

SHALL WE DANCE? HOW TRANSITION INTERMEDIARIES SET UP AND LEAD LOCAL SUSTAINABILITY TRANSITION FOCUSED ON INNOVATION INITIATIVES

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ABSTRACT

Local sustainability innovation transition projects are often coordinated by transition intermediary actors and financed by public funds. Previous research has focused on how institutionalized and commissioned intermediaries help to translate local niche activities to a more global sphere, and to the regime level. However, from a micro perspective, little is known about the patterns of the interplay between the actors within local sustainability innovation transition projects and their intermediaries. Moreover, we are missing a comprehensive overview of how intermediaries stimulate the implementation of sustainability innovation transition-related strategies and measures. The six case studies and their innovation journeys presented in this paper contribute to developing an understanding of interaction, dynamics and patterns between heterogeneous actors at niche and regime levels who collaborate in publicly funded sustainability innovation transition projects.

Keywords: sustainability innovation, sustainability transitions, civic participation, intermediaries, innovation journey.

1. INTRODUCTION

Sustainability innovation transitions are fundamental long-term and multi-dimensional societal transformation processes that establish a socio-technical shift towards more sustainable ways of living (Markard et al., 2012). We witness such transitions taking place in business organizations as well as in cities and municipalities, and requiring cooperative solutions and joined forces (Benz, 2007). Scholars identified initiatives that enable the common participation of important actors as key mechanism for innovating towards sustainability (Garbe, 1982; Boyte, 2005; Silver et al., 2010).

Many of these initiatives are publicly funded and led by transition intermediaries such as universities or NGOs (Wolf et al., 2021). Intermediaries are organizational or individual actors who influence sustainability transitions by connecting actors' skills and resources. They support local projects in forming a shared development trajectory towards a global niche with shared rules and practices (Geels and Raven, 2006) and in accelerating niche innovation solutions to the regime level (Hargreaves et al., 2013; Kivimaa et al., 2019).

In this context, we recognize that many intermediaries experience difficulties or even fail in initiating and implementing participatory processes, while others are successful. Yet, we so far miss an understanding of the patterns in the interplay between heterogeneous actors that transition intermediaries should strive for to achieve the necessary broad participation and lasting implementation of developed solutions (Hargreaves et al., 2013; Kivimaa et al., 2019a; Wolf, 2021). Therefore, this paper uses six case studies of publicly

funded sustainability innovation transition initiatives led by intermediaries to identify interaction patterns and strategies.

2. THEORETICAL BACKGROUND AND RESEARCH FOCUS

The Multi-Level Perspective (MLP) and the Strategic Niche Management (SNM) theory offer perspectives to understand and conceptualize the challenges of intermediaries in sustainability innovation transition processes at a generic level. Both theories highlight that sustainability transitions involve interactions between the spheres of the

- “landscape (macroeconomic and macro-political trends, significant environmental changes, (...) etc.),
- regime (the deep structure of the socio-technical system involving alignment between technologies, infrastructure, institutions, (...) etc.), and
- niches (spaces where various technical, social and organizational innovations are (...) tested)” (Kivimaa and Kern, 2016, p. 206).

Publicly funded sustainability innovation projects usually include actors from the regime such as political institutions (Celata and Coletti, 2018; Turnheim and Geels, 2019) and from the niche(s) such as citizens involved in grassroots initiatives (Burgess et al., 2003; Blake and Garzon, 2012; Middlemiss, 2010; Kirwan et al., 2013; Seyfang and Longhurst, 2016).

One of the significant challenges in sustainability innovation projects is to scale up niche experiments to achieve a transformation of the overall socio-technical system (Wittmayer et al., 2017; Gliedt et al., 2018). Innovations developed in niches need to be translated to mainstream regimes (Raven et al., 2010; 2011 Hargreaves et al., 2013; Seyfang and Longhurst, 2016). Intermediaries are essential catalysts between niche and regime actors in such acceleration processes (Hargreaves et al., 2013; Smink et al., 2015). They contribute with resources and knowledge to managing the niche-regime interface (Bush et al., 2017; Gallagher et al., 2018; Kivimaa et al., 2019). Thus, it is usually a transition intermediary that applies for funding to develop a participatory process, implementing and leading it - very often a university or an NGO (Wolf et al., 2021).

However, still little is known about the patterns in the interplay between niche, intermediary and regime actors in the sustainability innovation transition context. A reality check on strategies that intermediaries use for supporting the development of innovative solutions in publicly funded initiatives is still missing (Kivimaa et al., 2019). Scholars thus call for research to investigate intermediaries' approaches for stimulating and coordinating sustainability innovation transition (Howells, 2006; Wolf, 2021).

Our study explores intermediary strategies to stimulate participation in six sustainability innovation transition initiatives involving niche and regime actors in four European countries. By identifying intermediary activity and actor interaction patterns, we aim at contributing to the yet neglected investigation of micro aspects of multiple-actor network processes in publicly funded sustainability innovation transition projects. Our research question reads as follows: “How do transition intermediaries set up and coordinate participatory processes that focus on sustainability innovation between niche and regime actors in publicly funded local initiatives?”. Based on the identified patterns and phases, we develop an exploratory framework of actor interaction patterns and intermediary coordination activities.

3. METHODS

Considering the need to investigate sustainability innovation solution development and implementation in-depth, we chose a qualitative exploratory research design built on six case studies (Flick, 2009; Yin, 2009). Such a comparative approach appeared to be adequate as the processes we study are bound by time and place (Creswell, 1998).

3.1 SAMPLING

The cases were chosen according to the following criteria:

1. Sustainability innovation oriented local initiatives, that
2. involved niche and regime actors and
3. were set-up and led by publicly funded transition intermediaries such as universities and/or NGOs, and
4. provided us with access to long term and complete transition process data.

To satisfy the fourth criterion, we mixed the outlined purposive sampling strategy with a convenience sampling approach (Flick, 2009). Overall, we involved six case studies, as identified in Table 1.

Project Name	Region	Duration	Focus	Intermediary actor	Regime actors	Niche actors
LA21	Austria (Tyrol)	24 months (from Aug/16 - Aug/18)	Add another storey of the current childcare facility	NGO - Regional office LA21 Office for village renewal	Regional government/municipality Architects	Citizens, Leisure Clubs, Teachers, Businesses (eg: town bakery).
LA21	Austria (Vorarlberg)	27 months (from May/17 - Aug/19)	Broaden the spectrum of the community's future with the help of participatory process	NGO - Regional office LA21 Office for citizen engagement and participation	Regional government/municipality	Citizens, Leisure Clubs, Businesses (restaurant, commerce)
LA21	Austria (Upper Austria)	17 months (from Nov/18 - May/20)	Strengthen the quality of living, including the SDGs	NGO - Regional office LA21 Agenda 21 network Upper Austria	Regional government/municipality	Citizens, Leisure Clubs, Businesses (bakery, commerce)
Plastic Twist	Greece (Thessaloniki)	24 months (from Jan/18 - Dec/19)	Raise awareness on plastic in the sea with campaigns and activities that	NGO - MedSOS	Policy Makers, Plastic Industry, Researchers,	Entrepreneurs, Plastic Experts, Citizens, Students,

			involve the target group		Companies, Investors, Cultural Associations	Plastic Makers, Blue Barrel Project.
Plastic Twist	Switzerland (Lucerne)	24 months (from Jan/18 - Dec/19)	Achieve a behavioral change in dealing with plastic into the direction of revaluation and reuse	Lucerne University of Applied Sciences and Arts	Policy Makers, Plastic Industry, School Teachers, Researchers, Municipality, Investors.	Entrepreneur, Citizens, Students, Micro BioMik, Plastic Maker, FabLab Workers.
Plastic Twist	Netherlands (Rotterdam)	24 months (from Jan/18 - Dec/19)	Build awareness and grow a rethinking plastic movement, mobilizing entrepreneurs and create a critical mass of people	NGO - BlueCity	Policy Makers, Plastic Industry, Municipality, Port of Rotterdam, Companies, Researchers, Universities, Investors.	Plastic Experts, Entrepreneurs, Citizens, Students, Plastic Makers, The Waste Net.

Table 1. The six case studies

The first three case studies were part of the Lokale Agenda 21 (LA21), funded by the Austrian federal bodies and involved local initiatives from Oberhofen (Tyrol), Schwarzenberg (Vorarlberg) and Kremsmünster (Upper Austria). LA21 projects aim to include a broad basis of citizens to reach equal cooperation that transfers the concerned citizens into actors. Choosing various regions from one country (Austria) enabled us to visualize the differences and similarities in patterns and actions across the cases. The intermediary actors (process facilitator from an NGO) was hired with the help of the publicly funded LA21 project.

The other three cases were part of the EU horizon 2020 funded PlasticTwist project, which aimed at “developing plastic revaluation approaches by setting up and sustaining local innovation systems” (Wolf et al., 2021) in Lucerne (Switzerland), Rotterdam (Netherlands) and Thessaloniki (Greece). The publicly funded transition intermediaries were a university and two NGOs. These intermediaries applied a generic methodology to enable niche-regime fit. The PlasticTwist cases complement the findings from Austria with the broader perspective of research findings from very heterogeneous countries in Europe. They were considerably more complex as more actors were involved, and the activities were less defined at the beginning. This sampling enabled us to go beyond a specific geographical area and sustainability innovation project type, which increases the generalizability of our findings.

3.2 DATA COLLECTION

Data from the LA21 initiatives was obtained through 22 semi-structured narrative expert interviews. The interviews were conducted with project directors, involved participants, intermediaries and LA21 state office managers. The interview guideline contained

questions about motivational aspects and about the framework conditions to set up participatory processes. These interviews help to understand the nature of participation in each community. They were recorded and transcribed verbatim, resulting in 62 pages of interview protocol.

The data collected from the PlasticTwist Project was obtained from a body of text containing internal and external project communication (45 pages) and three rounds of semi-structured interviews. The first round of problem-centred interviews (Witzel, 2000) with the team leader from each transition intermediary aimed at understanding the set-up processes. Therefore, interviews were held after the first year of the project was completed, and interviewees were asked questions about the actors involved and the main events organized. A round of follow-up problem-centred interviews with the same three interviewees 11 month later asked what happened in the solution development phase. Finally, we conducted 15 semi-structured interviews (Flick, 2014) with the main actors identified from the first interviews to enrich the findings with perspectives from other involved actors. The interview transcripts were recorded and transcribed verbatim, resulting in 164 pages of interviewing protocol.

3.3 DATA ANALYSIS

The data were analyzed separately using qualitative content analysis (Miles et al., 2013) and Atlas.TI or MaxQDA as coding software. First, they were coded in vivo independently by two researchers following an abductive approach. We negotiated the meanings and incorporated critical activities in “innovation journeys” (Van de Ven et al., 1999). Innovation journeys are maps that relate specific events to actors and points in time (Rip, 2012). Our innovation journeys visualize the from the open coding derived actor categories (intermediary, niche and regime actors), event categories (network building, information and collaboration events) and outcome categories (ideas, workshops and projects, working groups or a document).

The innovation journeys enabled a detailed analysis of the interaction patterns that emerged from activities initiated by the transition intermediaries. This step of the analysis involved several phases: First, only the innovation journey maps from Austria (one example in Figure 2 in the Appendix) were individually analyzed, then discussed and identifiable patterns in each of the cases agreed. The same analysis approach was then applied to the Plastic Twist innovation journeys (one example in Figure 3 in the Appendix), and finally, the findings from the two sub-samples were compared.

4. FINDINGS

From the cross-case comparison, we identified common patterns of niche-regime interaction that we call phases. The six phases resemble a wave-like sequence of opening and closing interaction activities of involved actors within facilitated events. These appeared in all innovation journeys, regardless of the content and complexity of the sustainability innovation transition initiative. In small scale processes such as the Austrian LA21, we observed one sequence, whereas in the more complex Plastic Twist cases, we found that the phases reoccur in two or three loops. The six phases are summarized in Table 2 below.

Phase	Responsible	Activity focus	Funding focus	Actors	Results
1	Intermediary	Project set up	Project management	Intermediary, funding office and external facilitators	Project ready for kick off Events of phase 2 planned
2	Intermediary	Informing, setting up networks, need analysis	Information and network events. Information collection activities	ALL	Network formation Overview on involved and concerned actors and their perspectives Collection of ideas and needs
3	Intermediary	Initial solution development	Draft solutions	Narrow participation: Niche & regime actors particularly affected and local government	Initial ideas Focused events of phase 4 planned
4	Intermediary	Solution extension	Event series to present-collect feedback-extend and select ideas (iterative)	Broad participation: All, but focused according to interest (targeted involvement)	Ideas to be implemented. Artefacts necessary for idea implementation. Implementation plans and groups.
5	Regime actors	Solution implementation	Solution idea implementation, e.g., events, contests, action plan	Responsible subgroups	Solutions implemented Networks created (ready for self-organization?)
6	Regime and niche actors	Self-organization	No funding	Responsible subgroups	Ongoing participation and solution implementation

Table 2. The six phases of interaction patterns to enable sustainability innovation transition.

The phases are described in more detail below.

4.1 PHASES

Phase 1: Project setup phase

The project setup necessitates network building within the project bodies and formal collaboration structure set-up. The focus lies on starting the participatory process. Therefore, the funding body is contacted, administrative and collaborative procedures are set up, and knowledge about the local innovation system is gathered. A major activity is

to define procedures that will guarantee a good in- and external information flow throughout the project. Information flow is planned as a sequence of meetings and information distribution through a website, newsletters, events, or other channels. Further, the intermediaries ensure that the necessary skills and competences are available in the project team. If necessary, external facilitators are called in to plan participatory processes and make sure that they will be facilitated in a professional manner. The latter sometimes also help to create an upbeat vibe and project vision.

Phase 2: Kick-off phase

A kick-off event to bring together relevant actors and start the initiative is designed. This first get-together is conceptualized and implemented as an event that mixes information, collaboration, and network building. Part of the event format explicitly aims at making the different actors talk to each other. How the intermediaries design the participatory processes in this phase, depends from the objectives and the funding conditions of the projects. Within rather cooperative formats, we can see that the participation converts already into profound cooperation between several niche and regime actors who start working together. It is no longer about a singular act of participating but rather the joint attempt to co-create a community within a formalized setting.

Phase 3: Initial solution development phase

During this phase, the initial development of sustainability innovations is facilitated by the intermediaries. This happens through the organization of focused working group events. The intermediaries invite local or regional actors and stakeholders who were identified in phase 2 as those most affected by the change and willing to engage in solution development. Relatively closed groups gather several times to develop proposals for solutions and are stable in group membership. Simultaneously, the intermediaries plan the next phase, which foresees the presentation and extension of the draft solutions to a broader audience in a new event series.

Phase 4: Solution extension phase

During this phase, the intermediaries organize a series of idea rehearsals and workshop events in which initial solutions are presented and extended. Unlike in phase 2, these events encourage the participation of all stakeholders, but in a focused manner. Participants are mixed across niche and regime actor groups. For example, workshops for developing a plastic revaluation toolkit for schools may cause the interest of citizens (kids, parents) as niche and teachers as regime actors, but not of other actors. The emerging working groups feel responsible for and are committed to the implementation of “their” ideas. The results from these events are further event proposals, action plans, contest designs or product prototypes. Often, the broader public is involved in the selection processes of the “best” ideas through a public voting process.

Phase 5: Solution implementation phase

The intermediaries support the earlier formed working groups to implement their project ideas. This partly happens by granting them funding for specific activities like events or meetings, and partly by providing access to expertise or laboratories and by connecting actors to others. The transition intermediaries step back and see it as the responsibility of the involved niche and regime actors to implement their ideas. They, however, ask for regular updates, thereby offering the groups implementation milestones.

Phase 6: Self-organization phase

The self-organization phase starts once the funding of the intermediary in the frame of the sustainability innovation initiative ends. By then, the working groups consisting of niche and regime actors are ideally mature enough to implement and develop the solutions without further support by the transition intermediaries.

4.2 FRAMEWORK DEVELOPMENT

This paper reports how intermediaries set up sustainability innovation focused on participatory processes between niche and regime actors in publicly funded local initiatives. We found from our case studies that the approaches used by the intermediaries resemble each other from a processual perspective, although the topical foci of the initiatives were different. Across cases, we identified six phases of wavelike opening and closing that appeared with the same general niche and regime actor inclusion and interaction patterns: After a first broad gathering to seek and give information, prototype solutions are developed in more targeted events where niche and regime actors collectively work towards solutions. The working groups then open again to a broader audience to discuss and extend the proposals, which are finally implemented by smaller groups. The following Figure 1 summarizes these findings in a conceptual framework:

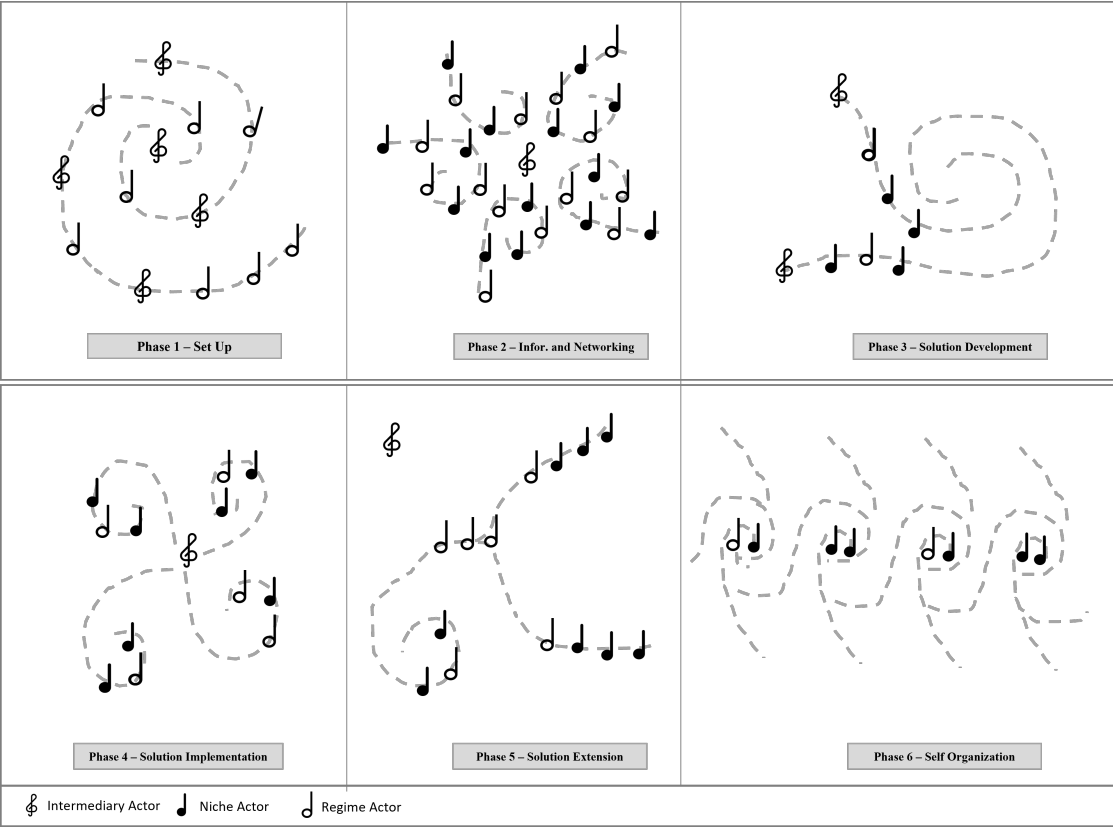


Figure 1. Conceptual framework.

We can see that the intensity of collaboration between different groups varied throughout the process. Still, the patterns resemble a dance choreography with an intense connection between actors, but not all actors are simultaneously on stage. Closed sub-groups appear, partners and rhythms change, but the same choreographer orchestrates all movement, and thus a coherent picture emerges.

5. DISCUSSION

With our research, we discover design patterns that underlie the intermediaries' sustainability innovation facilitating "choreography", which we contribute to the investigation of intermediaries' approaches to stimulate localizing sustainability transition (Howells, 2006). From this symbolic perspective, our innovation journeys can be understood as dance notations, i.e. symbolic representations of dance movement and path mapping. This worked well as methodological means for visualizing patterns to gain an overview of the analyzed processes (Rip, 2012).

Leaving the dance metaphor aside, we complement extant research with insights into the micro aspects of participatory multiple-actor network processes set up and led by transition intermediaries and how they unfold (Kivimaa et al., 2019). We confirm findings in earlier MLP and SNM theory-based research that transition processes in a socio-technical context are non-linear and require the interplay of actors from the niche and the regime level (Rip and Kemp, 1998; Geels, 2012). Our findings also reveal that although not linear at the content level, these processes follow joint development trajectories at the process level. Given that the transition intermediaries were all successful in stimulating collaboration between niche and regime actors, our findings offer empirical insights into strategies of how intermediaries can support sustainability innovation (Kivimaa et al., 2019). We conclude that the strategic trigger to influence such processes lies in the facilitation of a process that purposefully designs the interactions between niche and regime actors, and where the choice of suitable means and ways must be attuned carefully to the respective phase of the sustainability innovation process.

Our research suggests that the research field of sustainability innovation might benefit from including a more comprehensive range of fields that study socio-cultural transformations on a local level. The dominant transition studies investigate large scale transformations of established systems and focus on socio-technological transformational processes (Markard et al., 2012). However, this perspective can only observe specific facets of these processes. Civic engagement is an essential element in sustainable developments (Lexer et al., 2000; Hargreaves et al., 2013). For a profound social transformation, we argue here with Loorbach et al. (2017) that transition intermediaries must consider that individuals need to feel responsible for their actions and recognize their ability to impact transformative processes. This can be supported through settings designed by intermediaries that engage in a participatory culture and cooperation between niche and regime actors.

Despite all similarities, our research also shows the diversity in the intermediaries' approach to participation. Although following the same trajectories, we find single, double, and triple loops of the six phases in the analyzed processes - and various actor groups that become involved depending on the topical focus of the sustainability innovation initiative. This confirms earlier research that assumed that participation is not one concept that suits all - instead, the individual conditions needed to foster public participation have to be taken into account (Silver et al., 2010; Wolf et al., 2021). This dynamic perspective is worth considering in the theoretical discussions about democratic governance that seeks sustainability transition and successful strategies of transition intermediaries (Kivimaa et al., 2019).

6. CONCLUSION, LIMITATIONS AND FURTHER RESEARCH

From our study, we conclude that transition intermediaries that follow the above process trajectory can be successful and need to adapt to the specific local needs. Participation is a crucial part when it comes to sustainability innovation transition on a local level. Our

six cases emphasize the importance of intermediaries and their connecting approaches between niche and regime actors. While developing innovative sustainable modes of producing and consuming within a community, complex problems are faced that call for collective solutions designed in cooperative manners.

Our research also bears implications to policymakers: It contributes to developing guidelines for public bodies and funding organizations to support local projects in overcoming challenges at the niche-regime interface. This study corroborates the claim for proper policy framework conditions to enforce innovative and sustainable strategies and points towards citizens' individual actions and behavior (Lexer et. al, 2000).

We acknowledge that our - in their number limited - case studies deal with different processes of civic wealth creation than for example countries of the global south do. We recommend further examinations about how to stabilize participation within local communities and how intermediaries can support such processes in other environments, beyond the eurocentric view. Additional cases interesting to study would be those that that were not successful, had to be cancelled or when things went wrong.

Our innovation journeys were designed to focus on the actual process and get first insights into how the participants interact. It would be interesting to shed more light on how the intermediaries can influence interaction. This is because it seems beneficial for a process to unfold when the niche actors have a confident, valid trust in their municipality or regime of politics that is in place. The impression emerges that support from the local authority is needed to allow the participatory process to grow into a more consistent form, which points to the concept of governance and its core. In addition to that, we see that this study mainly points to the first five phases until the funding dies out and the self-organization begins. One major difficulty however lies mainly in sustaining this self-organizing and formalization when the process facilitation ends.

Due to our findings and the acknowledgement of their limitations, we invite researchers to investigate self-organized working groups and the roles of transition intermediaries after the funding and what role the heterogeneity of the actors can play in that sense. Additionally, we call for research on how the interaction between niche and regime actors can be influenced furthermore.

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APPENDIX

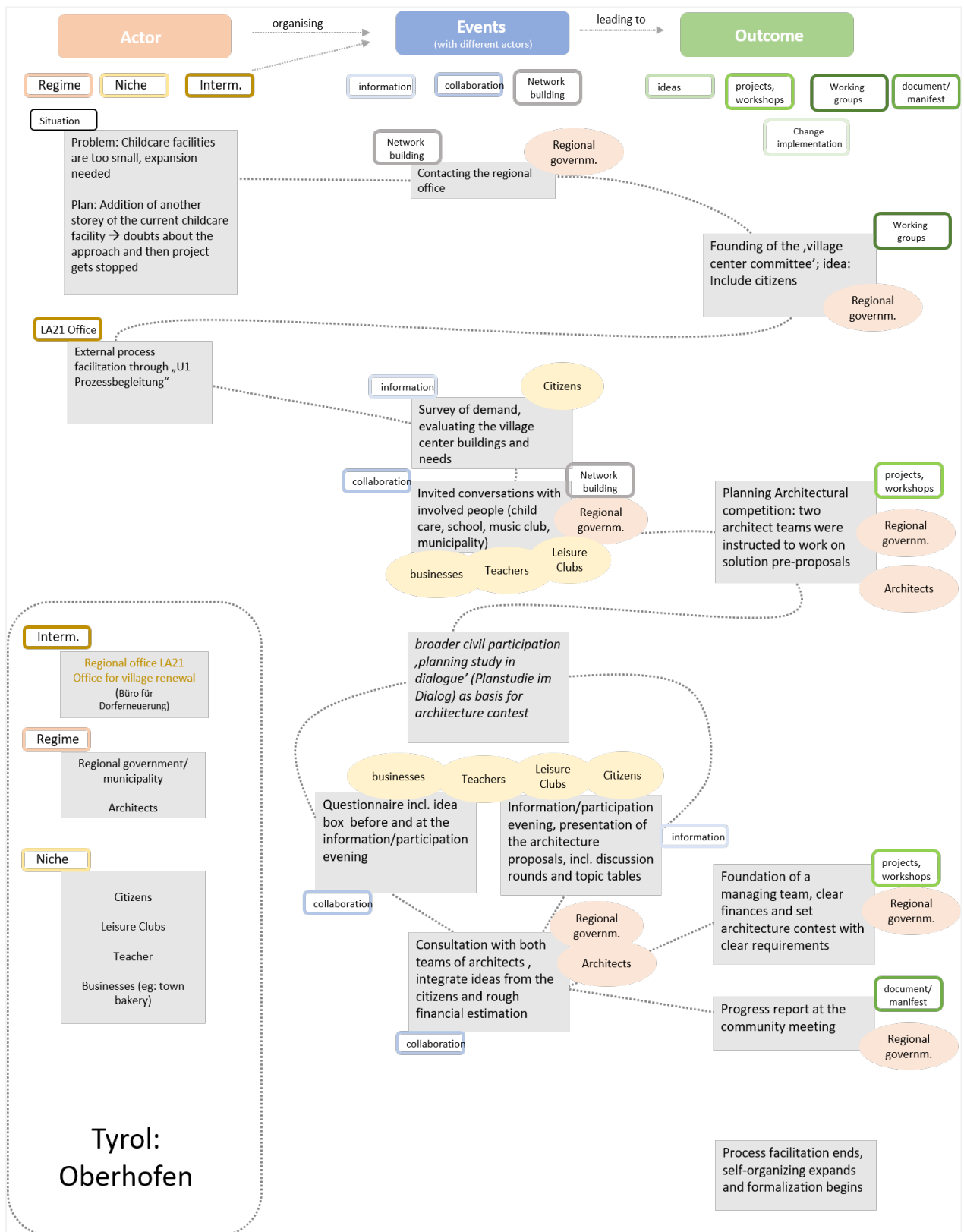


Figure 2. Innovation Journey from LA21 (Austria) – Tyrol

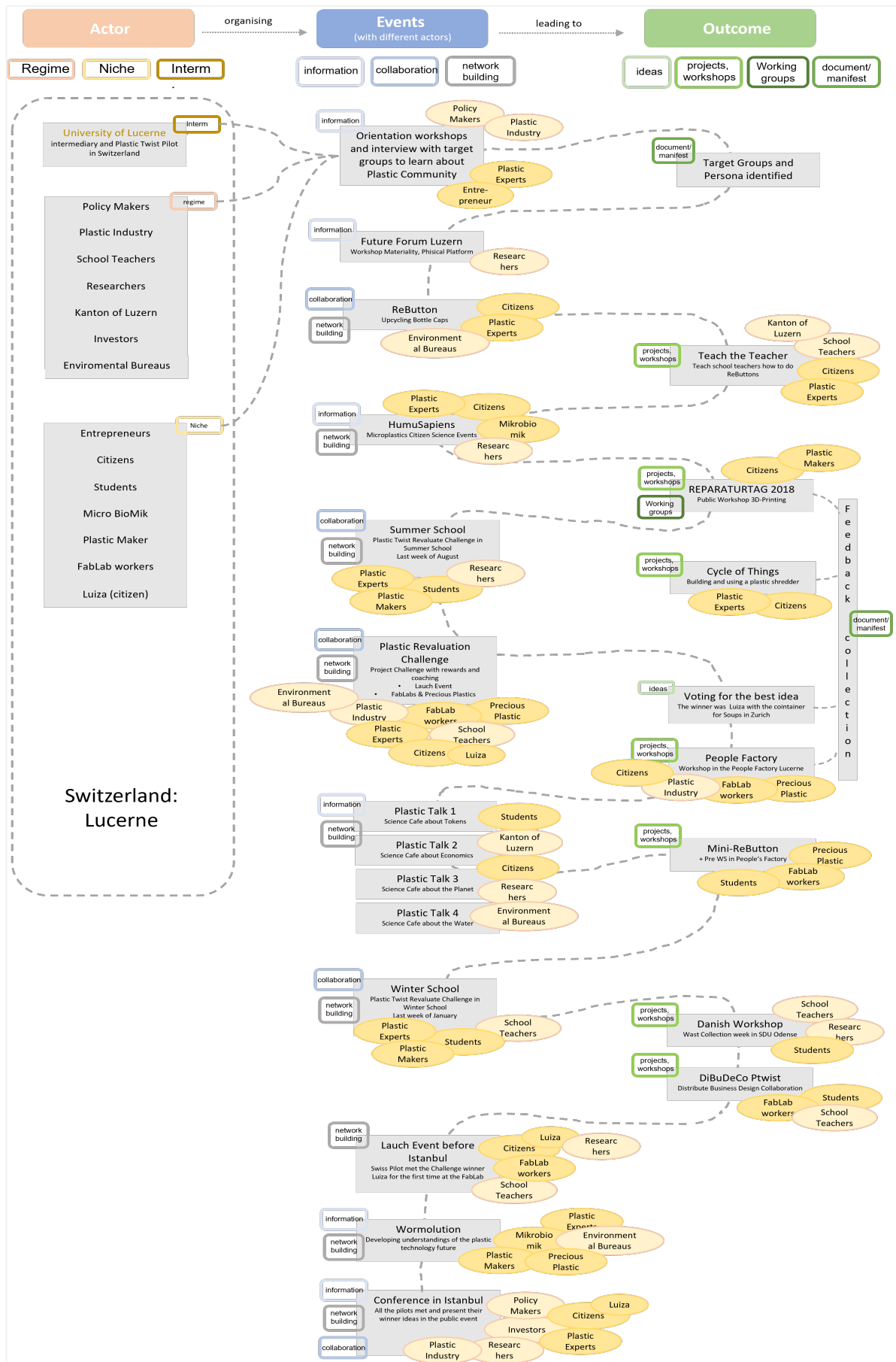


Figure 3. Innovation Journey from Plastic Twist – Switzerland