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Prof. Dr. Peter Weiß

Contact: peter.weiss@hs-pforzheim.de

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Enabling Agentic Information Systems Using Service Dominant Architecture (SDA): Theorizing Design for the Insurance Business

Motivations & Research Question

This paper develops **architectural design principles and patterns (design theorizing)** for agentic information systems (AIS) by examining how **Service-Dominant Architecture (SDA)** can contribute to the emerging Agentic AI (Artificial Intelligence) paradigm. Approaches such as **Multi-Agent AI (MAAI)** serve as a conceptual reference frame and vocabulary for describing **emerging agentic capabilities in enterprise information systems**. We have been developing SDA as design knowledge for **service systems** for several years. Agentic AI is now changing the nature of technological resources and their agency, potentially transforming information systems from reactive automation layers into increasingly autonomous, goal-oriented participants in **value co-creation**. This raises a central question for **service-system design** in the emerging **Agentic AI paradigm**: **What can SDA already provide, and where does SDA itself need to evolve?**

Methodology

Following a **Design Science Research (DSR) approach**, Service-Dominant Architecture (SDA) has been developed as a body of design knowledge for service systems. **Agentic AI** introduces a new technological paradigm characterized by increasing technological agency, delegation, autonomy, and resource entanglement. **Using MAAI exemplarily as a conceptual vocabulary and reference frame**, we investigate what this new paradigm means for **service-system design**: which existing SDA design principles remain applicable, which require refinement, and where new design knowledge is needed. We conceptualize this process as the **exaptation of design knowledge**. Established SDA design knowledge is transferred to the emerging context of Agentic AI, where its applicability is examined and, where necessary, refined or extended.

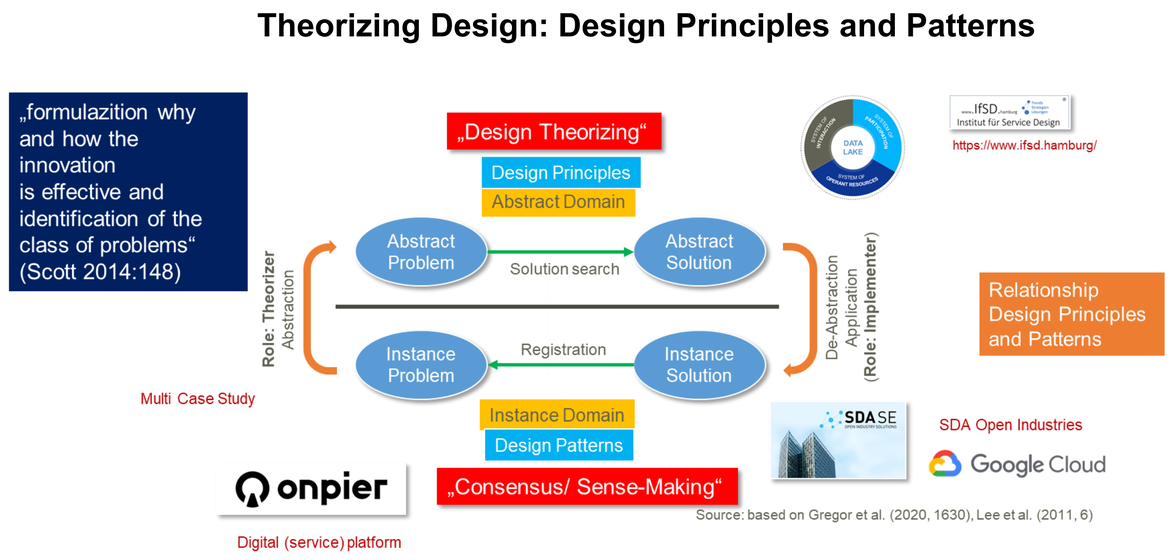


Figure 1: Relationship Design Principles and Patterns (own illustration based on Gregor et al. (2020: 1630), Lee et al. (2011: 6))

Preliminary Results

From a research perspective, the study **extends SDA into the emerging context of Agentic Information Systems** and contributes exaptation-type design knowledge by examining how existing SDA design knowledge can be transferred, adapted, and further developed for a novel technological paradigm characterized by technological agency, delegation, autonomy, resource entanglement, and dynamic multi-agent coordination.
The study contributes **justificatory and prescriptive design knowledge** by identifying implications for existing SDA design principles and their application to agentic service systems. Drawing on structuration theory (Giddens, 1984; Orlikowski, 1992) and institutional theory (Scott, 2014), it further considers how **interactions between human and technological agents** may contribute to the emergence and reproduction of new structural properties and institutional arrangements, enabling value co-creation and **heteropathic resource integration in interorganizational settings**, particularly in dynamic Collaborative Networks and Hybrid Collaborative Networks.
In this context, SDA is investigated as a design perspective for structuring and evolving hybrid collaborative service ecosystems in the emerging Agentic AI paradigm.

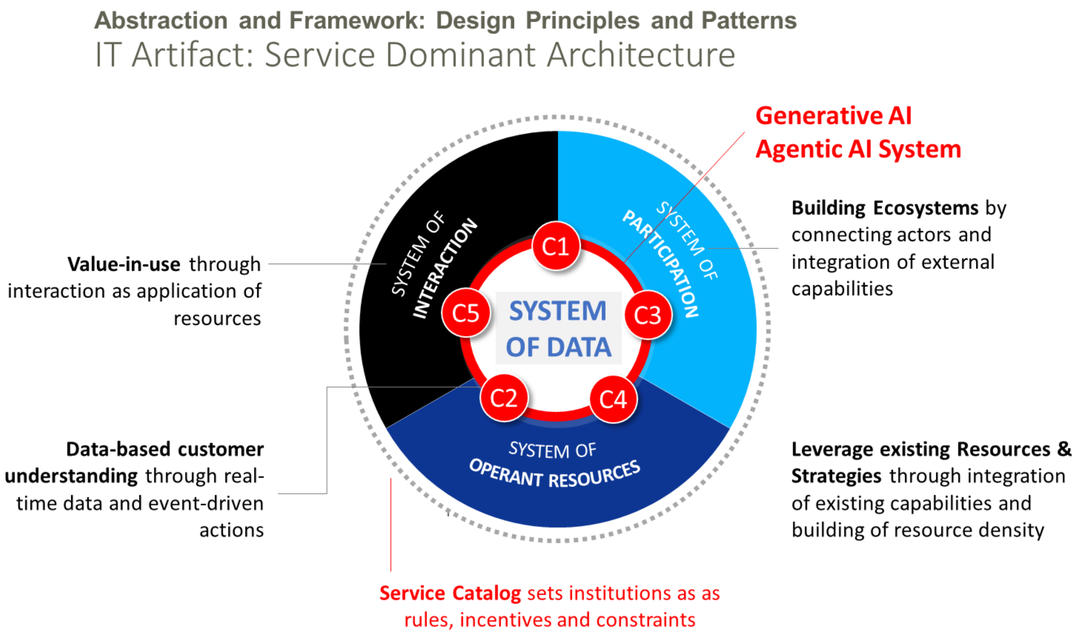


Figure 2. IT Artifact: Five Service Systems of Service Dominant Architecture (Source: modified, based on Warg et al. 2025)

No.	Description
C1	Foundation Model: Large AI models enable multimodal input processing, reasoning, and output generation
C2	Data-centric Perception and Action: Individual perception and action enable agents to process data and act adaptively in the environment
C3	Dynamic Orchestration: Conducted composition of and decision making between agents and external services
C4	Agent Integrated Workflow: Configurable arrangement of agents and their interactions, defining task sequences, dependencies and termination.
C5	Interaction Interface: User interface (UI) or system integration, including application programming interfaces (API)

Table 1. Multi-agent artificial intelligence (MAAI): System Architecture (Allmendinger et al. 2026: 6-7)

Key conclusions and perspectives

The presented results provide **justificatory and prescriptive design knowledge** for designing and configuring service systems and related IT artifacts, such as **engagement systems**, in the context of collaborative hybrid service ecosystems. Emerging **Agentic AI capabilities**, exemplified through MAAI, are incorporated into service-system design to enable **heteropathic resource integration** and support emerging **hybrid value co-creation practices and new value constellations** in hybrid service ecosystems and Hybrid Collaborative Networks. Our DSR research provides a systematic path from **intervention activities grounded in relevance-driven use cases and contextualized IT artifacts** toward a progressively evolving design knowledge base for **service-dominant Agentic Information Systems (AIS)**, grounded in S-D logic and operationalized through SDA.

Future work should foresee intervention activities to evaluate created design knowledge using Translational Service Research and Design Methodology (TSRDM) (Warg et al. 2026).

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