# NEW SERVICE DEVELOPMENT THROUGH ACTION DESIGN RESEARCH IN JOINT RESEARCH PROJECTS

*Research paper*

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## Abstract

*Information systems research on smart services receives numerous contributions that result from joint research projects. Such projects bring together researchers from academia and industry; both conducting applied research while developing marketable services. This paper contributes a conceptual meta-framework, which represents and describes joint research projects in service research based on the integration of previous conceptualizations. It combines the service marketing perspective of new service development (NSD) with the industry-academic collaboration perspective of action design research (ADR). The framework provides the entire IS community with a better understanding how joint research projects are conducted. Researchers that work in such projects can adopt the framework concepts and organize their projects accordingly. To demonstrate the framework's application, we use the case of the development of a smart service in electric vehicle domain.*

*Keywords: Service Research, Action Design Research, New Service Development, Practice-oriented Research, Joint Research Projects*

## 1 Introduction

National and international research funding includes funding instruments that are accessible only to joint consortium projects comprising partners from both academia and industry. In recent years, the development of new services in the context of such consortium projects has been a focal theme not only on the funding policy agenda of the European Union, but also on national agendas. For instance, the German Federal Ministry of Research and Education (BMBF) has set up the research program "Innovations for Manufacturing, Service, and Work" to fund joint research projects by the year 2020 with a cumulative budget of one Billion Euro. The goals set out in the program description are representative for the entire class of funding instruments: First, "...applicable solutions shall be found, in order to maintain and generate jobs in Germany". This implies a mandatory dissemination of research outcomes into practice. Second, projects shall demonstrate their support in achieving political objectives based on a set of social, economic, and environmental goals.[1]

[1] https://www.bmbf.de/de/innovationen-fuer-die-produktion-dienstleistung-und-arbeit-von-morgen-599.html

A service researcher who aims at receiving funding, typically adopts the following process: In response to a more specific "call" within a program, the researcher develops an outline that addresses the goals described in the call and forms a consortium with suitable partners from academia and industry. The funding institution's main evaluation criterion is the chance of a market success of the project's desired outcomes and its expected contributions to societal and political goals. In case of acceptance, the consortium refines the outline into a full proposal that requires final approval from the financier.

Peffers et al. (2008) and Hevner et al. (2004) are examples that describe how IT-based solutions for observed organizational problems can result from Information Systems (IS) research. The authors coined the term Design Science Research (DSR) for this approach. Joint research projects have peculiarities that are not yet addressed by the common processes in applied IS research such as DSR. For example, the contents of the call restrict the researcher in the set of addressable phenomena. Second, academic researchers must partner with industrial researchers and vice versa. Academia and industry have different strategies and points of view towards writing a proposal and conducting a joint research project. While academia takes a design-oriented perspective towards creating knowledge, industry takes a market-oriented perspective towards gaining economic benefit. The research process is embedded in an organizational context that emerges from the interactions of the academic researchers with industrial partners, funding agencies, public authorities, and other stakeholders. Each stakeholder maintains its individual set of goals towards the joint research project and its results.

These peculiarities lead to difficulties for IS researchers who participate in joint research projects and want to report research results to the IS community. It also represents a challenge for inexperienced IS researchers who do not know about joint research projects, but want to reuse results from joint projects or have to review academic manuscripts, which have been produced in the context of such projects. Difficulties also emerge for practitioners who either participate in joint research projects or plan to do so while having a limited understanding of such projects' structures.

Against this background, this paper addresses the following guiding research question: *What are the core concepts of joint research projects in service research?* We set four objectives for this paper. First, we aim at supporting researchers and practitioners in joint research projects to better communicate the specifics of their research processes and research outcomes. Second, we want inexperienced researchers and practitioners to understand the joint research process and its outcomes better. Our third objective is to provide an instrument that can be used for structuring and formulating both research proposals and overarching research manuscripts such as dissertation projects. The last objective is to demonstrate how the developed instrument can guide and support the development of an actual smart service in the electric vehicle (EV) domain.

We conduct conceptual research and construct a meta-framework that helps to represent and describe the development of marketable services in joint research projects. Our framework adds to the long-standing tradition of industry-academic collaboration in the IS community. It provides a descriptive lens to various industry-academic collaboration settings such as consortium research projects (Österle and Otto, 2010) and engaged scholarships (Schubert et al., 2015). We first depict the specific sets of stakeholders and goals in joint projects and then tap into two principal sources for the theoretical underpinning of our meta-framework: New Service Development (NSD) (Jin et al., 2014; Johnson et al., 2000) and Action Design Research (ADR) (Sein et al., 2011). NSD maintains a service marketing perspective, as required to address the funding institutions' goal to create services that meet market needs. We will extend its perspective to account for a more diverse set of stakeholders. ADR allows for an engineering-like perspective on the development of IT-enabled services. It captures the iterative development of the business processes, data structures, IT systems, and their interactions within an organizational setting. The meta-framework synthesizes both theoretical perspectives while taking into account the specific sets of stakeholders and goals in the complex joint research project environment.

This paper unfolds as follows. The next section discusses the specific characteristics of project stakeholders and project goals in joint research projects, and describes NSD and ADR as constituents of the framework. Based on this, we present the resulting meta-framework. We then introduce the case of the joint research

project CrowdStrom, where a smart service is currently being developed. In the next section, we illustrate our framework's utility through its application in the CrowdStrom example. We subsequently review the contributions of our work and discuss possible implications, limitations, and directions for future research. The paper concludes with a summary.

# 2 Research Background

## 2.1 Stakeholders and Goals in Joint Research Projects

Funding institutions praise joint research projects as a mechanism to promote research initiatives of great *societal relevance* (German Federal Ministry of Education and Research, 2014, p. 49). The call for *relevant* research implies the questions, "Relevant to whom?" (Kuechler and Vaishnavi, 2011, p. 126) and "Relevant in what way?". The second question reflects expectations of different stakeholder groups that are associated with a joint research project.

IS research projects address various groups of *stakeholders*. Gill and Bhattacherjee (2009) identified *internal* clients (other researchers of the community) and *external* clients (researchers from other communities) that the IS research community is primarily focusing on. Practitioners such as industry/academic collaborators and consultants are external clients that receive less consideration. This is why IS research has been criticized for deficient practical relevance (Mathiassen and Nielsen, 2008; Winter, 2008). Against this backdrop, DSR has been described as one exemplary way to develop research outcomes that are both scientifically rigorous and relevant to practitioners (Gregor and Hevner, 2013; Österle et al., 2011). Therefore, the research outcomes in DSR projects must demonstrate their practical relevance and yield specific utility for real business problems that can be exactly specified. Researchers who adopt the DSR paradigm hence often partner with industry (Österle and Otto, 2010; Schubert et al., 2015).

Politicians, funding institutions, and project management agencies are stakeholders specific to joint research projects. The former set goals that govern the formulation of funding agendas and programs (German Federal Ministry of Education and Research, 2014). This process may include the participation of social groups, governmental and non-governmental organizations. Their perspective includes not only an economic but also a broader societal relevance of research outcomes. Funding institutions and project management agencies, which are commissioned with the development of agendas and programs, translate these goals into objectives that make up specific calls for research proposals. The objectives are the primary selection criterion for these proposals and for evaluating a project's success. In this way, funding institutions and project management agencies link politicians, social groups, and research projects.

Each external stakeholder maintains different goals and needs towards the joint project, from which we distinguish political goals, societal goals, and research needs (Benner and Sandström, 2000). *Societal goals* refer to desired social, environmental and economic results (Porter and Kramer, 2006). For example, the IS community has recently been conducting research on the environmental sustainability of information systems (Malhotra et al., 2013). *Political goals* result from the perception and (possible interest-based) interpretation of societal goals. This interpretation may happen in interactive processes with social groups. *Research needs* emerge from prior research within and across communities and often are induced by technological trends. The IS community has discussed its "grand challenges" in manifestos (Österle et al., 2011), research agendas (Becker et al., 2015), and research priority lists (Ostrom et al., 2015).

Proposal development demarcates the interpretation and implementation of the external goal system by the newly-formed project consortium. *Research goals* summarize the research objectives and research questions addressed by the involved researchers. *Business goals* addressed by the involved practitioners span from strategy-driven plans, such as developing new technologies, services or markets over increasing operational efficiency or profit, to innovation and sense-making processes. Table 1 summarizes the main concepts related to stakeholders and goals in joint research projects.

| Project Relation | Goal | Content |
|---|---|---|
| external to ... | research needs | hot-spots, blind-spots, grand challenges, research priority lists |
| | societal goals | social, environmental, and economic results |
| | political goals | societal goals as perceived and interpreted based on interests |
| internal to ... | research goals | research objectives, research questions |
| | business goals | profit, innovation, operational efficiency |

*Table 1. Dimensions for Proposal Evaluation and Expected Contributions.*

## 2.2 New Service Development

NSD is a "normative" process (Johnson et al., 2000) that supports both service researchers and practitioners along its main stages of designing, analyzing, developing, and introducing new services into the market (Roth, 2015). The market-oriented view of NSD accounts for the complex socio-technical nature of a service system (Böhmann et al., 2014; Spohrer et al., 2007), that is the interplay of actors and resources towards co-creating value (Vargo and Lusch, 2017).

NSD processes are sufficiently generic that their stages and activities apply to any service development project. However, firms have to make project-specific adaptations of the generic NSD process (Zeithaml et al., 2017) and may or may not use certain methods and tools to approach the related activities (Jin et al., 2014). A development project can return to earlier stages if later planning and development activities require adapting the service concept, and any activity can result in termination of the project if it reveals that the project is not viable. The NSD process acts as funnel for raw ideas for new service offerings that are refined and filtered out over the course of the process. In the last stages, only the most promising ideas survive and are introduced into the market.

Starting with the *Design* stage, business objectives and an overall strategy for the new service offering are defined (Scheuing and Johnson, 1989). Subsequently, many fitting ideas are generated, filtered by their viability and economic feasibility (Zeithaml et al., 2017), and then expanded into service concepts, including information on the required service system and the customers' needs that the ideas fulfill (Kim and Yoon, 2014). *Analysis* encompasses all activities required to formulate a business plan, that is, conducting at least a complete market assessment and setting up a financial plan (Scheuing and Johnson, 1989). These documents are then used to gain project authorization from top management. The *Development* stage comprises the actual transformation of the service concept into a marketable service. In the *Full Launch* stage, the new service is introduced to the entire market. Feedback from early adopters and ongoing reviews of the service performance against the service objectives are used to modify and improve the service offering (Johnson et al., 2000; Storey and Kelly, 2001).

## 2.3 Action Design Research

Action Research (AR), has become an established research method in the IS discipline that aims at solving problems in an organizational setting while creating scientific knowledge at the same time (Susman et al., 1978). The underlying credo of AR is to examine the human organization and its processes, being a complex socio-technical system, as a whole within its original environment (Baskerville, 1999). DSR, another prominent research methodology in IS, focuses on building and evaluating innovative IT artifacts that address important issues in organizations (Hevner et al., 2004). Apart from implementations, DSR generates design knowledge in form of constructs, models, and methods (March and Smith, 1995). The relationship between AR and DSR has been controversy discussed (e.g. by Becker et al., 2013; Iivari and Venable, 2009; Järvinen, 2007; Loebbecke and Powell, 2009). Sein et al. (2011) criticize the sequential structure of DSR, in which evaluation activities in organizational contexts are separated from the actual creation of the artifact. In line with the concept of AR, the authors stress that "artifacts emerge in interaction with organizational elements" (Sein et al., 2011, p. 38) and position ADR as new design

research method that combines the best from AR and DSR. ADR focuses on the building, intervention, and evaluation of an artifact while taking into account theoretical perspectives as well as influences from the organization's environment (Sein et al., 2011).
The ADR method, comprises the four stages of *Problem Formulation (1)*, *Building, Intervention, and Evaluation (2)*, *Reflection and Learning (3)*, and *Formalization of Learning (4)* (Sein et al., 2011). During the *Problem Formulation* stage, the organizational problem is identified and articulated. Determining the scope of the project and the practitioners' participation as well as agreeing upon research goals set common ground for future collaboration between researchers and practitioners. Based on the results from stage one, the actual IT artifact is designed in an iterative process of *Building*, *Intervention* in the organization and a continuous *Evaluation* (BIE). Parallel to the first two stages the researcher performs continuous *Reflection and Learning*, to gain knowledge that can be applied to a broader class of problems. In stage four, the project specific learning is further developed into a formalized learning, which constitutes a general solution concept for a class of problems and can be characterized as design principles (Sein et al., 2011; Van Aken, 2004).

## 3 NSD through ADR in Joint Research Projects

We now synthesize the theoretical perspectives of NSD and ADR while taking into account the specific sets of stakeholders and goal systems in the joint research project environment. We apply the lens of meta-framework development, which is a "conceptual method for building theory based on the integration of previous frameworks" (Beverungen, 2014, p. 191). Figure 1 exhibits "NSD through ADR in joint research projects"—a *meta-framework*, which is the main outcome of our work. This meta-framework ought to serve as an instrument for the development of research proposals and research manuscripts spanning the individual constituents of the envisioned research project.
Our meta-framework provides means to represent and describe all stages of conducting joint service research projects, from proposal development to dissemination. Each set of concepts relates to one subsection of this paper's background section. ADR provides us with an engineering perspective that integrates all building, intervention, and evaluation activities within the organizational context of the joint research project. The method realizes the actual development of the artifact, including all types of collaboration between academia and practice. NSD accounts for an overarching market-oriented perspective that focuses on business model considerations with regard to the service system, actors and their interactions, revenue streams, value co-creation, resources and activities, and other aspects. By integrating both perspectives, the meta-framework supports the different stakeholders in integrating their goals into the service system.

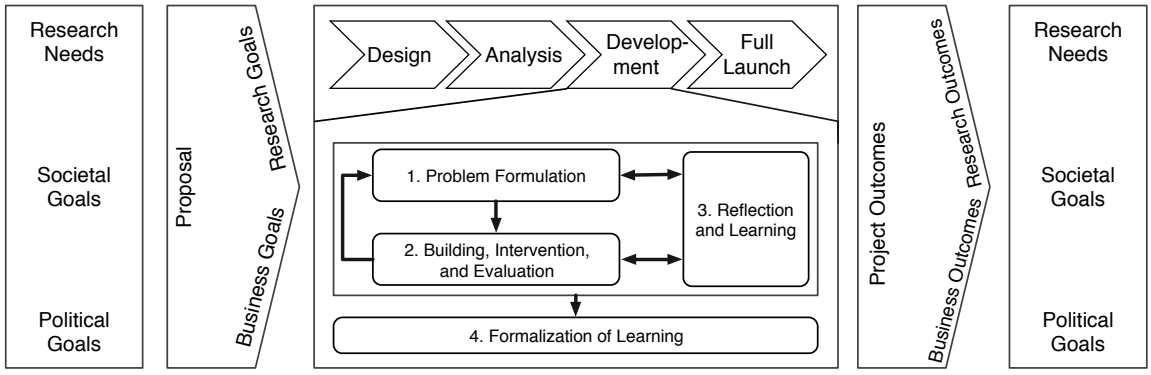


*Figure 1. New Service Development through Action Design Research in Joint Research Projects.*

The left box of the meta-framework represents the initial project-external goal systems. We distinguish between three different types of such goals stemming from the various stakeholders: *research needs*,

*societal goals*, and *political goals*. Research needs depict hot-spots, blind-spots, grand challenges, and priorities identified and formulated by research communities or other academic groups. Societal goals describe desired social, environmental, and economic results of the research. Political goals refer to the interest-based interpretation of societal goals.
The project *proposal* describes the mechanisms by which a project consortium translates project-external goals into project-internal goals. The translation happens with the precept of defining project-internal goals that both match the project-external goals and are compatible with the project members' individual goal systems. They may comprise of *research goals* and *business goals*. The proposal is represented next to the goal system. The complementary concept of *project outcomes* represents the project outcomes' contribution to project-internal goals. These outcomes are a lever for contributing to the initial project-external goals of the project's external stakeholders depicted on the left-hand side. Moreover, joint research projects not only impact on existing research needs, societal goals, and political goals. Instead, the project outcomes may reveal new or additional research needs, and highlight new or updated societal and political goals. Consequently, the framework closes with the impact of the project outcomes on the project-external goal system.
The figure's central element depicts the industry-academic collaboration in developing new services. The NSD process (Johnson et al., 2000) as shown in the figure's upper section provides means to structure joint service research projects from early conception to market launch. Goals from the project environment are transferred into business/research goals and finally into a profitable and goal-compliant business model. The development stage is refined applying the ADR stages suggested by Sein et al. (2011). These stages summarize the researchers' and practitioners' efforts to create all necessary components to get the new service up and running.

# 4 The CrowdStrom Case: a Joint Research Project

CrowdStrom is an ongoing joint research project concerned with the development of a new service in the electric mobility domain, which allows individuals to share their privately owned charging points with other public users. We (the authors) participate as academic research partners in the project. This section gives an overview of the CrowdStrom project, which will subsequently serve as a case of our framework's application.

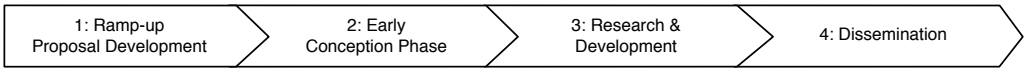


*Figure 2. Project Steps.*

The joint research project's course of action can be divided into four steps, as indicated by Figure 2 and by the following subsections. The case description is based on the project documentation, research diaries, notes from weekly team meetings that reflect the project's progress, and notes from focus group meetings. The latter bring together members from the different research projects within the same funding program to exchange ideas, discuss common issues, and transfer gained knowledge. Discussions with project partners and the project management agency serve as additional sources of information.

## 4.1 Step 1: Ramp-up and Proposal Development

In 2012, the BMBF publishes the call "Service Innovations for Electric Mobility" to fund service science research in the electric mobility domain. In response, service researchers address the call while taking into account the political goals (e.g., "having one million EVs on German roads by the year 2020" and "Germany to become technology leader in the electric mobility domain") as well as related societal goals (e.g., climate protection, urban challenges) expressed therein. As part of the CrowdStrom

project application, a joint consortium including a local utility that operates charging points and a technical services corporation that functions as certifying body for IT systems is formed. Information systems, marketing, and human resource management researchers complete the consortium. Together, the consortium members transfer and categorize the political and societal goals – in view of the general research needs of their disciplines – into project members' business goals and research goals.
The consortium wants to support the diffusion of EVs by mitigating a main barrier to customer adoption of EVs, that is the lack of a well-developed public charging infrastructure (Rezvani et al., 2015). To achieve a sufficient nation-wide charging infrastructure that can handle the proclaimed 1 million EVs, Germany requires a total of 950,000 public and non-public charging points by 2020 (German National Platform for Electric Mobility, 2016). However, a typical "chicken-and-egg problem" arises, as potential buyers of EVs wait for further development of the infrastructure, and the resulting limited demand for EVs deters investors from developing that infrastructure.
The CrowdStrom project seeks to develop a smart service that encourages the increasing number of private persons as well as small and medium-sized firms to make their charging points available to public users. Utilizing existing idle charging stations mitigates the lack of a sufficient public charging infrastructure and consequently reduces barriers to customer adoption of EVs. The service makes use of context data from peer-users and peer-providers such as locations, technical parameters and status information of EV and charging point to match supply and demand on the platform, as both, the EV as well as the charging point are smart products that can transmit and receive various forms of data (Beverungen et al., 2017).
After the BMBF selected the project outline, the consortium wrote a full proposal that includes the main research & development activities, a project plan, financial details, responsibilities of the consortium members, as well as expected outcomes without final specification of the service characteristics. The full proposal was accepted by the BMBF in December 2012 and the project receives funding for three years starting in 2014.

## 4.2 Step 2: Early Conception Phase

Soon after the full proposal was approved by the BMBF, the consortium formulated ideas for concrete service characteristics by sketching multiple alternatives and evaluating them regarding their economic viability. The needs of potential customers, industry partners and researchers are taken into account. Operational objectives are derived from the general objectives, and strategies that are required for reaching these objectives are defined. The consortium decides in favor of a Sharing Economy business model that is similar to business models of successful companies such as Airbnb and Uber (Plenter et al., 2017).
A central service provider acts as an intermediary, who runs a peer-to-peer Internet platform. It connects the private individuals that provide charging stations, the so-called peer-providers with the private individuals that use these charging stations, the so-called peer-users. Peer-providers define prices for charging at their stations and intermediary charges a fee from the peer-users. The technical feasibility of the concept is examined by the local utility and the IS research group. Finally, the project's working structure is derived and thereof responsibilities are distributed.

## 4.3 Step 3: (Actual) Research & Development

Different kinds of processes and IT artifacts have to be created to get the CrowdStrom service up and running. The iteratively developed CrowdStrom prototype comprises a web portal and a mobile application (App) to be used by peer-providers and peer-users, as well as a back-end that encapsulates the business logic and serves data to the client applications (Betzing et al., 2017).
Peer-users take the App or the web portal to search for and reserve charging stations nearby. They can learn about the station's current status, ratings, opening hours, supported charging standards, and supported socket types. When a peer-user reserves a specific charging point, it becomes unavailable for other users for fifteen minutes. Within this time frame, the user has to reach the station, authenticate himself by

means of a RFID card that has a unique identifier, and start the charging session. The central back-end system manages all required flows of data and technical processes related to charging the car. Charging stations connected to the back-end are remote-controlled using the *Open Charge Point Protocol* (OCPP) (Schmutzler et al., 2013). This de-facto standard allows CrowdStrom to support most charging stations that are available on the market. Furthermore, peer-providers are provided with statistics and visualizations thereof in a dashboard. These statistics include details about past charging sessions such as the total number of transactions, total kilowatt hours [kWh] served, and distribution of transactions throughout the day and week. Besides usage data and statistics, the web portal enables peer-providers to manage their charging stations, e.g., (de-)active a charging station or adjust opening hours and prices.

This step does not only include the implementation efforts, but also researching service parameters such as the particular pricing model or required provider incentives and provider locations (Plenter et al., 2018), and then integrating them into the service concept and the IT solution.

### 4.4 Step 4: Dissemination

During the dissemination, the project's business and research outcomes are exploited to satisfy the overall goals stated in the project proposal. The consortium currently prepares CrowdStrom's launch, which will be conducted as a phased launch consisting of three stages: First, only charging points from the local utility will be integrated, so the technical and procedural quality of the service system can be field-tested. Second, any peer-provider in the project region may participate. Third, the service will be available nationwide. Marketing strategies are being developed, and different business scenarios are analyzed while considering external factors such as the pace of the EV market development and estimations for the price developments of charging equipment. Over the course of the project, research outcomes are being published in order to transfer new knowledge into the research community. Further, the consortium has regular meetings with practitioners from the electric mobility domain and attends symposia to foster dissemination within the general public.

## 5 Demonstrative Application of the Meta-Framework

The described steps in which CrowdStrom is conducted can be mapped into our meta-framework as Figure 3 illustrates. The initial ramp-up and proposal development step of the CrowdStrom project was concerned with the transformation of project-external goals into project-internal goals and it ended with the formulation of the project proposal.

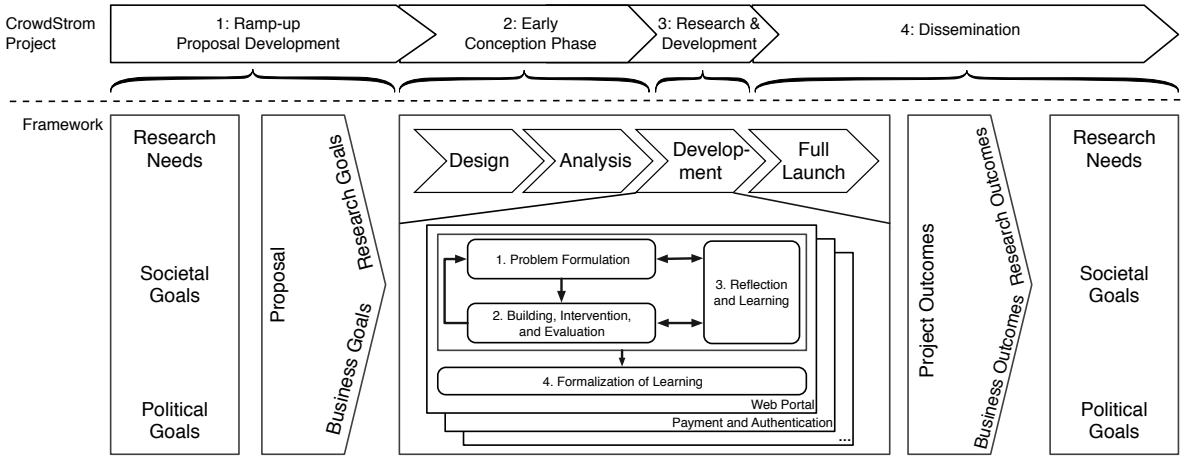


*Figure 3. Project Phases Mapped to the Framework.*

The full proposal included specific project goals that are compatible with the business partners desires and our research interests and which were developed to address the broad political and societal goals in view of our discipline's research needs (cf. Figure 4). For example, the combination of societal (environmental-friendly transportation) and political (one million EVs by 2020) goals influences the business goal of our industry partner to develop a tight-knit charging infrastructure in the project region. Similarly, the academic project partners transform research needs combined with political and societal goals into research goals such as the conceptual design and prototypical development of a peer-to-peer platform for EV charging.

Particularly in the beginning of the project, there is a risk of project partners having differing goals and objectives towards the project, which can result in colliding interests that impede the project's success. In the case of CrowdStrom, we conducted a workshop with all project partners to align those multifaceted goals towards a joint project goal and solution objectives. The framework serves to structure the project-external and project-internal goal systems and can become an input to project management methods to align all project partners.

The following early conception phase corresponds to the *Design* and *Analysis* stages in the meta-framework, which is in line with the NSD approach, where service alternatives shall be generated, evaluated, and then selected during the first two stages of the process. Table 2 gives the mapping of project activities to all stages of the NSD process. After being evaluated in both, technical and economic terms, the Sharing Economy service concept was selected. The early conception phase ends with the conclusion of all *Design* and *Analysis* activities and provides the basis for the subsequent artifact development.

| **Design** | **Analysis** | **Development** | **Full Launch** |
|---|---|---|---|
| Development of different business model concepts<br>Design and screening of service characteristics | Evaluation of the economic viability of the concepts<br>Analysis of the technical feasibility of the concepts<br>Selection of the Sharing Economy service concept | Online platform consisting of a front-end for peer-users and peer-providers as well as an administrative central system back-end<br>Mobile application for Android and iOS | Definition of a three-stage launch plan:<br>1. pilot partner<br>2. regional peer-providers<br>3. nationwide launch |

*Table 2. Activities within the NSD Stages.*

Building the required IT artifacts for the service directly corresponds to the *Development* stage in the meta-framework. Each of the individual artifacts that is being developed during the Research & Development stage has been created in an instance of the ADR method.

To demonstrate the application of the ADR method and its stages, we use the example of developing payment and authentication methods for the CrowdStrom service. Peer-users should have the ability to access the peer-providers' charging points without being assisted by the respective peer-provider.

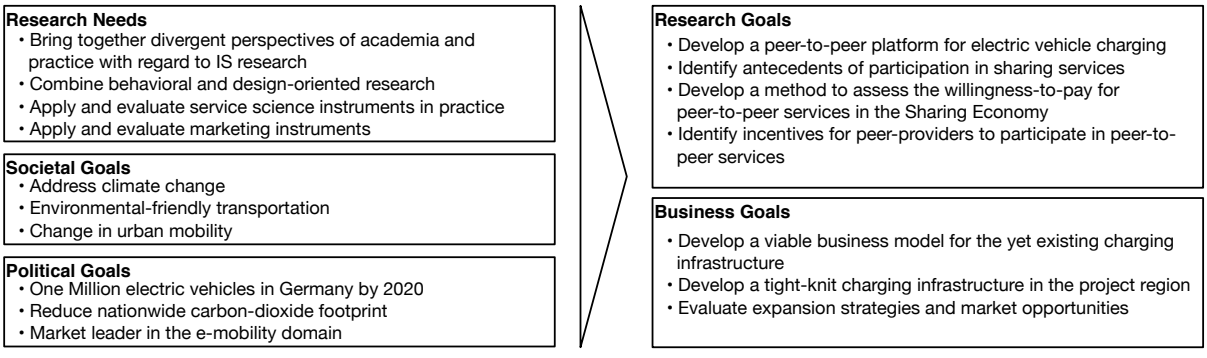


*Figure 4. Transformation of Project-external Goals into Project-internal Goals.*

Therefore, we elicited and assessed the processes necessary to enable third parties to autonomously access charging points. User authentication to connect the EV to the charging point and the subsequent payment were identified as crucial processes. The *formulated problem (1)* was to identify suitable methods for user authentication and payment. The following *building, intervention, and evaluation (2)* iteration started by surveying 179 local citizens to elicit consumer preferences on common and innovative methods for authentication and payment. The results of the survey were then presented to and discussed by the whole project team in a workshop, which evaluated the technical feasibility, the suitability and possibilities to implement the elicited methods in the partnering utility's existing infrastructure. Unfortunately, the elicited preferences and workshop results did not match, as the methods with the highest user preferences were not compatible with the existing charging points. In ADR's spirit of *continuous reflection and learning (3)*, the insights gained were considered in another iteration. Another workshop with the project partners was conducted to find a method that both has high user preference and that fits the technical restrictions of the charging points. The resulting choices of authentication via App, text message, RFID card, and payment via direct debit were consequently implemented into the software prototype (Matzner et al., 2015). In two field tests, the method's implementation and underlying processes were evaluated in real-world organizational settings. The first one used two charging points and some EVs from the fleet of the utility. For the second field test, we provided a private person with a charging station, which then was used by other test participants in the role of peer-customers. Finally, a compromise was found which has high customer preference and which can be implemented w.r.t. the existing charging infrastructure. Especially in joint research projects, one has to balance advantages and disadvantages of users' preferences with financial aspects of implementing new solutions and processes compared to using existing ones. The project team *formalized this learning (4)* in the project documentation and in Matzner et al. (2018).
Dissemination activities span over the right-hand side of the meta-framework. This step focuses on the multi-staged launch of the newly developed service. It corresponds to the *Full Launch* stage of the NSD process (cf. Table 2). However, project outcomes go beyond the full launch, as the project not only achieves business goals but also research goals. Figure 5 gives an overview of the research and business outcomes achieved in the project. The outcomes amount to the project-internal goal system (cf. Figure 4). Research outcomes are being disseminated within the respective communities. The aforementioned launch is currently in preparation. Nevertheless, the transformation of project outcomes into an updated project-external goal system cannot be fully analyzed yet, because the project has not been completed and the project outcomes are not finalized. For now, the project members already identified new research needs and problem areas that require political intervention. For example, there is a need for clarifying the legal status of private charging stations, which can be currently interpreted as part of the energy supply nets, which makes them subject of heavy regulations and which would entail a bureaucratic burden for private peer-providers.

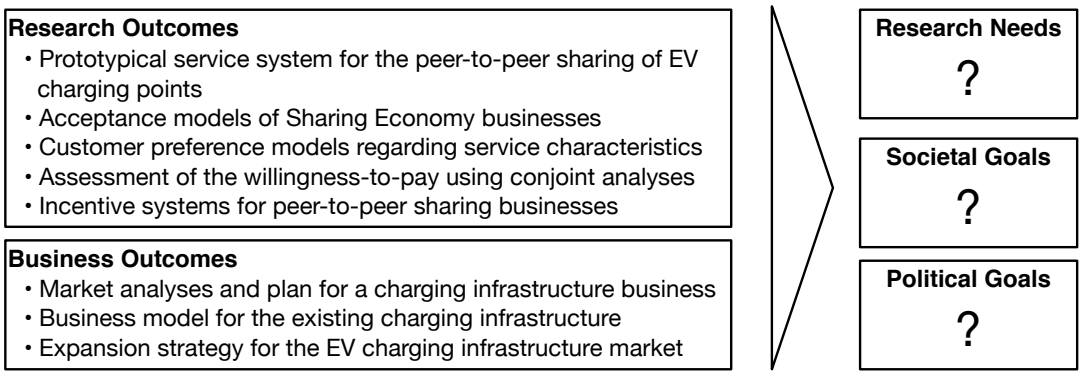


*Figure 5. Project Outcomes.*

# 6 Discussion, Implications & Reflections

We subsequently justify some general design decisions and then point out the implications of our research for different stakeholder groups in joint research projects. Lastly, we reflect upon limitations and potential remedies thereof.

## 6.1 Discussion of Design Decisions

Although the perspectives of NSD and ADR inform our understanding of joint research projects, their activities and steps cannot be distinctively mapped to the phases of joint research projects. Instead, the activities overlap to some extent. In the *Ramp-up and Proposal Development* step in joint research projects some project activities actually resemble *Design* and partly *Analysis* activities of NSD. These include the formulation of business objectives and the generation of ideas to meet the business objectives (Scheuing and Johnson, 1989), which usually take place in the *Design* stage. In joint research projects, however, business objectives and ways to achieve them must be defined at the time the project outline is written. Additionally, the full proposal must also contain preliminary project and financial plans, responsibilities and individual work packages of the consortium partners. These documents are usually prepared during the *Analysis* stage of NSD. This peculiarity of attracting funding for the joint research project using a full proposal could justify to split the NSD process and place the *Design* phase into the proposal box. However, a split would come at the cost of the meta-framework being less generalizable and applicable for other industry-academic partnerships. Furthermore, the documents created in the context of the full proposal only serve as a baseline for project approval and are subject to ongoing refinements over the course of the project. Consequently, the NSD process is still properly conducted step-by-step, once the project is approved, and thus remains as a whole in the main part of the framework. Additional potential overlaps emerge when synthesizing the stepwise model of NSD with the iterative ADR approach. On the one hand, we acknowledge that some ADR activities such as the formulation of specific problems already start in the *Analysis* phase of NSD. On the other hand, later iterations may overlap with the *Full Launch* stage of NSD as time goes by. It is worth mentioning that many publicly funded projects do not develop ready-to-market products for immediate commercial exploitation, but primarily knowledge and service blueprints that the consortium can build upon in the sense of an economic dissemination. That is, in the *Full Launch* phase, consortium partners from industry may take the gained knowledge and put it to use in their organizational settings or license it to third parties. Even then, important experiences can be made regarding the evaluation and derivation of formalized learning with respect to ADR. Although this may be an issue when mapping the specific research activities to the meta-framework, it is not critical from a methodological perspective, as NSD also demands feedback-loops where adjustments are made based on insights gained (Johnson et al., 2000). To sum up, although the ADR iterations also affect the *Analysis* and *Full Launch* stages of NSD, the main research and development activities take place in the *Development* stage, and thus, justify the position of ADR within the overall framework.

## 6.2 Implications for Project Stakeholders

This paper's main *theoretical contribution* is a meta-framework that synthesizes previously unrelated theoretical concepts from the fields of new service development and action design research. It complements prior research results from these two areas with constructs that are specific to joint projects: the sets of project-external goals and project-internal goals as well as the proposal. This meta-framework has various implications for different types of stakeholders. From the perspective of *academic and industrial researchers*, the meta-framework is a means for representing and describing issues related to joint research projects – more specifically, it is useful to address issues in projects that develop new services. Such representation and description, for instance, can be used to facilitate project-internal and project-external communication and discussion as well as planning processes.

The publicly funded joint research project is an instrument that is only used in a few countries. This is why we separate further implications for researchers who are involved in joint research projects from those for researchers who are not involved. To this end, the meta-framework reminds the former to elicit goals, to transfer given project-external goals into compatible project-internal goals, and maintain a corridor of requirements towards the design of processes and IT systems. Those are then input to the actual research & development activities, which hopefully will lead to novel knowledge and also yield new services that meet market needs and societal/ political goals at the same time. For researcher inexperienced with joint projects, our meta-framework provides an entry point into and explanation about the complex structures of such joint projects, including for instance the project stakeholders' and/ or the project members' possibly divergent goal sets.

With our work, we want to make a step towards a better understanding of joint research participants' situations within our IS research community. Other researchers can further benefit from the meta-framework as helpful contextual knowledge when making sense of research originating from joint projects. In the same line, the framework can be applied when researchers want to reuse and further develop findings from joint projects, when researchers have to review manuscripts that report on joint project results, or when they consider collaborating in a research or publication project with partners from joint projects.

Furthermore, researchers who have the opportunity to apply for funding of joint research projects, but have not yet made use of it, may consider an application based on an improved understanding of this funding instrument. More specifically, from the perspective of *service researchers*, our work emphasizes and reminds scholars on the interdisciplinary nature of service research. This work combines a service marketing perspective (NSD) with an IS engineering perspective (ADR) as it is needed in the "real-world" development of new service businesses—and not just in joint research projects. While our meta-framework illustrates the big picture of NSD through ADR on an abstract level, its user can take it as reference point to tap into more specific instruments and tools included in the research streams of NSD and ADR. Lastly, our work also sketches an innovative real-world instantiation of NSD: CrowdStrom, a joint research project which will have traversed the whole NSD process, including the full launch, in the near future.

From the perspective of *business professionals* in charge of research and development, joint projects can be a helpful instrument to facilitate the development of new services. Joint projects can pave the way for risky innovation projects that—without public funding—would be too expensive to fail in view of uncertain market developments, such as CrowdStrom was. This work maintains that even when receiving public funding, managers retain entrepreneurial freedom and individual responsibility when turning project-external goals into business goals that fit their enterprise strategies. From the perspective of *politicians* and further *societal groups*, our work provides means to illustrate, how joint projects stimulate research and business development activities at the same time. Industrial partners in joint projects only receive partial funding of research expenses and have to commit financial resources themselves, too. As a result, the value for taxpayers' money (in terms of contribution to societal goals) is likely to increase through joint projects, because business development activities have to focus on a set of topics with contemporary societal relevance, given by the funding institutions' implementation of political goals.

## 6.3 Limitations

Our work, being conceptual in nature, does not claim to explore the phenomenon of joint research projects exhaustively but has some limitations that we subsequently discuss and try to resolve. First, the applicability of the proposed meta-framework, and thus, its evaluation has been demonstrated for only one joint research project in this paper. However, we tested the applicability on other joint research projects we have conducted in the past, but which cannot be reported here in detail. We also recently met with academic and industrial members of the aforementioned focus group to discuss and test the applicability of the meta-framework on their individual project settings. It became evident that the meta-framework can be used successfully to represent and describe the ADR perspective on NSD in joint research projects—not just for projects with an IS focus but also for business-driven development projects. While this research

relates the idiographic details of one case with established theory, more applications to other joint projects are desirable, for instance, in order to further develop the meta-framework into a procedural reference model that includes specific work practices to assist joint projects.
One initial step would be to complement our conceptual research with a multiple case study methodology that investigates other researchers' joint projects to test meta-framework and propositions. Concerning external validity, the meta-framework then also needs to be applied to cases that feature a variety of characteristics, based on designing a cross-case replication logic (Yin, 2013).
Second, the meta-framework in its current form does not distinguish the different actors participating in a joint project individually. We considered a simultaneous representation of all project partners and their relationships as not feasible due to the complexity that grows with any additional actor. A possible extension could be the inclusion of cyclic processes of design, sense-making, and negotiation (Lyytinen et al., 2008) in which actors bring together and jointly discuss different viewpoints on goals, the proposal, and the activities in the different NSD and ADR stages.
Third, the meta-framework is not capable of providing researchers and practitioners with operational guidelines on, for example, how to conduct the project or how to resolve conflicting aims that could co-exist in a joint research project. Instead, it focuses on illuminating the composition of such a project, core elements of its research process and its outcomes. By doing so, it provides researchers and practitioners with an instrument that can facilitate participants' understanding of the project and the communication among partners. By decomposing the structure of a joint research project, the meta-framework can be used to formulate in-depth inquiries into its mechanics, which we see as an opportunity for future research.

# 7 Conclusion

This paper illustrated a set of core concepts capable of representing and describing joint research projects in service research. We constructed a meta-framework that synthesizes the basal properties of joint research projects with the service marketing perspective of NSD and the IS engineering perspective of ADR. The meta-framework contains all steps and phases of joint project work, starting with forming the consortium and developing the proposal, to the actual research and development at the core of the project, up to the subsequent dissemination of the research results. It considers the various project stakeholders' perspectives, such as those of funding institutions, service researchers, as well as consortium partners from industry. The meta-framework assists researchers and practitioners in communicating the specifics and outcomes of their joint research projects. Moreover, it also provides guidance to actors inexperienced with the specifics of joint research projects, which is especially important for small and medium enterprises that want to participate in such a collaborative research setting. We illustrated the applicability of our framework by the case of CrowdStrom, a joint research project we are currently conducting. Based on our development and concurrent evaluation activities as well as the learning situated from the project, we will continue to generalize our findings to derive more formalized learning in the spirit of ADR that may support service researchers in future joint projects.

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