Artifacts Becoming Actors
Integrating Digital Agents Into Business Processes

When Business Process Management (BPM) research meets Information Systems (IS), the traditional notion has been that human actors perform activities with digital artifacts as tools. However, recent developments in the areas of artificial intelligence, data science, and machine learning have led to cases where digital artifacts take on the role of actors in business processes, performing activities with decision authority and without human involvement. They have their own agency, therefore they can be called digital agents. Since digital agents differ significantly from human agents in how they behave in business processes (e.g., different capacities, execution speeds, flexibility, ability to react to exceptions), we need a comprehensive understanding of how they can be incorporated in business processes. For research, it opens a new perspective on the field of BPM, which better reflects the current developments in the IS world than the traditional models. Practitioners could better understand which type of digital agents are suitable for which tasks, and how they best integrate them into their processes.

Study 1: Classifying Digital Agents
RQ: How can we describe different types of digital agents in a taxonomy?
Goal: Create a classification framework for the concept of digital agents
Data: Cases of digital agents described in literature
Methodology: Theoretical literature review, theory building

Study 2: Describing the Behavior of Digital Agents
RQ: How do different types of digital agents act in business processes, regarding task performance as well as their interactions with other agents?
Goal: Deepen the understanding of how the different types of digital agents operate and what their strengths and weaknesses are
Data: 3 cases of digital agents in practice and process data on them
Methodology: Qualitative (multi-case study), quantitative

Study 3: Prescribing Digital Agents for Process Optimization
RQ: How to design a recommender system that identifies opportunities to incorporate digital agents into given business processes?
Goal: Build a recommender system that analyzes an existing business process and recommends where to implement which type of digital agent
Data: Quantitative process data for many digital agents from practice
Methodology: Quantitative analysis, process mining, design science

Preliminary Taxonomy for Digital Agents
A digital artifact that assumes the role of a social actor in a business process, and which is equipped with the abilities required for mastering and executing process work through their autonomous agency and authority.