A service design perspective on the stakeholder engagement journey during B2B innovation : challenges and future research agenda

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Challenges and future research agenda

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Abstract

In this article we aim to evaluate the challenges and develop a research agenda on how service design can effectively enable stakeholders´ engagement during the B2B innovation process. In these inter-firm collaborative B2B contexts, innovation has to happen in highly dynamic, complex and heterogeneous constellations of stakeholders with a diversity of goals, motives and capabilities, which presents challenges to the successful management of B2B innovation processes and outcomes. Investigating stakeholder engagement within B2B settings requires a multi-faceted perspective considering different stakeholders from a diversity of sectors engaging in complex network relationships. We argue that in order to advance service design opportunities for stakeholder engagement, we need to address the unique complexities and challenges of stakeholder engagement during innovation from a *systemic* and *emerging* perspective. From a systemic view, we evaluate stakeholder engagement types and behaviors within a multi-level engagement platform (i.e., innovation network). As an emerging process we zoom in on the temporal and relational connections and hybrid orchestration to allow for both structural and emerging stakeholder engagement to take place during the innovation process. We develop a stakeholder engagement journey in which we integrate service and innovation stages and propose how service design activities can support and facilitate the aforementioned challenges and complexities. Finally, we identify concrete research questions and thus develop a research agenda for future research into stakeholder engagement for B2B innovation trajectories.

Keywords: stakeholder engagement, B2B innovation process, stakeholder engagement journey, innovation networks, service design

1. Introduction

In this article we aim to evaluate the challenges and develop a research agenda on how service design can effectively enable stakeholders´ engagement during the B2B innovation process. Technological developments in the areas of digital transformation, Internet of Things and industry 4.0, additive manufacturing and artificial intelligence (AI) amplify the importance of stakeholder engagement during the B2B innovation process. Innovating products and services as digitally enabled solutions requires ecosystems that co-create value across traditional industry and sectoral boundaries to exploit the interconnection of physical and digital assets through data (e.g. Govindarajan & Immelt, 2019; Nambisan, Wright & Feldman, 2019). Similarly, societal calls for responsible organizing to fulfill the UN Sustainable Development Goals also necessitates engaging with stakeholders to achieve sustainability-driven innovations (Maon, Lindgreen & Swaen, 2009; Ferraro, Etzion & Gehman, 2015). Pursuing innovations in these contexts therefore deals with highly dynamic, complex and heterogeneous constellations of actors with a diversity of goals, motives and capabilities that further challenges successful management of B2B innovation processes and outcomes (Nambisan, Lyytinen, Majchrzak & Song, 2017).

Additionally, B2B firms have recently experienced an increasingly uncertain environment as the 2020 COVID-19 pandemic and the resulting lockdown worldwide immediately diminished consumer demand thereby severely impacting many B2B markets (Cankurtaran & Beverland, 2020). Compared to B2C markets, B2B contexts entail more complex business settings, a more complicated purchase with customers often requiring highly complex and customized products. Understanding business customers´ problems and needs is challenging and therefore puts customer engagement at the forefront of business innovation (Zhang & Xiao, 2020; Lilien, 2016).

We extend the concept of customer engagement towards stakeholder engagement as recent literature (Blasco-Arcas et. al., 2020) has adopted ‘actor engagement’ as a broader theoretical perspective. A multitude of actors (e.g. customers, suppliers, channels, investors, government

institutions) engage in an interactive process, integrate resources and co-create value within an institutional context provided by a service ecosystem (Storbacka, 2016; Lusch & Nambisan, 2015; Jonas, Boha, Sörhammer and Moeslein, 2018). Lusch & Nambisan (2015, p. 162) define service ecosystems as: '*… a relatively self-contained, self-adjusting system of mostly loosely coupled social and economic (resource-integrating) actors connected by sharing institutional logics and mutual value creation through service exchanges*'. In line with Storbacka (2016) we consider stakeholder engagement as a microfoundation of co-creation activities during B2B innovation processes within a service ecosystem (i.e., innovation network). In this article, we adopt the concept of an engagement platform enabling the stakeholder engagement journey that includes all the actors´ interactions (i.e. physical and virtual touchpoints) enabling resource exchange and integration that co-create value among stakeholders during B2B innovation (Breidbach, Brodie & Hollebeek, 2014; Hollebeek, 2019; Blasco-Arcas et. al., 2020).

Despite the acknowledgement in extent research on the importance of stakeholder engagement within B2B markets, very little is known on the actual activities of engagement in these complex business settings and for innovation trajectories in particular (Yu & Sandiori, 2020; Lethinen, Aaltonen & Rajala, 2019*)*. We address this research gap by emphasizing the complexities and specific challenges of stakeholder engagement within B2B innovation networks. We approach stakeholder engagement from a systemic view linking type of stakeholders and engagement types to multi-level platform engagement during innovation. We identify stakeholder engagement as an emerging process as stakeholders engage and disengage over time, forming relationships with other stakeholders throughout the innovation process requiring hybrid orchestration modes.

Recent research has indicated the relevance of service design principles to actually tackle the complex challenges and problems B2B firms experience today (Nakata & Hwang, 2020; Zheng, Lin, Chen & Xu, 2018; Cankurtaran et. al., 2020). However, up to date, we lack a thorough understanding of how design principles can support stakeholder engagement during B2B innovation trajectories. Service

design can be the trigger to develop and initiate activities to (dis)engage stakeholders aimed at value co-creation throughout B2B innovation processes. (Joly, Teixeira, Patricio & Sandriorgi, 2019) We address this research gap by integrating service design thinking to stakeholder engagement during the project life-cycle and propose a stakeholder engagement journey that links service design and innovation process stages. Next, we evaluate and propose how service design activities can tackle the complexities and challenges of stakeholder engagement that relate to the diversity of stakeholders and stakeholder behaviors within multi-actor platforms, the temporal and relational connections that evolve in structured and emerging types of stakeholder engagement within B2B innovation networks. Based on the aforementioned propositions, we develop a research agenda with specific questions for future research on stakeholder engagement during B2B innovation trajectories.

This article commences customer engagement design in industrial innovation by reviewing the theoretical concepts (section 2) linked to stakeholder engagement during B2B innovation adopting a systemic view (2.1.) to explain stakeholder engagement types within multi-level stakeholder engagement platforms. We advance stakeholder engagement as an emerging process (2.2.) that enables temporal and relational connections through hybrid orchestration modes and balance structural and emerging engagement throughout the stakeholder engagement journey. Next, we connect service design activities to stakeholder engagement during B2B innovation (section 3) by linking service design stages to innovation process steps within a stakeholder engagement journey (3.1.). Finally, we integrate service design activities to the previously discussed concepts and challenges (3.2. - 3.4.) and formulate propositions. We conclude the article by developing a research agenda (3.5.) that includes research questions for every proposition providing avenues for future research on stakeholder engagement during B2B innovation.

2. Theoretical framework

Research has shown that engaging stakeholders has a more prominent effect on firm performance within a B2B context compared to B2C industries (Kumar & Pansari, 2016). Especially within an innovation context, engaging business customers (i.e. B2B) has a significantly greater impact compared to consumers on several new product development outcomes (e.g. time-to-market and financial performance) (Chang & Taylor, 2016) and enhance improved solutions for business customers' problems (Cortez & Johnston, 2017; Zhang & Xiao, 2020). Hence, investigating stakeholder engagement within B2B settings requires a multi-faceted perspective considering different stakeholders from a diversity of sectors engaging in complex interpersonal relationships. In these inter-firm collaborative B2B contexts (e.g. for innovation) stakeholders are faced with challenges due to their interdependencies and competition with other engaged stakeholders (Blasco-Aras et. al, 2020; Lilien, 2016; Heirati, O'Cass, Schoefer & Siahtiri, 2016). For example, knowledge needs to be mobilized across stakeholders (e.g. Dhanaraj & Parkhe 2006) with diverging goals (e.g. Denis, Dompierre, Langley, & Rouleau, 2011) and different solution approaches and innovation cultures (Amabile et al., 2001; Huxham & Vangen, 2000). Literature on open innovation helps to understand how firms collaborate and exchange knowledge with external stakeholders in order to leverage complementary resources (Chesbrough, 2003; Wilden, Akaka, Karpen & Hohberger, 2017). From a service-dominant (S-D) perspective these stakeholders primarily exchange services with one another in which collaborative competences and knowledge interfaces impact innovation outcomes (Lusch & Nambisan, 2015). Chesbrough (2011) already introduced the concept of 'open service innovation', but in line with an S-D lens we adopt a broader view of service innovation comprising both tangible and intangible market offerings as a result of B2B innovation trajectories (Lusch & Nambisan; 2015). Following this S-D logic, stakeholders' engagement will be studied from a service ecosystem perspective in which multiple stakeholders engage in value co-creation and capture activities with other stakeholders throughout the B2B innovation process (Alexander & Jaakkola, 2018; Jonas et. al. 2018). Lusch & Nambisan (2015, p. 162) define service ecosystems as: '… *a relatively self-contained,*

self-adjusting system of mostly loosely coupled social and economic (resource-integrating) actors connected by sharing institutional logics and mutual value creation through service exchanges'.

Several studies have emphasized the need to consider stakeholder engagement as a microfoundation of value co-creation in service ecosystems (Kumar et. al. 2016; Jonas et. al., 2018; Storbacka et. al., 2016). Breidbach et. al. (2014) introduce the concept of engagement ecosystems that can be perceived as a dynamic capability and hence a type of competitive advantage. These engagement ecosystems are the actual platforms that provide the architecture for engagement, '*a road map for the different actors to come together and engage in service exchange*' (Lusch et. al., 2015, p. 165). Engagement platforms include all stakeholders' interactions (i.e., physical and virtual touchpoints) that enable resource exchange and integration to co-create value among stakeholders during innovation (Hollebeek, 2019; Blasco-Arcas et. al., 2020). Zooming in on and analyzing the dynamic co-creation capabilities of stakeholders engaging through these platforms during B2B innovation will enhance our understanding of value creation within these service ecosystems (Wilden et. al., 2017). Moreover, these platforms engage stakeholders over time to co-create and capture value throughout the innovation process (Jonas et. al. 2018). As the conceptualization of the engagement platform is strongly tied to the concept of the customer journey (Lemon & Verhoef, 2016), we will use the concept of the '*stakeholder engagement journey*' describing all stakeholder interactions (i.e. physical and virtual touchpoints) during the B2B innovation process. Even though extant research strongly acknowledges the importance of stakeholder ('actor') engagement within complex B2B market settings (Lindgreen & Wynstra 2005; Storbacka et. al. 2016; Meynhardt, Chandler & Strathoff, 2016; Storbacka, 2019; Heirati and Siahtiri, 2019; Blasco-Aras et. al., 2020; Lethinen et. al., 2019) a prominent research gap remains regarding the actual activities of engagement and disengagement of stakeholders over time (Lethinen et. al., 2019) within B2B innovation processes in particular. The latter can be translated into the question of 'What constitutes an effective stakeholder engagement journey?'.

We aim to link this question to service design principles that could steer, support and enhance the development of an effective stakeholder engagement journey. Extant research has already demonstrated the relevance of service design to address the multitude of challenges complex B2B settings have to face (Nakata et. al., 2020; Zheng et. al. 2018; Cankurtaran et. al. 2020), however, a consistent integration of design principles throughout stakeholder engagement has not been addressed. Hence, our core objective of this article is to apply a service design perspective in developing a stakeholder engagement journey during B2B innovation. We structure our discussion around three questions: (1) WHO are the actual stakeholder engaging during B2B innovation? We elaborate on the type of stakeholders and engagement behavior from a multi-level and platform perspective. (2) WHEN should stakeholders engage/disengage throughout the B2B innovation process? (3) HOW to integrate service design to enable stakeholder (dis)engagement during innovation?

We finally develop propositions listing the major challenges as well as research gaps and derive a research agenda with potential research questions that may advance future research for stakeholder management within B2B innovation context.

2.1. Stakeholder engagement during B2B innovation: a systemic view

Only recently, research has contributed to the study of 'engagement' in the Business-to-Business context. Primary attention was aimed at studying customer engagement of business customers through social media engagement platforms (Hollebeek, 2019a; Agnihotri, 2020), initiated through sellers' social influence on co-creation and online brand awareness within communities (Wang, Hsiao, Yang & Hajli, 2016), within multi-actor service ecosystems (Hollebeek, 2016; Ho, Chung, Kingshott & Chiu, 2020), for collaborative innovation (Hardwick& Anderson, 2019; Heirati & Siahtiri, 2019), using video conferencing (Hardwick & Anderson, 2019), in big data analytics (Zhang & Xiao, 2020), for high technology markets (De Ruyter, Keeling & Cox, 2019; Hollebeek, Andreassen, Costly, Klaus,

Kuppelwieser, Karahasanovic, Tagushi, Islam & Rather, 2019b) and competitive/turbulent environments (Heirati et. al. 2016). Among these contributions many focus on customer-supplier engagement (De Ruyter et. al., 2019; Heirati et. al., 2016; Hardwick et. al., 2019).

Within B2B contexts an increasing collaborative setting to co-create and capture value is crucial as B2B firms depend on external resources to meet complex market needs (Lehtinen et. al., 2019; Lusch, Vargo & Tanniru, 2010). Therefore, engaging other external stakeholders, next to customers and suppliers, for value creation and decision-making may enhance firm performance and long-term survivability (Lindgreen & Wynstra 2005; Reypens, Lievens & Blazevic, 2016). In line with extant research that has adopted actor engagement as a broader theoretical perspective (Alexander & Jaakkola, 2018; Blasco-Arcas et. al. 2020) we use the concept of stakeholder engagement (Jonas et. al., 2018) within a B2B innovation context. Stakeholder engagement is currently discussed in literature from a systemic view (Lehtinen et. al., 2019; Meynhardt et. al., 2016; Jonas et. al., 2018) in which the outcome focus has evolved into system-wide benefits including joint benefits for a network of actors as well as the overall value created for the system (Reypens, Lievens & Blazevic, 2016). The S-D logic labels these systems of resource-integrating actors, where stakeholders join for mutual value co-creation and value capture, as service ecosystems (Vargo & Lusch, 2014; Chandler et. al., 2015; Meynhardt et. al. 2016). Below we describe the components of these ecosystems relevant to B2B innovation settings: the types of stakeholder engagement, multi-level stakeholder engagement and stakeholder engagement platforms.

2.1.1. Types of stakeholder engagement

The entities within the service ecosystem which undertake activities are the so-called actors. Actor engagement refers to actors´ disposition to engage as well as their activities of engaging through interacting, sharing and integrating resources with other actors within an institutional context provided by the service ecosystem (Storbacka et. al. 2016; Blasco-Arcas, 2020). This institutional

context (e.g. innovation) defines the broader setting in which actors engage. Hence, actors become stakeholders in view of their disposition to a specific bundle or course of actions during a B2B innovation process (Jonas et. al., 2018). We can distinguish primary (e.g. suppliers, business customers, employees and shareholders) from secondary stakeholders (government, interest groups, media and trade associations) where the latter comprises engagement that is not directly related to an exchange-based activity (Storbacka, 2016). From a systemic perspective stakeholder engagement takes place within an actor-to-actor network (e.g. multiple stakeholder innovation network) in which value creation and appropriation is not limited to individual or constellations of actors/stakeholders, but to the service ecosystem as a whole. (Hillebrand, Driessen & Koll, 2015; Alexander & Jaakkola, 2018).

Within the B2B context, the concept of engagement has not always been clearly delineated and remains a relatively new phenomenon (Hollebeek, 2019). Conceptual articles (Alexander & Jaakkola, 2018; Storbacka, 2016; Brodie, Hollebeek, Jurić & Ilić, 2011) provide the theoretical foundations describing engagement as a psychological state during a dynamic, iterative process comprising cognitive, emotional and behavioral dimensions. Contributions as to this date on the type of engagement dimensions within B2B settings are quite fragmented. In studying business customer engagement through social media engagement platforms, Hollebeek (2019) states that particularly in B2B these engagement platforms provide cognitive and behavioral opportunities for actors to acquire knowledge and invest resources (i.e., time, energy and effort). Heirati et. al. (2019) investigate how customer-supplier collaboration drives service innovation from a 'knowledge-based view'-perspective. This study could be classified as an engagement study focusing on the cognitive engagement dimensions. The same reasoning could apply to the study of Wang et. al. (2016) in which the impact of co-creating customers within a B2B social media context on brand awareness (i.e., a cognitive engagement dimension) in online communities has been analyzed. The studies mentioned so far take a traditional dyadic perspective, however, in line with a more holistic and systemic perspective on engagement research, any type of actor/stakeholder should be included in the service

ecosystem (Alexander & Jaakkola 2018). This perspective reflects the systemic principles of value co-creation (Meynhardt et. al. 2016) in which service ecosystems (e.g. multi-stakeholder networks) are characterized by nonlinearity and feedback within a dynamic setting, continuously changing via transitions throughout the phases of innovation.

Part of these transitions relate to stakeholders´ engagement state (e.g. continuous, recurring or one-off engagement) as stakeholders´ engagement will evolve over time (Storbacka et. al., 2016) as stakeholder 'oscillate' (Blasco-Arcas et. a. 2020) between the subject and object of engagement, may exhibit influencing behaviors (Alexander & Jaakkola, 2018) that may impact other stakeholders´ perceptions and hence diminish specific stakeholders to engage or even trigger stakeholder disengagement behavior (Jonas et.al., 2018).

In section 3 we propose how service design principles could support and steer these different stakeholder (dis)engagement behaviors as well as engagement states during B2B innovation trajectories.

2.1.2. A multi-level stakeholder engagement

Engagement literature has been explored from a multi-level perspective (Chandler & Vargo, 2011; Alexander & Jaakkola, 2018; Storbacka, 2019; Jonas et. al., 2018; Meynhardt et. al., 2016; Storbacka et. al., 2016). At the macro-level the level of analyses constitutes the service-ecosystem in which we focus on the system-wide benefits and the co-created value for the system/innovation network as a whole (Lethinen, 2019). The service-ecosystem does also provide the institutional context that provides the rules, norms and practices for stakeholders to engage during the B2B innovation process. The micro-level focuses on the individual stakeholder who engages in activities driven by the present-day connections in the service ecosystem and its institutional context (Jonas et. al., 2018; Storbacka et. al., 2016). On the meso-level engagement represents the collective of interactions and

relationships within groups of stakeholders within the service ecosystem (Storbacka et. al., 2016). The meso level introduces the concept of the so-called subsystems and interconnects the micro- and macro levels of stakeholder engagement. Hence, from a systemic perspective value ties together the different engagement levels in a coherent way (Meynhardt et. al., 2016). In line with a microfoundational view (Storbacka et. al., 2016; Jonas et. al., 2018), we conceptualize stakeholder engagement as a microfoundation of value co-creation within the service ecosystem. In contrast to 'value', engagement activities (behaviors) and resource integration can be observed and empirically investigated (Storbacka et. al., 2016) and constitute the meso-level as they connect individual stakeholders (i.e. micro-level) to generate service ecosystem (i.e. macro-level) outcomes.

Managing and designing multi-level stakeholder engagement behaviors are challenging as individual stakeholder motives, value propositions and expectations differ (Roosens, Lievens & Dens, 2019). In terms of an ecosystem view, these stakeholders engage in a multitude of value co-creating activities with other stakeholders that may embed divers and potentially conflicting engagement contexts. Stakeholders facing these different engagement contexts can experience role conflict or disengage from the innovation network as the rules and norms required for one specific role may not match these expected by a stakeholder´s other role (Alexander & Jaakkola, 2018). Especially within innovation networks stakeholders should work towards a broader goal and therefore require shared institutional arrangements that bridge and balance the different engagement contexts of the individual stakeholders (Jonas et. al., 2018).

In section 3 we elaborate on how service design principles could manage these multi-level interdependencies of stakeholder engagement during B2B innovation trajectories.

2.1.3. A stakeholder engagement platform

Facilitating stakeholder engagement within dynamic, interdependent B2B innovation ecosystems requires formal structures (i.e., platforms)(Marcos-Cuevas, Nätti, Palo & Baumann, 2016). Within innovation management research two predominant types of platforms have been identified (Gawer & Cusumano, 2014): (1) internal or company-specific platforms that bundle assets in a common structure that enable firms to efficiently develop derivative products, and (2) external (industry) platforms based on products, services or technologies that provide the structure upon which external innovators can develop their own complementary products, service and technologies. The organization of these industry platforms also relies on an ecosystem perspective and fits the context of stakeholder engagement during B2B innovation (Blasco-Arcas et. al. 2020). In line with a systemic view and based on the definition of Storbacka et. al. (2016, p. 3011) on actor engagement we can define the role of these platforms as 'multi-sided intermediaries' that stakeholders leverage in order to engage with other stakeholders for resource integration during B2B innovation processes. These platforms represent the key intermediary and are positioned at the center of the service ecosystem (e.g., innovation network) in which they organize stakeholder co-creation activities (Blasco-Arcas et. al., 2020).

Value co-creation activities during B2B innovation require a modular architecture (i.e. service platform) consisting of tangible and intangible resources that facilitate the interaction of stakeholders and resources (Lusch et. al., 2015). Especially in B2B settings, the inter-organizational relationships and resource deployments are more complex (Blasco-Arcas et. al. 2020) and require a platform that describes the protocols within which innovation activities and interactions can take place. In this article, we adopt the concept of an engagement platform. As the conceptualization of the engagement platform is strongly tied to the concept of the customer journey (Lemon & Verhoef, 2016), we will use the concept of the '*stakeholder engagement journey*' describing all the stakeholders´ interactions (i.e. physical and virtual touchpoints) enabling resource exchange and integration that co-create value among stakeholders during B2B innovation (Breidbach, Brodie & Hollebeek, 2014; Hollebeek, 2019; Blasco-Arcas et. al., 2020). This stakeholder engagement journey therefore captures stakeholders´

experience during the innovation process across multiple interactions (Lemon & Verhoef, 2016; Jonas et. al., 2018).

In section 3 we propose how service design principles can develop and steer innovation activities during the stakeholder engagement journey.

2.2. Stakeholder engagement during B2B innovation: an emerging process

We consider stakeholder engagement within B2B innovation settings as an emerging process focusing on evolving phenomena that incorporate "*…temporal progressions of activities as elements of explanation and understanding.*" (Langley, Smallman, Tsoukas & Van De Ven, 2013, p. 1). The question of when and how stakeholder engagement and disengagement unfold over time requires a processual investigation as prior research has mainly taken a more static approach focusing on stakeholder attributes and dispositions instead of linking stakeholder (dis)engagement to the unique context of the developing multi-stakeholder system (Lethinen et. al., 2019) or to the specific stakeholder experience over time (Blasco-Arcas et. al., 2020). The temporal properties that relate to stakeholders´ (dis)engagement duration, frequency and regularity determine the dynamic and iterative nature of stakeholder engagement during innovation (Storbacka et. al., 2016). Stakeholder engagement evolves within the context of an inter-organizational innovation project/network in which the relationships stakeholders hold within the network will determine their level of engagement (Jonas et. al., 2018; Chandler & Lusch, 2014). The complex, dynamic and iterative nature of stakeholder engagement raises the question of suitable orchestration modes that balance the need for formalized structured coordination versus a more flexible approach allowing an organic and emerging innovation network (Nambisan, et. al. 2017; Oliveira & Lumineau, 2017).

We provide a more fine-grained perspective on when stakeholder (dis)engagement within innovation networks occurs by emphasizing (1) the temporal and relational connections, (2) the structural versus emerging view, and (3) the orchestrating modes for multi-stakeholder engagement during innovation.

2.2.1. Temporal and relational connections

Lethinen et. al. (2019) emphasized that stakeholder (dis)engagement changes back and forth over time in which collaboration does not evolve linearly, but where stakeholders are interconnected and influence other stakeholders´ behavior in a highly dynamic process.

As we raised earlier, we do not want to emphasize so much the disposition of stakeholders reflecting the internal engagement properties (Chandler et. al., 2015), but aim to focus on the specific context in which stakeholder engagement evolves (Lethinen et. al., 2019). Hence, we elaborate on the external engagement properties (Brodie et. al., 2011) comprising the connections between stakeholders that occur over time (i.e., temporal) and the relational connections (Chandler et. al., 2015) that emerge during innovation. We start by discussing the temporal connections as they apply to all other engagement properties (e.g., relational properties, informational properties, motives for engagement, levels and intensity for engagement) (Storbacka et. al., 2016).

In an innovation network - service ecosystem – service exchanges connect systems and processes as well as the stakeholders involved in which connections reflect stakeholders´ experiences from the past that will lead to future stakeholders´ experiences (Granovetter, 1985; Storbacka et. al., 2016). As such, engagement is characterized by temporal connections between stakeholders that are ongoing and continually changing. The present-day connections have emerged from past experiences and will impact future ones (Chandler et. al., 2015). Also, participating stakeholders have different motives, goals, resources and capabilities and therefore also different temporal horizons. Hence, one of the key challenges is how innovation network stakeholders from temporally asymmetric worlds manage

conflicting temporalities (e.g. Reinecke and Ansari 2015) in their collaborative effort towards B2B innovation. Consequently, during innovation they will have to establish temporary collectives in which stakeholders´ engagement may vary in terms of duration, frequency, level and intensity (Storbacka et. al. 2016; Nambisan et. al. 2017).

Relational connections emerge as stakeholders engage in resource sharing and integration for value co-creation with other stakeholders during innovation, thereby taking up specific roles or participating in specific innovation activities that connect them (Chandler, 2015; Storbacka et. al., 2016). The latter connects stakeholder engagement to network theory (Granovetter, 1985), investigating the structural properties (e.g., centrality, density or brokering role of a stakeholders, see Borgatti & Foster, 2003 for a more extensive overview) on how stakeholders are embedded within their innovation network. The constellation of stakeholders engaging during innovation co-creates the value of the connections or the so-called 'social capital' (Borgatti et. al., 2003; see Hardwick et. al., 2019 for supplier-customer engagement and Agnihotri, 2020 for customer-sales organization engagement in B2B settings) that emerges within the innovation networks.

The relational connections will evolve and continuously change according to the stage and type of innovation activities in which stakeholders engage. The relational properties may involve the amount and types of relationships as well the properties linked to the structural position (e.g., centrality, power) of a stakeholder within the innovation network (Storbacka et. al., 2016). These relational properties are in a constant flux, as relationship properties might change and new stakeholders enter or existing one leave the service ecosystem.

In section 3 we propose how service design principles can steer the temporal and relational connections throughout the stakeholder engagement journey.

2.2.2. Structural versus emerging engagement

The context of complex inter-organizational collaboration and engagement during B2B innovation can be described from the lens of 'Grand Challenges' research (Ferraro, Etzion & Gehman, 2015) in which three core facets are key in analyzing the 'Grand Challenge' for B2B innovation engagement: (1) complexity due to the nonlinear dynamics between many stakeholders, (2) uncertainty about the nature of the problems and their evolution for all engaged stakeholders, and (3) evaluative as problems entail multiple evaluation criteria as well as different jurisdictional angles leading to new problems.

These facets make it difficult for innovation stakeholders to determine 'ex ante' what external resources they would need and how they could be integrated. As a result, strategic innovation initiatives are often emergent as they are not explicitly articulated (Deken, Berends, Gemser & Lauche, 2018) due to an uncertain, complex and evaluative context (Ferraro et. al., 2015).

Even though service ecosystems should provide an architecture of participation (e.g. platform) (Lusch et. al., 2015) to ensure both value creation and value capture among stakeholders (Reypens et. al., 2016), a major challenge remains balancing the openness to change and transition next to a stable and transparent context in which stakeholders can engage (Blasco-Arcas et. al., 2020). The ability of ecosystems to enable constellations of stakeholders to adapt to environmental change and competitive turbulence that create new innovation avenues, has been conceptualized as 'structural flexibility' (Lusch & Nambisan, 2015). The processual as well as temporal nature of stakeholder engagement throughout innovation extends structural engagement with emerging engagement. Emerging engagement goes beyond structural flexibility as it better captures the complex, uncertain and evaluative context (Ferraro et. al., 2015) of inter-organizational innovation trajectories. The latter is linked to oscillation of stakeholders in their transition from subjects (i.e., directing engagement towards other stakeholders) to objects (i.e., having engagement directed towards them) and ensures that engagement platforms are able to evolve in view of the changes over time (Blasco-Arcas et. al., 2020*)*.

Therefore, the configuration of the ecosystem (i.e., inter-organizational innovation network) should embed both opportunities for stakeholders to engage in a formal structured manner and to allow emergent engagement resulting from the flexibility and openness of the platform.

In section 3 we demonstrate how service design principles can balance structural and emerging stakeholder engagement throughout the innovation process.

2.2.3. Orchestration mode of stakeholder engagement during B2B innovation

In view of the complex temporal and relational properties of stakeholder engagement and its emerging nature over time we propose a hybrid orchestration mode (Reypens et. al., 2019) to engage stakeholders during their innovation trajectories. Within innovation networks, Reypens et. al. (2019) have described two types of orchestration modes: (1) a dominating approach in which the focal firm sets the agenda, recruits the stakeholders and uses contracts as the coordinating mechanism to steer relationships (Kazadi, Lievens & Mahr, 2016), and (2) a consensus approach where all stakeholders negotiate the agenda, engage in a voluntary way and predominantly use trust to manage relationships. In order to manage the diversity and the number of stakeholders both consensus-based and dominating orchestration modes are required (Reypens et. al., 2019. The dominating orchestration ensures a more formalized, structured approach, while the consensus-based approach allows emerging engagement between stakeholders to unfold within the innovation network.

Oliveira and Lumineau (2017) also propose the joint and complementary use of contracts next to integrators (i.e., firms whose core function is to coordinate and facilitate collaboration) to coordinate interorganizational project networks. As contracts can remain unchanged throughout an innovation project, this may create barriers to coordinate or enable stakeholder engagement. Integrators can compensate for this lack of flexibility enforced through contracts (Oliveira et. al., 2017). As such, stakeholder engagement could be enabled through contracts illustrating a structured, dominating

orchestration mode and through integrators that fit a more consensus-based orchestration mode that can allow for emerging engagement to take place. Contracts are in place to 'steer' interorganizational project networks, while integrators tend to 'connect' the stakeholders within the networks (Oliveira et. al., 2017).

A major challenge therefore lies in the inter-temporal use of different orchestration modes that are able to balance the more structural and formal coordination of stakeholder engagement next to a more open, adaptive coordination mode needed to enhance emerging engagement (Oliveira et. al., 2017; Lethinen et. al., 2019; Blasco-Arcas et. al., 2020; Storbacka et. al., 2016).

Hybrid orchestration will adapt organization according to the transitions between phases and activities in the stakeholder engagement journey within the context of the innovation project.

In section 3 we propose how service design principles can be linked to specific orchestration modes that guide stakeholder engagement and disengagement within the innovation network.

3. Integrating service design for stakeholder engagement during B2B innovation processes

Complex challenges within B2B settings, such as responding to sustainability and digitalization trends, push these firms to embrace new innovation methods that help them to manage disruptive change. One of these innovation methods is design thinking (DT), which has emerged as an innovation management practice emphasizing a human-centered innovation process of user interactions, creativity and learning mindsets and rapid prototyping activities, performed by multi-disciplinary teams (e.g. Lockwood, 2009; Seidel and Fixson, 2013; Liedtka, 2015). Design principles, as an essential part of innovation and change, become embedded in wider innovation problem-solving, transferring practices of designers into innovation managers' repertoires (Johansson-Sköldberg et al., 2009). Design thinking promises various benefits, such as increased innovativeness (Brown, 2008; Martin, 2009), the identification and interpretation of market signals and aesthetic and symbolic value

through user-centered choices (Dell'Era & Verganti, 2010), working on 'problems that matter' (Brown & Katz, 2011), differentiation opportunities in light of increased competition (Veryzer & Borja de Mozota, 2005; Nakata & Hwang, 2018), a positive impact on firms' innovation performance through cognitive bias reduction (Liedtka, 2015), a positive impact on firms´ capabilities, represented by their resources, processes and mindsets (Carlgren et al., 2014; Nakata & Hwang, 2020) that constitute design thinking for new product and service performance(Nakata et. al., 2020), as a dynamic capability that may impact product utility and novelty depending on problem (un)familiarity (Nagaraj, Berente, Lyytinen, Gaskin, 2020). A recent study has investigated the role of artificial intelligence as it improves the scalability of the innovation process providing solution to problems that are more highly user-centered compared to human approaches (Verganti, Vendraminelli & Iansiti, 2020).

Design' has been proposed as a crucial driver of service innovation (e.g., Oström, Bowen, Patricio & Vos, 2015; Zheng et. al. 2018), as a successful outcome of customer involvement (e.g., Storey & Larbig, 2018), from a multidisciplinary approach (e.g., Patricio, Gustafsson & Fisk, 2018; Joly et. al., 2019) and through customer experience and customer journey management (e.g., Kuehnl et. al., 2019). Recent research has indicated the relevance of service design principles to actually tackle the complex challenges and problems B2B firms experience today (Nakata & Hwang, 2020; Zheng, Lin, Chen & Xu, 2018; Cankurtaran et. al., 2020). However, up to date, we lack a thorough understanding of how design principles can support stakeholder engagement during B2B innovation trajectories. Below, we propose how service design can be the trigger to develop and initiate activities to (dis)engage stakeholders aimed at value co-creation throughout B2B innovation processes (Joly, Teixeira, Patricio & Sandriorgi, 2019). We start by describing, the stakeholder engagement journey (4.1.) thereby integrating innovation phases and service design phases. We next connect (4.2.) service design to and formulate propositions on (1) the type of stakeholders and engagement behaviors from a multi-level and platform perspective and (2) when stakeholders should stakeholders engage/disengage throughout the B2B innovation process. Finally, we formulate potential research avenues and questions for the propositions that we developed (4.3.). (See Table 1)

3.1. A stakeholder engagement journey through a service design perspective

In this article we have adopted the concept of an engagement platform that specifies the protocols (Lusch & Nambisan, 2015) on who, when and how stakeholders engage in what type of collaborative activity throughout the innovation process. We link the conceptualization of the engagement platform to the concept of the customer journey (Lemon & Verhoef, 2016) and propose '*stakeholder engagement journey'* describing all the stakeholders´ interactions (i.e. physical and virtual touchpoints) enabling resource exchange and integration that co-create value among stakeholders during B2B innovation (Breidbach, Brodie & Hollebeek, 2014; Hollebeek, 2019; Blasco-Arcas et. al., 2020). This stakeholder engagement journey therefore captures stakeholders´ experiences during the innovation process across multiple interactions (Lemon & Verhoef, 2016; Jonas et. al., 2018).

Patricio, Gustafsson & Fisk (2018) stated that focusing on the innovation of complex networks and ecosystems through a 'service design' lens would enhance the actual research impact of service innovation and design. Research on New Product and Service Development (NPD/NSD) has proposed primarily sequential processes with a range of activities within specific stages from strategy formulation to final commercialization of the offer (e.g., Griffin, 1997; Cooper, 2008). Stakeholder engagement during B2B innovation trajectories rely on dynamic, iterative and nonlinear interactions. The orchestration of these settings requires a more flexible, more holistic approach that can be provided through service design and can extend the relatively more structured new service development stages (Patricio et. al., 2018).

Recent literature has linked several 'design stage' typologies to the innovation process. A three-stage innovation process (i.e., disrupt, define and develop) has been adopted to integrate design principles for B2B innovators to deal with 'wicked problems' (e.g., Cankurtaran et. al., 2020) following the COVID-19 pandemic. Nakata et. al. (2020) propose three design thinking activities for innovation: (1) discovery, (2) ideation and (3) experimentation. Yu & Sangiorgo (2018) use service design to NSD

activities and suggest 4 phases: (1) design, (2) analysis, (3) development, and (4) launch. We adopt and extend the design thinking activities of Nakata et. al. (2020) for studying the stakeholder engagement journey during innovation and add an 'implementation phase' comparable to the 'launch' phase described by Yu et. al. (2018). The inclusion of 'discovery' before designing ("*developing service concepts and generating ideas*", See Yu et. al., 2018, p. 41) or 'defining' (e.g., Cankurtaran et. al., 2020) a service concept better captures a service design lens and addresses the uncertain, complex and evaluative context (Ferraro et. al., 2015) of multi-stakeholder innovation projects. Linking design and innovation phases then leads to the following steps: (1) understanding the innovation need through *discovery*, (2) generation and development of potential concepts and answers through *ideation*, (3) testing and refining concepts/prototypes through *experimentation*, (4) preparing for and evaluation of (post) commercialization through *implementation.* We integrate these stages into the stakeholder engagement journey during innovation in figure 1.

- INSERT FIGURE 1 HERE-

The design mindset 'human centeredness' is crucial to trigger discovery (Nakata et. al., 2020), in which naïve, open questioning through abductive reasoning as 'the logic of what is' (Martin, 2009, p. 27) could challenge existing solutions and open up new avenues. Cankurtaran et. al. (2020) notices that especially B2B businesses seem able to forward existing solutions/resources to innovation problems without really probing more deeply into their own needs as well as building empathy for stakeholders´ experiences. This 'design' approach could enable stakeholders to better explore and understand the problem that should be related to the diversity of institutional contexts of every individual stakeholder.

During ideation the abductive reasoning has been proposed as an avenue for creative ideas and multiple views (Nakata et. al, 2020) especially when constraints exist between a diversity of stakeholders regarding competition and interdependent resources. In line with the findings of Yu et.

al. (2018) designers could use codesign workshops and creative supporting tools to visualize and connect latent stakeholder needs with possible solution concepts.

The experimentation phase has been linked to the design thinking mindset of 'learning by failing' (Nakata et. al., 2020) as it will encourage stakeholders to question and disconfirm and test all developed service concepts and prototypes. Case study research (Yu et. al., 2020; Lehtinen et. al., 2019) has demonstrated that designers (teams) can develop and visualize specific planning and communication tools, organize design workshops that specify collaboration and engagement within multidisciplinary teams throughout the project life-cycle. Yu et. al. (2020) explicitly emphasize the importance of these designers to trigger commitment and reduce relational frictions by 'mediating' between different stakeholders.

During the implementation phase designers can help stakeholders during prelaunch, launch and postlaunch review (Yu et. al., 2020) by using personas and storytelling techniques describing the end user experience. Also, end user narratives from expert interviews, design workshops and observation aid in delivering a vivid end user experience (Ludwig, Wang, Kotthaus, Harhues & Pipek, 2017). Designers can support implementation and help a focal firm as well as stakeholders to build organizational capabilities through teaching and coaching employees fostering the adoption of a more human centered mindset.

This above discussion on some fragmented studies combining service design steps/activities and the stages of the innovation process only 'scratches the surface' in terms of B2B stakeholder engagement during innovation. Hence, in the next section we link service design back to the earlier stakeholder engagement concepts (See section 2 & 3) and develop propositions on the role of service design thinking for enabling stakeholder engagement and disengagement during the innovation project life-cycle.

3.2. Service design enabling stakeholder engagement

3.2.1. Service design to manage different stakeholders and engagement dimensions

The number of stakeholders within an innovation network can impact network opacity (Reypens et. al., 2019) defined as the difficulty to observe network relationships when high numbers of stakeholders are involved during innovation. High levels of network opacity create a barrier for negotiations and the development of trust among stakeholders. The diversity of stakeholders may reduce the legitimacy of the focal firm or orchestrator when knowledge and expertise is spread among various stakeholders. Design teams might develop visual planning tools throughout the entire innovation process that communicate the specific roles of the stakeholders and provide transparency on the nature of the activities and interactions that will take place during the project life-cycle (e.g. Lethinen et. al., 2019). Designers can help in connecting different stakeholders with a diversity of know-how and expertise thereby bridging and enhancing collaboration throughout the stakeholder engagement journey. Hence, we propose the following:

Proposition 1: Service design activities can help to address the challenges related to the number and diversity of stakeholders engaged within an innovation network.

Stakeholder engagement within complex B2B innovation settings can be linked to cognitive, emotional and behavioral dimensions of engagement. Jonas et. al. (2018, p. 404) defined the type of antecedents related to these dimensions. Cognitive engagement antecedents are (1) '*self-representation'* that will indicate the individual´s stakeholder engagement motive to obtain a strong position within the innovation network, (2) '*resource dependence'* would reflect an individual´s stakeholder dependence on the engagement of other stakeholders for their own benefit, and (3) '*hierarchical level*' referring to a cognitive engagement dimension that is linked to the hierarchical position of a stakeholder within the innovation network. Stakeholders´ engagement will also be emotionally determined by the '*friendship'* they experience and '*trustworthiness*' they perceive about other stakeholders´ engagement over time. Finally, a '*common goal*' is the behavioral dimension that motivates

stakeholders to engage based on the '*perceived purposeful behavior*' other stakeholders demonstrate in achieving that goal. Also, the '*institutional arrangements'* refer to the setup and development of shared rules, norms and values that motivate stakeholders to engage within the innovation network. Stakeholders´ cognitive, emotional and behavioral motivations to engage may create a form of conflict or tension as each stakeholder needs to balance the needs and motivations of the other stakeholders involved throughout the engagement journey(s) (Alexander & Jaakkola, 2018). Designers can help in balancing these different stakeholder contexts and try to enhance commitment and trust within the innovation network (Yu et. al., 2018). Active informing (Lethinen et. al., 2019) through planning and visualization tools allow designer teams to develop clarity on the nature of the engagement required throughout the innovation process. We can formulate the following proposition:

Proposition 2: Service design activities can help to address the challenges related to conflicting views within innovation networks following the different cognitive, emotional and behavioral engagement dimensions/motives.

3.2.2. Service design to manage multi-level engagement platforms

From a systemic perspective stakeholder engagement takes place within a multiple stakeholder innovation network in which value creation and appropriation is not limited to individual (i.e., micro-level) or constellations of actors/stakeholders (i.e., meso-level), but to the service ecosystem (i.e., macro-level) as a whole. (Hillebrand, Driessen & Koll, 2015; Alexander & Jaakkola, 2018). As a consequence, innovation managers need to balance the different goals, motives, behaviors and expectations and temporal horizons on all three levels of engagement: (1) engagement of an individual stakeholder, (2) engagement of constellations of different actors (e.g. multidisciplinary teams), and (3) the entire innovation network. Platforms (Storbacka et. al., 2016) are positioned at the center of the service ecosystem (e.g., innovation network) and are the key intermediary in which a focal firm or orchestrator organizes stakeholder co-creation activities (Blasco-Arcas et. al., 2020). Designers can

help in balancing the potential conflict that arise from the multi-level dynamics within innovation networks. Communication and visualization tools can be embedded throughout the engagement journey to better align individual stakeholder, stakeholder teams and innovation network expectations and goals. Moreover, design principles can assist orchestrators or focal firms in developing the appropriate platform architecture. As a result, we formulate the following proposition:

Proposition 3: Service design activities can help to develop and balance the multiple views related to the multi-level engagement platforms.

3.2.3. Service design to manage temporal and relational connections

An innovation network engagement is characterized by temporal connections between stakeholders that are ongoing and continually changing. The present-day connections have emerged from past experiences and will impact future ones (Chandler et. al., 2015). Stakeholders that engage during innovation will establish temporary collectives, in which stakeholders´ engagement may vary in terms of duration, frequency, level and intensity (Storbacka et. al. 2016; Nambisan et. al. 2017). Lethinen et. al. (2019) touched upon the issue of the 'temporal dynamics' of stakeholder engagement and disengagement within innovation networks over time. However, these practices are far from clear in extant research. Exclusion of external stakeholders during the early stages of innovation could enhance harmony for the internal stakeholders and secure a go-decision for the innovation project (i.e., focal firms, employees, suppliers) (Aaltonen, Kujala, Havela, 2015; Lethinen et. al., 2019). Designer teams can deliberately disengage stakeholders as too much transparency and information may create a bottleneck for moving forward with planning. When establishing further plans, engaging external stakeholders was deemed necessary by the designer team to assure future stakeholder engagement (Lethinen et. al., 2015).

Next to the temporal aspect of stakeholder engagement, the relational connections will also evolve and continuously change according to the stage and type of innovation activities in which stakeholders engage. The relational properties may involve the amount and types of relationships as well the properties linked to the structural position (e.g., centrality, power) of a stakeholder within the innovation network (Storbacka et. al., 2016). Designers can take up their roles as communicators, connectors and activators (e.g. Yu et. al., 2018) to ensure that the required stakeholders and stakeholder constellations engage throughout the innovation process. Hence, we formulate the following proposition:

Proposition 4: Service design activities can help to develop and fine-tune the inter-temporal dynamics and relationships of stakeholder engagement during innovation.

3.2.4. Service design to manage structural and emerging engagement

Inter-organizational innovation networks should develop both formalized structures for stakeholder engagement as well as open, flexible platforms that allow engagement to emerge. Therefore, the processual as well as temporal nature of stakeholder engagement throughout innovation extends structural engagement with emerging engagement and reflects the complex, uncertain and evaluative context (Ferraro et. al., 2015) of inter-organizational innovation trajectories. Designers can support stakeholders to embrace the temporal, uncertain and complex issues of the innovation project. More specific, designers can trigger active dialogue and feedback through workshops that enhance empathy (Lethinen, et. al., 2019; Nakata, et. al., 2020) among stakeholders regarding why, when and how they can engage throughout the project life-cycle. In doing so, designers can use visualization and communication tools and methods that trigger creative contributions and establish new connections within the innovation network that result in common goals and narratives among different stakeholder teams. We develop the following proposition:

Proposition 5: Service design activities can help balance the need to steer structural engagement next to enhancing emerging engagement.

3.2.5. Service design to manage hybrid orchestration modes

We proposed a hybrid orchestration mode (Reypens et. al., 2019) to engage stakeholders during their innovation trajectories in which dominating orchestration ensures a more formalized, structured approach, while the consensus-based approach allows emerging engagement between stakeholders to unfold within the innovation network. A major challenge for these inter-collaborative innovation networks therefore lies in the inter-temporal use of different orchestration modes that are able to balance the more structural and formal coordination of stakeholder engagement next to a more open, adaptive coordination mode needed to enhance emerging engagement (Oliveira et. al., 2017; Lethinen et. al., 2019; Blasco-Arcas et. al., 2020; Storbacka et. al., 2016).

Hybrid orchestration will adapt network organization linked to the transitions between phases and activities in the stakeholder engagement journey within the context of the innovation project. Designers can fuel creativity of stakeholder (teams) through design workshops that embrace 'abductive reasoning' and 'learning by failing' and point to the emerging collaboration patterns that result from it. As such, designers can connect and integrate structured, formalized settings with more open, creative and flexible settings. We formulate the following proposition:

Proposition 6: Service design activities can help balance different orchestration modes for stakeholder engagement during innovation.

3.3. Research avenues for service design in stakeholder engagement during B2B innovation

Service design activities can help to manage different challenges of stakeholder engagement during B2B innovation. However, many research opportunities exist to deepen our understanding of how stakeholders co-create and capture value in B2B innovation ecosystems. Thus, we offer a research

agenda to advance service design for stakeholder engagement in industrial marketing. Table 1 presents specific research questions for each proposition developed in the previous section.

Service design activities can help to address the challenges related to the number and diversity of stakeholders engaged within an innovation network **(P1).** Developing inter-collaborative innovation networks in B2B settings can be rather complex especially due to the large number and diversity of stakeholders. Most of the literature on managing multi-stakeholder innovation networks looks at the roles of an orchestrators or the focal firm as the initiator for setting up these networks. However, if we acknowledge the potential importance of service design in stakeholder engagement during innovation, research should address how service design activities can be embedded within a stakeholder engagement journey by enabling and facilitating connections between a large diversity of stakeholders.

Service design activities can help to address the challenges related to conflicting views within innovation networks following the different cognitive, emotional and behavioral engagement dimensions/motives (**P2**). A major research gap can be formulated on the role of service design in dealing with conflicting motives, expectations and different engagement contexts of stakeholders within an innovation network. Research avenues therefore exist on how and when service design can be an effective approach to align different cognitive, emotional and behavioral motives throughout the stakeholder engagement journey.

Service design activities can help to develop and balance the multiple views related to the multi-level engagement platforms **(P3)**. The aforementioned challenges (e.g. multitude of different stakeholders, different goals, expectations, temporal horizons and stakeholder contexts) require research to probe more deeply into how service design can balance and integrate these challenges from a multi-level engagement perspective : (1) individual stakeholder (micro), (2) constellations of stakeholders (meso), and (3) innovation network (macro). Moreover, insights are needed on how service design can steer

and enable stakeholders' engagement and disengagement as well as how they can facilitate the architecture of engagement platforms during the stakeholder engagement journey.

Service design activities can help to develop and fine-tune the inter-temporal dynamics and relationships of stakeholder engagement during innovation **(P4)**. Stakeholder engagement is characterized by temporal horizons in which stages of (dis)engagement for stakeholders evolve throughout the innovation process. Research on how and when service design can facilitate the temporal dynamics of stakeholder (dis)engagement in terms of optimal duration, frequency and intensity during this innovation engagement journey is lacking.

Service design activities can help balance the need to steer structural engagement next to enhancing emerging engagement **(P5)**. In complex, uncertain and dynamic innovation networks stakeholder engagement is never fixed, but evolves and emerges throughout the innovation process. In view of the different phases and innovation activities formalized structures for engagement need to be complemented with more open, flexible and emerging engagement patterns. Current research does not provide us with a coherent understanding of how service design may enable and bridge both structured and emerging engagement during innovation.

Service design activities can help balance different orchestration modes for stakeholder engagement during innovation **(P6)**. In view of the structural and merging stakeholder engagement that evolves during inter-temporal dynamics within the stakeholders engagement journey a hybrid orchestration mode would be needed. However, to date, no specific studies have integrated the role of service design in facilitating stakeholder engagement patterns (e.g. structural versus emerging) according to specific orchestration modes (i.e., dominant or consensus-based) and have investigated the factors that might mediate/moderate this relationship.

-INSERT TABLE 1 HERE-

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Figure 1 : The stakeholder engagement journey during innovation

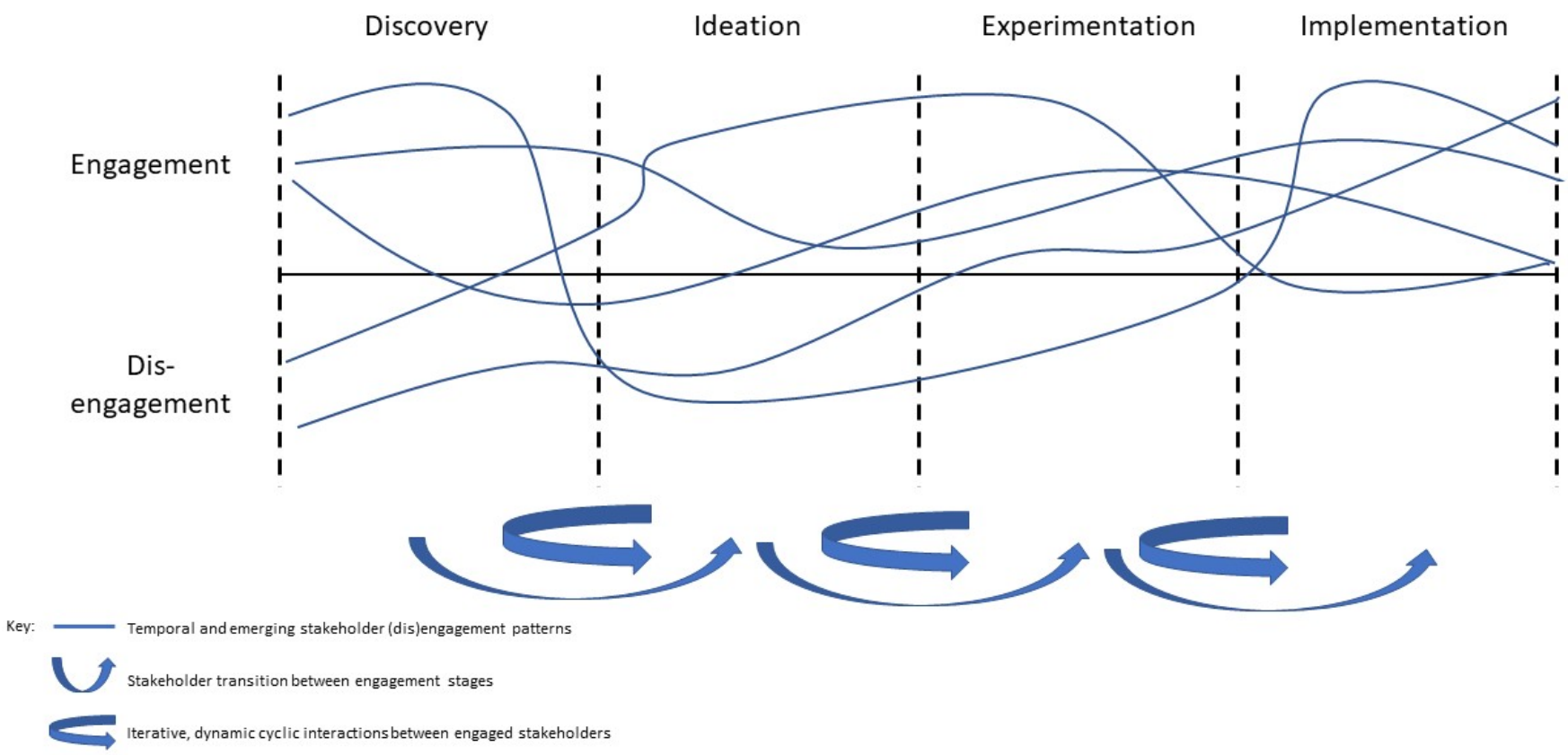

Table 1: Research propositions and questions on stakeholder engagement during B2B innovation

Research propositions	Research questions
Proposition 1 : Service design activities can help to address the challenges related to the number and diversity of stakeholders engaged within an innovation network.	* In what ways can service design support and facilitate negotiations and the building of trust to enable stakeholder engagement within large innovation networks? How can these service design activities be integrated within the stakeholder engagement journey? * How can service designers enhance the transparency of and ensure the stakeholder connections within an innovation network with a large diversity of stakeholders? How can service designers help in steering engagement of non-obvious stakeholders (e.g. NGO´s)? * What theories can explain how inter-organizational collaborations can leverage service design activities to optimize the stakeholder engagement journey?
Proposition 2: Service design activities can help to address the challenges related to conflicting views within innovation networks following the different cognitive, emotional and behavioral engagement dimensions/motives.	* How can service design manage (potential) conflict among engaging stakeholders within an innovation network and throughout the engagement journey? * How can service design contribute to the alignment of different engagement contexts as well as different expectations and motives of stakeholders within an innovation network? * How, when and under what conditions do specific cognitive, emotional and behavioral engagement motives impact (also mediate or moderate) service design´ effectiveness throughout the stakeholder engagement journey? And how should service design´ effectiveness be conceptualized and measured during a stakeholder engagement journey?
Proposition 3: Service design activities can help to develop and balance the multiple views related to the multi-level engagement platforms.	* How can service design balance the different goals, motives, behaviors and expectations as well as temporal horizons on all three levels of engagement (i.e., individual stakeholder, constellation of stakeholders and innovation network)? * What (multidisciplinary) theoretical lenses can contribute to the use of service design perspective on the micro (i.e., individual stakeholder), meso (i.e., stakeholder teams) and macro (i.e. innovation network) level as well as their multi-level integration? * How can service design enable value creation and capture within an innovation network throughout the stakeholder engagement journey? *How can service design support and help defining the development of stakeholder engagement platforms and their architecture?
Proposition 4: Service design activities can help to develop and fine-tune the inter-temporal dynamics and relationships of stakeholder engagement during innovation.	* How, when and under what conditions can service design steer the 'temporal dynamics' of stakeholder engagement and disengagement within innovation networks throughout the engagement journey? * How can service design help in optimizing what stakeholder (constellations) engage when during the engagement journey in terms of duration, frequency, level and intensity?

	* What new theories may explain the inter-temporal dynamics of stakeholder engagement during B2B innovation trajectories?
Proposition 5: Service design activities can help balance the need to steer structural engagement next to enhancing emerging engagement.	* How can service design enable the integration of both formalized structures for stakeholder engagement as well as open, flexible platforms that allow engagement to emerge? * How can service design trigger stakeholders´ acceptance and willingness to engage due to the uncertain, complex and temporal dynamics during stakeholder engagement journeys? * How can service design support and enhance connections and relationships within innovation networks and hence contribute to the development of emerging engagement throughout the stakeholder engagement journey?
Proposition 6: Service design activities can help balance different orchestration modes for stakeholder engagement during innovation.	* How can service design help balance hybrid orchestration modes to steer inter-temporal dynamics throughout the stakeholder engagement journey? * How can service design help in implementing a specific orchestration mode (e.g. dominant versus consensus-based) during the stakeholder engagement journey? * How is service designs impact on hybrid orchestration influenced by the specific competences, skills, mindset and attitudes of the stakeholders, market turbulence and level of novelty/innovativeness of the innovation project throughout stakeholder engagement journeys?