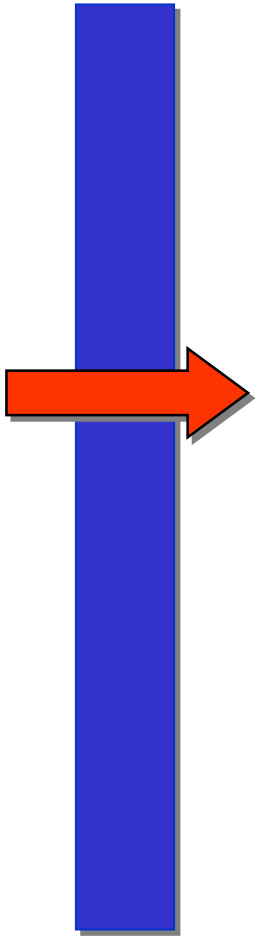
Reality: No central Workflow, processes run over multiple systems which communicate directly



Questions (Examples):

- How is the process running through the systems ?
- Does the process comply with the planned process ?
- Which process variants exist and how often do they occur ?
- Where are process exits or delays ?
- How long does it take from step A to B ?
- …

Agenda



Initial Situation / Motivation

Process Mining Fundamentals

Process Mining with Celonis

The Godfather of Process Mining

INNOVATIVE TRENDS

News, Events und Knowledge rund um IT, Digitalisierung, Cloud, Unternehmenssoftware, Innovation, Startups uvm. von Prof. O. Höß

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Startseite > Process-Mining-Ikone Professor Wil van der Aalst wird Chief Scientist bei Celonis

Process-Mining-Ikone Professor Wil van der Aalst wird Chief Scientist bei Celonis

25/08/2021 ohoess News BPM, Business Process Management, Celonis, Digitale Transformation, Digitalisierung, Forschung, Personalia, Process Mining, Unternehmenssoftware, Wissenschaft

Gerne den **Artikel** bzw. die **Posts auf XING**, **LinkedIn**, **Facebook** und **Twitter** teilen !

Prof. van der Aalst verstärkt Celonis als Chief Scientist (Quelle: Celonis, leicht modifiziert)

Eine interessante Personalie: **Prof. Dr. Wil van der Aalst verstärkt Celonis** ab **1. September 2021** als **Chief Scientist** (siehe **Pressemeldung Celonis**).

Dem **Shooting-Star im Bereich Process Mining und Execution Management Celonis aus München** (u.a. **Gewinner des Deutschen Zukunftspreises**) ist **mit dem Process-Mining-Vordenker van der Aalst ein toller „Fang" gelungen.**

Power Search

SOCIAL MEDIA

NEWSLETTER

Anmelden

FEATURED

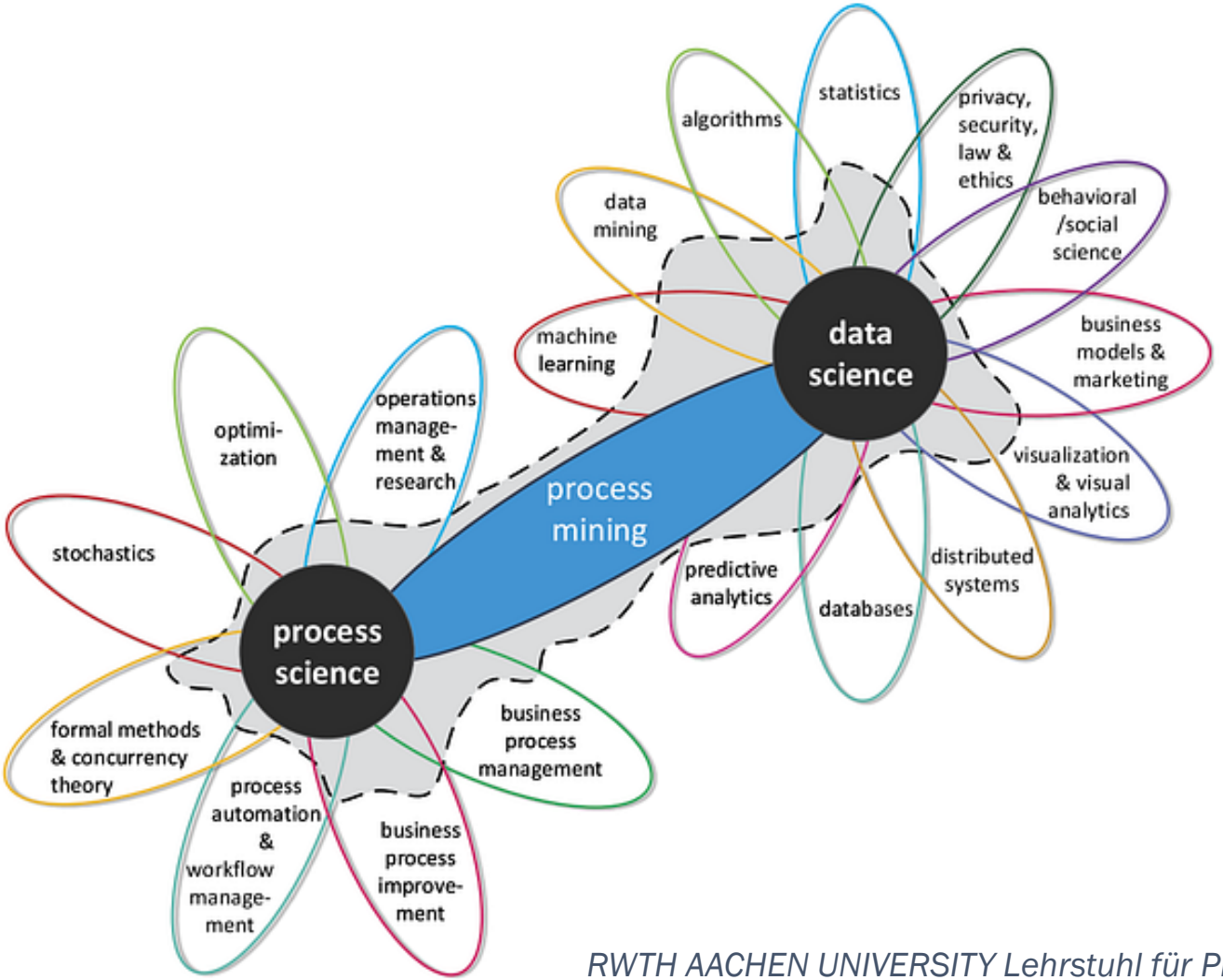
DEV-CLOUD CONFERENCE '23
.NET DEVELOPER CONFERENCE '22
Embedded Software Engineering Kongress 2023
Sindelfingen | 04.–08.12.2023
Digital Gipfel
CAMUNDA CON 2024
Embedded Software Engineering Kongress
DIGITAL
NOVATEC SUMMIT

Process Mining

- Data Mining Technique in BPM where Business Processes are analysed by analysing Data / Logfiles from productive information systems.

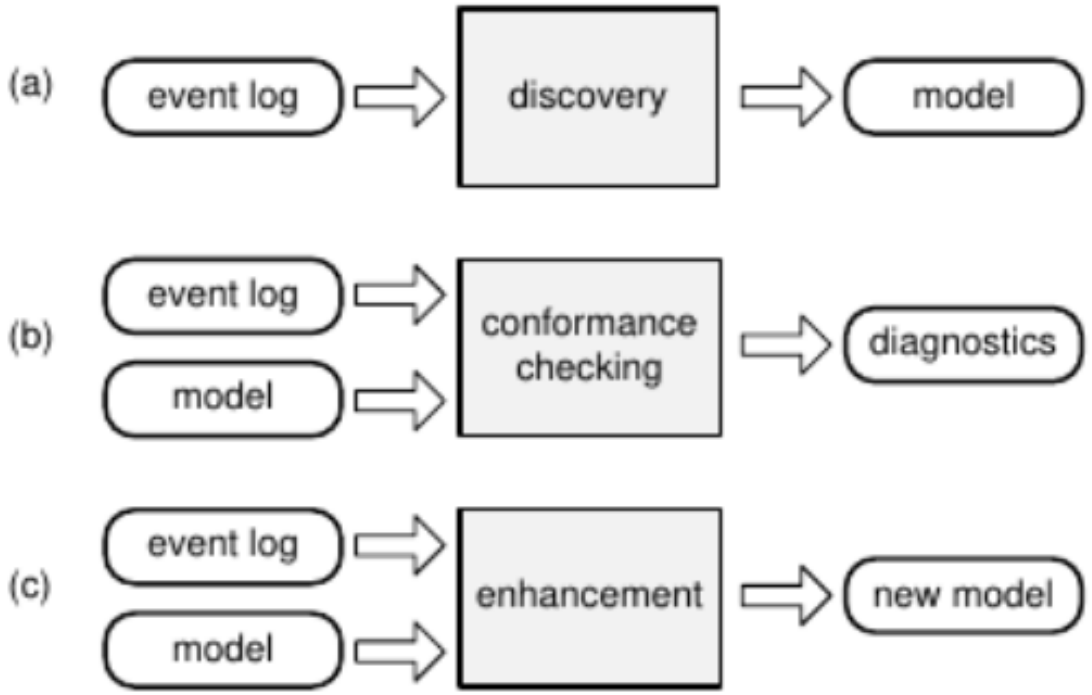
- **Process Mining = Data Mining / Data Science applied to Process Data**

Process Mining and Data Science



RWTH AACHEN UNIVERSITY Lehrstuhl für Process and Data Science 2023 (Prof. v.d.Aalst)

Types of Process Mining



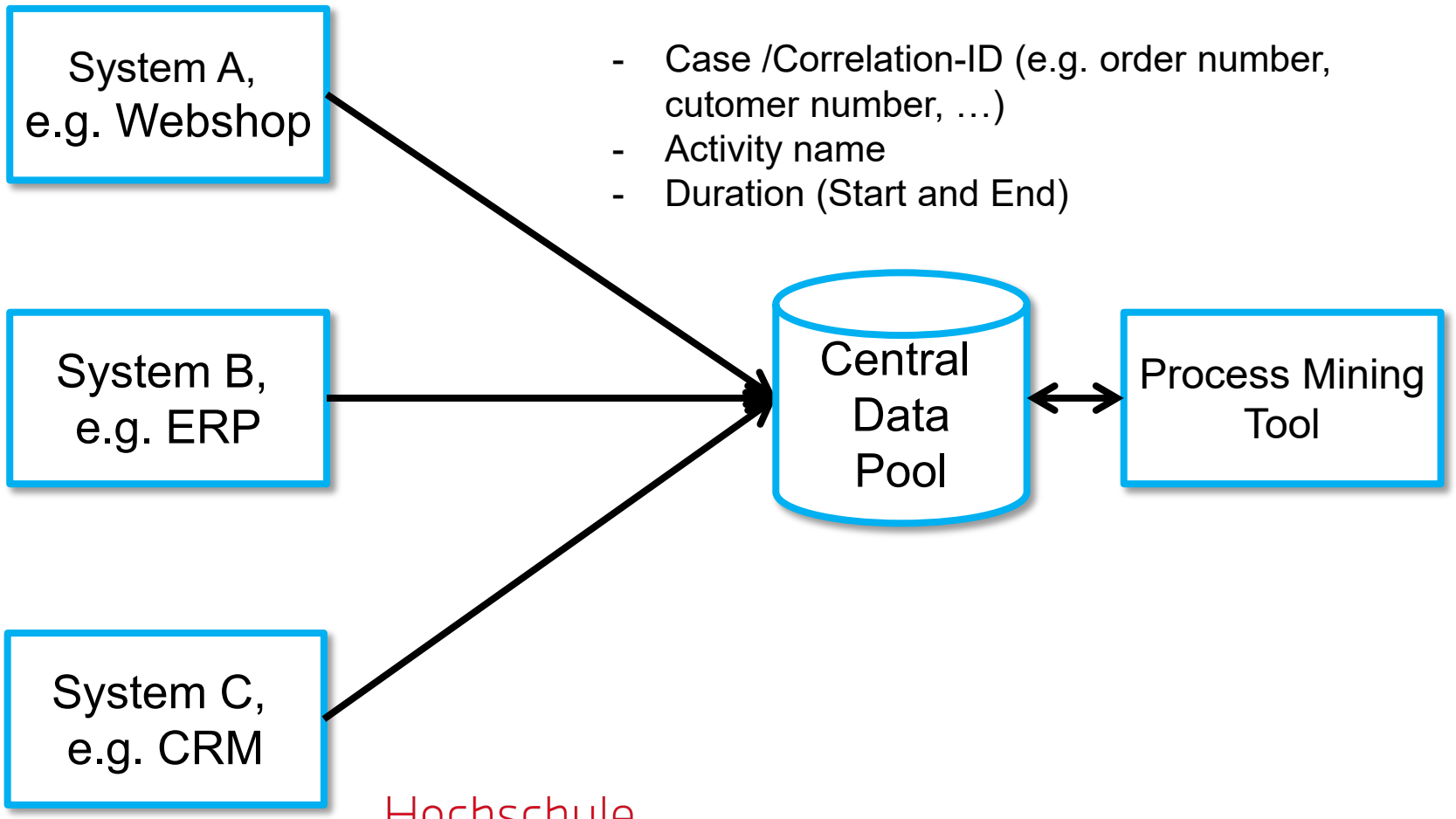
- Van der Aalst et al.
- https://www.researchgate.net/publication/221585990_Process_Mining_Manifesto

Process Mining Overall Architecture

Analysis of collected process data

Important data fields

- Case /Correlation-ID (e.g. order number, cutomer number, …)
- Activity name
- Duration (Start and End)



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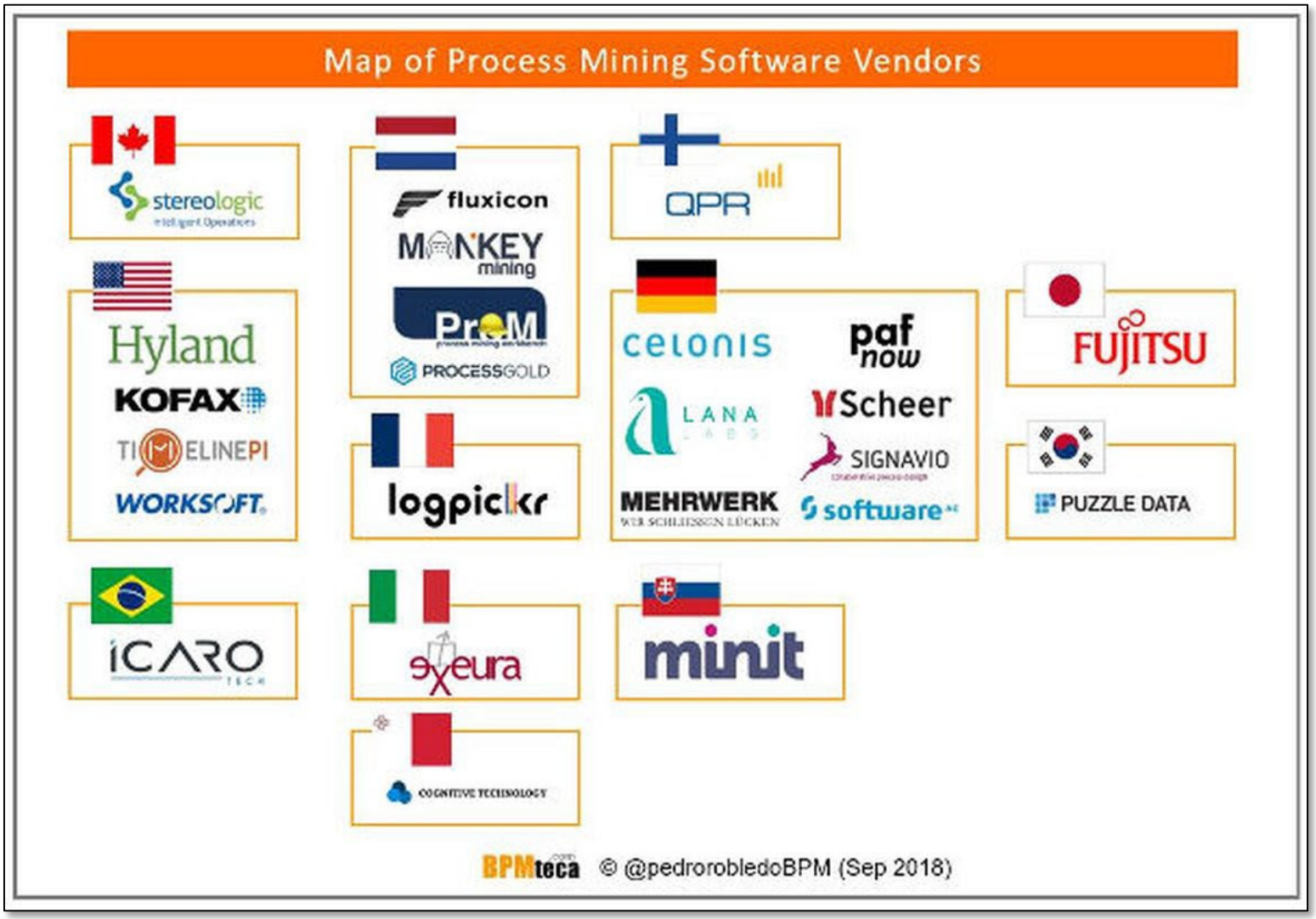
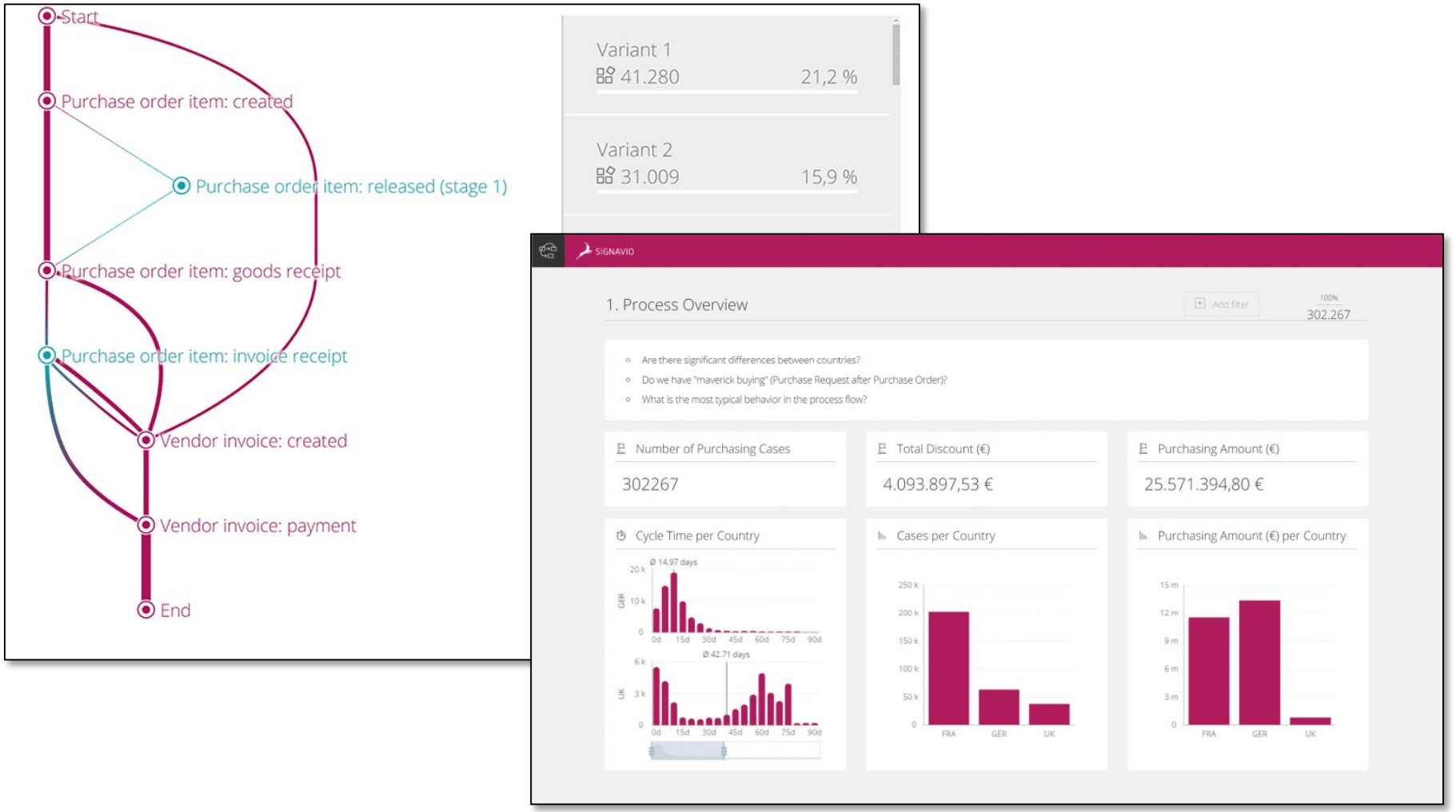
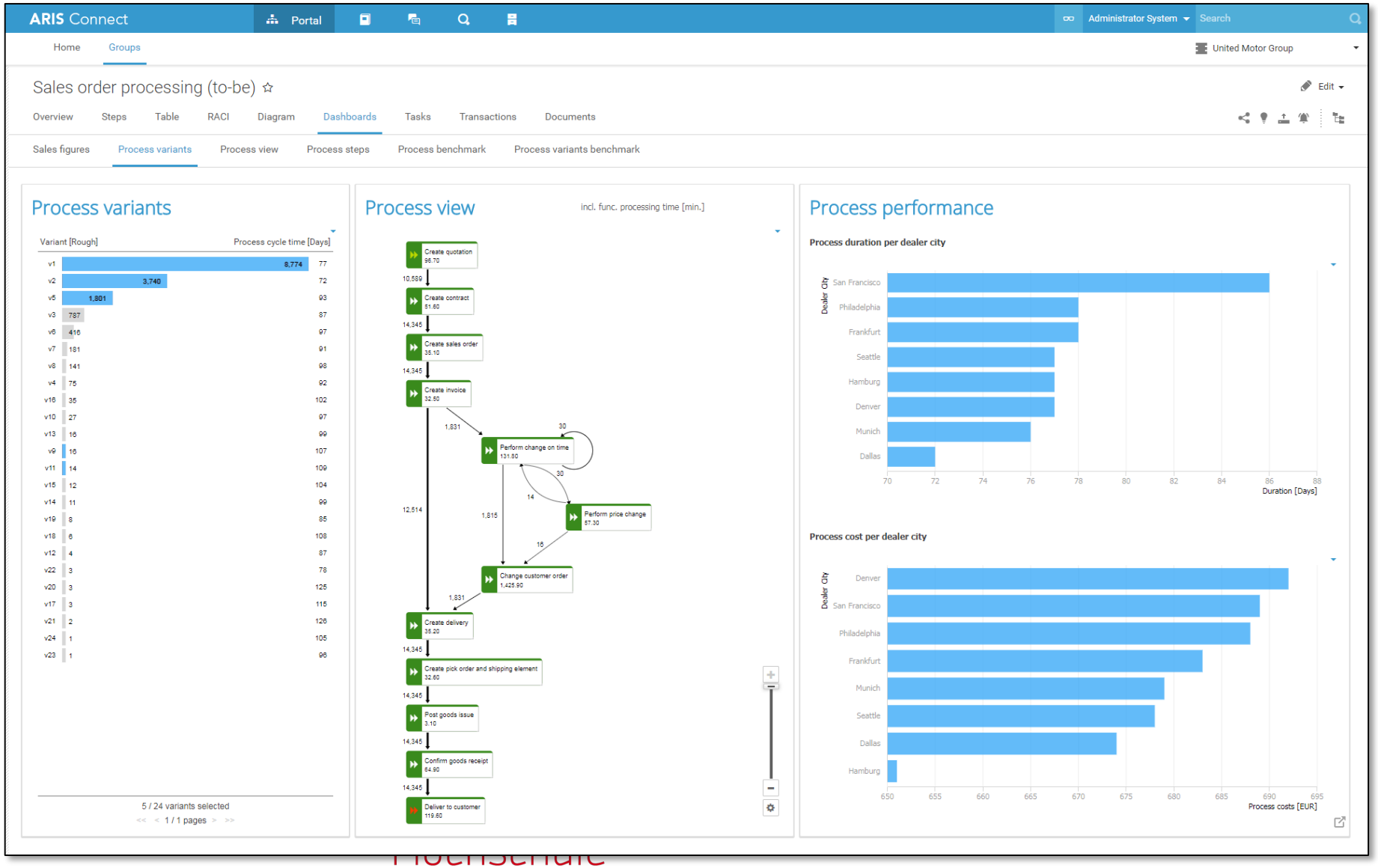
Vendor Landscape



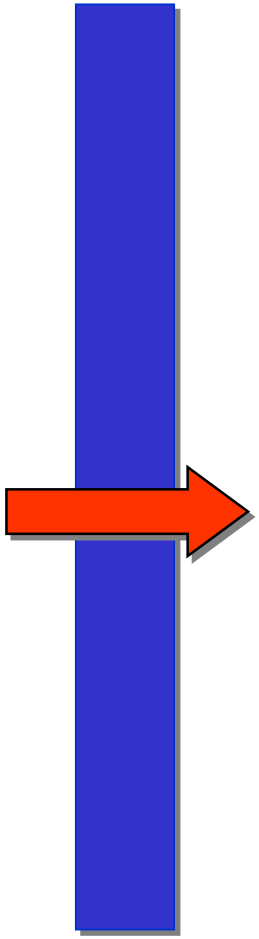
Example: Signavio Process Intelligence



Example: ARIS Connect



Agenda



Initial Situation / Motivation

Process Mining Fundamentals

Process Mining with Celonis

Example: Celonis from Munich wins German Future Award 2019

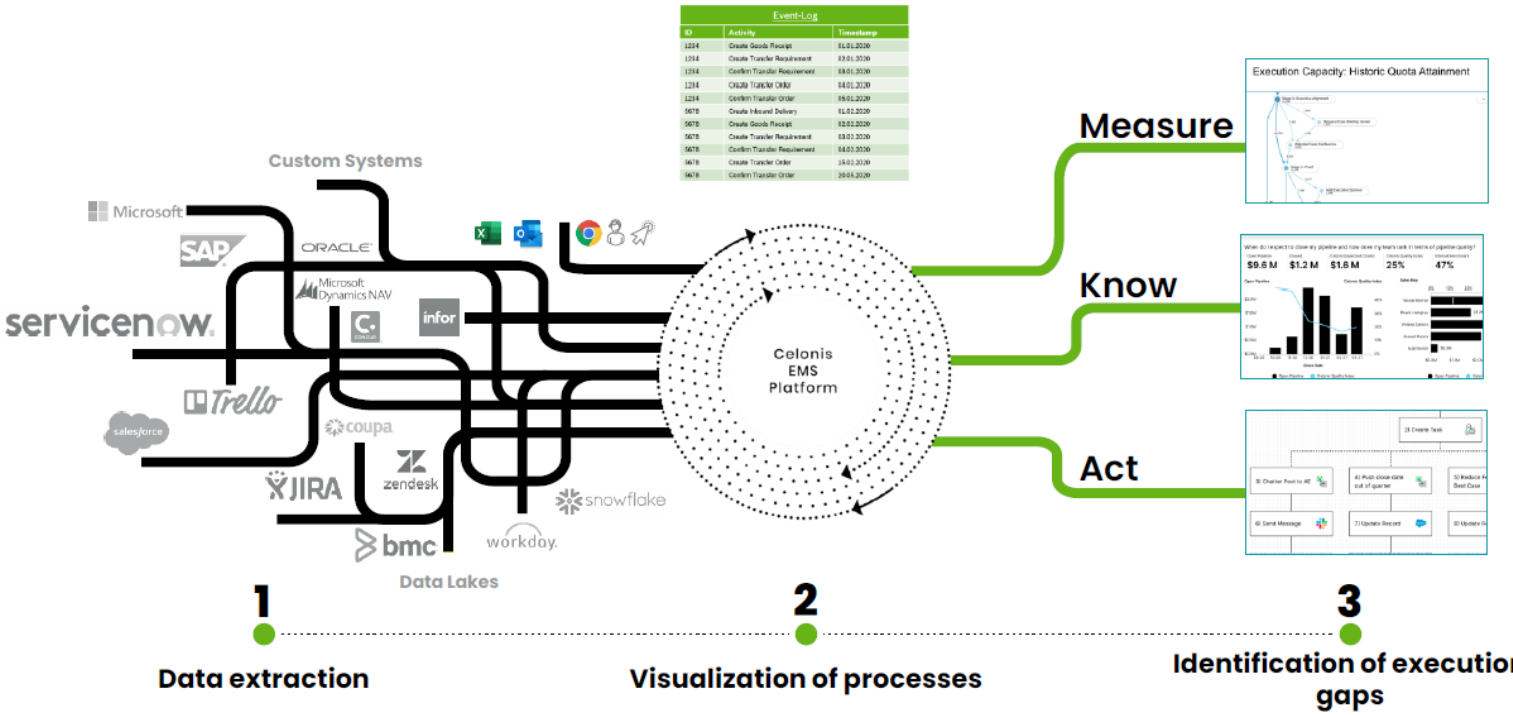
Founded 2011 (Spin Off from TU Munich)

Over 800 Employees

Valuation: over 10.000.000.000 Euro (Decacorn)

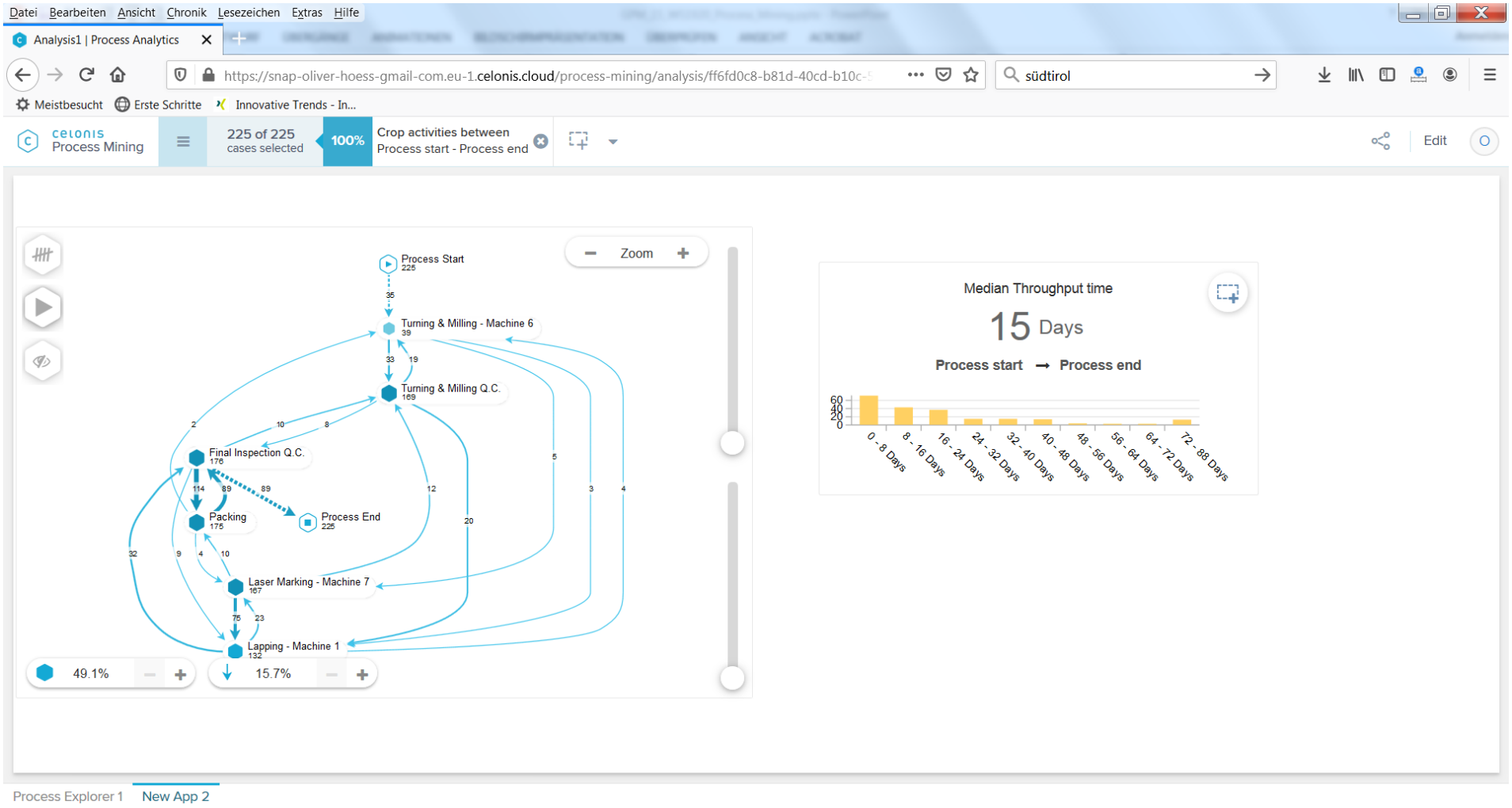
Generic Architecture

Theoretical Basics: Process Mining

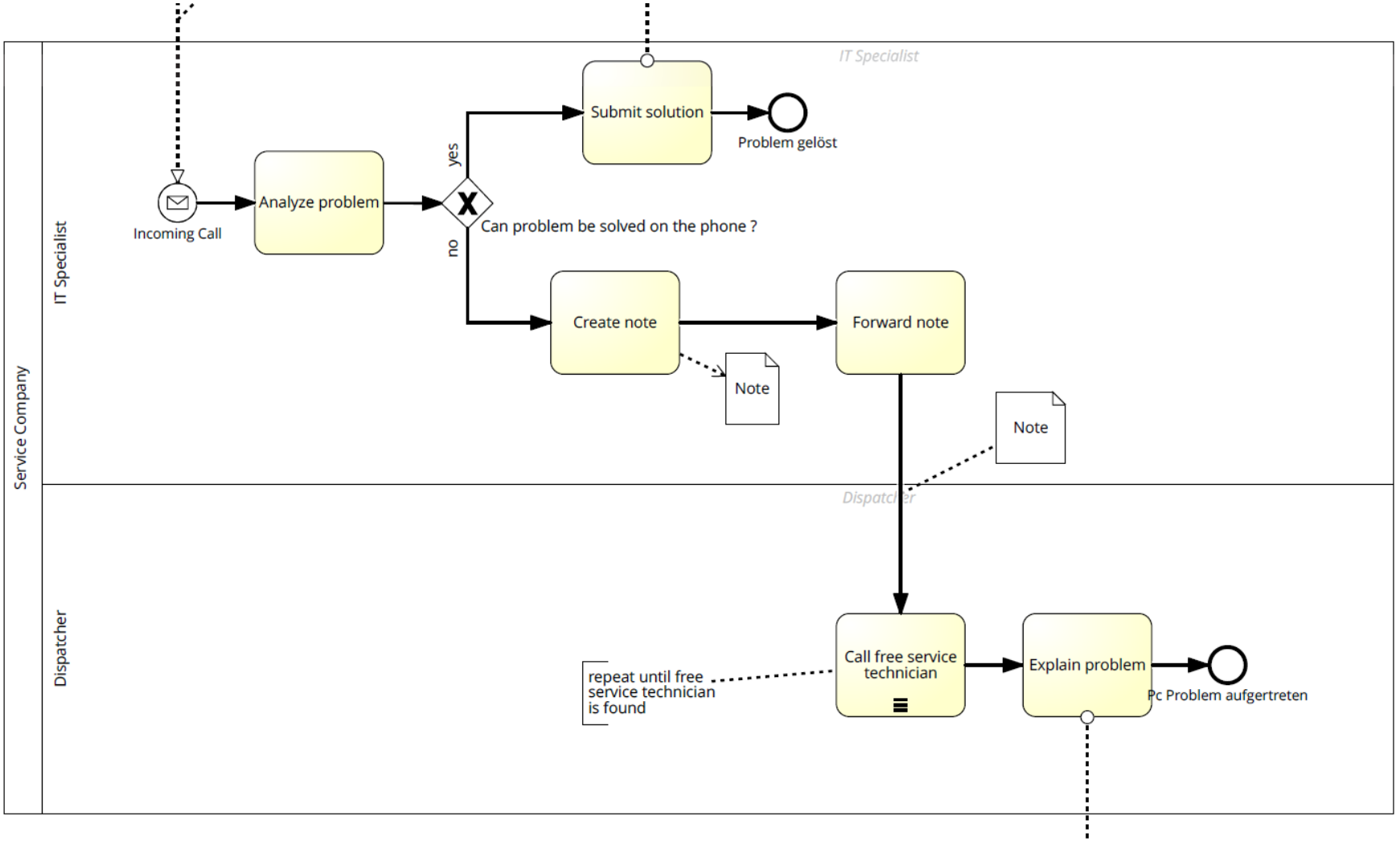


BOSCH

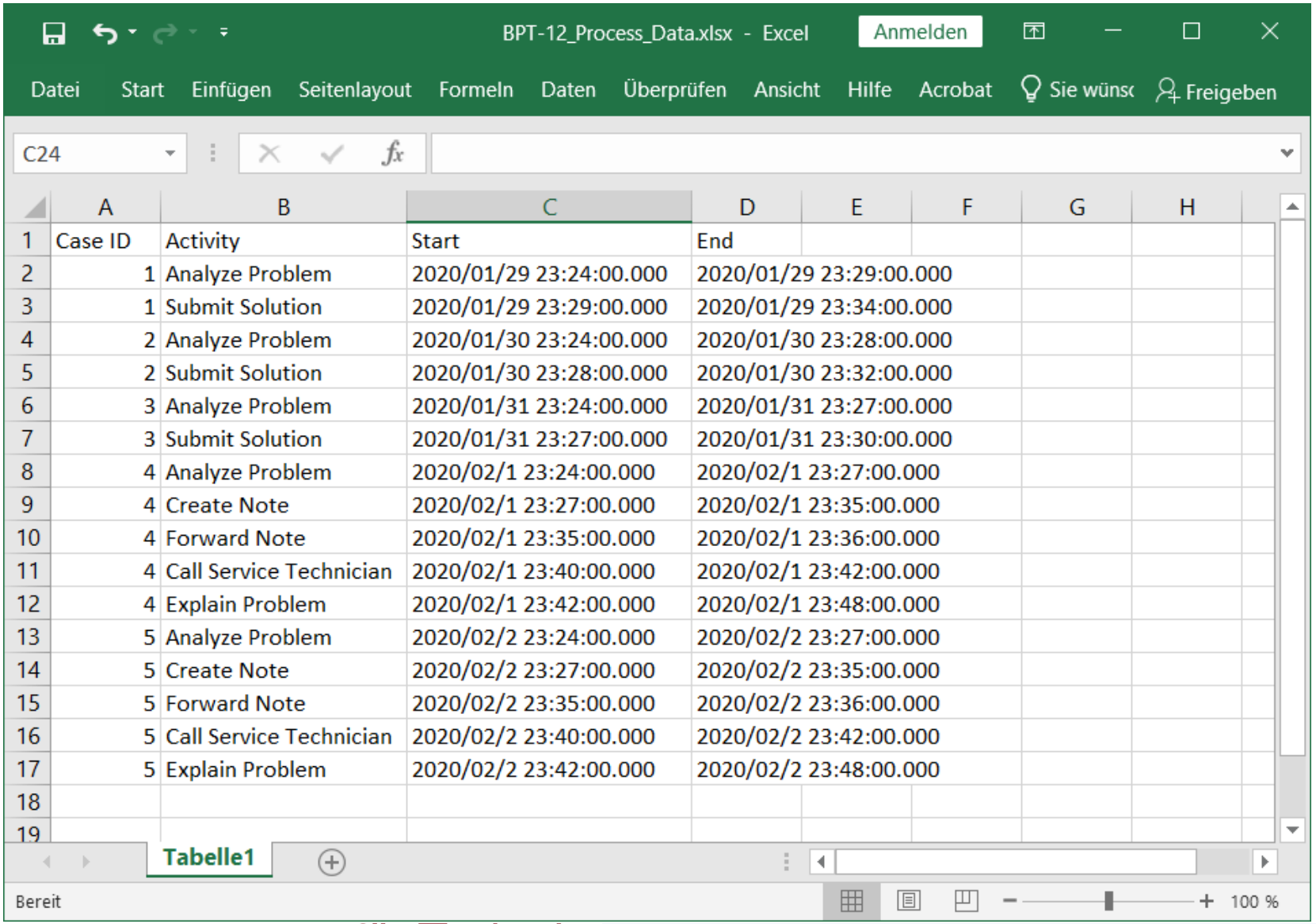
Example: Celonis EMS (Execution Management System)



Simple Example Process

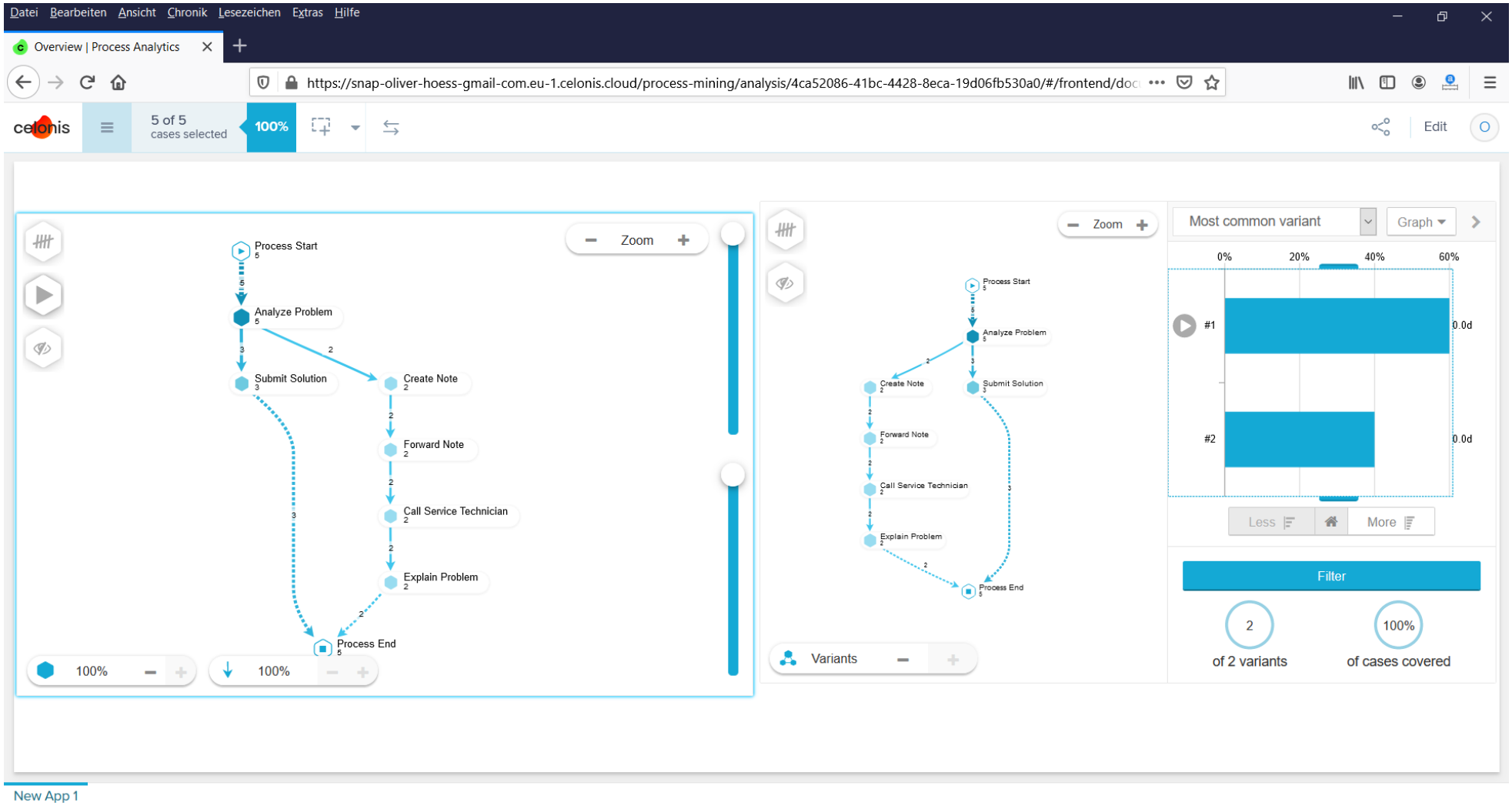


Simple Process Log

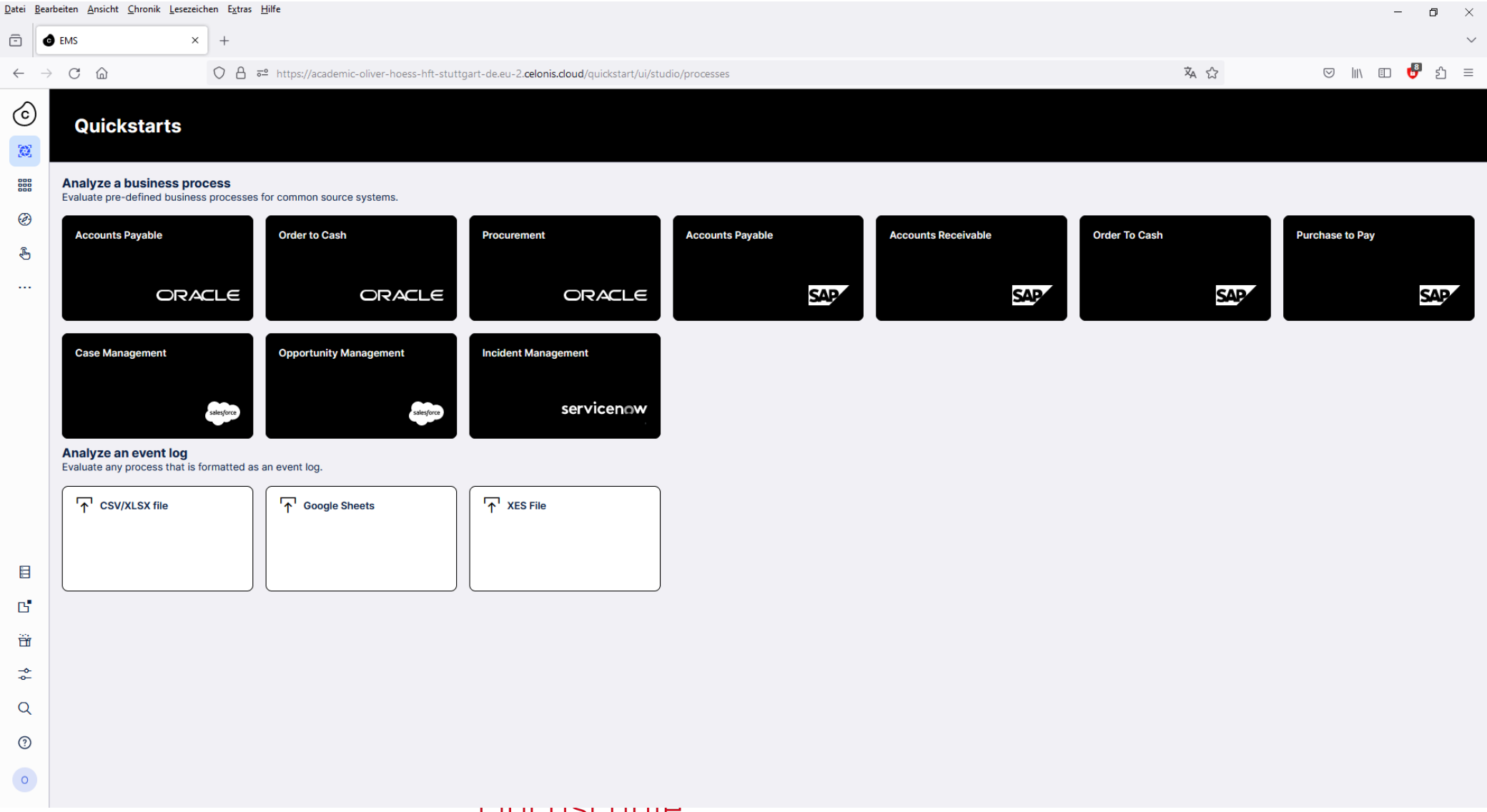


	A	B	C	D	E	F	G	H
1	Case ID	Activity	Start	End				
2	1	Analyze Problem	2020/01/29 23:24:00.000	2020/01/29 23:29:00.000				
3	1	Submit Solution	2020/01/29 23:29:00.000	2020/01/29 23:34:00.000				
4	2	Analyze Problem	2020/01/30 23:24:00.000	2020/01/30 23:28:00.000				
5	2	Submit Solution	2020/01/30 23:28:00.000	2020/01/30 23:32:00.000				
6	3	Analyze Problem	2020/01/31 23:24:00.000	2020/01/31 23:27:00.000				
7	3	Submit Solution	2020/01/31 23:27:00.000	2020/01/31 23:30:00.000				
8	4	Analyze Problem	2020/02/1 23:24:00.000	2020/02/1 23:27:00.000				
9	4	Create Note	2020/02/1 23:27:00.000	2020/02/1 23:35:00.000				
10	4	Forward Note	2020/02/1 23:35:00.000	2020/02/1 23:36:00.000				
11	4	Call Service Technician	2020/02/1 23:40:00.000	2020/02/1 23:42:00.000				
12	4	Explain Problem	2020/02/1 23:42:00.000	2020/02/1 23:48:00.000				
13	5	Analyze Problem	2020/02/2 23:24:00.000	2020/02/2 23:27:00.000				
14	5	Create Note	2020/02/2 23:27:00.000	2020/02/2 23:35:00.000				
15	5	Forward Note	2020/02/2 23:35:00.000	2020/02/2 23:36:00.000				
16	5	Call Service Technician	2020/02/2 23:40:00.000	2020/02/2 23:42:00.000				
17	5	Explain Problem	2020/02/2 23:42:00.000	2020/02/2 23:48:00.000				
18								
19								

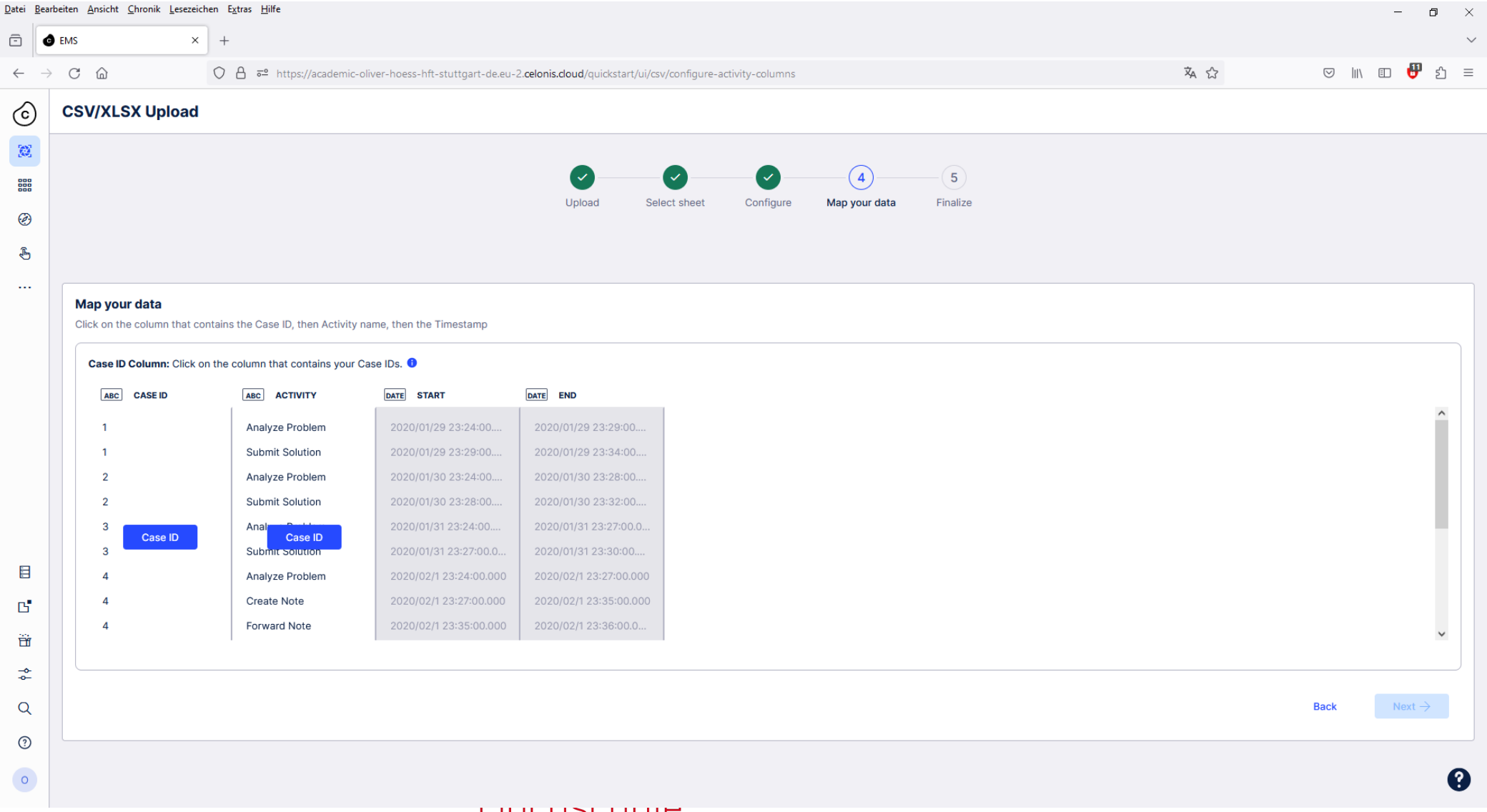
Analysis of the process / log data with Celonis



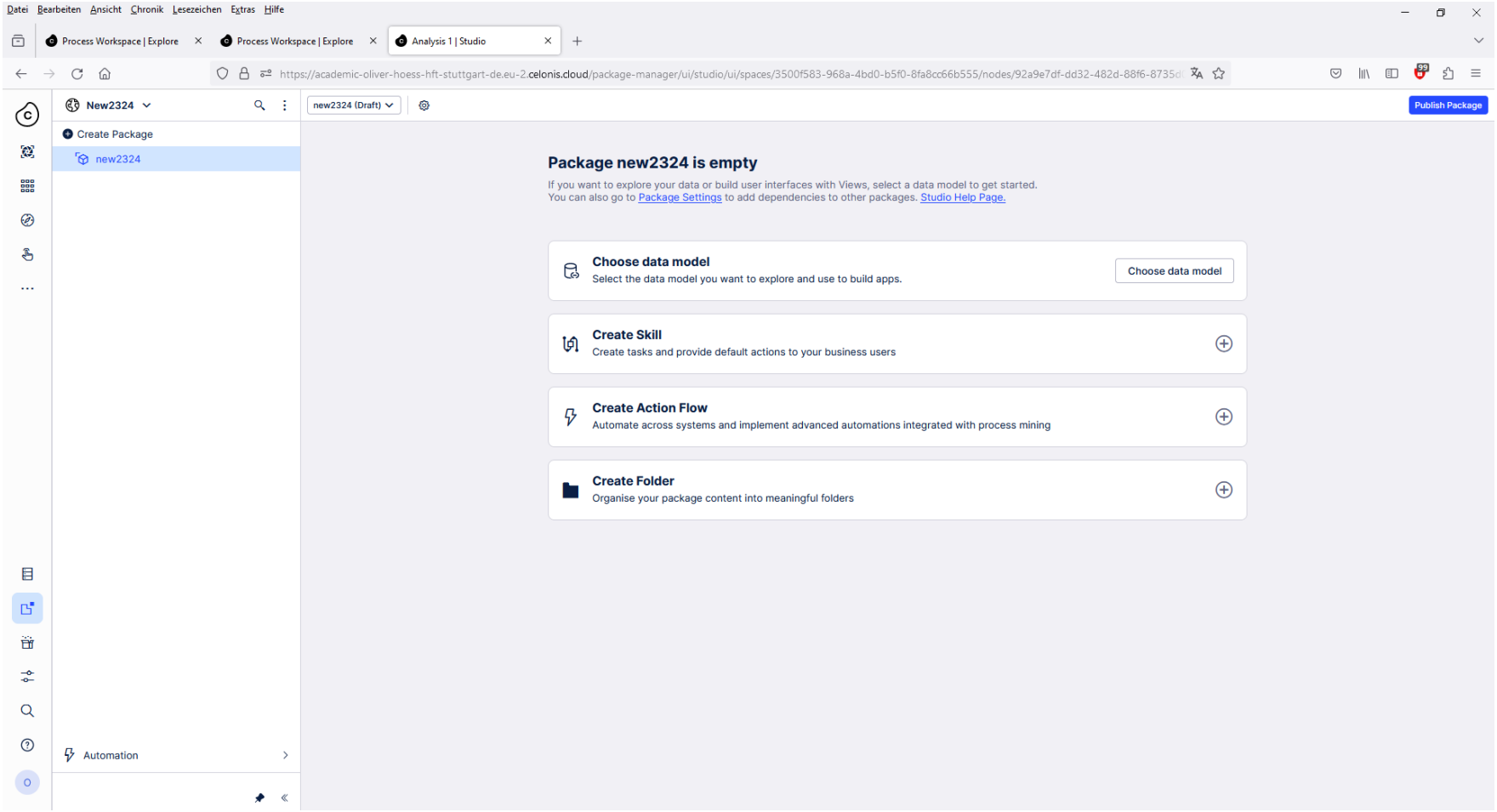
Step 1 - Quickstarts



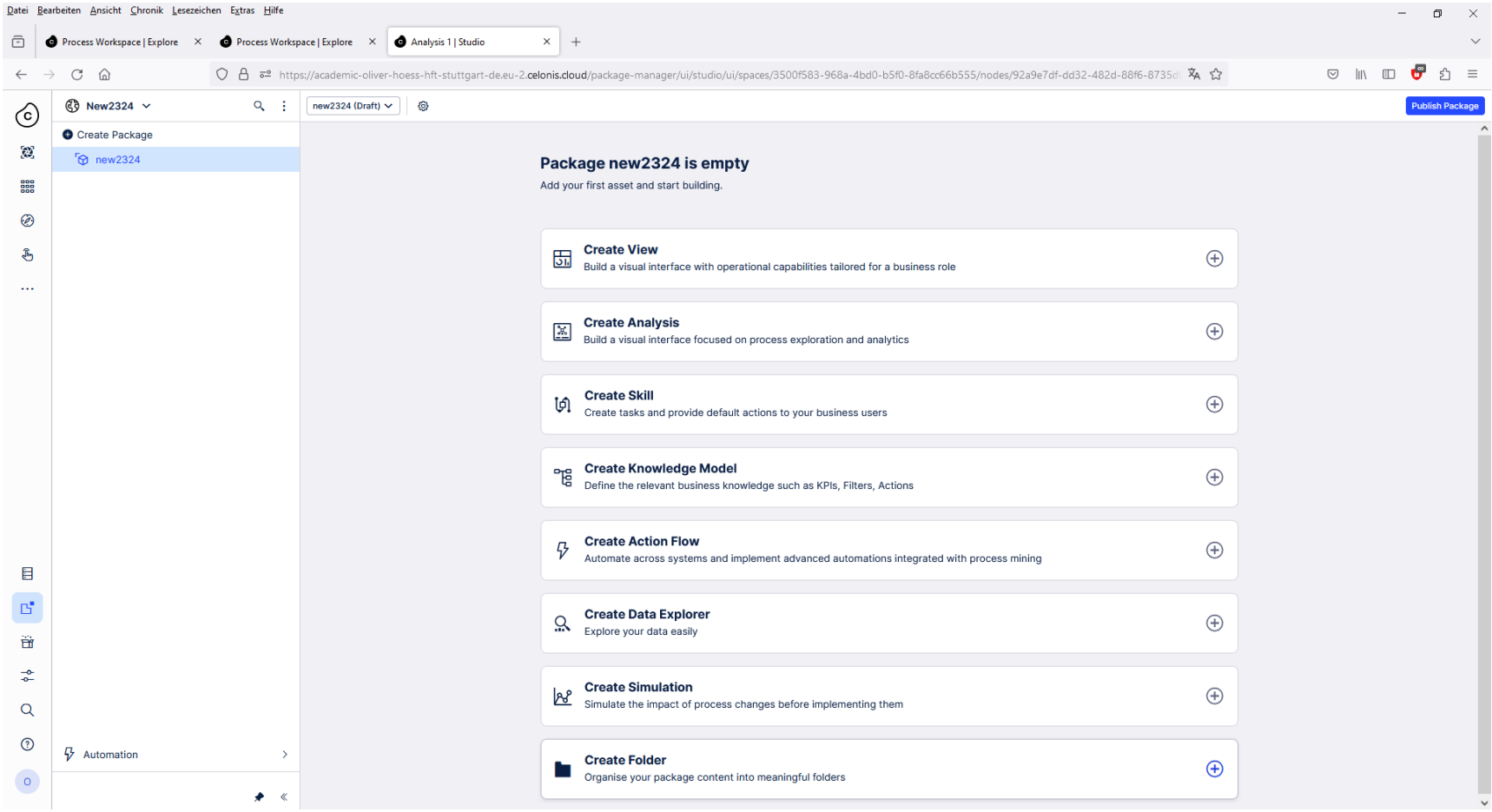
Step 2 – Define Key Fields



Step 3 – Studio explore- Choose Data Model



Step 4 – Create Analysis



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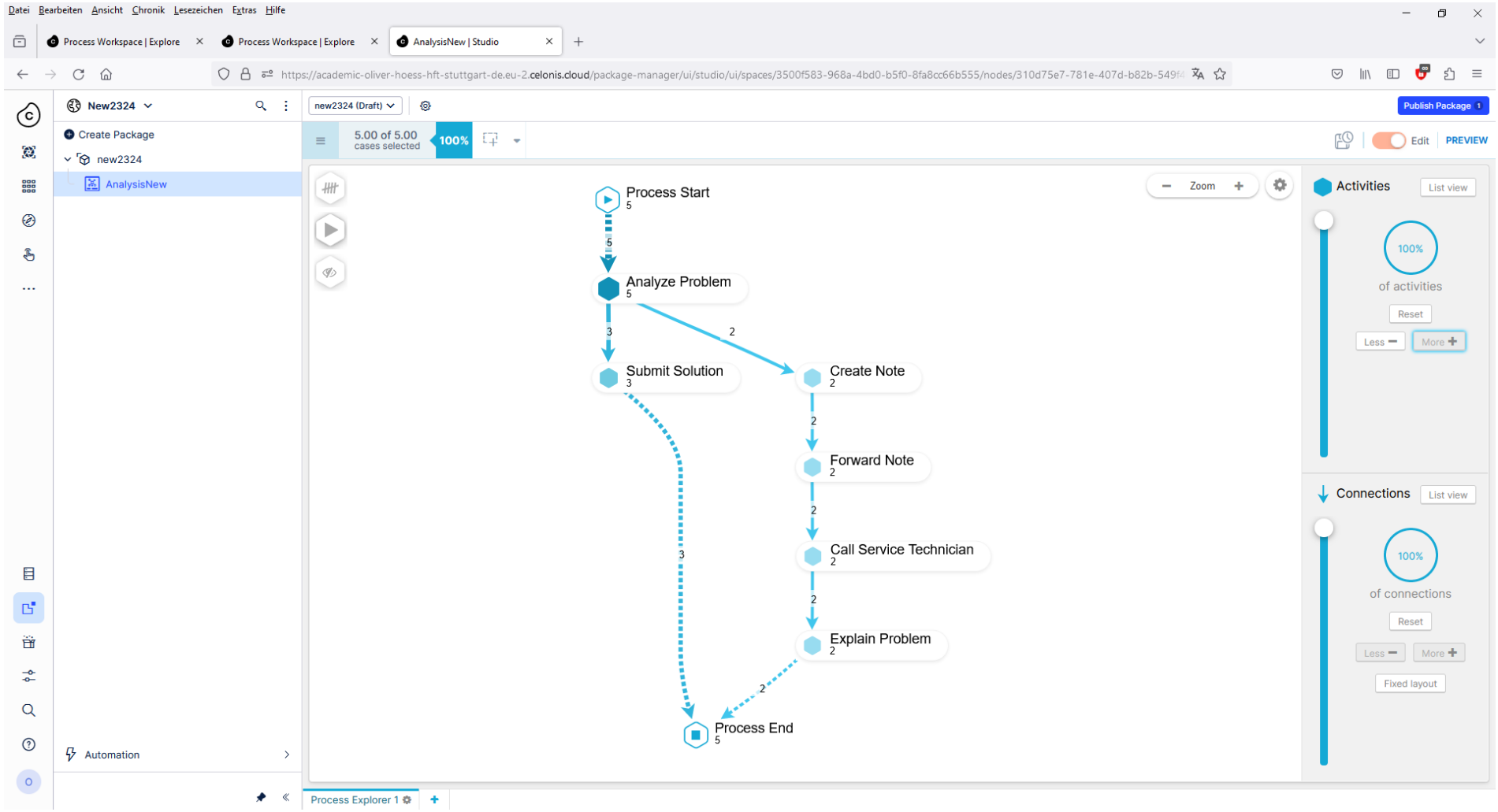
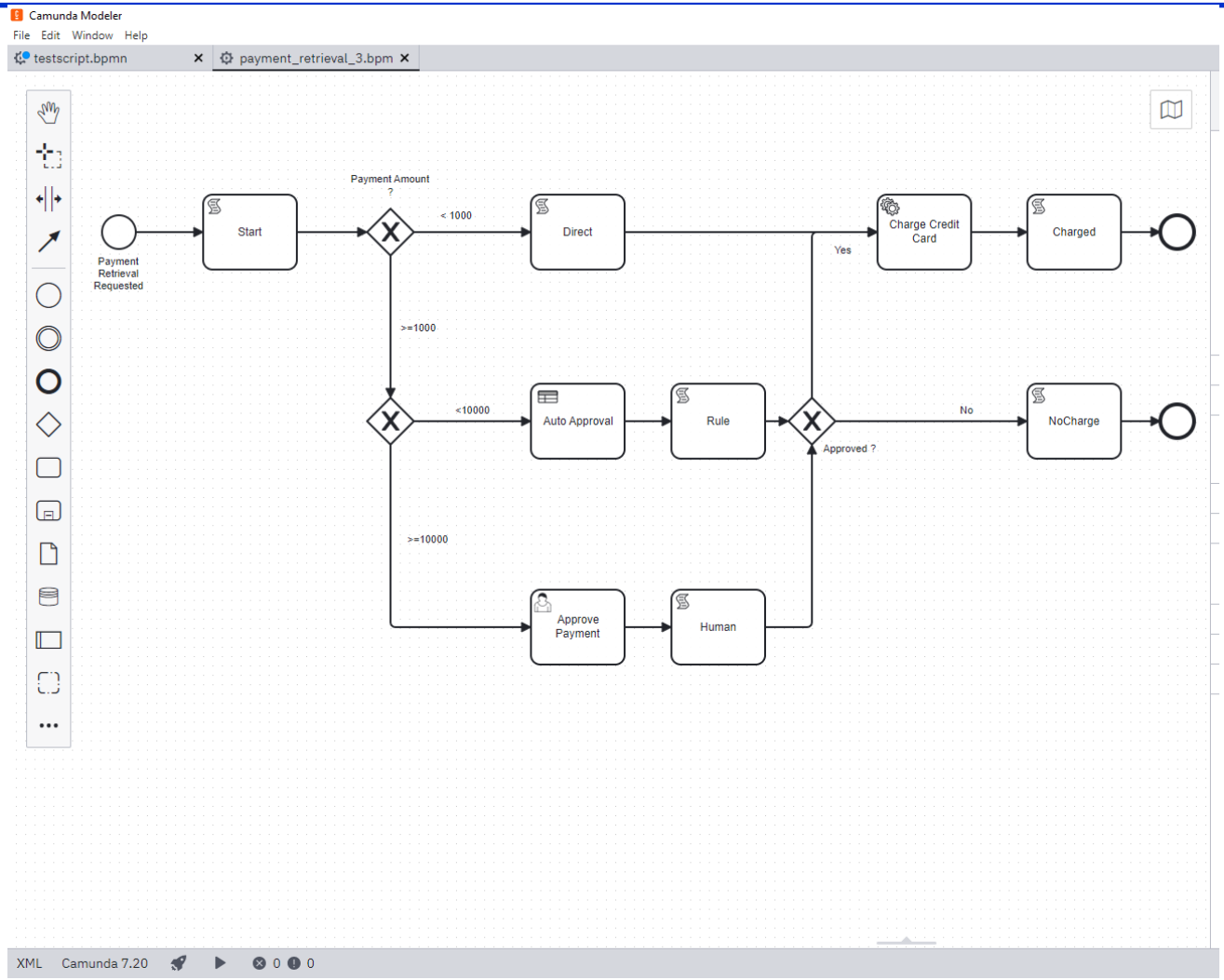
Step 6 – Result



2nd Example: Camunda Instrumentation with script tasks



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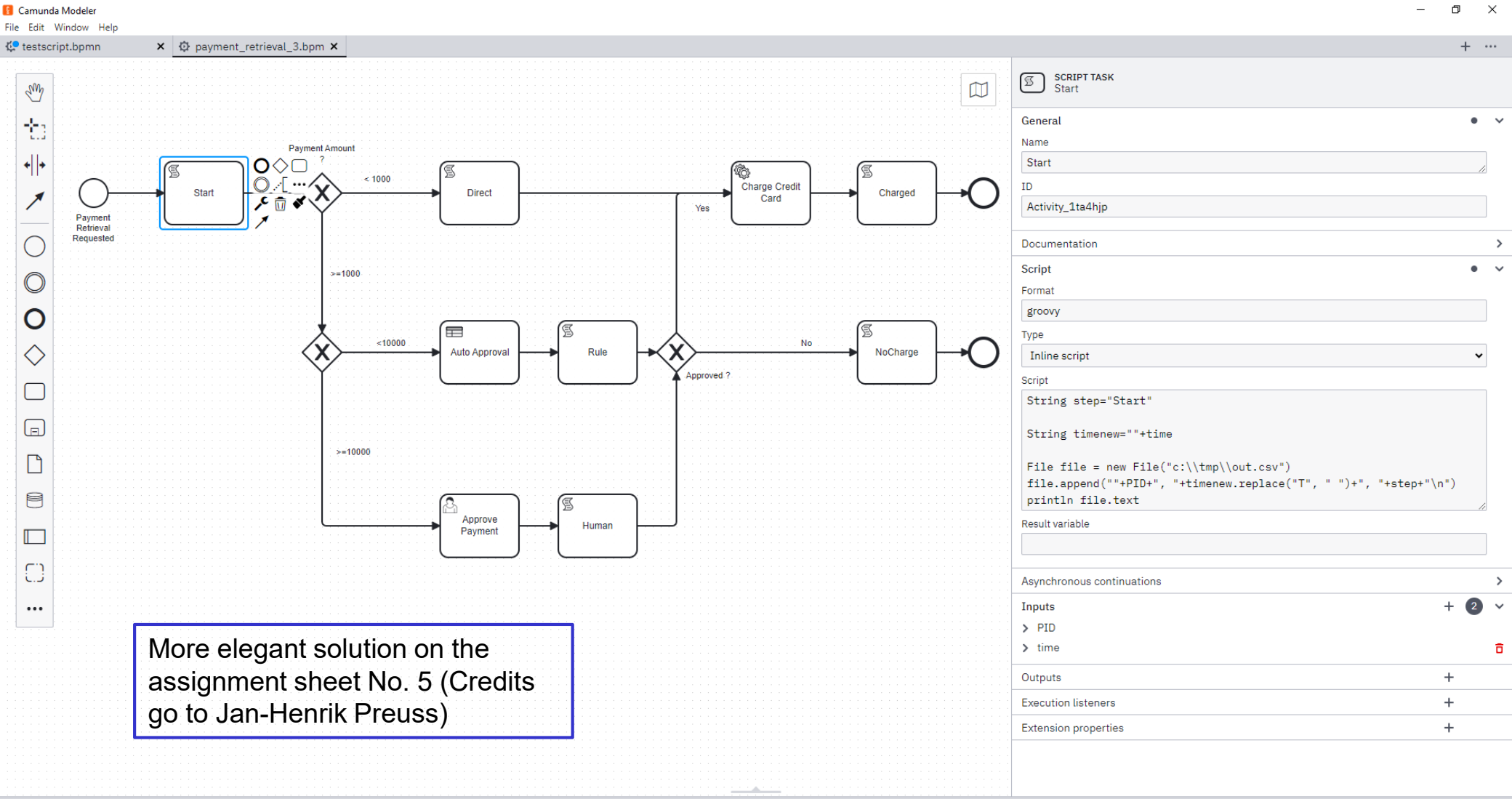
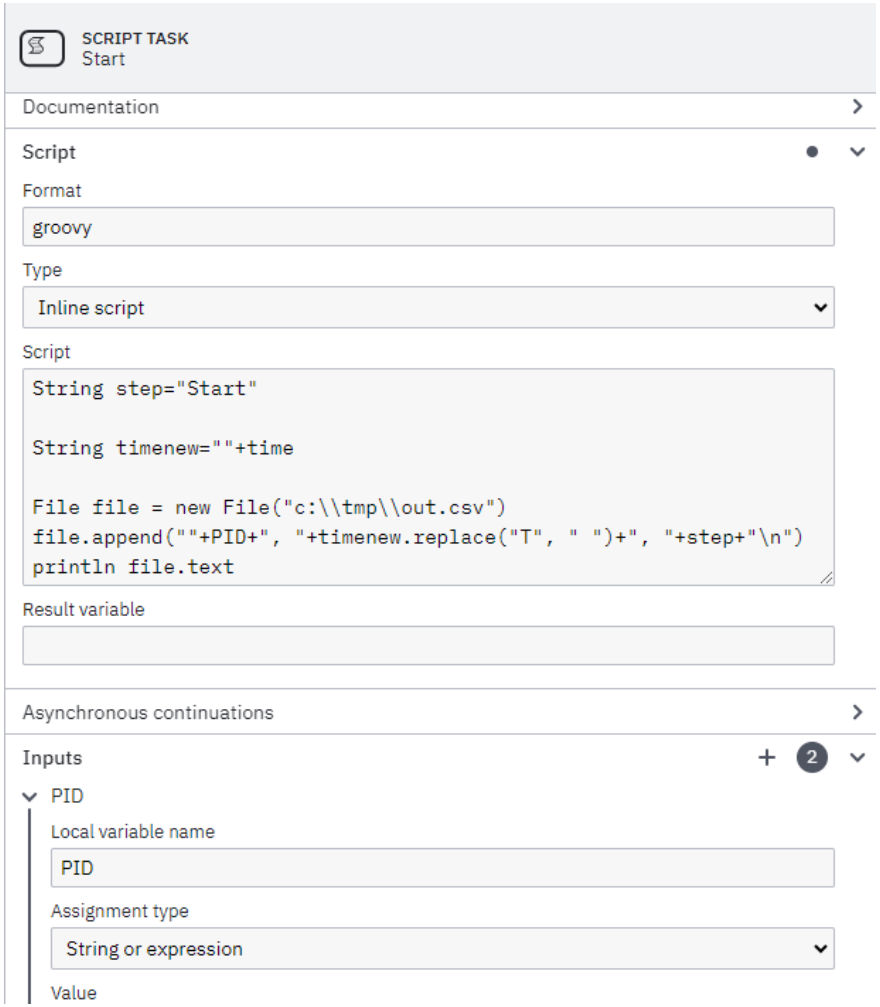
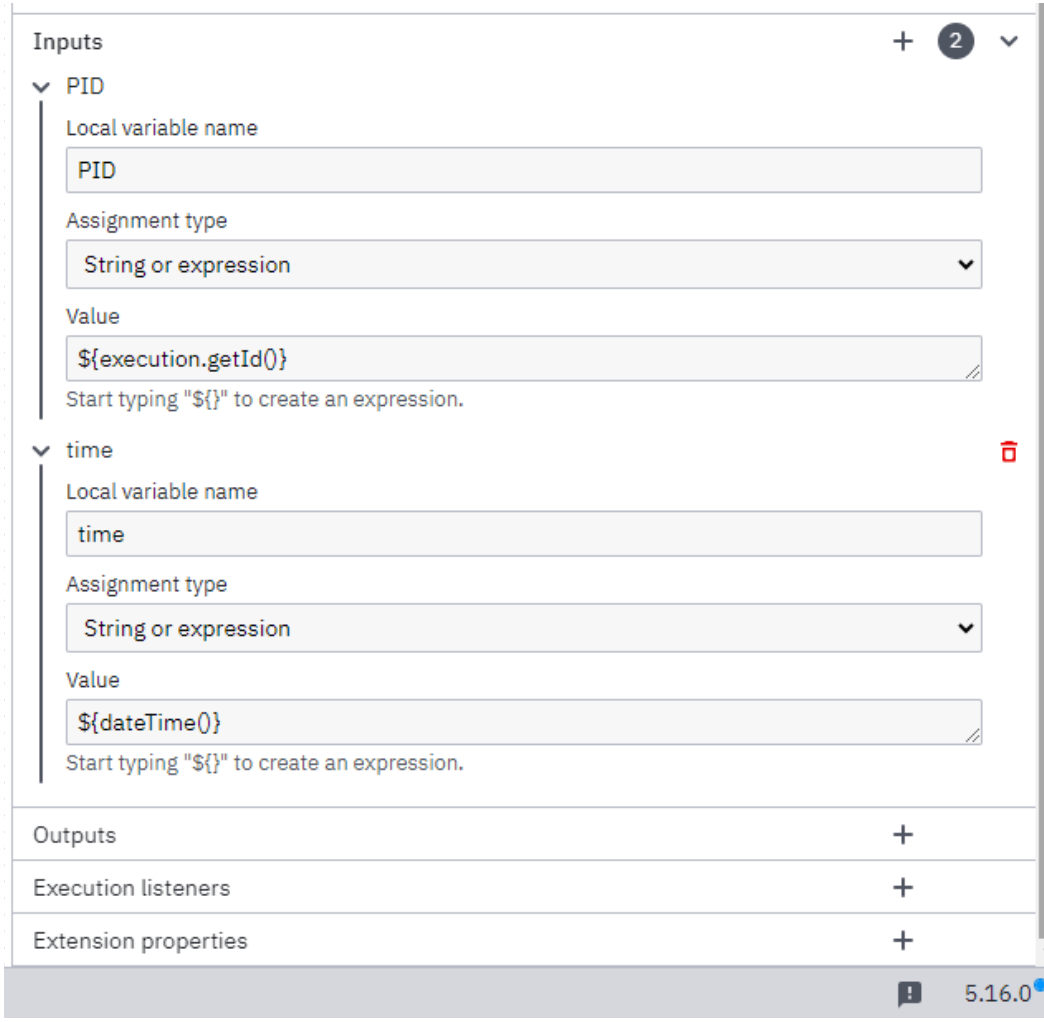


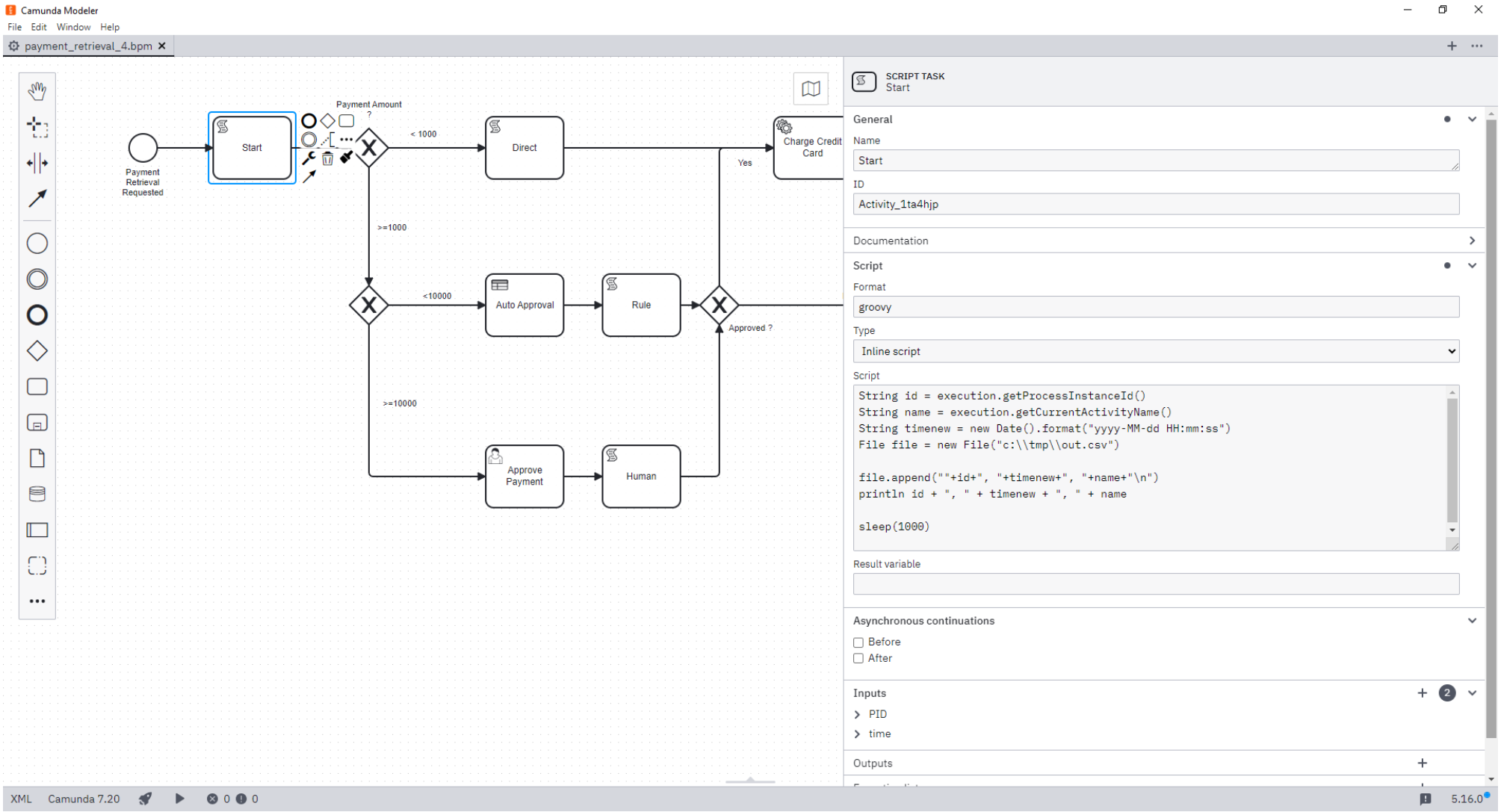
More elegant solution on the assignment sheet No. 5 (Credits go to Jan-Henrik Preuss)

2nd Example: Camunda Instrumentation with script tasks

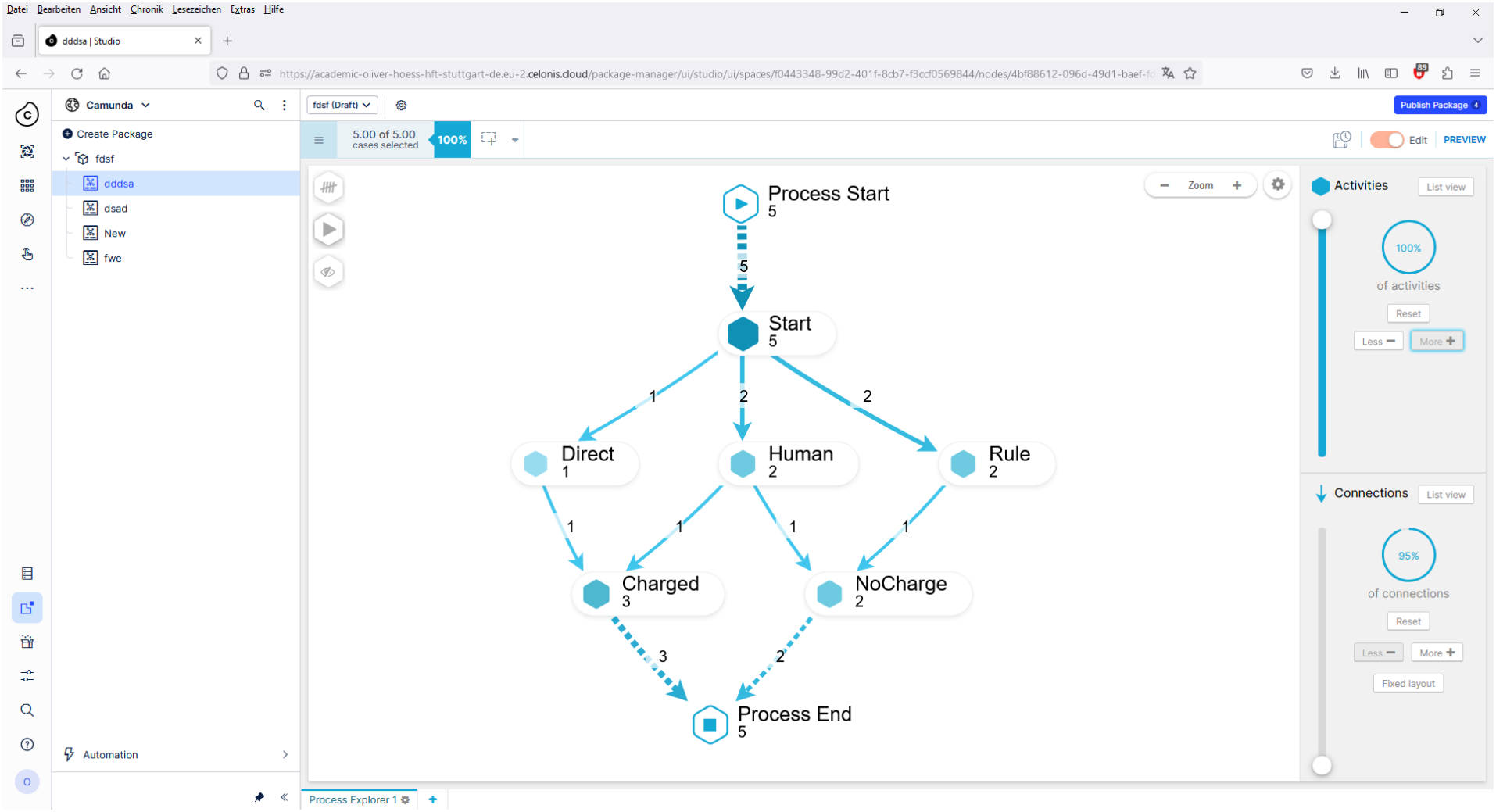




Elegant Solution: No Variables & automatic extraction of activity name (Credits: J-H Preuß)



Result for all paths in Celonis




[Weitere] Fragen?!