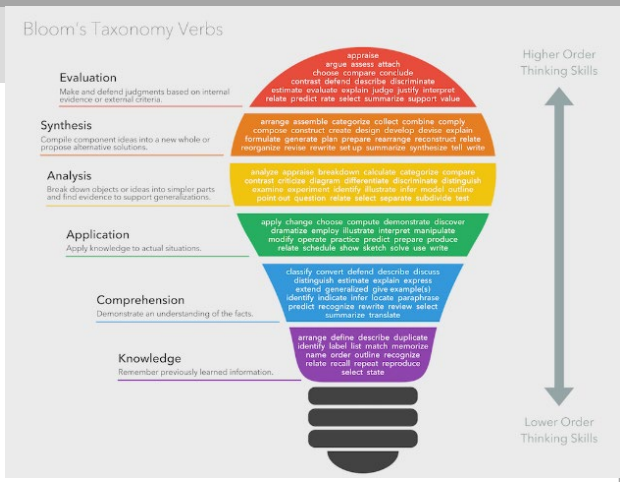
„Business Process Technologies“
[3] Analysis and Optimization



Bloom's Taxonomy Verbs by Fractus Learning, Lizenz: CC-BY-SA 4.0

Lerning Goals

- ✓ Understand the utility of process analysis
- ✓ Understand the different types of process analyses
- ✓ Perform analyses on processes
- ✓ Use classical (reductionist) process optimization patterns on processes

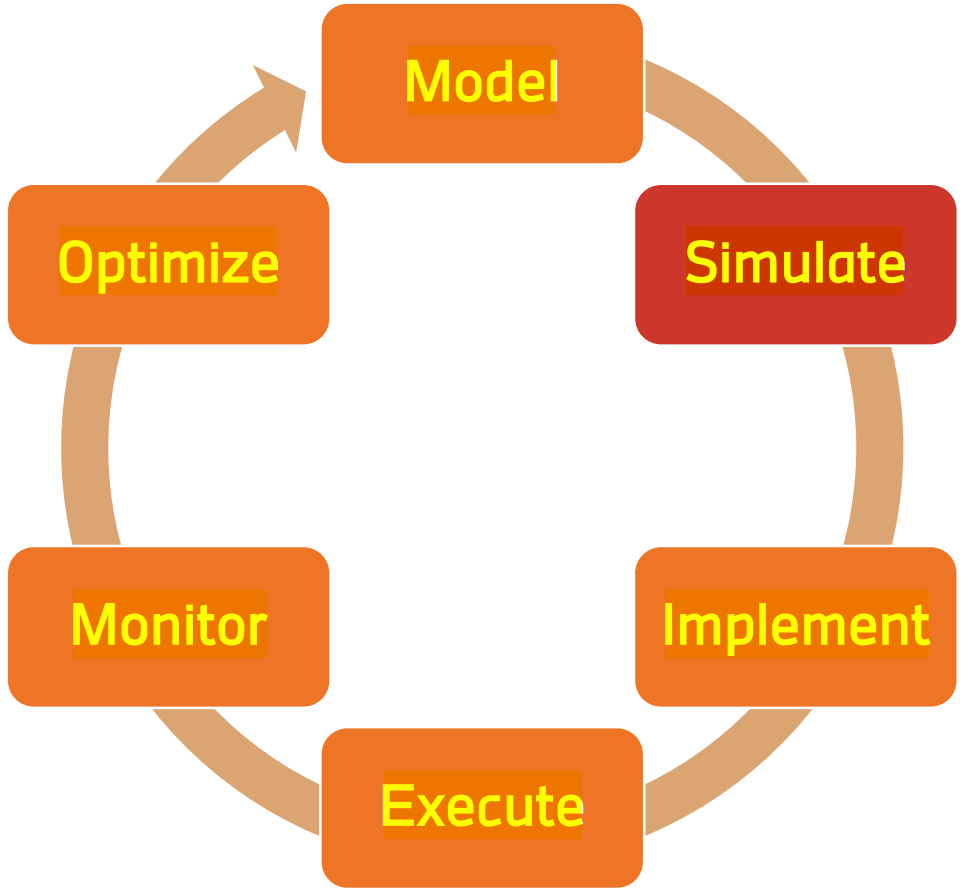
Agenda

- Analysis
  - Analysis in the BPM cycle
  - Process analysis by process type
  - Analyzing to-be-processes using Signavio
- Optimization
  - Approaches
  - Patterns
  - Robotic Process Automation
  - Application
  - Comparison to Business Reengineering

[03.1] Analysis

Process analyis in the BPM cycle

- In many scenarios, formal process analysis aids understanding a modeled to-be-process with respect to
  - Costs
  - Time
  - Resources
    - Use of IT systems
    - Use of documents
    - Involvement of roles



[03.2] Analysis by process type

Process analysis by process type

As-Is-Process

- Business Process Intelligence
  - Data preparation
  - Reports
- Business Activity Monitoring
  - Event definition
  - Event monitoring

To-Be-Process

- Estimation of quantity structure
- Simulation

Documentation for both types
- Models
- Text documentation

Types of metrics in process analysis

Process-oriented

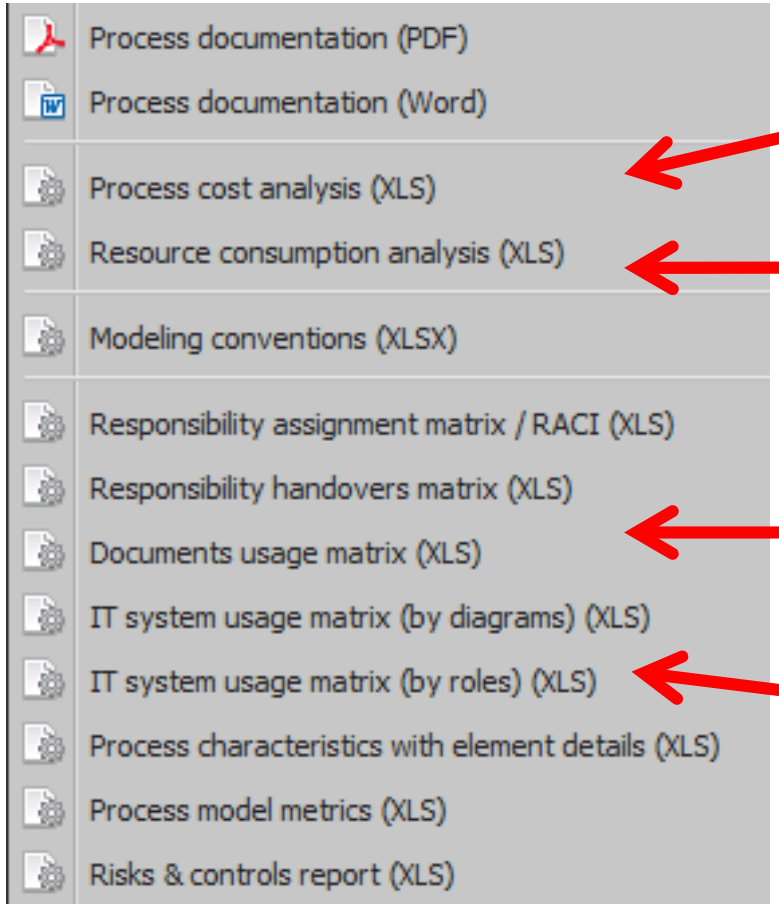
- Time-oriented
  - Execution time
  - Total duration
- Value-oriented
  - Process cost
- Quantity-oriented
  - (Non-)Executed steps

Resource-oriented

- Time-oriented
  - Usage time
  - Wait time
  - Failure time
- Value-oriented
  - Usage cost
  - Idle cost
- Quantity-oriented
  - Input/Output
  - Stock

[03.3] Analysis Questions

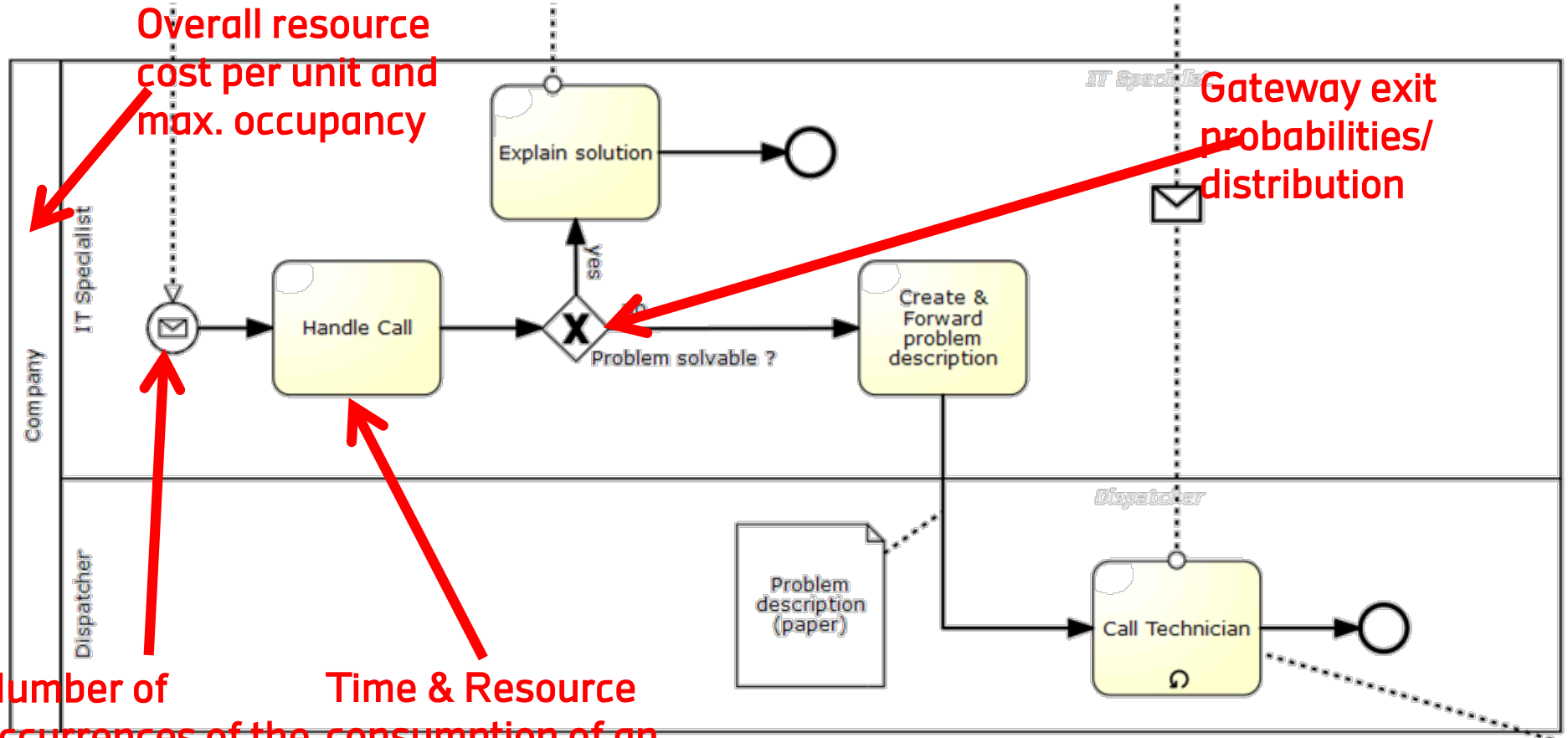
Process analysis questions & example Signavio reports



- Which activities produce which costs?
- How much time/ resources does which activity consume?
- Which documents does which activity use?
- Which IT systems does activity/role use?

[03.4] Analysis in Signavio

Example resource analysis: necessary process parameters



Scenarios group settings for different aspects for a what-if comparison.

Szenarien

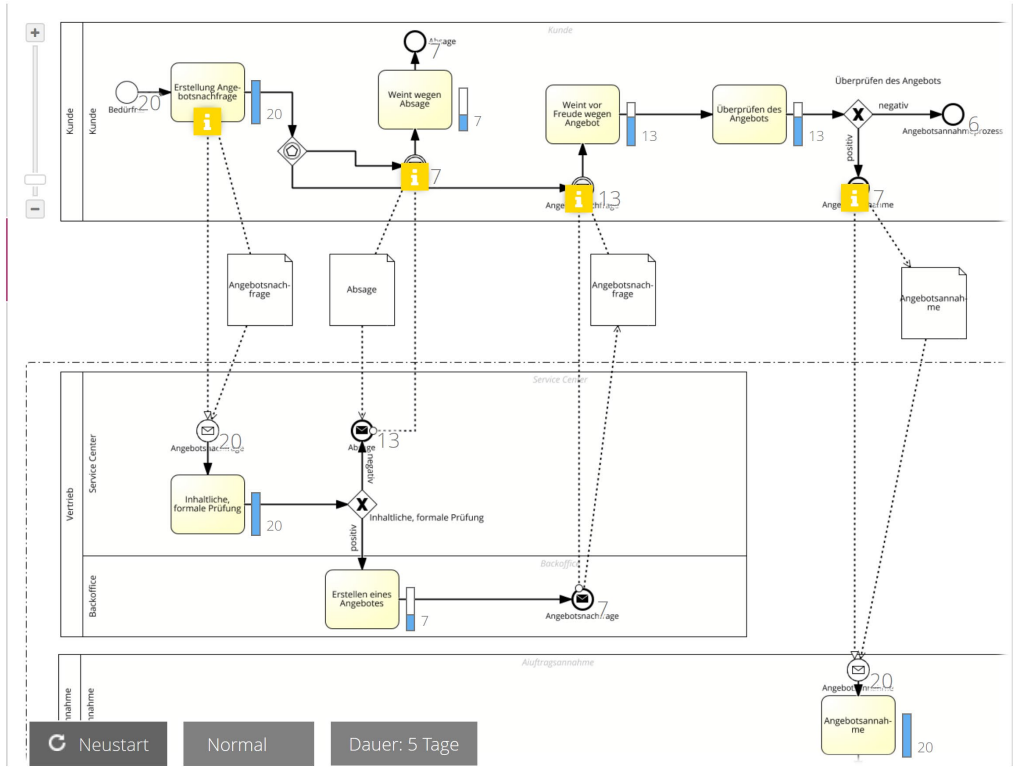
Normal +

Kosten
Dauer
Frequenz
Ressourcen

	Aktivität	Ausführungszeit (Format: hh:mm:ss)
1.	Erstellung Angebotsnachfrage	00:00:00 ...
2.	Weint wegen Absage	00:00:00 ...
3.	Weint vor Freude wegen Angebot	00:00:00 ...
4.	Überprüfen des Angebots	00:00:00 ...
5.	Inhaltliche, formale Prüfung	00:15:00 ...
6.	Erstellen eines Angebotes	00:30:00 ...
7.	Angebotsannahme	00:05:00 ...

	Nachrichten-Zwischenereignis	Wartezeit
1.	Absage	00:00:00
2.	Angebotsnachfrage	00:00:00

Schritt für Schritt
Ein Fall
Mehrere Fälle



Aktueller Lauf (Normal)	Letzter Lauf (Normal)
Kosten	Kosten
1.658,33 €	1.658,33 €
mehr...	
Gesamtdurchlaufzeit	Gesamtdurchlaufzeit
0d 10h 10m 00s	0d 10h 10m 00s
mehr...	
Ressourcenverbrauch	Ressourcenverbrauch
0d 10h 10m 00s	0d 10h 10m 00s
mehr...	
Flaschenhals	Flaschenhals
---	---
mehr...	

Excel Export

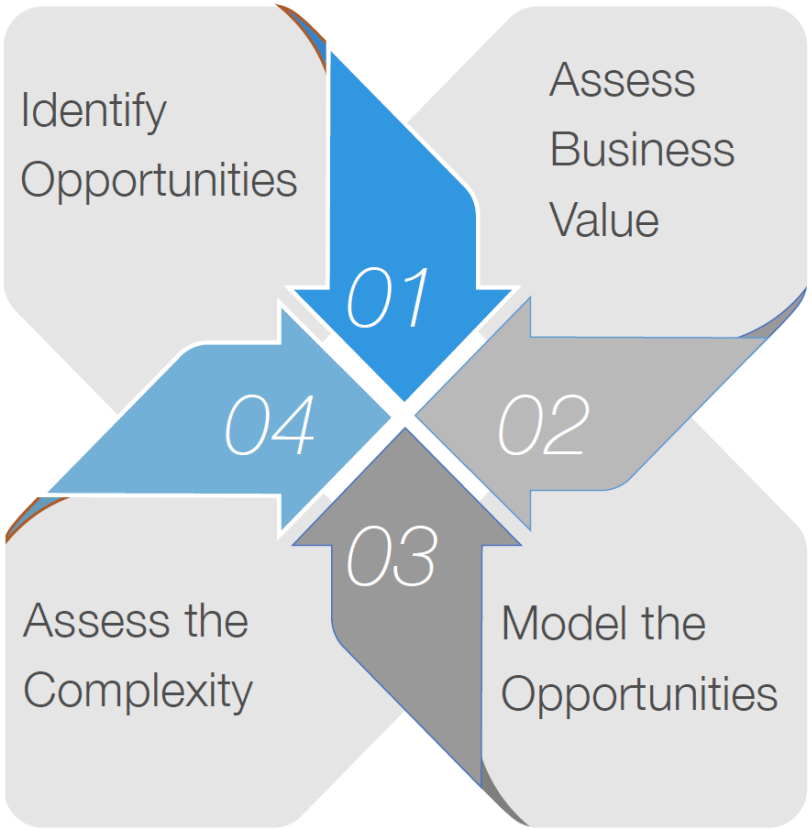
Example resource analysis: results

Report:	Resource Planning (Process)				
Date:	31.10.2013				
Time:	09:59:23				
Name:	Incident Management				
Frequency (per year):	18250				
			Company - Dispatcher		
Task	Input factor	Average processing time [min]	Workload [h]	Workload [h, incl. contingency allowance]	Nr. of full resources
Handle Call	1,00	5,00			
Explain solution	0,70	5,00			
Create & Forward problem description	0,30	10,00			
Call Technician	0,30	10,00	912,50	912,50	0,52
Sums		14,50	912,50	912,50	0,52

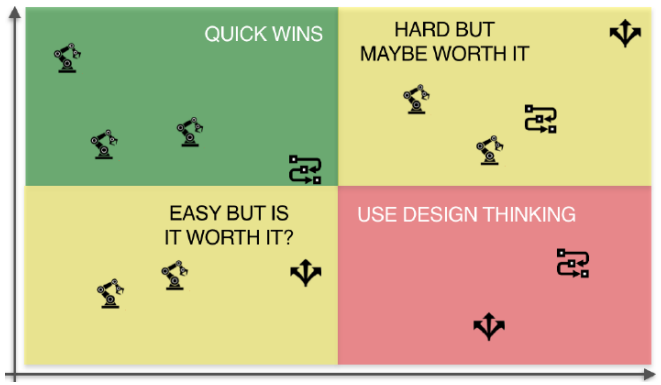
Company - IT Specialist			Sum		
Workload [h]	Workload [h, incl. contingency allowance]	Nr. of full resources	Workload [h]	Workload [h, incl. contingency allowance]	Nr. of full resources
1.520,83	1.520,83	0,86	1.520,83	1.520,83	0,86
1.064,58	1.064,58	0,60	1.064,58	1.064,58	0,60
912,50	912,50	0,52	912,50	912,50	0,52
			912,50	912,50	0,52
3.497,92	3.497,92	1,99	4.410,42	4.410,42	2,51

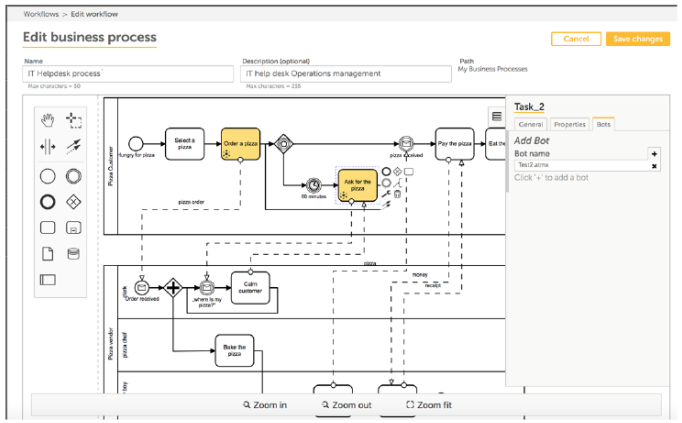
[03.5] Optimization: Steps

Optimization: Steps



Opportunity Name	Priority	Automation Type
Invoice Reconciliation	1	Task
Password Reset	2	Task
Employee Department Transfer	3	Flow
Expense Approval	4	Decision





Quelle: D. Brakoniecki: Robotics in Context: Finding the Right Tool to Solve the Right Process Problem. BPMCE 2019, London.

Process optimization - Approaches

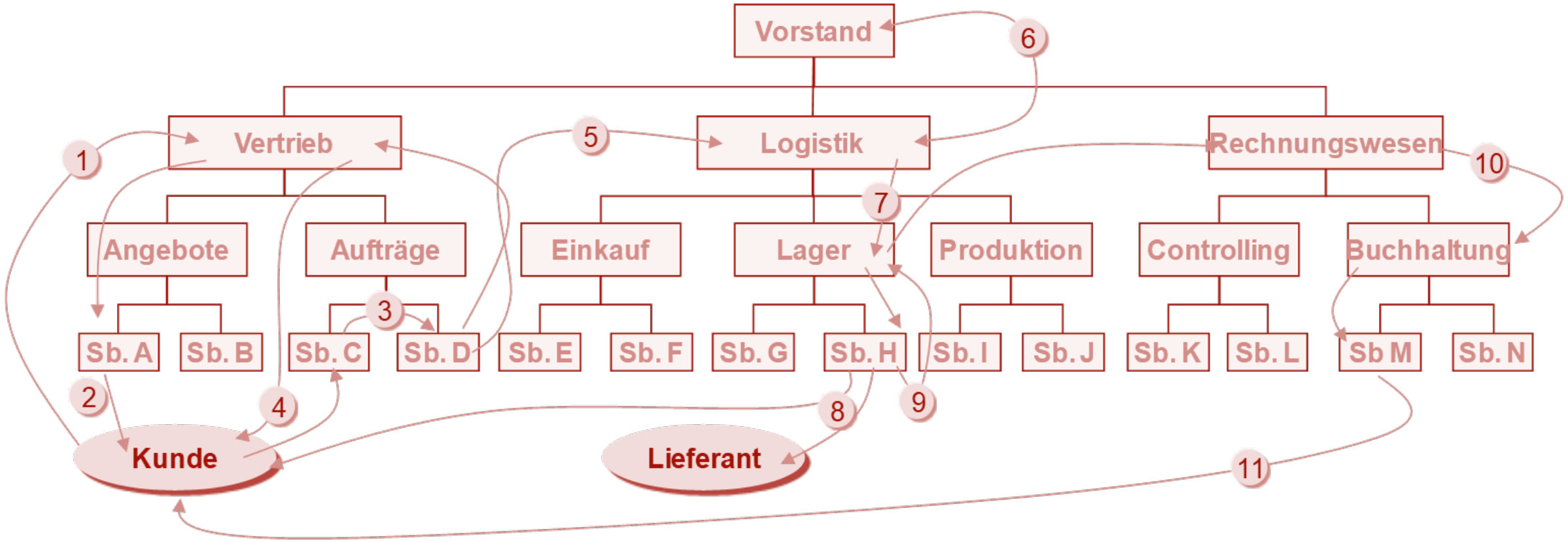
Classical-reductionist

- Simplify
- Standardise, automate
- Parallelise/Reorder
- Reduce waste
  - Categories: Stock, Waiting times, Overprocessing, Redundant work, Movement, Overproduction, Waste
- Changed division of labor along the value chain

Potential-oriented

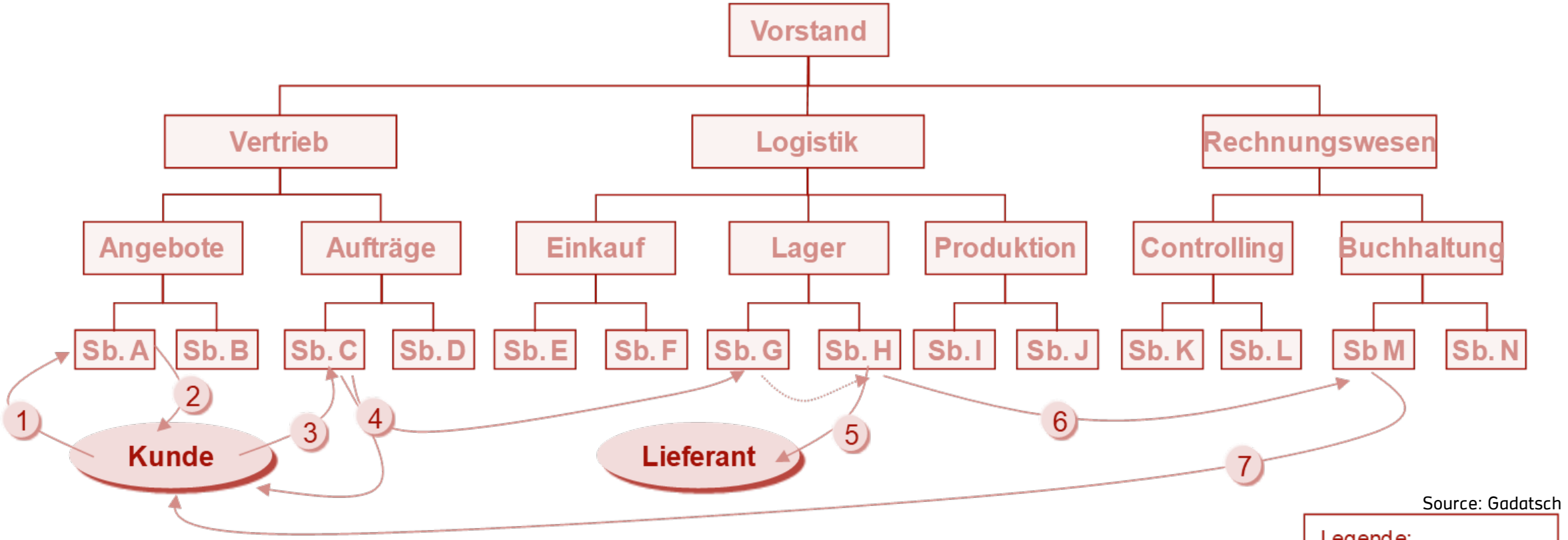
- Individualize
- Reduce latency
- Enrich
- Monetarize time/attention
- Generalize for new purposes/products

Case study: Spare part order



Source: Gadatsch

Case study: Spare part order (2)



Source: Gadatsch

Legende:
Sb. = Sachbearbeiter

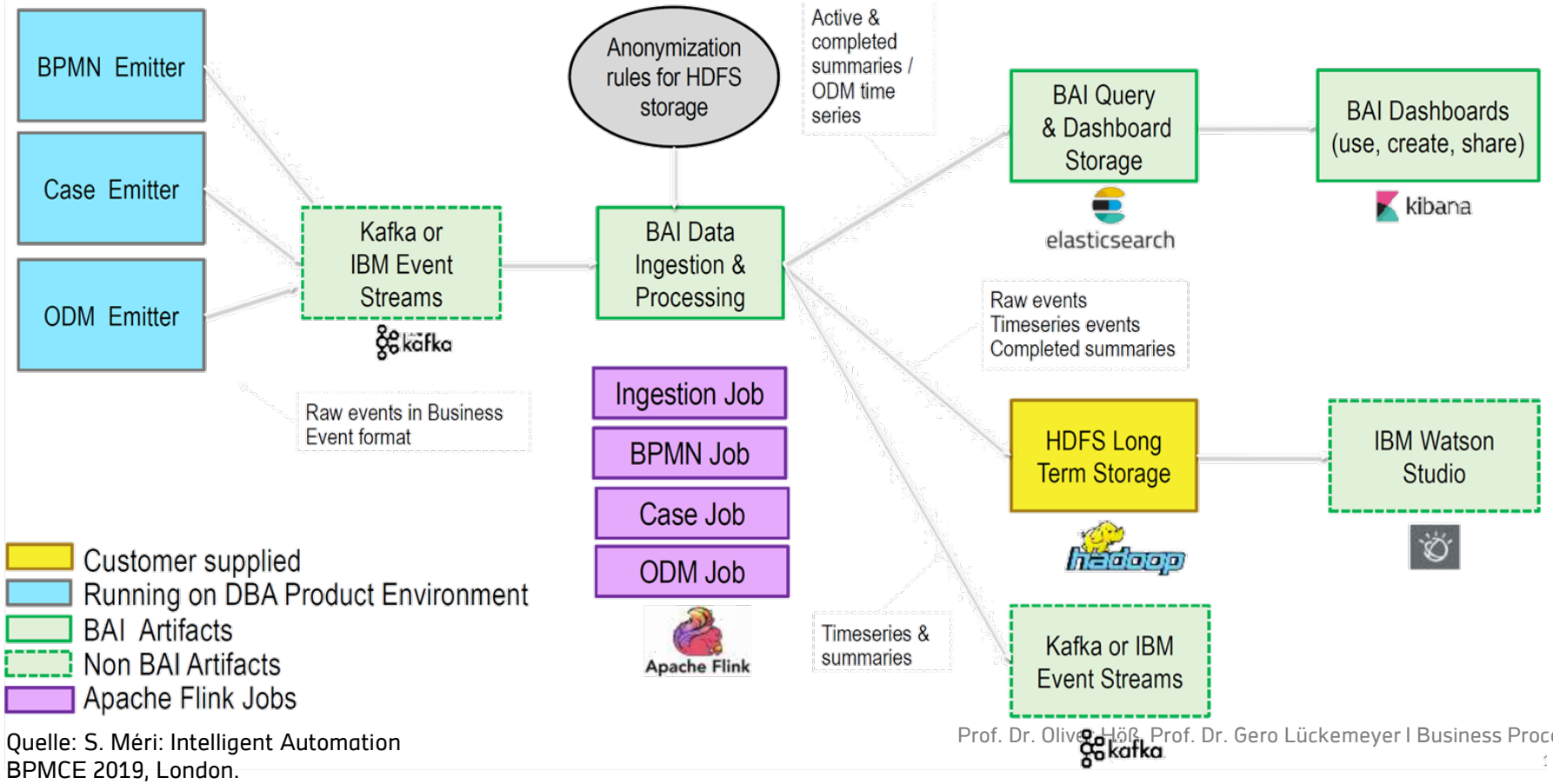
Comparison Process Optimization and Business Reengineering

	Business Reengineering	Process Optimization
Effect on existing organization	Fundamental change, replacement with new organization	Enhance existing organization
Organizational change	Radical change („Quantum leap“)	Moderate change
Process description	General understanding, abstraction from details	Process analysis and detailed description („sharpen the saw“)

Quelle: Gadatsch

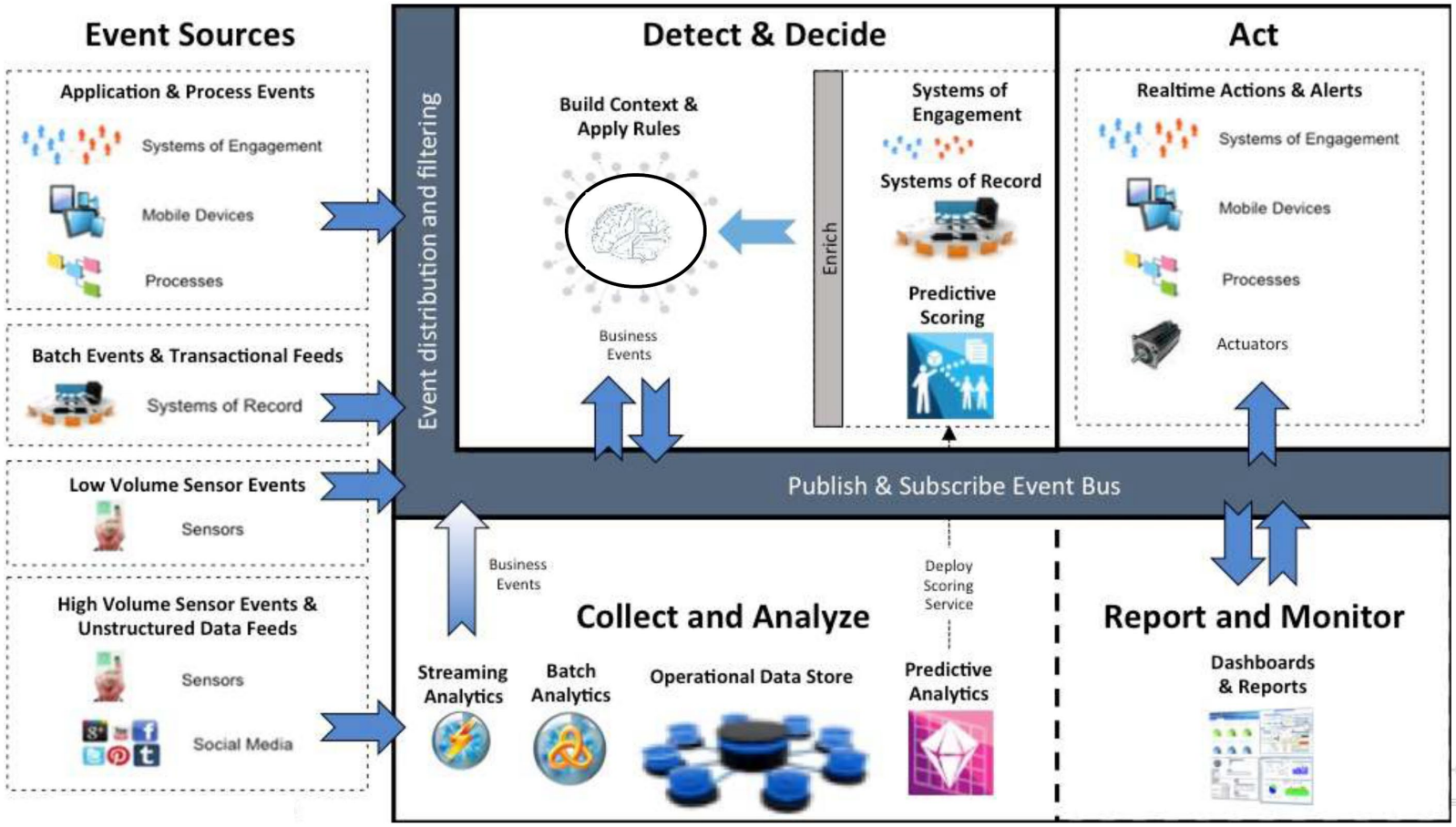
[03.6] Automation

Automation Analysis – Sample Open Source Tool Chain



Quelle: S. Méri: Intelligent Automation BPMCE 2019, London.

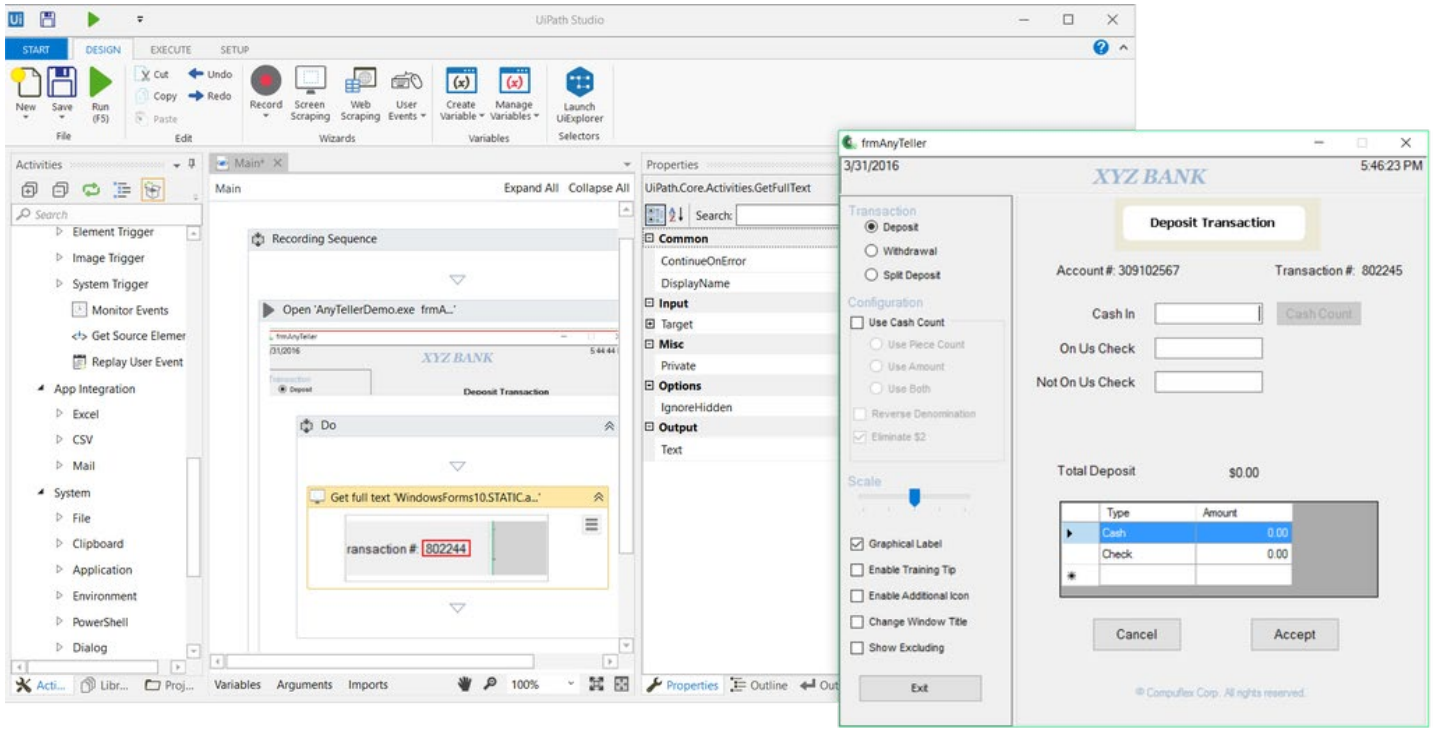
Automation Analysis: Sample Architecture



Quelle: S. Méri: Intelligent Automation BPMCE 2019, London.

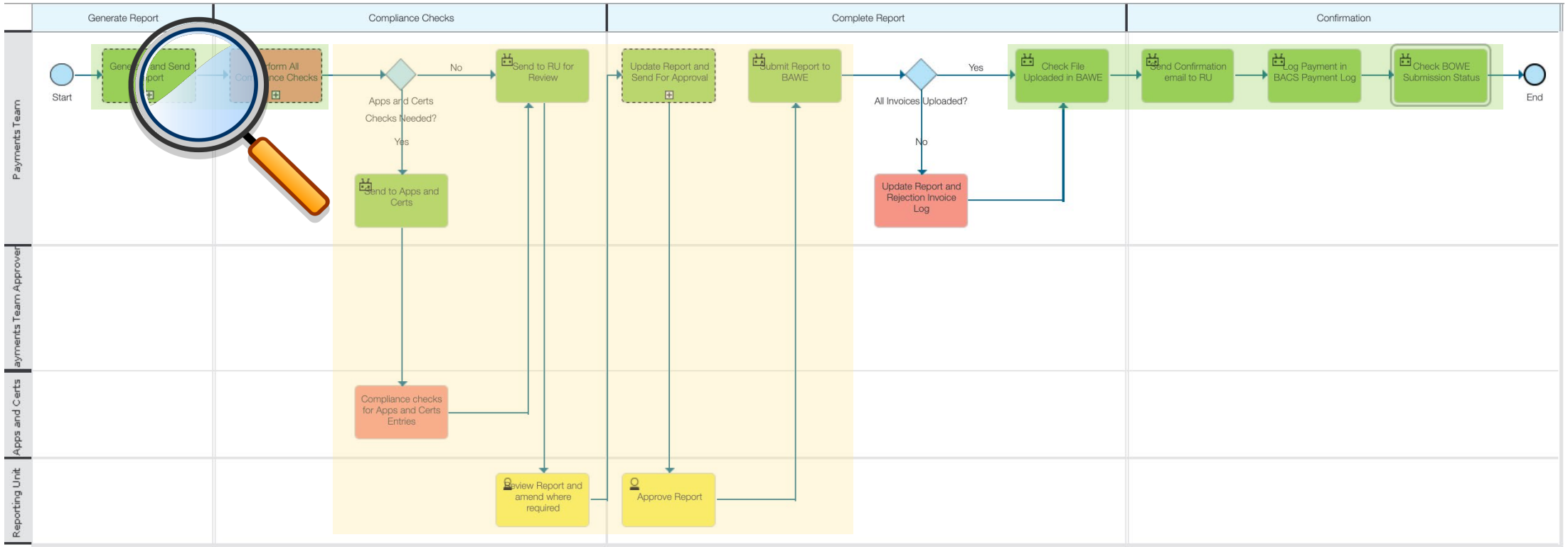
Accelerating/Reducing Media Breaks: Robotic Process Automation (RPA)

- Lifting „Quick Wins“
- Automating input processing across applications
  - Remove media breaks
  - Reduce errors
  - Save time
- Specialized tools
  - e.g. UIPath



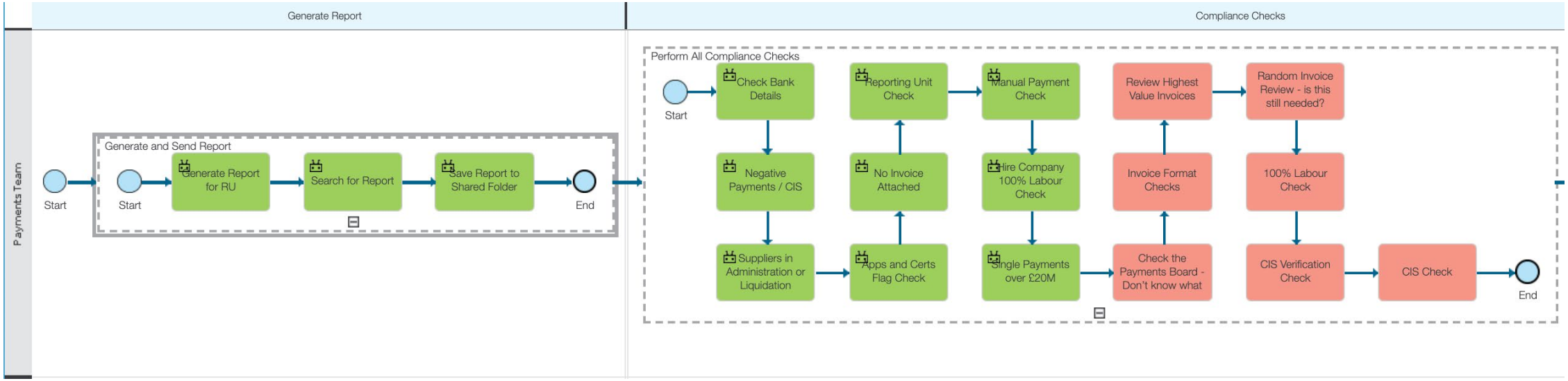
Quelle: https://venturebeat.com/2019/04/30/robotic-process-automation-company-uipath-raises-568-million-at-7-billion-valuation/

Process optimisation: Payment Process Example



Quelle: D. Brakoniecki: Robotics in Context: Finding the Right Tool to Solve the Right Process Problem. BPMCE 2019, London.

Process optimisation: Payment Process Example



Robotic Process Automation (RPA): 10 Entwicklertage sparen 3,3 FTE Aufwand/Durchlauf!

Quelle: D. Brakoniecki: Robotics in Context: Finding the Right Tool to Solve the Right Process Problem. BPMCE 2019, London.

Summary

- ✓BPM-Tools offer wide-range simulations for many aspects.
- ✓BPM optimizes processes continuously using classical-reductionist approaches with well-known criteria as well as potential-oriented approaches.
- ✓Systematic automation and digital transformation of processes require comprehensive analyses and (mostly) time.
- ✓For quick efficiency gains, companys currently increasingly use the approach „Robotic Process Automation“, in fact matured tools for presentation integration of heterogenous applications.

Thank you very much

For your attention!