

Dissertation Proposal

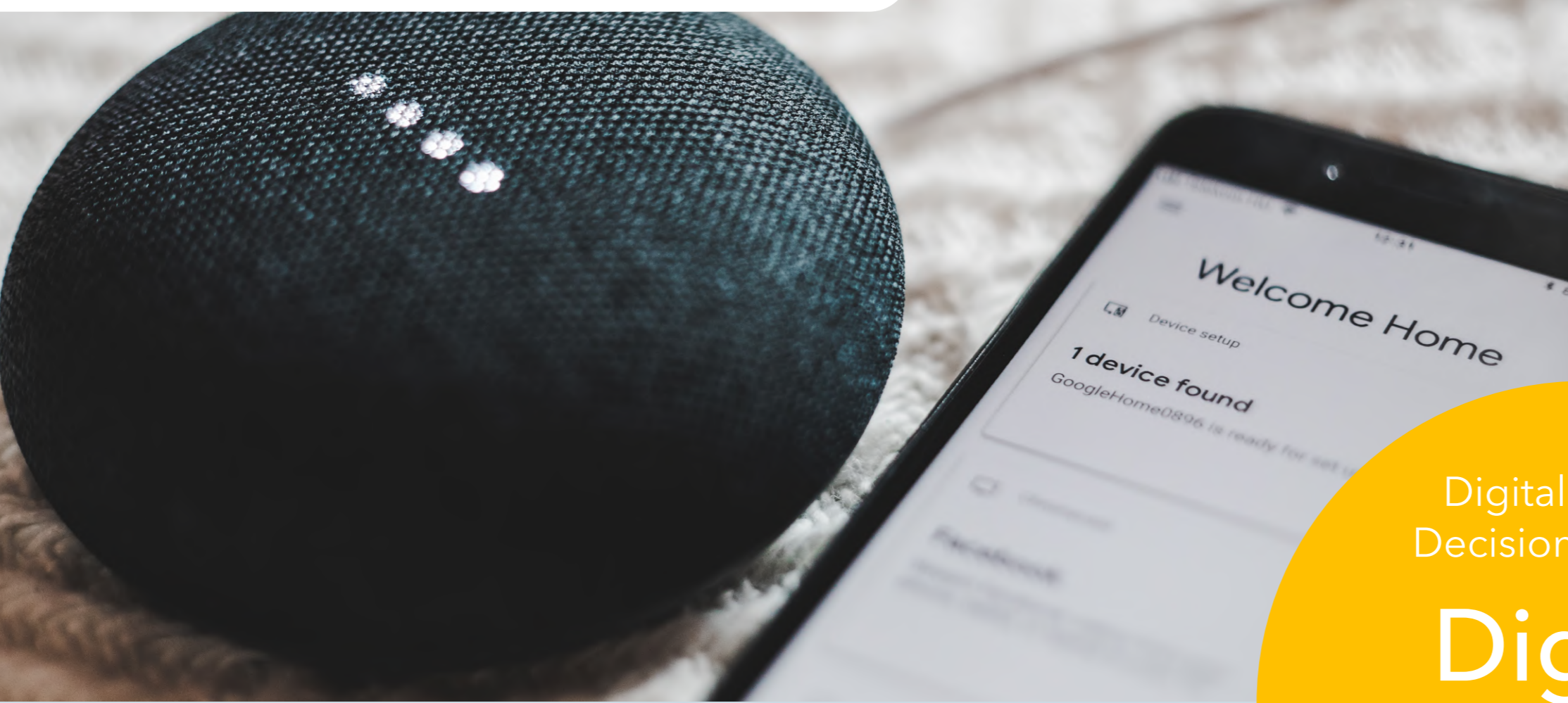
Artifacts Becoming Actors

Integrating Digital Agents Into Business Processes

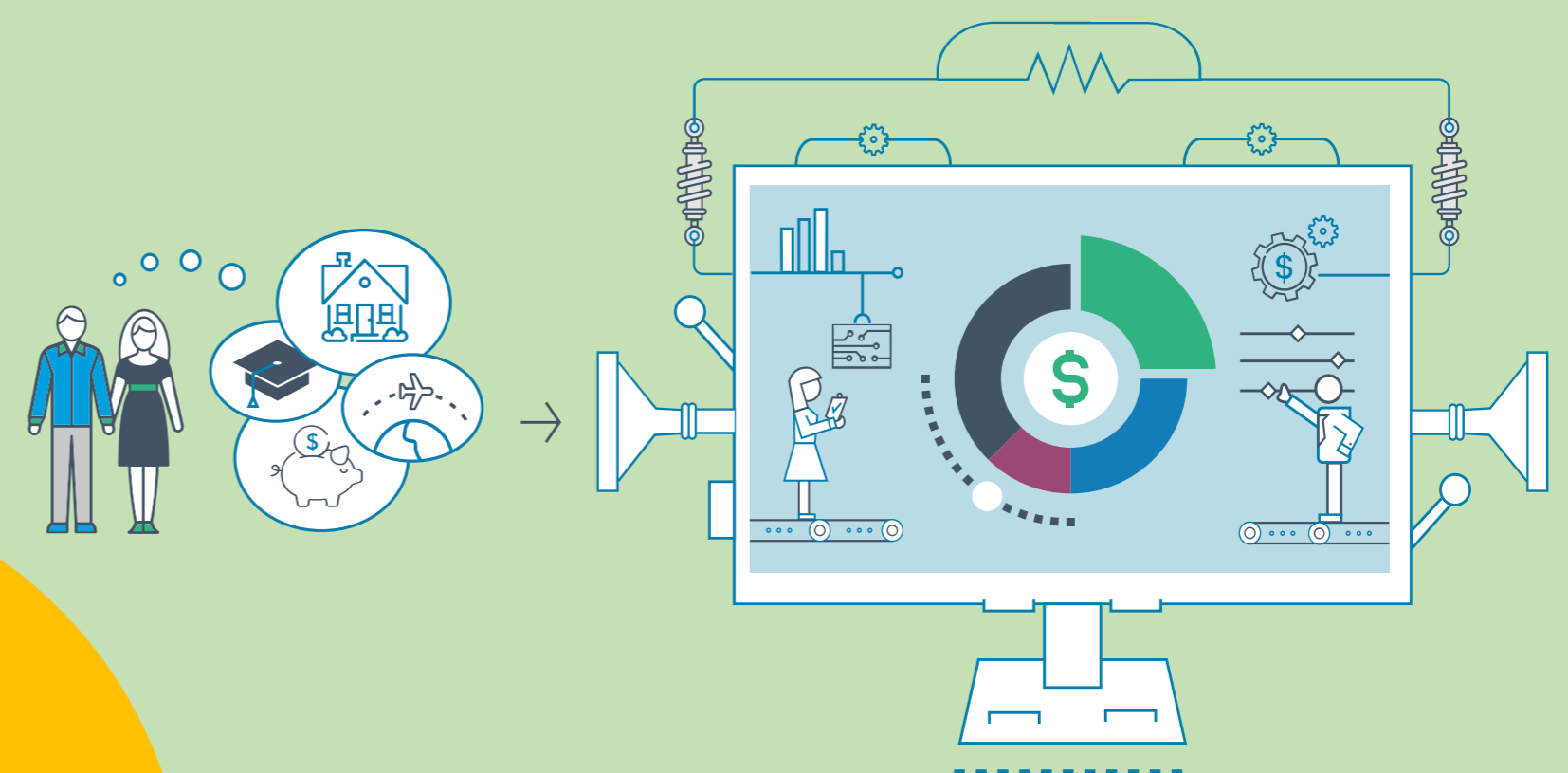
When Business Process Management (BPM) research meets Information Systems (IS), the traditional notion has been that human actors perform activities with digital artifacts as tools. However, recent developments in the areas of artificial intelligence, data science and machine learning have led to cases where digital artifacts take on the actor role for process activities, performing them 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.

Virtual assistants have access to highly versatile data sources and can make decisions in various areas



Robo Advisors constantly monitor the financial market and make individual investments for their customers



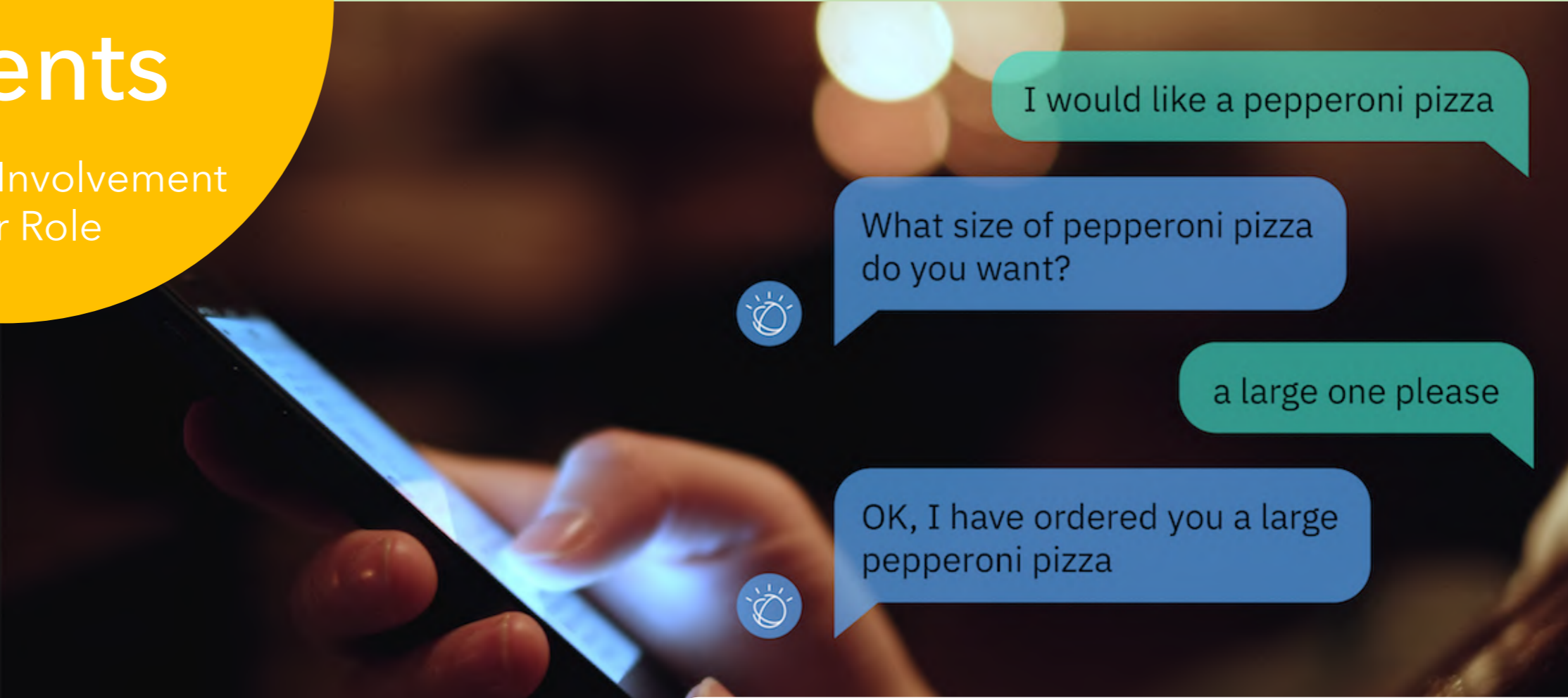
Digital Artifacts
Decision Authority

Digital Agents

No Human Involvement
Actor Role



Dynamic pricing agents make one of the most critical decisions for retail companies on their own authority



I would like a pepperoni pizza

What size of pepperoni pizza do you want?

a large one please

OK, I have ordered you a large pepperoni pizza

Chatbots can take over interfaces to customers, interpreting user input and choosing process paths

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.

