PVM-Fachtagung #9 | Nachhaltige IT Projekte

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Systematically embedding automation reuse in business process management projects

Wir geben Impulse

KEBAP

Konstruktion und Evaluation von Referenzmodellen und -bausteinen zur KI-gestützten Automatisierung von Prozessen

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Fachhochschule Südwestfalen
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Short round of introduction

Who are you talking to today?

Prof. Dr. Ralf Plattfaut

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Professor of Controlling & Process Management at the South Westphalia University of Applied Sciences in Hagen

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Since March 2023 research associate at the South Westphalian University of Applied Sciences in Hagen as part of the KEBAP research project

- Research focus
  - Business process management
  - Reuse of process automation
  - Construction of RPA reference artifacts

Motivation & Research Objective

- Through Digital Transformation, we are **constantly** creating **new digital solutions**[1]
- This process is **limited** by the **availability** of **development capacity** & **development costs**[2]
- This builds "**technical dept**“[3] → Organizations **struggle** to **eliminate legacy IT** solutions & build **ever-increasing** "mountains" of **IT artifacts** and **technical debt**[4]
- The artifacts must be **continuously maintained** and further **developed** → this **ties up technical** and human **resources**
- Especially with regard to **sustainability**, there should be an **improvement** for **projects** here

[1]Vi19, vV22, [2]Ko84, KS98, NR06, Di15, BNK22, [3] KNO10, TAV13, [4]RPL23

Motivation & Research Objective

- In systems engineering, there has long been **systematic reuse** in **information system** development[1] → it can **reduce development time** & **expenses** as well **as technical dept** & **maintenance** efforts[2]
- **BPM** is often used to **support digitization** and digitalization **projects[3]**, this is done systematically with the **BPM Lifecycle** according to Dumas[4]
- In BPM **automation reuse** can happen on **different levels[5]**
- **Reusing automation components** has been identified **essential** in **BPM[6]**

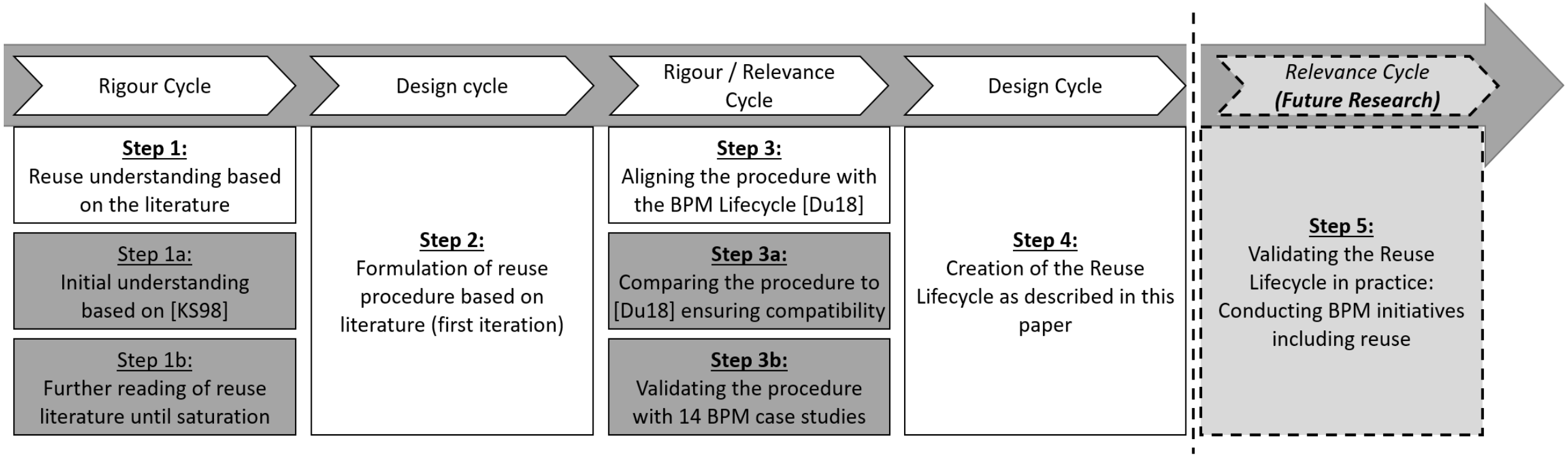
RQ 1. Which methods or technologies do organizations use for reuse when automating through BPM?

RQ 2. How can we systematically anchor reuse in BPM projects?

[1]KS98, [2]RPL23, KS98, [3]BKR12, We19, Du18, [4]Du18, [5]FP23, [6]RMR15, Du18

Method

Design Science Research - Approach in an iterative design



Findings - Enhancing the BPM Lifecycle with reuse

Methods for reuse in the BPM Lifecycle by Dumas et al.

- While Dumas et al. have not explicitly anchored the reuse of automation in the BPM Lifecycle
- They do offer mechanisms to reuse at the modeling stage[1]

Reference-Processes

- **Generic** and idealized **models developed with reuse** in several organisations in mind (e.g. Generic model of a purchase-to-pay process)

Specializations

- A **variant** of such a **generic process** that is adaptable for use in specific contexts (e.g. the purchase-to-pay process of an energy provider, including meter reading)

Sub-Processes

- Processes **embedded** in more **extensive processes** (e.g. 'Opening and scanning letters', which may be embedded in both the purchase-to-pay and the order-to-cash process)

Global Process Models

- **Complete processes** that can be **invoked** at any time from another process anywhere within the organisation (e.g. the order-to-cash process)

- Concepts **help reuse** on a **sequence** and **modeling level**
- Do **not** explicitly **include** the **automation artifacts** created in the process implementation phase
- We **add** further **concepts** to **advance reuse** and systematically **anchor** them in the **BPM Process**

[1]Du18

Enhancing the BPM Lifecycle with systematic reuse

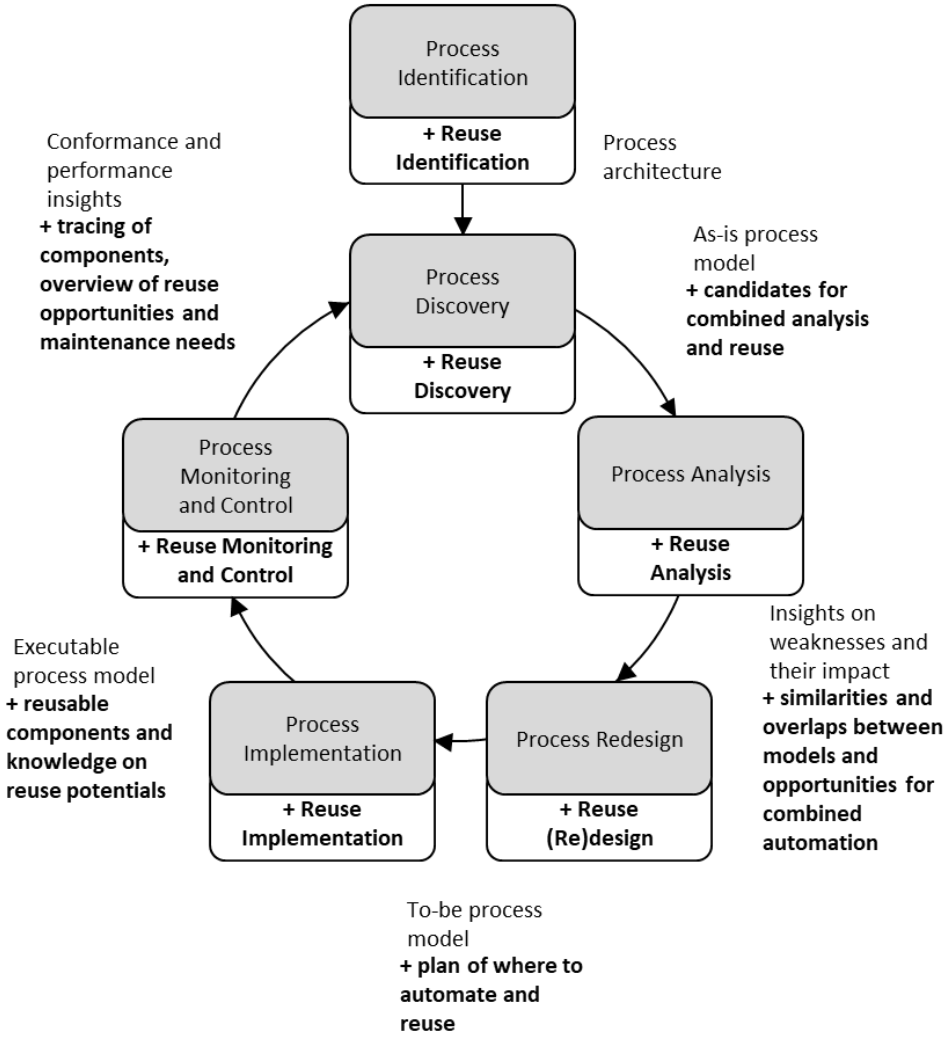
Practical approaches for reuse with the BPM lifecycle

Central repository	**Process standardization / Centralising processes**	**Knowledge management**	**Reuse of artefacts**
Training	**Sub-Processes**	**Reference-Processes**	**Reusing processes in other contexts**
	Procedural model to support reuse	**Pilots to validate reuse**	

[1]KT18, BSK18, vR18, Ma18a, KHW18, LDW21, Pa21, Pu21, RZW18, MBW21, Ra18, Ce18

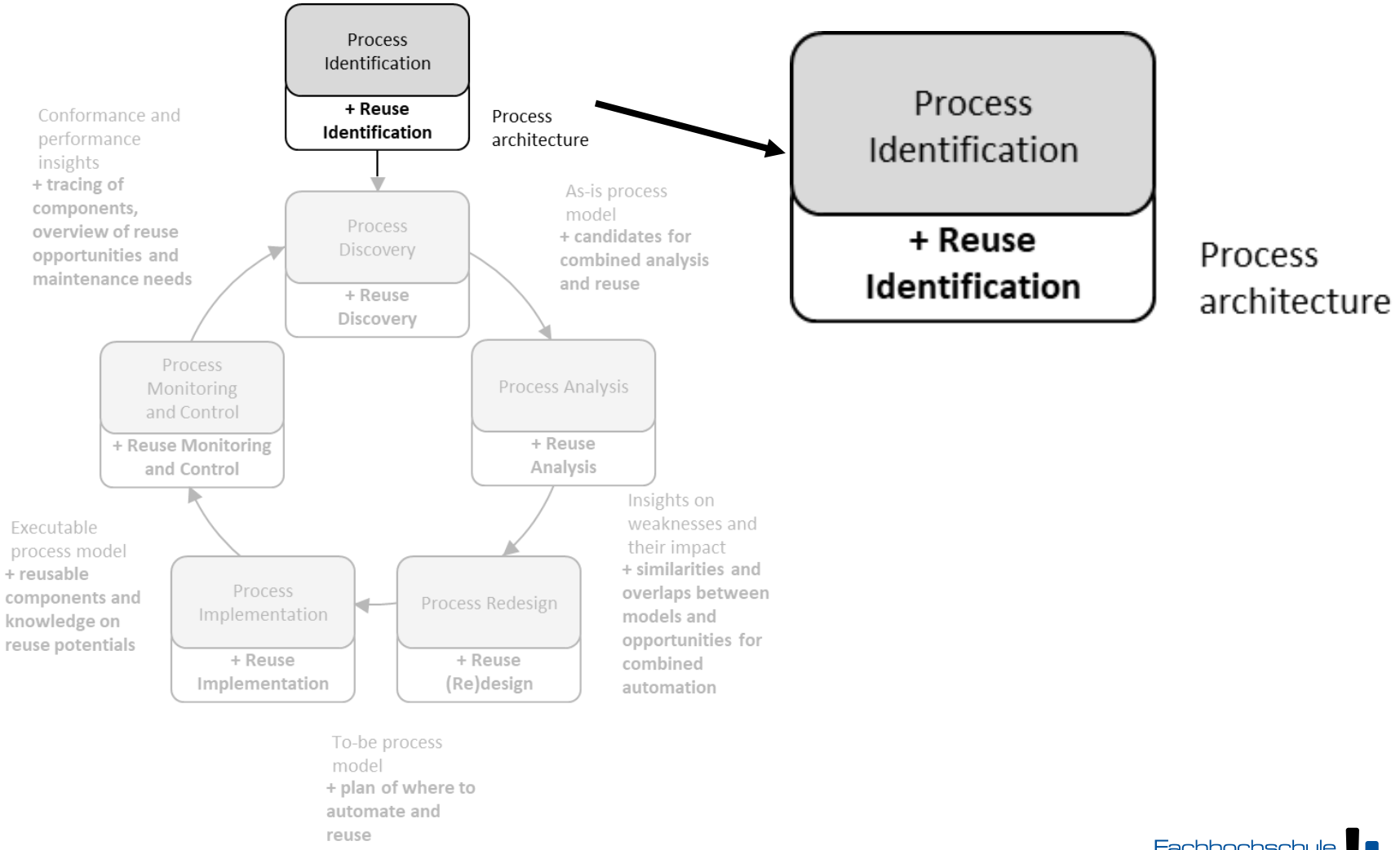
Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle



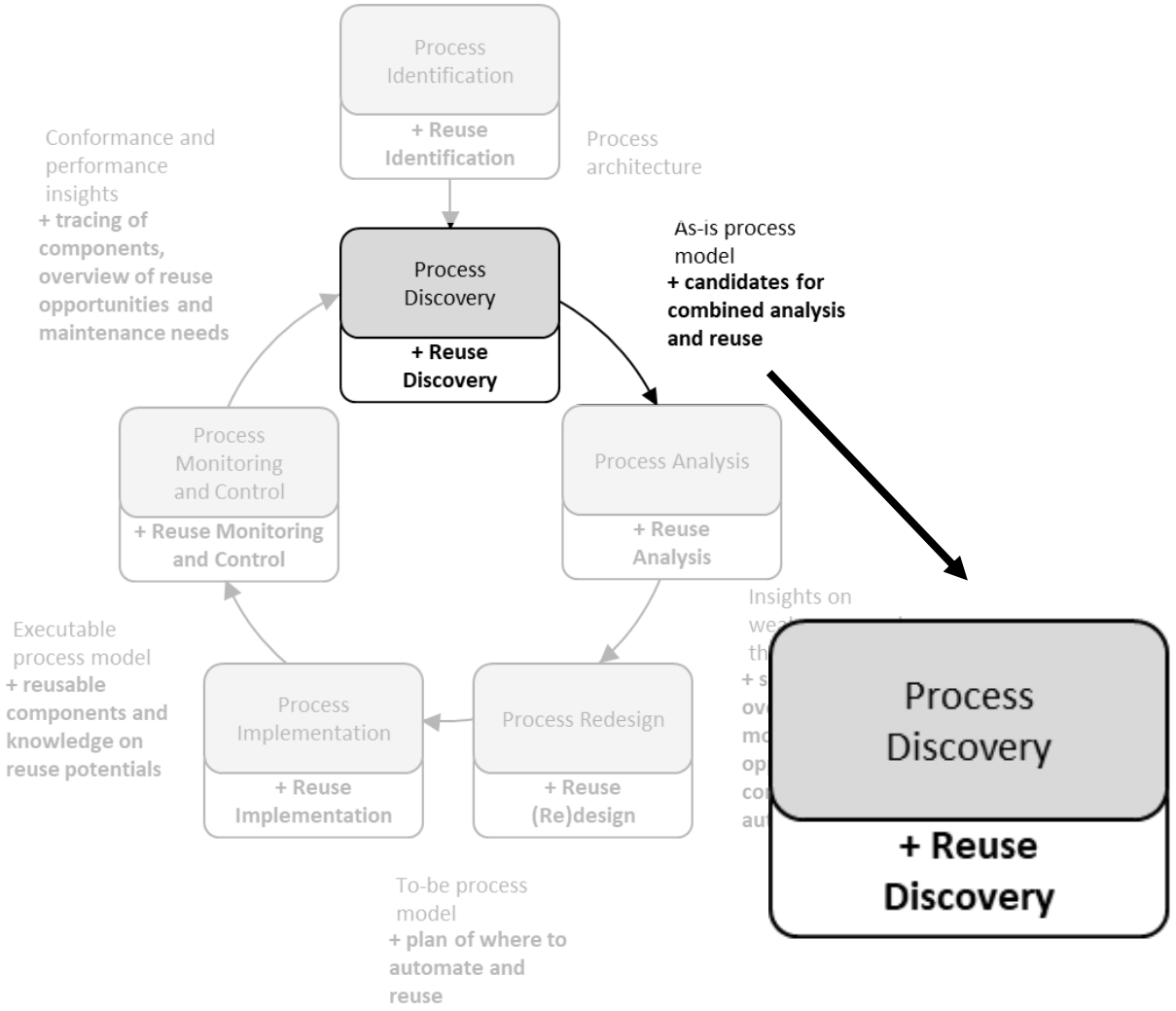
Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle



Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle



As-is process model
+ candidates for combined analysis and reuse

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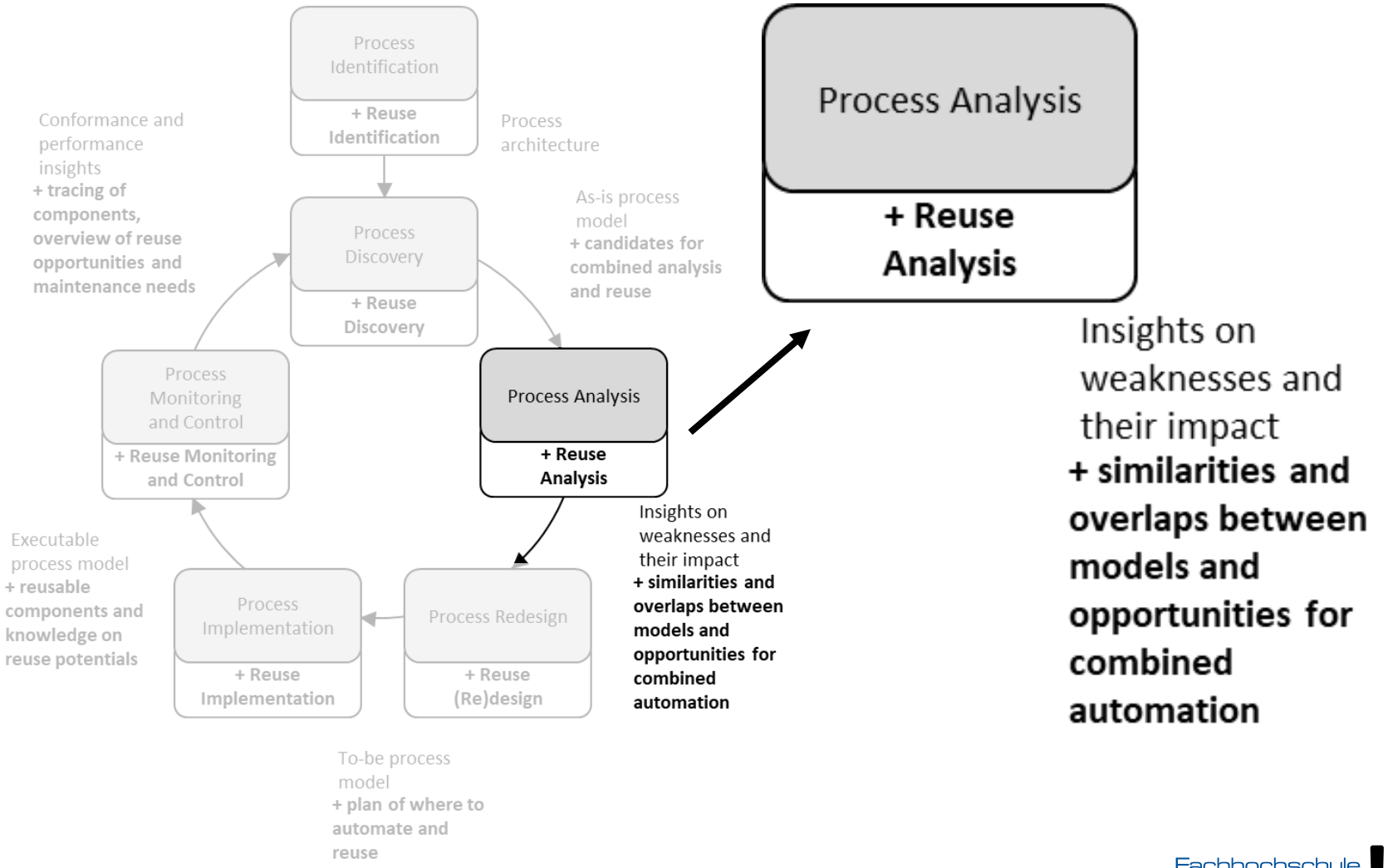
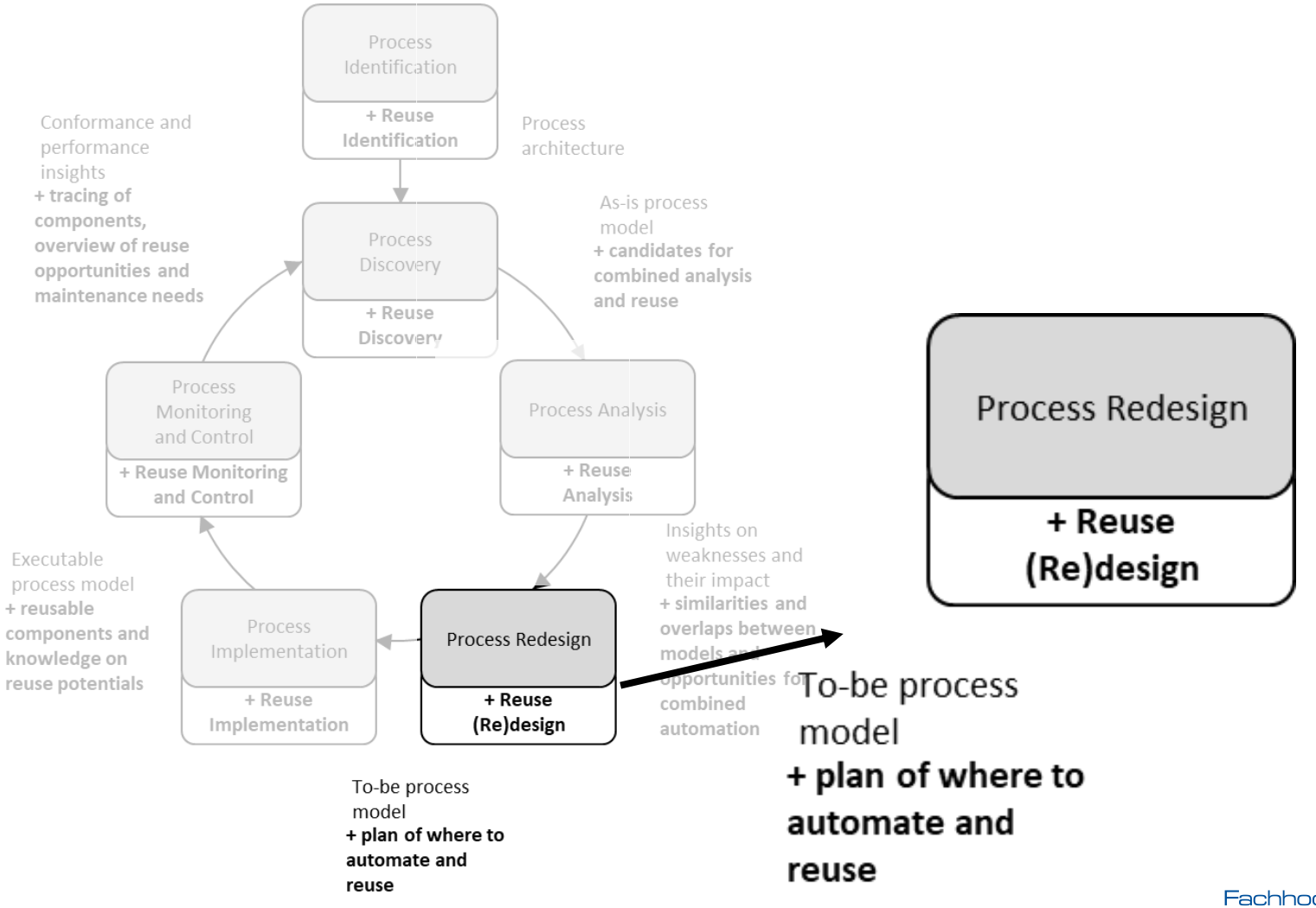
Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle



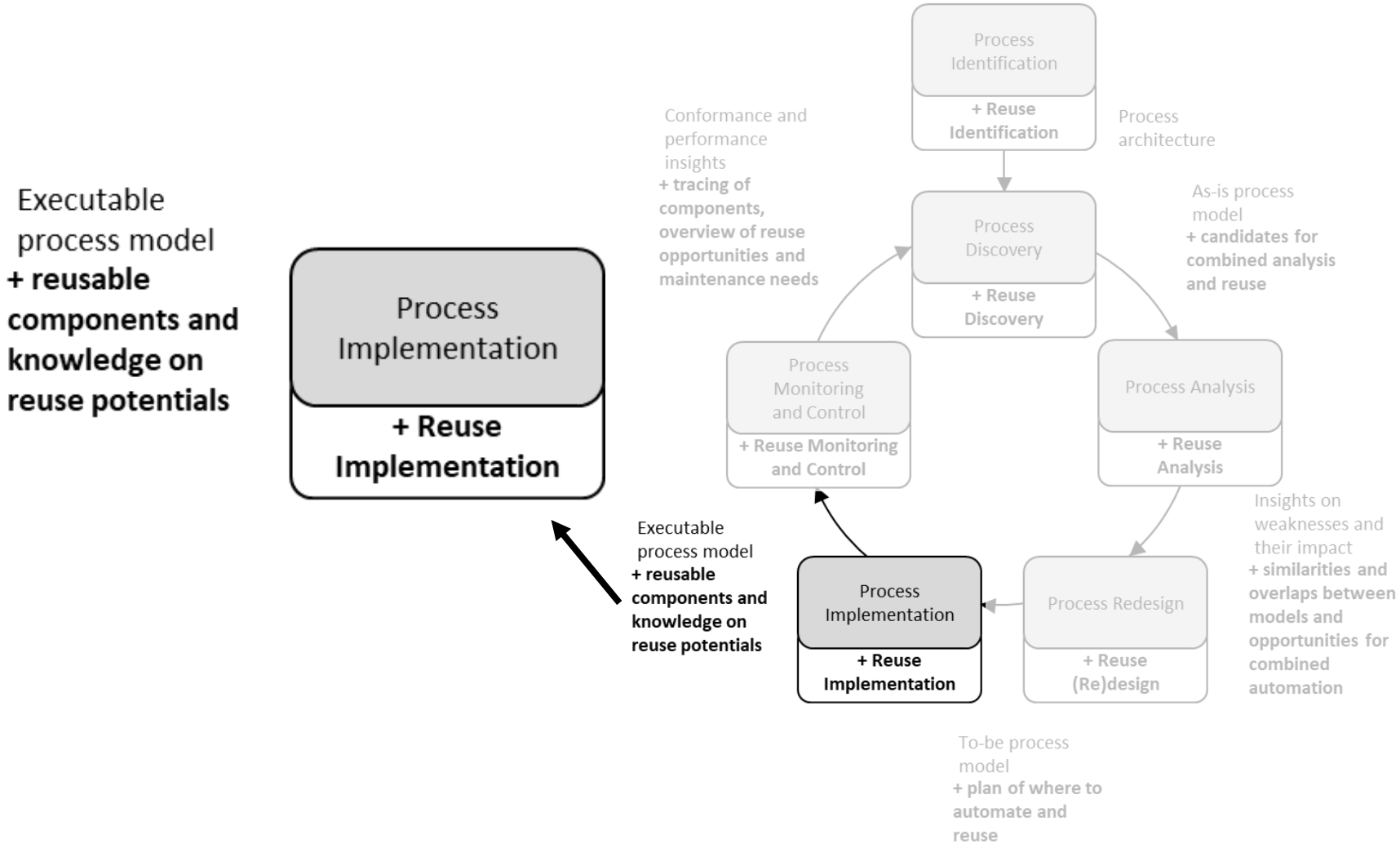
Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle



Enhancing the BPM Lifecycle with systematic reuse

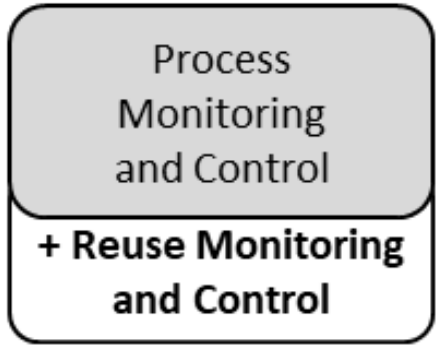
The proposed approach: The Reuse Lifecycle

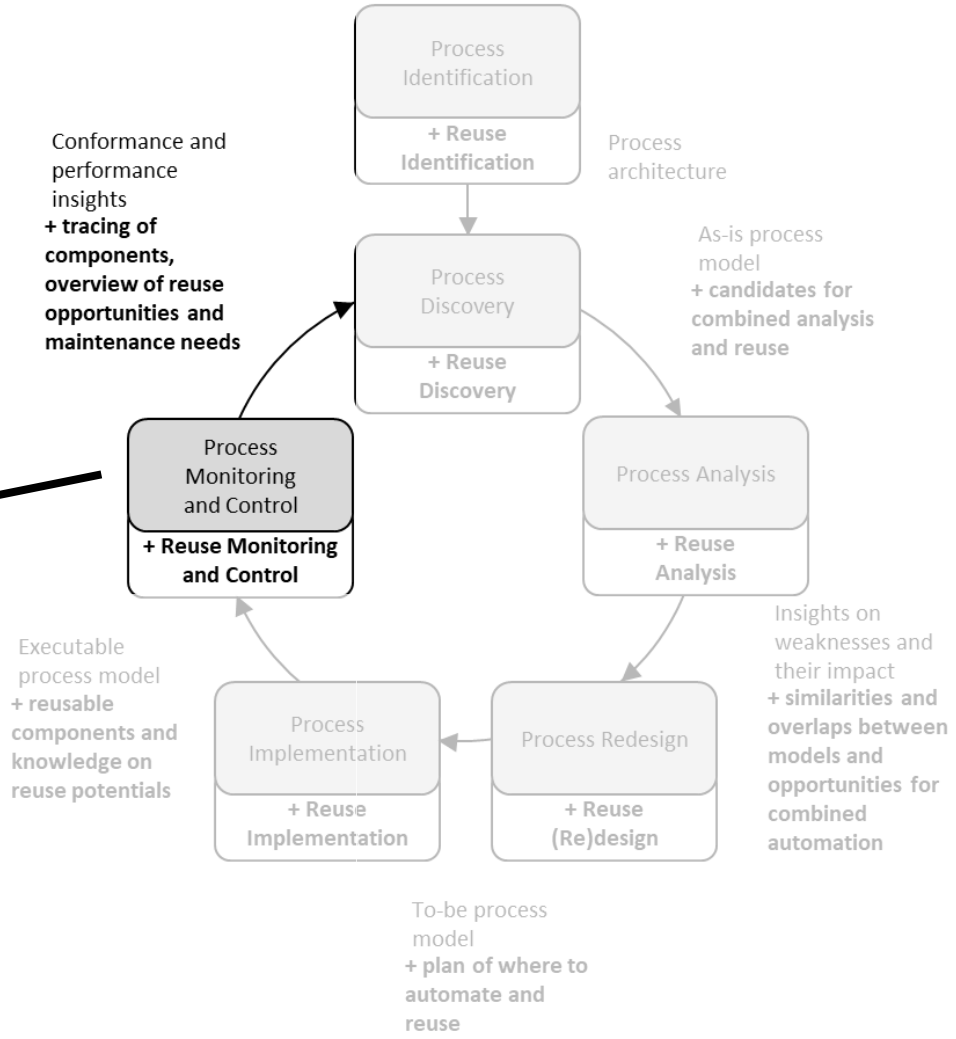


Enhancing the BPM Lifecycle with systematic reuse

The proposed approach: The Reuse Lifecycle

Conformance and performance insights
+ tracing of components, overview of reuse opportunities and maintenance needs





Theoretical & practical contributions

- **Procedure** with which reuse can be **systematically** embedded into the **creation and re-engineering** of **business processes**
- General **consensus** that **reuse** should be **applied** in **BPM** and a call for **methods** and **approaches** to support reuse[1]
- Reuse is **performed** for **business process models** and for the **resulting automation components**
- **Builds** on the **Business Process Management Lifecycle**[2] in every step of BPM
- The systemization of practical reuse approaches enables **researchers** to **develop new forms** of **reuse** support in business processes and BPM projects
- Can help **vendors** of BPM technologies to **support** these **approaches** specifically
- **Practitioners** can use the proposed approach to **structure BPM initiatives** and thereby **maximize** the **benefits** of reuse

[1]Da15, RV15, RMR15, Du18, Be23 [2]Du18

Limitations

While we conducted a thorough literature analysis

- We may have missed relevant mechanisms for general automation reuse and reuse in business processes

The division of the analyzed papers into two authors may reinforce this (selection bias).

- To counteract this, one case was read by both authors and agreement was verified

Future research may conduct further studies that incorporate a broader range of cases

Research Agenda

On whether and how our findings apply to different technologies relevant to business process automation

- For example, the specific dynamics of reuse in no code, low code
- Or other environments may require additional mechanisms or different reuse environments

We plan to apply the Reuse Lifecycle in several BPM initiatives in further research to verify and extend our approach

- We are currently working with six organisations aspiring to start reuse enabled BPM or expand their existing approaches with reuse considerations
- We will adjust the approach in successive iterations

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