Two qualitative case studies on network governance in Swiss transit station district development
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ABSTRACT

Designing station districts to support transit-oriented development (TOD) requires multi-actor collaborations across sectors, planning scales, and administration levels. Dedicated planning processes are rare and perceived differently by the relevant actors. Previous TOD studies have shown that actors respond to this challenge with network governance, forming networks through a bottom-up approach to integrating development policies and processes. This article examines whether and how network governance occurs for transit station districts in two Swiss case studies. Through a qualitative analysis of the role of network formations in actors’ handling of governance challenges, the findings demonstrate that actors learn about plurality and structure collaborative operations management through network governance. The article suggests that statutory planning authorities and public transport operating agencies promote the profile of station districts’ spatial imaginaries so local practitioners acknowledge the benefits of dedicating resources to networked development orchestration.

Introduction

Transportation and urban planning must become more sustainable to tackle global challenges (Creutzig et al., 2016; Geels et al., 2017). Transit-oriented development (TOD) contributes to this transition by aligning urban planning with mass transit stations (Calthorpe, 1993; Qviström & Bengtsson, 2015). Following this approach, transit stations and their neighborhoods (i.e., transit station districts) provide mixed-use areas with well-designed access to public mass transit and seamless transfers to sustainable inner-city transportation modes. These modes and mass transit options become more attractive for users (Bertolini, 1996; Blad et al., 2022).

To develop a station district in a common direction to support TOD, actors from different sectors and multiple planning scales and administration levels – public transport providers, public authorities, and private developers – must collaborate (Hickman et al., 2021; Papa & Bertolini, 2015). As a jurisdiction – to entrust selected actors with the tasks, competences, and responsibilities for development – is unavailable (Müller, 2023; Stadler Benz & Stauffacher, 2023), station district development often lacks consistent governance, with each party operating in ways specific to particular organizations, sectors, planning scales, and administration levels (Bertolini et al., 2012; Stepanova & Polk, 2023). Dedicated development processes are rare and, if available, guided by informal planning procedures and contested by actors (Albrechts & Balducci, 2013; Scholl, 2017).

Previous TOD research discusses network governance as a bottom-up mode if dedicated processes and jurisdictions are lacking from the top down (Dirghayani et al., 2020; Mu & De Jong, 2016). Network governance denotes how informal actor networks unfold as guiding structures in different forms and on varying rungs to support process integration (Mu & De Jong, 2016; Provan & Kenis, 2008). In addition to focusing on vertical alignment across planning scales and administration levels within a sector, network governance allows for the horizontal integration of sectoral policy avenues. It emphasizes synchronizing developments along vertical and horizontal axes, which is vital to TOD (Dirghayani et al., 2020; Thomas et al., 2016).

The governance challenges of station district development have been roughly outlined, and research on whether and how network governance may occur is lacking. This article aims to tackle this gap by conducting two qualitative case studies. First, the governance challenges that actors face in developing station districts are explored. Second, it is clarified how actor networks may have unfolded as guiding structures to tackle them. The article aims to answer two research questions (RQs):

- RQ-1: What are the governance challenges of station district planning?
• RQ-2: How do actor networks form to respond to governance challenges?

The case studies focus on two Swiss station districts, Bern Wankdorf and Ostermundigen, with multiple commonalities. Both are part of the Bernese agglomeration and represent transforming commercial land-use structures through housing development changes to transition from industry-dominated areas to service centers with enhanced public spaces (AUSTA der Stadt Bern, 2023). They are subject to multiple development projects concerning settlement areas or public transport infrastructures and involve collaborations between actors.

The analysis of two Swiss station districts has the potential to provide results and insights that can be transferred to other contexts in which actors strive to integrate urban development with transportation planning. If station districts exhibit patterns of land-use intensification, constellations of actors, and organizational affiliations comparable to those in these cases, as outlined in the case study contexts section, then similar governance challenges may occur to which network formations present a potential response and remedy.

In this article, a synopsis of the relevant theory is provided. The case studies and methods used are presented. Then, the results are discussed with suggestions for further research and limitations. Finally, the article is concluded with implications for practitioners and policymakers.

Theoretical background

Transit station districts’ development potential and implications for multi-actor collaborations

The TOD planning principle exploits the nexus of transportation and urban planning to form the basis for sustainable development (Qviström & Bengtsson, 2015; Reusser et al., 2008). It aspires to integrate urban development with mass transit services and infrastructures and shift planning for compact spaces toward a shared vision (Calthorpe, 1993; Geels et al., 2017). TOD suggests that planners combine intensive, mixed land use with multimodal transit accessibility and enhanced spatial connectivity between transportation modes to make public transport and human-powered mobility more appealing (Blad et al., 2022; Papa & Bertolini, 2015).

Transit station districts support TOD by offering attractions and public spaces with easy access to mass transit (Bertolini, 1996; Cervero, 1998). Station districts include transit stations, station areas, and adjacent neighborhoods (Brons et al., 2009; De Wijs et al., 2016; Wicki et al., 2023). Broadly supported development across each foci helps foster alignment beyond the boundaries of sectors, planning scales, and administration levels (Reusser et al., 2008; Stadler Benz & Stauffacher, 2023).

Guiding potential developers of a station district in a common direction is challenging. Coherent development trajectories that support TOD are indistinguishably framed (Thomas et al., 2018; Zemp et al., 2011). Previous studies have implied that current policies inadequately reflect multi-actor collaborations, using spatial imaginaries similar to transit station districts (e.g., multimodal transportation, railway transit, and shared mobility hubs; Banerjee, 2022; Blad et al., 2022; Stadler Benz & Stauffacher, 2023; Weustenenk & Mingardo, 2023). Prevailing governance modes do not appropriately consider the urban planning—transportation nexus (Hirschhorn et al., 2020; Van Acker & Triggianese, 2020).

In Switzerland, Stadler Benz and Stauffacher (2023) investigated problem structuring, the primary challenges in developing multimodal transportation hubs, and the cross-scalability of trajectories by including actor perspectives from local, regional, and national planning scales, as well as municipal, cantonal, and federal administration levels. As a central challenge for implementation governance, they emphasized the “multitude of actors with their different interests, roles, and processes” (p. 106). To explore this in detail, this article aims to unpack the governance challenges in developing two Swiss station districts (cf. RQ-1).

Governance and network governance

Governance refers to “the complex processes and interactions that constitute patterns of rule” and acknowledges “the diverse activities that often blur the boundary of state and society” (Bevir, 2011, p. 2). It includes creating and adhering to rules that governmental, nongovernmental, and private sector actors refer to and comply with (Hirschhorn et al., 2020). For this article, actors are individuals who make decisions and act as members of organizations, including projects, corporations, and other administration types (Burton et al., 2020).

Traditionally, governance modes have been concerned with vertical and top-down alignment of processes between different planning scales and administration levels rather than with horizontal and bottom-up process integration across multiple sectoral policy avenues (Hansson, 2020; Nadin et al., 2021). Network governance is a differentiated approach that revolves around an unaligned, cross-sectoral group of actors who interact to tackle a problem with a shared commitment but without following a prescribed process (Huggins & Thompson, 2022; Knox & Arshed, 2022). While early scholars analyzed organizational networks in corporates, nonprofits, and public administrations (e.g., Fama & Jensen, 1983; Provan, 1980), dedicated network governance research occurred later, focusing on public–private partnerships (Hill & Lynn, 2005) and regional entrepreneurship (Knox & Arshed, 2022). The latter contributions viewed networks as governance modes and an entire network as the unit of analysis rather than single network nodes with their ties (Provan & Kenis, 2008).

Mu and De Jong (2016), adopting a network governance approach to researching TOD, devised a conceptual model with three ascending rungs along which actor networks integrate different policies and planning processes to reduce deficiencies due to fragmented, poor guiding structures in the urban planning–transportation nexus. The rungs describe how network governance addresses the (1) substantive complexity, (2) strategic uncertainty, and (3) institutional deficiency of TOD planning, as outlined in the following section. The case study of Urumqi, China, illustrates Mu and De Jong’s (2016) cumulative “ladder of network governance” (p. 57) by demonstrating how actors achieved mutual recognition, process alignment, and trust along the three rungs while planning for TOD. Dirghahayani et al. (2020) developed this by framing the ladder as a response to poor regulatory planning groundwork for TOD (Newman, 2009). A qualitative study of a developing mass transit corridor in Jakarta, Indonesia, showed how slight network formations helped deal with existing but fragmented regulatory groundwork (Dirghahayani et al., 2020). This article adopts Mu and De Jong’s (2016) model, without the extension of Dirghahayani et al. (2020), as part of its conceptual framework to clarify how actor networks may have formed in two Swiss station districts in response to governance challenges (cf. RQ-2).

Conceptual framework to examine horizontal policy and process integration in station district development

This section develops this article’s conceptual framework using the network governance concept to illustrate how actors may horizontally integrate perceptions, interests, and objectives to address poor guiding structures (Dirghahayani et al., 2020; Mu & De Jong, 2016). Fig. 6 in the data analysis section summarizes the conceptual framework and the article’s RQs, data collection methods, and expected results, thus representing the research framework. Station district project actors could mitigate implementation difficulties by adopting network governance (Dirghahayani et al., 2020). Network governance may target a degree of horizontal policy and process integration, depending on the particular deficiency, distinguishing between the three ascending rungs of Mu and De Jong’s (2016)
cumulative ladder. Rising up the rungs, an informal actor network may unfold as a guiding structure to overcome governance challenges by enabling:

(1). Mutual recognition, awareness of plurality, and information and knowledge exchange between actors to reduce substantive complexity
(2). The management of structures and processes, goal alignment, and collaboration between actors to reduce strategic uncertainty
(3). Rule changes and trust between actors to reduce institutional deficiencies

Initially, scholars interpreted network governance as a novel, universal response to coordination failures of dominating hierarchical modes and did not distinguish between different forms. To unpack effective network management, Provan and Kenis (2008) differentiated between three primary forms of network governance based on two design dimensions (cf. Table 1). First, an actor group decides how their network will be brokered, either by all actors in equal shares (i.e., shared participant governance), one organizing actor (i.e., lead organization governance), or somewhere in between. Second, the adopted broker configuration is kept within the network or outsourced to an external provider (i.e., administrative organization governance) that is not a network participant and administers the network (Provan & Kenis, 2008). Dirgahayani et al. (2020) adopted these three forms to reflect on how network governance may occur to target a degree of horizontal policy and process integration (cf. RQ-2) in response to identified governance challenges (cf. RQ-1).

Case study contexts

This study was part of a transdisciplinary research project between Swiss Federal Railways (SBB) and the Swiss Federal Institutes of Technology (Müller et al., 2022; USYS TdLab, 2024). From the case study sample, two station districts of the same size were chosen: Bern Wankdorf and Ostermundigen (cf. Fig. 1). They have the same administrative affiliations with the Swiss Confederation, the Canton Bern, and the Bern-Mittelland District (RSTA des Kantons Bern., 2024). They are connected to the same regional railway network (belonging to SBB, but operated by the Bern-Lötschberg-Simplon Railway (BLS)) and local public transport services offered by BERNMOBIL (tramway and bus) and the Regional Transport Bern-Solothurn (bus; SBB, 2024). Due to these commonalities, most station district development actors are the same, except for local public authorities (Bauer, 2020; Hartmann, 2020). Bern Wankdorf corresponds to a district of the City of Bern, Switzerland’s federal city, which had a permanent resident population of roughly 135,000 in 2022, while Ostermundigen is a municipality with a permanent resident population of approximately 18,000 in 2022 (BFS, 2024).

Bern Wankdorf describes a district of the City of Bern, which includes the railway station of the same name (cf. Figs. 2 and 3). Wankdorf corresponds to a greater development perimeter that covers parts of the Municipalities of Ostermundigen and Ittigen. This perimeter has been a development focus of the Canton of Bern for more than two decades and is the subject of numerous projects and strategic (land-use) plans devised by various actors (BVD des Kantons Bern., 2024). Many of these projects involve the station district. In contrast, strategic (land-use) plans address it as part of the Wankdorf perimeter or even larger development scopes, such as the city or canton. Appendix A summarizes ongoing projects and strategic (land-use) plans.

Ostermundigen’s station district (cf. Figs. 4 and 5) revolves around the municipality’s only railway station (Hartmann, 2020). Although a 1997 cantonal development program focused on the district, no investments occurred. The first development by a (private) owner was the BareTower (Bear Tower) project in 2011. The Poststrasse Süd (Poststrasse South) project followed in 2014 and the Municipality of Ostermundigen passed a land-use plan (Item, 2020). In 2017, the municipality initiated the first total revision of local zone plans since 1995 to harness the increasing development interests of property owners in the station district, including SBB and private developers, and other focal points in Ostermundigen (O’mundo, 2021a; O’mundo, 2021b). Appendix A summarizes these plans and projects.

Methods

Data collection

The data for this study were collected between May 2020 and December 2021. A total of 32 semi-structured interviews of 60 to 90 minutes were conducted in German with station district actors of Bern Wankdorf and Ostermundigen (Charmaz, 2002; Kvale, 1996). The interviewees were public transport providers (N = 16), public authorities (N = 10), local property owners (N = 5), and a local stakeholder group (N = 1; cf. Appendix B). These interviews were used to identify other interviewees (Coleman, 1958).

The interviews explored the case studies’ process settings and guiding structures, signaling potential governance challenges (cf. RQ-1). The interviews were conducted with the help of an interview guide containing generic, open questions (cf. Appendix B; Kvale, 1996), and responses were followed up on with ad hoc inquiries to expand how interviewees, with other actors, responded to challenges (cf. RQ-2).

Documents were studied for both districts to identify their current development processes and planning groundwork and to prepare for the interviews. They contained mass media outputs (N = 5) and public relations and official reporting pieces of public bodies – press releases, mission statements, land-use plans, and a parliamentary intervention (N = 16). Further documentation originated from actors’ internal correspondence – presentations, material from workshops, workshop minutes, and a memo (N = 9; cf. Appendix C).

Data analysis

Following an explorative and reflexive coding and memo-writing approach to analyze the interview transcripts (Braun & Clarke, 2022, 2023), supported by NVivo (March 2020 release) software, the collected data were iteratively inquired into themes and narratives signaling governance challenges (Kohler Riessman, 2008; Ryan & Bernard, 2003) to address RQ-1. For RQ-2, the case-specific challenges were reviewed for actor network formations and their roles in responding to them. To ensure that the study’s theoretical background provided a lens on the empirical analysis and to guide the coding at the primary level, the operationalization presented in Table 2 was used.

In order to interpret and discuss the results and answer the RQs, the themes and narratives identified were reflected upon using the conceptual framework as part of the research framework (cf. Fig. 6). First, to assess the required degree of horizontal integration in the station districts, case-specific governance challenges (cf. RQ-1) were contrasted with ascending deficiency rungs (Dirgahayani et al., 2020; Mu & De Jong, 2016). Second, these degrees were collated with the organizational network formations found in the qualitative data (cf. RQ-2),
which were interpreted using the three primary forms of network governance (Provan & Kenis, 2008). Table 3 provides a step-by-step overview of how the explorative and reflexive coding and memo-writing approach incorporated the research framework for this article.

Results and discussion

This section discusses the results, with a summary in Table 4.

Bern Wankdorf

RQ-1: Diverging identifications with the district space at the core of actors’ fragmented knowledge

Actors involved in local projects followed coordination frames and strategic plans established at larger planning scales. They neglected to create a coherent, dedicated development trajectory for the station district. The city and canton integrated area development projects and inner-city transportation planning within the Wankdorf perimeter, whereas SBB mandated railway infrastructure projects through a regional coordination program (Interviewees 4, 5, 9, 13). Actors emphasized vertical process alignment in these programs, mainly isolating railway infrastructure planning from urban settlement and transportation development.

An exception was the station redevelopment project that SBB initiated in 2018, which selectively involved the City of Bern and faced implementation difficulties due to insufficient horizontal process integration. Although the project completed a joint exploration phase that included a test-planning study, close collaboration between SBB and the city subsequently diminished (Interviewees 2, 13, 21). Poor alignment of user forecasts and what different dimensions of the planned underpass would mean for the budgeted costs led to a deadlock, which continued until the project’s discontinuation in 2020 (Interviewees 2, 10, 12, 13).

The fragmented knowledge of the station’s future importance signaled divergence between actors. This may be traced to different identifications of SBB and the city with the station district, which underpinned their respective development policies. Given their
involvement in developments around the station, city representatives wanted the underpass to provide a corridor for human-powered mobility, connecting two developing areas (Interviewees 2, 3). For SBB, layover safety, transit service punctuality, and efficient project completion were crucial (Interviewees 7, 12). They identified with the station insofar as it was one node within the regional coordination program’s scope to contribute to a targeted railway network capacity increase (Interviewees 7, 13, 15).

These governance challenges may point toward rungs of Mu and De Jong’s (2016) cumulative ladder of TOD deficiencies. The challenges of isolated district projects and fragmented knowledge of future station frequencies and functions signal substantive complexity. This resulted from the gap in dedicated integrating structures, which enabled the co-existence of contrasting identifications and policies among actors. The challenge of meaningful, continuous process and policy integration in the project demonstrates that unaligned knowledge and identifications may imply severe implementation difficulties – especially if an undertaking requires intensified collaboration beyond the prevailing silos in the district. This challenge also suggests strategic uncertainty that complicated finding common ground.

RQ-2: Mobility hub network

As suggested by SBB and the Hauptstadtregion Schweiz (Swiss Capital Region) regional development association, the Bern Wankdorf station district became a pilot in 2019 to test a coordination process devised by SBB to support the iterative design of Mobilitäts hubs (mobility hubs; Bauer, 2020; Friedli, 2020). This process included two workshops with city representatives, the canton, SBB (railway infrastructure provider,
public law property owner), BERNMOBIL (tramway infrastructure and service provider), BLS (railway service provider), and Energie Wasser Bern (Energy Water Bern; public law property owner). During these workshops, they created a legally nonbinding plan depicting the district’s current and future projects and mobility offers and the space needed for them (Bauer, 2021). Most actors saw the benefits beyond the process (to be repeated annually) in gathering diverse developers to create a network dedicated to the station district that balanced vertical and horizontal alignments of interests (Interviewees 1, 2, 6, 8, 16).

As the first vessel to connect actors in this context and fill the governance gap, the mobility hub network reduced substantive complexity in the district’s development. With SBB as a leading actor, this network resembled a lead organization governance form (Provan & Kenis, 2008). In line with Mu and De Jong’s (2016) results in Urumqi, this formation enabled the exchange and pooling of knowledge on future projections and project pipelines, even if it was too late in the station’s redevelopment (Interviewees 7, 11, 13). It prepared common ground to address strategic uncertainty and collaborative operations management (Interviewee 3). Dirgahayani et al. (2020) highlighted the rung’s preparatory character in their case study’s analysis and how actors could not remedy omissions on forthcoming rungs. In contrast to the Chinese and Indonesian case studies mentioned earlier, the interactions on this rung were less disputed and substantial in output within the mobility hub network, except for the plan creation. This plan’s nonbindingness may have been why collaboration remained lighthearted, and participants benefited from getting to know each other. The following quote from a city representative underpins this (translated from German):

“By...getting to know each other...you come to understand each other. Then, one says, ‘We had the same aim. So, the bottom line is getting a working infrastructure up and running’” (Interviewee 2).

**Osternundigen**

**RQ-1: Unaligned overall development due to actors’ contrasting needs and time horizons**

The Municipality of Osternundigen initialized the total revision of local zone plans in 2017 as a partial response to the increasing development interests of property owners in the station district. As it was the first total revision in 20 years, it was vital to prepare for pressing issues, such as Osternundigen’s transition from a large village to a small town (Iten, 2020). These issues required spatial consideration at the local planning scale. The district’s private developers pushed for a district-focused specification of how they could seize property-related windows of opportunity without waiting to complete the revision’s large-scale “bureaucratic” processes (Interviewees 17, 18, 19).

SBB’s developers remained reserved about developing their properties in the station district (Interviewees 20, 27), continuing the “tradition” that SBB’s local property development was limited to conducting explorative studies (Interviewees 17, 19). SBB acknowledged the potential for growing frequency and a more vibrant public space due to the recently opened ground-floor uses and urban significance of the BäreTower (Bear Tower) and Poststrasse Süd (Poststrasse South) projects (Interviewee 20). Its railway infrastructure planners would redevelop Osternundigen’s railway station and lay the foundation to implement quarter-hour intervals for regional trains only after 2030 (Interviewees 28, 29). Deeming this renewal as the driver of a profitability-driven window of opportunity, SBB’s developers would operate with a time horizon for station redevelopment that was longer than those of private developers (Interviewees 20, 21, 30).

Reflecting on the case-specific challenges against Mu and De Jong’s (2016) cumulative ladder suggests that a gradually widening governance gap may complicate the handling of strategic uncertainty created by actors’ needs and time horizons. Existing horizontal ties between the municipality, private developers, and SBB’s developers proved meaningful in recognizing mutual interests and contrasting conceptions about station district development and reduced substantive complexity. The frame of the total revision provided an umbrella for developers to
<table>
<thead>
<tr>
<th>Analytical interest points behind the concept</th>
<th>Concept</th>
<th>Definition</th>
<th>Operationalization</th>
<th>Quote from semi-structured interviews (translated from German)</th>
<th>Subcodes from data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ-1 Governance</td>
<td>Challenge</td>
<td>A condition requiring skill, determination, and energy to be achieved or dealt with (Macmillan Dictionary, 2023).</td>
<td>The ways in which actors consider rules and patterns of rules in development processes (Bevir, 2011).</td>
<td>“Some want to move forward quickly, but others think it does not hurt if we have revised zone plans, but we are not investing there currently” (Interviewee 17).</td>
<td>Aligning concepts, narratives, projections, and needs</td>
</tr>
<tr>
<td>RQ-1 Governance</td>
<td>Substantive complexity of TOD planning</td>
<td>“...a situation of policy-making and implementation that involves multiple actors and is characterized by multiple perceptions and contested knowledge” (Mu &amp; De Jong, 2016, p. 56).</td>
<td>Critical conditions and moments in development processes that require intensified interaction and communication between actors (Stadler Benz &amp; Stauffacher, 2023).</td>
<td>Not available</td>
<td>Clarifying the operation mode and leadership</td>
</tr>
<tr>
<td>RQ-1 Governance</td>
<td>Strategic uncertainty of TOD planning</td>
<td>“...a situation where actors in the networks behave in a reflective way, anticipating strategies of actors, reacting to changes in the environment and making unexpected choices” (Mu &amp; De Jong, 2016, p. 56).</td>
<td>Insufficient rule changes and trust between actors (Dirgahayani et al., 2020; Mu &amp; De Jong, 2016).</td>
<td>Not available</td>
<td>Diversifying the actor group</td>
</tr>
<tr>
<td>RQ-2 Organizational network formation</td>
<td>Institutional deficiency of TOD planning</td>
<td>“...an environment where the rules of the networks are inadequate, unclear or even conflicting, and coordination mechanisms are lacking for interaction and production of collective actions” (Mu &amp; De Jong, 2016, pp. 56-57).</td>
<td>Unclosed group of three or more actors who periodically interact and horizontally integrate development processes and policies to address a deficiency (Knox &amp; Arshed, 2022; Mu &amp; De Jong, 2016).</td>
<td>“We have tried to create joint agreements. It is more of a brief coordination, so these organizations talk to each other and proceed in a coordinated way” (Interviewee 19).</td>
<td>Substantive complexity due to isolated district projects and fragmented knowledge of future station frequencies and functions</td>
</tr>
<tr>
<td>RQ-2 Organizational network formation</td>
<td>Shared participant governance</td>
<td>“...is governed by the network members themselves with no separate and unique governance entity” (Provan &amp; Kenis, 2008, p. 231).</td>
<td>A network formation governed by multiple participating brokers (Provan &amp; Kenis, 2008).</td>
<td>Not available</td>
<td>Strategic uncertainty due to the co-existence of contrasting identifications and policies among actors</td>
</tr>
<tr>
<td>RQ-2 Organizational network formation</td>
<td>Lead organization governance</td>
<td>“...all major network-level activities and key decisions are coordinated through and by a single participating member, acting as a lead organization” (Provan &amp; Kenis, 2008, p. 235).</td>
<td>A network formation governed by a single participating broker (Provan &amp; Kenis, 2008).</td>
<td>Not available</td>
<td>Strategic uncertainty due to actors’ needs and time horizons</td>
</tr>
<tr>
<td>RQ-2 Organizational network formation</td>
<td>Administrative organization governance</td>
<td>“...a separate administrative entity is set up specifically to govern the network and its activities” (Provan &amp; Kenis, 2008, p. 236).</td>
<td>A network formation governed by a single nonparticipating broker (Provan &amp; Kenis, 2008).</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Table 2: Conceptual operationalization for qualitative data analysis and generated subcodes (adapted from Brooks et al., 2015; Meijer and Van Der Krabben, 2018).
become vocal about their future intentions. As the revision advanced, these votes signaled a demand for strategically orchestrating the plurality of potential development processes to ensure that temporally distributed actions align with the same vision for the district.

**RQ-2: Central construction site network**

In 2019, the municipality began to explore three development foci within the total revision frame – *Zentrale Baustellen* (central construction sites; ZBS; O’mundo, 2021a; O’mundo, 2021b). One ZBS addressed the station district (Interviewee 19; Iten, 2020). In contrast to the 1997 cantonal development program, the municipality intended the early integration of its development policy and forthcoming planning process with local property owners (Interviewee 17). It proposed joint test planning to private developers and SBB to study specific subjects, such as housing development, traffic management, and district access points (O’mundo, 2021a). Participation had vesting financial conditions, as the municipality would partially fund the study through money from the participating actors. By signing a joint planning agreement, nine of the twelve property owners entered test planning. They completed the study in early 2020. From then on, the municipality would plan single property developments with respective owners (Interviewee 19).

Using Provan and Kenis’ (2008) primary forms, the ZBS frame shows the contours of a network with a single-actor brokerage, highlighting the municipality’s critical role as the lead organization that initialized, cultivated, and maintained collaboration while being a property owner. The ZBS network’s first activities established a vision for the station district and a policy to structure future collaborations. The test-planning study resulted in a broad-based big picture that property owners, the municipal council, and competent cantonal agency endorsed (Interviewee 19). In this study, the municipality defined the strategic ground rules for developing the district to give actors transparency on potential property actions for which the statutory planning authorities would adjust building laws to allow more intensive land use (Interviewee 17).

For mitigating strategic uncertainty, there are a few differences compared to the Chinese and Indonesian case studies mentioned earlier. As in Ostermundigen, orchestration efforts in Urumqi came from a public body, albeit a dedicated coordination committee with extensive resources to initiate multiple process management strategies. These addressed a larger and transportation-focused development scope compared to the ZBS frame that has, so far, mainly covered spatial and settlement issues (Mu & De Jong, 2016).

### Table 3

Step-by-step overview of the explorative and reflexive coding and memo-writing approach used for qualitative data analysis (adapted from Braun and Clarke, 2022, 2023).

<table>
<thead>
<tr>
<th>Step</th>
<th>Explorative and reflexive thematic analysis activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explore and become familiar with the data by delving into the collected materials (documents and interview transcripts) for the first time and writing memos about personal reflections and initial analytical thoughts.</td>
</tr>
<tr>
<td>2</td>
<td>Initially code the data using the conceptual operationalization (cf. Table 2) and link codes to existing or newly written memos.</td>
</tr>
<tr>
<td>3</td>
<td>Generate initial themes and narratives (signaling governance challenges [cf. RQ-1] and actor network formations [cf. RQ-2]) from the codes and memos, and continually reflect, review, and redevelop these themes and narratives.</td>
</tr>
<tr>
<td>4</td>
<td>Code the data a second time using the conceptual operationalization (cf. Table 2) and link codes to existing or newly written memos.</td>
</tr>
<tr>
<td>5</td>
<td>Generate from the codes and memos refined, reinterpreted, and renamed themes and narratives (signaling ascending rungs of network governance and the TOD deficiencies being addressed [cf. RQ-1], and suggested primary forms of network governance [cf. RQ-2]), and continually reflect, review, and redevelop these themes and narratives.</td>
</tr>
<tr>
<td>6</td>
<td>Write the results and discussion section of this article to report on the themes and narratives that are considered the richest and most compelling, along with selected data extracts.</td>
</tr>
</tbody>
</table>

### Table 4

Selected case-specific results.

<table>
<thead>
<tr>
<th>Key aspects</th>
<th>Bern Wankdorf results</th>
<th>Ostermundigen results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance challenges</td>
<td>Fragmented knowledge of future projections and actors’ diverging identifications with the district</td>
<td>Actors’ development time horizons and needs for concrete follow-up actions</td>
</tr>
<tr>
<td>Initiating and leading actor(s) of network formation</td>
<td>SBB (lead) and <em>Hauptstadtregion Schweiz</em> (Swiss Capital Region) association</td>
<td>Municipality of Ostermundigen</td>
</tr>
<tr>
<td>Guiding structures through network governance</td>
<td>Mobilitätshub (mobility hub) network fosters knowledge exchange and actors’ awareness of their plurality</td>
<td><em>Zentrale Baustelle</em> (central construction site) network enables management of joint operations and temporally distributed processes</td>
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<td>Resemblances with primary forms</td>
<td>Lead organization governance</td>
<td>Lead organization governance</td>
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While Ostermundigen shared Jakarta’s primary driver of strategic uncertainty – necessary goal alignment between planning groundwork under revision and private developers pursuing different interests – the case-specific, network-leading organizations’ options to reduce this uncertainty differed. A public law operating agency led Jakarta’s transit corridor development and interacted with private property owners to support TOD, acting as a coordination body with no financial resources to support flanking area developments. The agency also faced implementation difficulties with private developers because the regulatory groundwork that underlay land releases for public infrastructures excluded elements vital to TOD, such as pedestrian and cycle paths (Dirgahayani et al., 2020). The Municipality of Ostermundigen’s involvement was as the statutory planning authority (for the total revision and tramway infrastructure development) and a local property owner. A municipal planner summarized how they used the resulting negotiation position to (1) lead the way with property development investments and (2) require developers to support potential land releases for the tramway project in exchange for relaxing land-use conditions (translated from German):

Suppose we must acquire land for the tramway development. We should not have lengthy negotiations. We record this in the bilateral planning agreements with the developers. If building law changes occur for your property, you give us the land (Interviewee 19).

**General discussion, suggestions for further research, and limitations**

The case studies differ in the deficiencies addressed by the organizational network formations (substantive complexity in Bern Wankdorf; strategic uncertainty in Ostermundigen). Both networks followed lead organizations, SBB and the Municipality of Ostermundigen. Provan and Kenis (2008) proposed that the lead organization governance form enables effective network management if a network formation exhibits a (1) low and centralized trust level, (2) moderate participant number, (3) low goal consensus, and (4) moderate need for network-level competencies. Findings for both case studies on the second and third factors align with this proposition, while case-specific outcomes on trust levels require a differentiated view. The different rungs on which the mobility hub and ZBS networks tackled deficiencies suggest that trust in Ostermundigen may not have been as low as in Bern Wankdorf due to previous ties between actors and the resulting awareness of the plurality of interests and conceptions. A few persistent fixations do not signal higher trust, including SBB never following up on its explorative studies.

Investigating the need for network-level competencies would offer a suggestion for expanding the case analyses. For example, it could be promising to clarify how participants deal with the burden of being part of formations and how degrees of network interdependencies and exposures affect acquiring the necessary competencies (Provan & Kenis, 2008). To zoom into tasks and interactions within networks and how participants simultaneously serve external demands and needs, conducting a single qualitative in-depth case study oriented toward Knox and Arshed’s (2022) work on regional entrepreneurial ecosystems is proposed. They inductively explored related network formation in the Tay Cities region in Scotland, deriving three relational work dimensions of formations and how degrees of network interdependencies and exposures differed. A similar inquiry into a transit station district in the Tay Cities region in Scotland, deriving three relational work dimensions of formations and how degrees of network interdependencies and exposures differed. A similar inquiry into a transit station district in the Tay Cities region in Scotland, deriving three relational work dimensions of formations and how degrees of network interdependencies and exposures differed. A similar inquiry into a transit station district in the Tay Cities region in Scotland, deriving three relational work dimensions of formations and how degrees of network interdependencies and exposures differed. A similar inquiry into a transit station district in the Tay Cities region in Scotland, deriving three relational work dimensions of formations and how degrees of network interdependencies and exposures differed. 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development policies should include measures beyond creating and revising single pieces of the regulatory jigsaw. A Swiss example is Verkehrsrdscheiben (Multimodal Transportation Hubs) Program launched in 2021 by the Federal Department of the Environment, Transport, Energy and Communications, cantonal conferences, and municipal associations. This information and networking platform aims to spread knowledge of how actors can emphasize integrated and networked station district developments based on existing laws and instruments.

CRediT authorship contribution statement

Stefan Markus Müller: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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Supporting data are unavailable, as the participants did not agree to have their data shared publicly due to the nature of this research.

Appendix A. / B. / C.

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