VILNIAUS UNIVERSITETO
VERSLO MOKYKLA

INTERNATIONAL PROJECT MANAGEMENT PROGRAM

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MASTER FINAL THESIS

INNOVATIVE BEHAVIOR IN PROJECT TEAMS DURING THE IMPLEMENTATION OF MULTI-REGIONAL PROJECTS IN THE XOMETRY COMPANY	**INOVATYVUS ELGESYS PROJEKTŲ KOMANDOSE, ĮGYVENDINANT DAUGIAREGIONINIUS PROJEKTUS XOMETRY ĮMONĖJE**

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Vilnius, 2025

SUMMARY

VILNIUS UNIVERSITY BUSINESS SCHOOL

INTERNATIONAL PROJECT MANAGEMENT PROGRAMME

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INNOVATIVE BEHAVIOR IN PROJECT TEAMS DURING THE IMPLEMENTATION OF MULTI-REGIONAL PROJECTS IN THE XOMETRY COMPANY

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Master thesis prepared 2025, Vilnius

Number of pages: 58

Number of tables: 3

Number of pictures: 6

Number of Appendixes: 1

Short description of the work: This study explores, analyzes, and identifies potential problems related to innovative behavior in project teams within the context of implementing multiregional projects at the Xometry Company.

The problem with this work: Although the mechanisms of innovative behavior in teams are known and project teams are considered as actors of innovation implementation in companies, it is still unclear how innovative behavior of teams is unfolding in multiregional projects and how to manage and support the process of team innovation effectively in a multiregional context.

The aim of this work: through investigation of academic literature on innovative behavior, apply the latest model of team innovation to the project teams of the Xometry Company during the implementation of multiregional projects; identify key characteristics and barriers to innovation in project teams in multiregional projects, and provide possible solutions for overcoming the issues.

The main tasks of the work:

1. Explore academic literature on concepts of innovation, innovations in projects, innovative behavior, and team innovation;

2. Develop research methodology, based on academic literature, find an appropriate framework for analysis of the team innovation process, develop a research model and questionnaire for interviews;
3. Carry out qualitative research, conduct analysis of the obtained data, and relate the data to the existing academic literature;
4. Make conclusions and provide recommendations.

Research methods used in work: critical evaluation of academic literature on innovative behavior in teams, qualitative analysis of the team innovation process in relation to the multiregional projects implementation of the Xometry Company, and interpretation of the thematic analysis results based on the interview data.

Research and results obtained: According to the input–mediator–output logic of the ImpAct Model, during the ideation phase, the aim for unification functions as a mediator alongside information processing and action regulation. In this model, team diversity serves as the input, moderated by team climate, and then passes to the mediator stage, where the aim for unification is applied. As the Technical Director explained, project teams may be diverse in knowledge and intentions, and while they can express ideas, these ideas must undergo the unification test. Thus, at the ideation phase in multiregional projects, the aim for unification acts as a mediator. At the innovation stage, the aim of innovation serves as input, where the product manager seeks the team's orientation towards process unification. During the implementation phase, it serves both as input — indicating whether ideas already have unification qualities — and as a mediator, requiring top management support to ensure the unification process continues effectively.

Conclusions of the work: Effective innovation in multiregional projects relies on aiming for process unification across regions at three phases of innovation behaviour as per the ImpAct model: ideation, innovation, and implementation stages. Aim for process unification is required at the ideation stage when top managers set strategic direction and, at the implementation stage, when they provide resources to teams. Product managers of multiregional projects, during the innovation phase, aim for unification when translating strategy into actionable requirements, but must maintain a fine balance between global standards and local adaptations. Process unification at the team level is required during the implementation stage, particularly in strengthening cross-regional integration and developing a multiregional mindset within teams. This is essential for successful innovation in international projects, as limited multiregional skills and uneven adoption of unification practices can hinder innovation.

SANTRAUKA

VILNIAUS UNIVERSITETO VERSLO MOKYKLA

INOVATYVUS ELGESYS PROJEKTŲ KOMANDOSE, ĮGYVENDINANT DAUGIAR REGIONINIUS PROJEKTUS XOMETRY ĮMONĖJE

Baigiamojo darbo vadovas: Assoc. prof., Dr. Dalia Bagdžiūnienė
Baigiamojo darbo atlikimo vieta ir metai: 2025 m., Vilnius
Puslapių skaičius: 58
Lentelių skaičius: 3
Paveikslų skaičius: 6
Priedų skaičius: 1

Trumpas darbo apibūdinimas: magistro darbe nagrinėjamas inovatyvus elgesys projektų komandose, įgyvendinant daugregioninius projektus „Xometry“ įmonėje, analizuojamas procesas ir identifikuojamos galimos problemos.

Problema: nors komandinio inovatyvaus elgesio mechanizmai yra žinomi ir projektų komandos laikomos inovacijų diegimo įmonėse dalyviais, vis dar neaišku, kaip komandos inovatyvus elgesys vystosi daugiaregioniniuose projektuose ir kaip efektyviai valdyti bei palaikyti komandinės inovacijos procesą daugiaregioniniame kontekste.

Darbo tikslas: nagrinėjant akademinę literatūrą apie inovatyvų elgesį, pritaikyti naujausią komandinės inovacijos modelį „Xometry“ projektų komandoms daugiaregioninių projektų įgyvendinimo metu; identifikuoti pagrindines inovacijos charakteristikas ir kliūtis komandų inovacijai daugiaregioniniuose projektuose bei pateikti galimus sprendimus problemoms įveikti.

Darbo uždaviniai:

1. Išanalizuoti akademinę literatūrą apie inovacijų sampratą, inovacijas projektuose, inovatyvų elgesį ir komandinę inovaciją;
2. Parengti tyrimo metodologiją, remiantis akademine literatūra, parengti tinkamą komandinės inovacijos proceso analizės struktūrą, sukurti tyrimo modelį ir interviu klausimyną;

3. Atlikti kokybinį tyrimą, analizuoti gautus duomenis ir susieti juos su esama akademine literatūra;
4. Apibendrinti tyrimo rezultatus ir pateikti rekomendacijas.

Darbe naudojami tyrimo metodai: akademinės literatūros apie komandų inovatyvų elgesį analizė, kokybinė komandinės inovacijos proceso analizė, susijusi su daugiaregioninių projektų įgyvendinimu „Xometry“ įmonėje; teminės analizės rezultatų interpretacija, remiantis interviu duomenimis.

Tyrimo rezultatai: remiantis ImpAct modelio įvesties–tarpinio elemento–išvesties (input–mediator–output) logika, idėjų generavimo fazėje siekis vienyti procesus veikia kaip tarpinis elementas kartu su informacijos apdorojimu ir veiksmų reguliavimu. Šiame modelyje komandos įvairovė veikia kaip įvestis, kurią moderuoja komandos klimatas, o vėliau pereina į tarpinio elemento etapą, kuriame taikomas siekis vienyti procesus. Kaip paaiškino techninis direktorius, projektų komandos gali būti įvairios pagal žinias ir tikslus, ir nors jos gali išreikšti idėjas, šios idėjos turi praeiti per unifikacijos testą. Taigi daugiaregioninių projektų idėjų generavimo fazėje siekis vienyti procesus veikia kaip tarpinis elementas. Inovacijos etape siekis vienyti procesus veikia kaip įvestis, kai produktų vadovas nukreipia komandą link procesų suvienodinimo. Įgyvendinimo fazėje šis siekis veikia tiek kaip įvestis – nurodant, ar idėjos jau turi suvienodinimo savybių, tiek kaip tarpinis elementas, reikalaujantis aukščiausio vadovų lygio palaikymo, kad unifikacijos procesas vyktų efektyviai.

Darbo išvados: efektyvi inovacija daugiaregioniniuose projektuose priklauso nuo siekio suvienodinti procesus per visas inovatyvaus elgesio fazes pagal ImpAct modelį: idėjų generavimo, inovacijos ir įgyvendinimo etapus. Siekis vienyti procesus yra būtinas idėjų generavimo fazėje, kai aukščiausio lygio vadovai nustato strateginę kryptį, ir įgyvendinimo fazėje, kai jie suteikia komandai resursus. Produktų vadovai daugregioniniuose projektuose inovacijos fazėje siekia suvienodinti procesus, verčiant strategiją į įgyvendinamus reikalavimus, tačiau turi išlaikyti pusiausvyrą tarp pasaulinių standartų ir vietinių adaptacijų. Procesų suvienodinimas komandos lygmenyje yra būtinas įgyvendinimo fazėje; ypač svarbu stiprinti tarpregioninę integraciją ir ugdyti daugregioninę komandų mąstyseną, nes riboti daugregioniniai gebėjimai ir nelygus suvienodinimo praktikų taikymas gali trukdyti inovacijai.

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INTRODUCTION

Highly competitive business environment encourage organizations from small firms to international corporations explore new ways to gain a competitive advantage. One of the ways to do so is internationalization strategy, when companies explore new markets in new regions rather than staying on domestic market. This leads to multiregional context of projects within such companies.

In academical sources Innovative Work Behavior is considered as essential element of competitive business performance (Jankelová, N., Joniaková, Z., & Mišún, J. (2021)) and business sustainability (Thurlings et al. (2015)). Innovative behavior of employees contributes to the ability of the companies to gain and sustain a competitive advantage (Martins and Terblanche 2003; Lin et al. 2018). This positive impact of employee's innovative behavior on business well-being and success explains the high scientific interest in factors that enhance or reduce the level of innovative behavior of employees and teams in organizations.

Relevance of the topic: Projects are of great importance for innovations development and implementation. Given the above, the topic of innovative team behavior is of great interest, as it is one of the components of a company's future success and competitive advantage. How can innovative activity be improved through the work of teams, which, on the one hand, serve, as a breeding ground for new ideas, and on the other, must be able to implement the company's strategic decisions and see the whole picture of the company's innovative activity as a holistic organism? To do this, it is necessary to find out how the innovation process of teams in multiregional projects is organized.

Problem Question: How does innovative behavior of project teams unfold in a multiregional context, and what factors influence this process?

Goal of the master's thesis: through exploration of academic literature and through interviews with employees, to investigate the innovative behavior in project teams during the implementation of multi-regional projects in the Xometry company.

Objectives of the master's thesis:

1. Explore academic literature on concepts of innovation, innovations in projects, innovative behavior, and team innovation;

2. Develop research methodology, based on academic literature, find an appropriate framework for analysis of the team innovation process, develop a research model and questionnaire for interviews;
3. Through face-to-face interview investigate how innovation implementation process works in practice in technological Company on the example of Xometry Company and its multiregional projects;
4. Identify the key characteristics and challenges specific to multi-regional projects that affect team innovativeness;
5. Investigate how top managers and product managers guide the transitions between innovation phases and support the development of ideas in the context of multiregional projects;
6. Conduct analysis of the obtained data, and relate the data to the existing academic literature;
7. Make conclusions and develop recommendations for strengthening the innovation environment and increasing the innovative effectiveness of multi-regional project teams.

Research methods: To understand how teams innovate in multi-regional projects, we chose to conduct a qualitative study based on interviews. This approach allowed us to look more closely at the processes and the everyday realities in which employees work, and to see what innovating actually means in practice from their point of view. The interview data was analyzed using a theoretical (deductive) thematic analysis, guided by an existing conceptual model of the innovation process. Following Braun and Clarke (2006), the analysis was conducted as a theoretical thematic analysis, where themes were defined by the existing theoretical framework rather than generated purely from the data.

Limitations: Although the theoretical framework highlights team climate and participative safety as important for ideation, the interview data showed that these aspects were not clearly visible from a senior management perspective. When asked about openness and idea sharing, the respondent tended to shift the discussion toward structural and organizational design issues rather than interpersonal team dynamics. This does not contradict the theory but rather reflects the respondent's position and the limits of the data. The ideation climate was perceived indirectly, through organizational and design decisions, rather than through direct observation of team interactions.

1. LITERATURE REVIEW

1.1.CONCEPT OF INNOVATION

Innovation is a key source of competitive advantage and growth in the world economy, especially for multiregional companies. Sustaining innovative capability motivates organizations explore new possibilities and regularities in this field. Global competition spurs companies to look for innovation not only in the country of origin, but abroad, hence, innovation and international business are closely interconnected (Fernández, 2023).

Today innovation is a cross-disciplinary research area and impressive body of knowledge represents it. OECD in Oslo Manual (2018) defines innovation as "the implementation of a new or significantly improved product (good or service), process, marketing method, or organizational method in business practices, workplace organization, or external relations."

From the perspective of organizational behavior discipline innovation is the intentional introduction and application of new ideas, processes, products, or procedures within a role, group, or organization, designed to significantly benefit the individual, group, organization, or wider society (West & Farr, 1990). This definition stresses the deliberate intention, implies particular steps for innovation implementation and emphasizes the focus on a specific positive result.

De Jong and Vermeulen (2005) conducted an extensive review of the existing literature on innovation across various industries and sectors. As mentioned earlier, De Jong and Vermeulen (2005) distinguish between two main perspectives in innovation research: the object-oriented and the subject-oriented approaches. The object-oriented view considers innovation in terms of tangible outcomes, such as new products, services, or processes. This includes both radical and incremental innovations, as well as technological transfers. Research within this perspective can be grouped into several thematic areas, including the definition of innovation, the development of new products, adoption and diffusion patterns, technology classification and transfer, and innovative business models.

In contrast, the subject-oriented approach emphasizes the role of individuals and groups involved in the innovation process. It examines how various actors, whether at the national, industry, organizational, group, or individual level, contribute to innovation and how their effectiveness can be enhanced. This line of inquiry focuses on understanding the behaviors, conditions, and environments that support or hinder innovative efforts.

After 2005, innovation studies had gone further and the field of innovation has expanded substantially, evolving from traditional models of linear technological change to more complex, dynamic, and human-centered approaches.

A major shift occurred with the rise of open innovation, a concept introduced by Chesbrough (2006). He argued that companies should not rely solely on internal R&D (Research and Development) but should instead engage external actors (customers, universities, startups) in the innovation process. This gave rise to the concept of innovation ecosystems, where value is co-created across networks.

As organizations grew flatter and more distributed, team-based innovation gained traction. Concepts such as shared leadership, cross-functional teams, and psychological safety (Edmondson, 2012) were shown to support innovation in dynamic environments. The rise of remote work added complexity to collaboration and knowledge sharing.

Digital technologies (AI, IoT, cloud platforms) transformed innovation into a continuous and data-driven process. Scholars like Nambisan et al. (2017) reconceptualized digital innovation as non-linear, iterative, and involving multiple actors through platforms and ecosystems: “Innovation in the digital age is increasingly characterized as iterative, collaborative, and platform-based - involving multiple actors, across organizational boundaries.”

A growing body of research emphasized the role of innovation in addressing social and environmental challenges. Concepts such as sustainable innovation, frugal innovation, and inclusive innovation have emerged to reflect new stakeholder priorities (Adams et al., 2016).

The most recent wave of research highlights employee-driven innovation (EDI), where bottom-up idea generation and psychological safety are central. This approach focuses on how organizational context, leadership style, and learning climate support innovation at all levels (Kesting et al., 2015).

There are many definitions of innovative behavior in academic literature. Scott & Bruce (1994) proposed a definition that has become classical: «the intentional creation, introduction and application of new ideas within a work role, group or organization, in order to benefit role performance, the group, or the organization." (Scott & Bruce, 1994, p. 581).

This definition is quite broad, allowing for a broad interpretation of the results of innovative behavior. At the same time, this definition encompasses not only individuals but also groups that align with the scientific interest of this study.

1.2. INNOVATIONS IN PROJECTS

As it was mentioned by Vice President of the Engagement Program Management Office, HP Services, Littleton, Mass., USA, Renee E. Speitel: "*In the practical project management sense, innovation means improving on a company's capabilities, tools and business practices. Project managers are natural-born innovators—they're constantly looking for ways to implement systems, manage risk and creatively deal with problems they see everyday. If project managers didn't act on their solutions, they wouldn't be project managers."*

In conference materials of Project Management Institute it is mentioned: *"Innovation is rarely seen as a key competency for project managers, and yet it is a skill at the very heart of a project manager's job"* (Gallagher, 2015*),* following with the definition of innovation: *"*as *generating and implementing ideas that add value to the organization".*

By its very nature, project activities are associated with innovation, with a unique outcome at the end of the project. According to the PMBOK Guide (PMI, 2021), a project is defined as: "A temporary endeavor undertaken to create a unique product, service, or result." (PMI, 2021, PMBOK® Guide – 7th Edition). In the context of project management, innovation is not limited to the absolute novelty of a process, product, or approach. This paper will consider project teams whose innovative activity is determined by the specifics of the project activity, rather than by the fact that these are innovative teams working in the high-tech sector and aim to create novel products, solutions, etc., which typically leads to patent registration. In our case, we share an approach where innovativeness includes novelty within the company.

In project management literature, even incremental improvements, creative problem-solving, or process adjustments are viewed as expressions of innovative behavior (Gemuenden, Salomo & Krieger, 2007). Projects often operate under conditions of uncertainty, evolving requirements, and changing stakeholder expectations, which forces teams to search for novel approaches and adapt continually. Thus, a project setting inherently creates a *demand for innovative responses*, positioning project work as an environment where innovation is not optional, but a functional necessity (Keegan & Turner, 2001).

In the literature, the relationship between innovation in projects and innovative behaviour in teams is conceptualised as a synergetic process: innovative behaviour—where team members generate, promote and implement new ideas—serves as a vital antecedent to project-level innovation outcomes, while project innovation—defined as the development and implementation of new products, processes or services within the project context—represents the broader systemic

result of these behaviours combined with team-level and contextual processes (Anderson & West, 1996; “Team Innovation” 2017). Research highlights that teams exhibiting higher levels of innovative behaviour are more likely to traverse the phases of ideation to implementation, thereby converting novel ideas into tangible project innovations (Reif et al., 2025). In turn, project innovation is not merely a matter of outcome, but depends on a sequence of team behaviours, team states (such as shared vision, communication and reflexivity), leadership, organisational climate and external demands, which moderate and mediate the extent to which innovative behaviour translates into successful innovative outcomes (Linhardt 2023; Srirahayu, 2023). Thus, while innovative behaviour focuses on the micro-level actions of team members, the innovation of the project reflects the meso- to macro-level process of idea generation, integration, and implementation. For master's - level research, one can frame the relationship thus: the emergence of innovative behaviour within a project team creates the necessary but not sufficient condition for project-level innovation; the actual realisation of project innovation depends on the interplay between team behaviours, team processes, and organisational and contextual enablers.

1.3. INNOVATIONS IN MULTIREGIONAL PROJECTS

The integration of innovation into the strategies of internationalized firms is a significant topic in contemporary discussions (Fernández, 2023). Notably, the highest volume of publications addressing innovation and international business since 1993 was released in 2020, with 43 articles published that year. Furthermore, an impressive 80% of the total articles analyzed by the author (189 out of 236) were published within the last decade, specifically from 2011 to 2020 (Fernández, 2023). This data indicates a sharp increase in scientific interest in the topic of innovation in international business.

International, multiregional projects have become a valuable tool for implementing innovation, development, and coordination for multi-regional corporations and international companies. According to Du et al. (2023) and Fernández (2023) multi-regional projects stimulate innovation through global knowledge and resource sharing.

Multi-regional projects have become an integral part of the innovative activities of multinational enterprises. Venaik and Brewer (2010) emphasized that innovation and learning are increasingly viewed as *critical drivers of performance* for multinational companies. According to March’s (1991) classic framework of *exploration vs. exploitation* in innovation, for the success of multinational corporations, it is critically important for them to:

1) Use existing knowledge effectively (exploitation).

2) Combine knowledge from different locations to create new ideas (exploration).

Knowledge transfer between departments, subsidiaries, and R&D centers is a key element of innovation in multiregional companies, but this activity also implies challenges and barriers. According to Miller et al. (2020), subsidiaries with complementary activities are more motivated to share knowledge, while those with overlapping or competing roles may resist collaboration. Business literature emphasizes that geographical distance is one of the factors that enhances creativity and the generation of novel solutions by subsidiaries; however, this comes with barriers such as coordination, cultural differences, and trust that need to be addressed**.** Such specificity within multinational companies affects multi-regional projects, where diverse teams must integrate insights across regions to produce innovative outcomes.

In a globalized world, the innovation process has become more distributed; new ideas and concepts are developed, adopted, and exploited across multiple countries or regions, rather than being confined to a single location. Hence, nowadays, companies, including MNCs, deliberately establish their R&D outposts, production plants, and sales points wherever they can best perform and benefit from differentiation.

This phenomenon is what is captured by the concept of Global Value Chains (GVC), as presented by Buckley (2009). In GVCs, innovative production and distribution are integrated into a single value-added chain, allowing companies to reduce costs and introduce new services to the market more quickly.

Xometry is an online platform based marketplace that connects manufacturers with customers worldwide. Xometry operates through a network model, featuring regionally focused, dispersed locations and partners, highlighting how global value chains become a necessary vehicle for executing innovative projects across multiple regions. After analyzing academic literature, we assume that the following barriers to innovation will also be relevant for the Xometry teams, given that Xometry is a multinational company.

Multiregional projects face innovation barriers mainly due to coordination complexity, communication constraints, cultural differences, resource asymmetry, inconsistent incentives, limited knowledge sharing, ambiguous ownership, and weak integrative leadership. These factors collectively reduce idea generation, slow transitions from ideation to decision-making, and complicate implementation of innovations.

Table 1

Examples of barriers to innovation from academic literature

Resource Asymmetry (tools, talent, budget)	Teece (1986)	Innovation requires specialised resources that are unevenly distributed across regions, resulting in unequal participation and execution capacity.
Knowledge Silos & Limited Knowledge Sharing	Nonaka & Takeuchi (1995)	Tacit knowledge is harder to transfer remotely; siloed information reduces idea novelty.
Trust Deficit in Distributed Teams	Zakaria et al. (2004)	Geographically dispersed teams form trust more slowly, impacting openness, creativity, and conflict resolution.
Ambiguous Roles & Ownership	Galbraith (2014); Martini, Massa & Testa (2013)	Cross-regional innovation suffers when decision rights, responsibilities, and authority lines are unclear.
Leadership & Governance Gaps	Ancona & Caldwell (1992) Zander & Butler (2010)	Distributed projects need integrative leadership; without it, coordination breaks down and teams diverge in their approaches.
Technological Fragmentation	Griffith et al. (2003); Majchrzak et al. (2012)	Inconsistent digital tools and platforms across regions impede collaborative design, prototyping, and documentation.

Source: Prepared by the author, based on the academic literature.

From open sources, we know that project activities of Xometry include projects aimed at the expansion of the business market to different regions and strengthening its positions in India, China, and Turkey.

Having a head office in the USA and multiple subsidiaries in Europe, the UK, China, India, and Turkey, the projects include financial, technological, and product specifics as Xometry is a technological company. For example, recently the company launched Teamspace Collaboration Solution in Europe, the UK, and Turkey:" *Since its launch in the US, Teamspace has seen success with over 7,000 teams created as of Q1 2025. This global expansion enables Xometry to drive deeper enterprise engagement and enhance viral buyer growth. Xometry Europe continues to expand its marketplace offerings to deliver greater value and selection to customers, while supporting long-term secular growth across its platform.*" (Xometry, 2023).

Among other press releases, in 2023, Xometry announced the acquisition of Tridi, Turkey's Leading On-Demand Manufacturing Marketplace:" *With the acquisition of Tridi, Xometry enables international and local customers in Turkey to use its advanced and powerful marketplace technologies*".

In these examples, we see that the projects are related to market expansion through the creation of processes, coordination of actions, and the establishment of systems between regions. Furthermore, we will delve further into the specific projects that will be analyzed.

1.4. INNOVATIVE TEAM BEHAVIOR

More often, researchers consider teams as "*a key source of creativity and innovation*" (Rouse, 2020; van Knippenberg & Hoever, 2021, p. 49). In organizations, teams are increasingly recognized as central actors in generating and implementing innovations (Reif et al., 2025).

Zhang M. J., Zhang Y., Law K. S. (2022) consider team innovation as the "extent to which a team, as a whole, develops useful new ideas and converts them into outputs".

West (2002), Hülsheger et al. (2009) defined Team IWB as *"the collective process by which a team generates, promotes, and implements innovations through coordinated actions and shared responsibility".*

Compared to individual innovative behavior, team innovative behavior is an *emergent phenomenon.* "*A team's innovative performance cannot be reduced to its members' individual*

innovations; it emerges from their interactions, shared goals, and coordinated activities." (Hülsheger, Anderson, & Salgado, 2009).

Knippenberg, (2017) writes "*in the practice of team innovation research, team innovation is by and large understood as including both the development and implementation of novelty*."

Research indicates that to deliver innovative outcomes, teams must progress through several key stages—from idea generation to idea promotion to implementation (Reif et al., 2025; Hülsheger, Anderson, & Salgado, 2009).

Academic literature proposes several models of the innovation process to us. All of them demonstrate that the innovation process is a multistage process. Furthermore, we will examine them closely.

Kanter (1988) and Scott & Bruce (1994) conceptualized IWB as a multidimensional construct with particular stages in the innovation creation and implementation process, a framework that has later been referred to in the literature as the *activity-stage model* (De Jong & Den Hartog, 2010).

Before the term IWB had been introduced, Kanter, (1988) developed the concept of distinct stages in the innovation process: idea generation, coalition building, implementation, and *transfer (diffusion)*. Scott & Bruce (1994) modified Kanter's Model by simplifying it to three stages. While Kanter's stage of Coalition Building emphasizes the importance of social or even corporate policies' influence on IWB, Scott & Bruce (1994) included this stage in the Idea Promotion stage. And Kanter's Transfer stage, where the practical results of innovation spread across the company, units, and so on. Scott & Bruce (1994) included the stage of Idea Realization.

Table 2

Stages of Innovative Work Behavior according to Kanter (1988) and Scott & Bruce (1994)

IWB Stages by **Kanter (1988)**	Definition	IWB Stages by **Scott & Bruce (1994)**	Definition
Idea Generation	Creation of new ideas, identification of problems, recognition of opportunities, and recombination of existing knowledge.	Idea Generation	Creation and exploration of novel ideas and solutions within a work role, group, or organization.

Coalition Building	Mobilizing support and resources, persuading others, and building alliances to protect and develop the idea.	Idea Promotion	Mobilizing support, building coalitions, and gaining necessary resources to move the idea forward.
Implementation	Transforming ideas into tangible outcomes through pilot projects, prototypes, and integration into workflows.	Idea Realization	Developing and implementing the idea into practical, concrete changes within the organization.
Transfer (Diffusion)	Spreading and institutionalizing the innovation across the organization or multiple units.		

Source: Prepared by the author, based on the academic literature (Kanter (1988) and Scott & Bruce (1994)

Mentioned above, the activity stage model by De Jong & Den Hartog (2010), derived from earlier models of innovation process, wasn't developed for teams specifically; its process logic was frequently applied to team-level innovation process, as team innovation similarly goes through the dimensions of idea exploration, idea generation, idea promotion, and idea application.

Furthermore, we will examine several theoretical frameworks for team innovation to structure our understanding of the processes underlying team innovation.

1.5. FACTORS OF INNOVATION IN PROJECT TEAMS

A meta-analysis by Hülsheger et al. (2009) employed two classes of team innovation antecedent variables: input and process variables. In other words, the term "variables" refers to factors that influence the team's innovative behavior. *Input factors* include Team size, Background diversity, Job-relevant diversity, Team longevity, Goal interdependence, and Task

interdependence. *Process factors* include external and internal communication, vision, support for innovation, task orientation, participative safety, cohesion, and task conflict. (See Table #).

The research identified that team process variables have a stronger influence on team innovation; they were found to be "*especially conducive to innovation" (*Hülsheger et al., 2009). Team input variables showed "*relatively small and variable relationships with innovation*".

The meta-analysis of Hülsheger et al. (2009) included the Team Climate Inventory (TCI) developed by West & Anderson (1996). Their findings demonstrate that these four factors – components of Team Climate for Innovation (Vision, Participative Safety, Support for Innovation, Task Orientation) are the strongest antecedents of innovative behavior in teams. The results of the meta-analysis proved that team climate has a great influence on the innovative behavior of teams. The research focused on team-level factors; organizational-level variables were beyond the scope of their analysis and were therefore not included.

Nevertheless, authors concluded that goal interdependence, job-relevant diversity, and team size are somewhat conducive to team innovation (Hülsheger et al., 2009). Another important conclusion is that the relationships between team process variables and innovation are stronger for team innovation than for individual innovation. Additionally, authors concluded that team process variables display stronger links with innovation than input variables.

This information provides us with important insight: process variables – including interaction and coordination processes, actions, and behaviors within the team define the team's innovative success. In other words, innovation is driven by what the team does with its resources throughout the working process, rather than by the resources themselves. Team can consist of experts, but without good team climate (vision, support for innovation, task orientation, participative safety), open communication within the team and outside the team, task conflict regulation, and team cohesion team won't be innovative: "*Team process variables displayed strong and generalizable relationships with innovation, whereas input variables showed only small and inconsistent effects. This suggests that the interaction and coordination processes within teams are more crucial for innovation than their mere structural characteristics*." (Hülsheger, Anderson, & Salgado (2009).

Table 3

Variables influencing team innovation

Conducive to team innovation	**Somewhat conducive to team innovation**	**Relatively small and variable relationships with innovation**
Team process variables	*Team input variables*	*Team input variables*
External and internal communication	Team size	Background diversity
Vision *(TCI) of West & Anderson (1996)*	Job-relevant diversity	Team longevity
Support for innovation *(TCI) of West & Anderson (1996)*	Goal interdependence	Task interdependence
Task orientation *(TCI) of West & Anderson (1996)*		
Participative Safety *(TCI) of West & Anderson (1996)*		
Cohesion		
Task Conflict		

Source: Prepared by the author based on the academic literature (Hülsheger, Anderson, and Salgado (2009)

As mentioned by van Knippenberg (2017), in the field of team innovation studies, there is a stronger focus on the idea generation stage; thus, the implementation stage, which is critical for innovation to emerge, remains less studied. Also, it is stressed that the innovation implementation stage is more challenging than idea generation, as it "is an important part of the innovation process to mobilize the necessary support and resources from outside of the team". It is admitted "*that the main challenges to implementation typically lie outside of the team in realizing support from senior management, collaborations with other departments, etc*." (Leifer et al., 2000, as cited in van Knippenberg, 2017).

The author reviewed team innovation in several themes: the knowledge integration perspective, the information integration perspective, and the team climate perspective.

One of the key drivers of idea generation in teams is knowledge integration—the fusion of diverse perspectives, experiences, and information. While knowledge diversity can stimulate creativity at the individual level (Richter et al., 2012; Zhou et al., 2009), teams are the natural environment in which the full process of information integration and understanding occurs (Ancona & Caldwell, 1992). Therefore, one of the key reasons for entrusting innovation to teams rather than individuals is their ability to combine diverse knowledge sources to create new solutions.

Within this approach, research on team innovation distinguishes two strands:

1. research on team diversity as a source of knowledge;
2. research on information integration as a process that transforms knowledge into innovation.

Team Diversity

The more diverse a team's composition in terms of knowledge and experience, the broader the information base and the higher is the potential for innovation. Meta-analyses confirm that functional and professional diversity are positively associated with team innovativeness, whereas demographic diversity (including gender, age, and ethnicity) is not (Bell et al., 2011; Hülsheger et al., 2009; van Dijk et al., 2012). However, this effect is not automatic; it depends on context. Research indicates that the relationship between diversity and innovation is moderated by factors that foster open knowledge sharing, including psychological safety, norms of openness, a supportive climate, team member participation, effective communication, and reflection (Somech, 2006; Fay et al., 2006; Mitchell & Boyle, 2015). Thus, diversity is a resource, but its innovative impact only arises in the presence of processes that reduce social fragmentation and stimulate knowledge sharing.

Information Integration as a Team Process

The second line of research focuses on the process of information processing and integration itself. It has been shown that teams exhibit higher innovativeness when they actively share knowledge, discuss and integrate information, and support boundary spanning, which brings in new data from outside (Hülsheger et al., 2009). Such processes are enhanced by psychological safety, trusting relationships, cross-functional dependencies, and a leadership style that fosters open discussion.

The findings of this study are largely consistent with those of the meta-analysis by Hülsheger et al. (2009), demonstrating that team members' diversity creates potential for innovation;

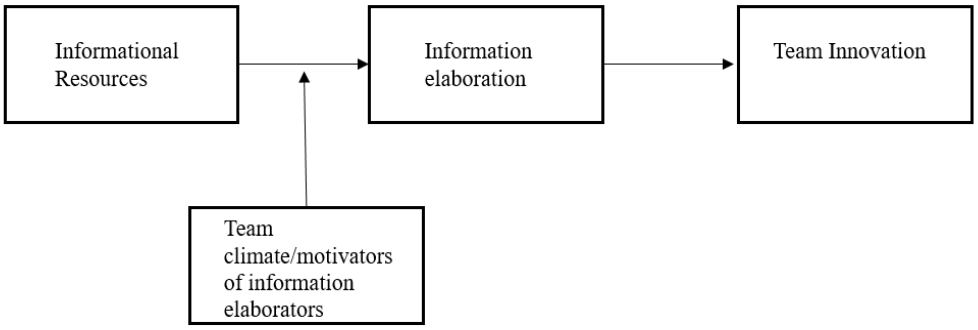
however, it is the integration of knowledge that transforms this potential into actual results. Therefore, for innovative teams, not only are the input characteristics (composition) critical, but also high-quality team processes that facilitate knowledge sharing and joint understanding.

The author highlights the Team Climate Perspective as another separate branch of team innovation studies. In addition to the internal diversity of team members and their ability to share information and propose ideas openly, the team atmosphere in which information integration processes take place is of great importance. The author emphasizes that team climate is a systemic factor; its influence extends to the entire process of team innovation, not a particular stage. Team Climate is not about the emotional state of team members; as described by *van Knippenberg, (2017)* it is "*shared experience of working in the team as this is shaped by team interaction patterns and the implicit or explicit message these patterns convey about what is seen as appropriate and inappropriate, desirable and undesirable by the team."*

As a result of the scientific review, the model of Knowledge integration/Team climate model of team innovation was formed.

Figure 1

Knowledge integration/Team climate model of team innovation



Source: van Knippenberg, 2017

1.6. AN INFORMATION PROCESSING–ACTION REGULATION (IMPACT) MODEL OF TEAM INNOVATION

Reif et al. (2025) developed the Information Processing–Action Regulation (ImpAct) Model of Team Innovation, specifically designed for the team innovation process.

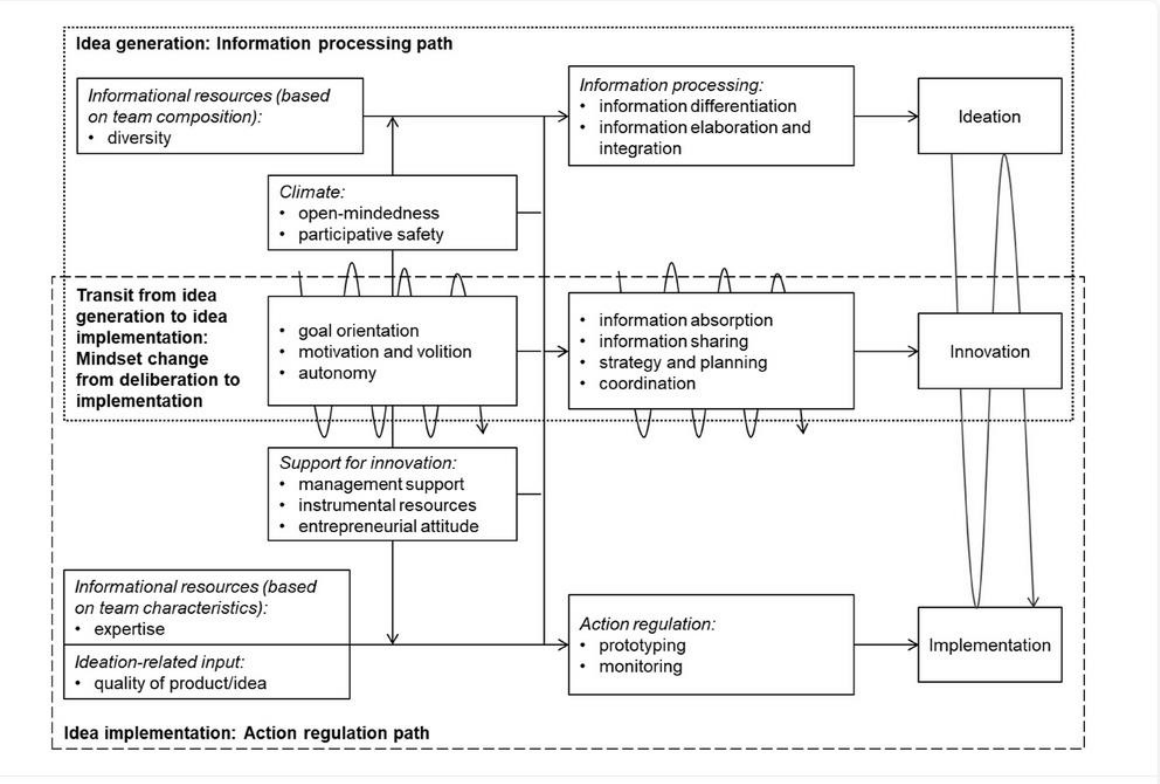
The ImpAct model differentiates two paths of team innovation: an information processing path leading to idea generation and an action regulation path leading to idea implementation.

Between these two paths lies a transitional area, an "*interface representing a transit phase between ideation and implementation*" (Reif et al., 2025). The transitional area represents the process of changing the team's mindset from deliberation to implementation. (See picture #)

The Model was organized by arranging the data collected during research by selected categories and then arranging these categories according to input-mediator-output logics (Mathieu et al., 2008).

Figure 2

ImpAct Model of Team Innovation



Source: Reif et al., 2025

Ideation (Information processing path)

Following input-mediator-output logic we see in the Model, that for Ideation the input consists of Informational resources, based on team composition (team diversity, that creates knowledge within team according to Knippenberg). Mediator is Team Climate (Open mindedness and participative safety within team). This leads us to the Output resulting in Information processing in team (information differentiation, informational elaboration and integration).

Implementation (Action regulation path)

Input for the implementation phase is the work done by the team with informational resources at the ideation stage: informational resources (based on team characteristics: expertise) and ideation-related input: quality of idea/product. Mediating by management support, instrumental resources, and entrepreneurial attitude leads to the output in the form of prototyping and monitoring.

Innovation (Transit phase)

The innovation phase can be compared to a breaking point of a team innovation process. The literature shows that many innovations fail not because teams lack ideas, but because they struggle to transition into the implementation phase.

In order to surpass the ideation through the transition phase to the implementation of innovation, it requires the team to change its mindset, to cross the Rubikon (Gollwitzer, 2012, as cited in Reif et al., 2025) — from divergent thinking (searching, brainstorming, questioning) to convergent action (prioritizing, planning, and executing) (Rosing et al., 2011, as cited in Reif et al., 2025).

In the article, Reif attributes all these aspects as relevant to the ideation and implementation stage equally, since all these factors are critically important for team innovation: "*Since ideation and implementation overlap in the aspects mentioned above, we interpret these aspects according to the Rubikon model as critical for the transit between ideation and implementation.*"

Information absorption refers to the team's ability to acquire, interpret, internalise, and integrate new knowledge from both internal and external sources into its existing knowledge base. It is closely linked to the concept of absorptive capacity (Cohen & Levinthal, 1990), which describes how organizations recognise the value of new information, assimilate it, and apply it for practical or commercial purposes. At the team level, information absorption ensures that relevant knowledge is not only collected but cognitively processed and transformed into shared understanding that can support problem solving, decision making, and innovative action. Teams with strong information absorption more effectively recognise opportunities, learn from past experiences, adapt to changing project environments, and combine diverse inputs in novel ways—therefore enabling higher levels of innovative work behavior**.**

Information sharing refers to the open and purposeful exchange of relevant knowledge, data, and insights among members of a team, ensuring that information available to individuals becomes accessible to the collective. While information absorption focuses on acquiring and interpreting new knowledge, information sharing ensures that this knowledge is distributed,

discussed, and transformed into shared understanding that supports collective learning and coordinated action. In innovation research, information sharing is considered a core component of team learning processes. When team members communicate their expertise, experiences, or new external knowledge, they expand the overall cognitive resources of the group, which in turn facilitates idea generation, problem-solving, and the implementation of innovative solutions. In this sense, information sharing acts as a behavioral mechanism linking absorptive capacity at the team level with innovative work behavior, because ideas can only be developed and applied when relevant information circulates openly among members rather than remaining siloed on the individual level.

A positive team climate for innovation is widely recognized as a key antecedent of innovative work behavior, and several psychological and structural factors within the climate directly shape how teams move from idea generation to implementation. Motivation and volition further strengthen this dynamic by driving members to engage actively in creative problem solving and to persist despite uncertainty or setbacks. Drawing on Amabile's (1998) componential model of creativity, intrinsic motivation increases cognitive engagement in innovative tasks, while volitional control supports determination and follow-through during implementation. Ultimately, autonomy empowers teams to determine their approach to tasks, experiment with various solutions, and refine their methods as challenges emerge. Research shows that autonomy reduces bureaucratic constraints and empowers members to act proactively, thereby enhancing both the speed and quality of innovative responses (Anderson, Potočnik, & Zhou, 2014). Taken together, goal orientation, motivation and volition, and autonomy form crucial elements of a supportive team climate.

The ImpAct Model indicates that at a specific stage of the innovation process, certain factors are crucial for an innovative outcome to occur. On the *stage of Ideation*, for the team, it is especially important to have access to information. Team members should feel free to share information, propose ideas, and answer each other's questions in order to produce potential ideas that will benefit the company. During the ideation stage, a supportive team climate encourages members to generate, promote, and realize new ideas. As we mentioned earlier, effective knowledge sharing (information sharing) is one of the barriers of innovation in projects in the multiregional context.

In the *transitional stage*, goal orientation connects to the process. Goal orientation provides teams with a shared understanding of objectives and desired outcomes, aligning individual efforts

and enabling members to evaluate which ideas support the team's strategic direction. As West and Anderson (1996) note, when teams agree on clear, collective goals, they are more likely to coordinate actions effectively and sustain momentum throughout the innovation process. On this stage occurs the structure-freedom paradox (Reif, 2025, Potocnik et al., 2022): "*On the one hand, team members demand autonomy, that is, task-related leeway rather than restrictive parameters; on the other hand, they demand goal orientation, that is, a clear mission with clear goals to which team members are aligned".*

The closer the process in the model brings the team to innovation, the more important the factors of coordination, strategy, and planning become. Reif et al., (2025) describes **s**trategy**,** planning, and coordination as key interface mechanisms that connect the cognitive stages of idea development with the behavioral stages of implementation. Strategy and planning refer to how teams translate ideas into concrete objectives, action steps, timelines, and resource allocations, thereby reducing uncertainty and creating a structured pathway from conceptual thinking to execution. Coordination, in turn, ensures that these plans are jointly executed: team members align their roles, synchronize tasks, communicate progress, and adapt actions when obstacles arise. According to Reif et al., (2025), both mechanisms are critical because they transform innovative intentions into collective, goal-oriented action, helping teams move beyond ideation and maintain momentum through the implementation phase.

In the practical implications section of the research of Reif et al. (2025) we are finding information about management for team innovation process and how to switch between the phases. In order to support the phase of ideation teams could pay attention or to be trained to:

- Participate consciously in the process of information processing by identifying and obtaining information from various sources, including the expertise of the team members;
- Think divergently (by brainstorming activities);
- Document the developed ideas;
- Enhance positive team climate;

To support Implementation phase of the team innovation process it is recommended to:

- Train teams to focus on action regulation during the implementation phase.
- Encourage prototyping of developed ideas based on team members' expertise and idea quality.

- Support continuous monitoring of progress through stakeholder consolidation and feedback seeking.
- Ensure teams check the feasibility of prototypes throughout the process.
- Promote reflection and learning as integral parts of implementation.
- Involve team members with an entrepreneurial attitude to drive initiative and adaptability.
- Provide teams with access to necessary resources, tools, and organizational support.

The role of the leadership in each stage and switching between them was mentioned in the study: *"Although not directly addressed in our data, many of our categories are related directly (management support for innovation) or indirectly (goal orientation, participative safety) to leadership behaviors and functions."*

1.7. THE CURRENT STUDY

In the previous paragraphs, we described the evolution of the understanding of innovation, outlined the specifics of innovation in project-based activities, and, using recent scientific articles as examples, demonstrated that projects are now a tool for implementing innovations at the international level (multiregional projects). We examined how innovative team behavior is understood in recent scientific literature. We also explored how scientific models describing the process of team innovation have developed in the field of team innovative behavior. While writing this paper, we drew on the work of recognized experts in this field, whose scientific approaches and results form the foundation of modern research.

This research is based on the Information Processing–Action Regulation (ImpAct) Model of Team Innovation (Reif et al., 2025). The ImpAct Model is the result of 235 situations from 60 employees working on innovation in teams and further integration with existing theory. In this model there are three stages of innovative process in teams: Ideation, Innovation, Implementation. As we can see it from the model scheme (look #) for each stage there are certain factors, influencing on team innovative behavior.

- Ideation stage is directed by information processing and team climate.
- Innovation stage/Transit stage *"is driven by a mindset change from deliberation to implementation"* (Reif, 2025).
- Implementation stage is based on action regulation and resources.

In the ImpAct model we find the importance of Team Climate and knowledge integration for team innovation as it was outlined in the research by Hülsheger et al., 2009 and Knippenberg, 2017 though it referred in the model as information processing and climate. Managerial support, as it was emphasized in the scientific literature, plays important role in the team innovation process and will be studied in this research.

We learned that team climate and knowledge integration have been studied as factors that positively influence innovative behavior in teams (Hülsheger et al., 2009, Knippenberg, 2017). We also found that many ideas indeed never reach the implementation stage, and this part of the innovation process is still not well studied (Knippenberg, 2017). The Impact model describes the team innovation process, and in this study we would like to explore, using the example of Xometry, how closely the company's team innovation processes align with this model. We want to understand what challenges teams encounter, how they transition from one phase to another, what roles the project manager and product manager play, and what multiregional barriers might hinder team innovativeness at each stage.

Ideation phase.

Here we can examine how easily team members can access information from colleagues in other regions, whether the team atmosphere encourages open idea sharing, whether brainstorming sessions are held, and how ideas are documented. Earlier we learned that for multiregional projects, the main difficulties are information access and coordination; access to information relates directly to the ideation phase. We also need to understand how ideas are evaluated and selected: why some ideas move forward while others are rejected, and what the decision to continue working with a particular idea is based on in the company.

Transition to the innovation phase.

The innovation stage has no strict boundary, and it will likely look different for each team. Using Xometry's teams as an example, we would like to see how the transition from ideation to innovation actually happens: at what point the team shifts from generating ideas to working only on specific ideas, and how the manager balances team members' autonomy in developing ideas with the overall project strategy, coordinating the process along the way. At this point in multiregional projects, the complexity of coordinating joint efforts increases, since different departments across regions need to align their work on the emerging idea or product. At this point of innovation process we would like to understand how aspects of information processing (information absorption, in formation sharing), support (autonomy, motivation and volition),

action regulation (strategy and planning, coordination) and aspect of climate (goal orientation) showing itself during the implementation of multiregional projects in Xometry company. According to the Reif, 2025 aspects mentioned above constitutes the transit phase: "*We also found that a specific set of categories was relevant for both idea generation and idea implementation. We interpreted this set of variables as constituting the transit phase between ideation and implementation*".

Implementation phase.

According to the model, this stage begins when the team already has a sufficient level of expertise and quality of idea development to move on to prototyping or modeling. For multiregional projects, expected difficulties at this stage include limited support for innovation from management and restricted access to instrumental resources. We would like to understand to what extent managers support the team's ideas and help them become actual innovations — whether they provide resources, tools, and managerial backing.

2. RESEARCH METHODOLOGY

2.1. RESEARCH PROBLEM, GOAL, OBJECTIVES AND RESEARCH MODEL

Research Problem: Although the mechanisms of innovative behavior in teams are known and project teams are considered as actors of innovation implementation in companies, it is still unclear how innovative behavior of teams is unfolding in multiregional projects and how to manage and support effectively the process of team innovation in multiregional context.

Research Goal: To investigate the team innovation process through the implementation of a multi-regional project at Xometry Company.

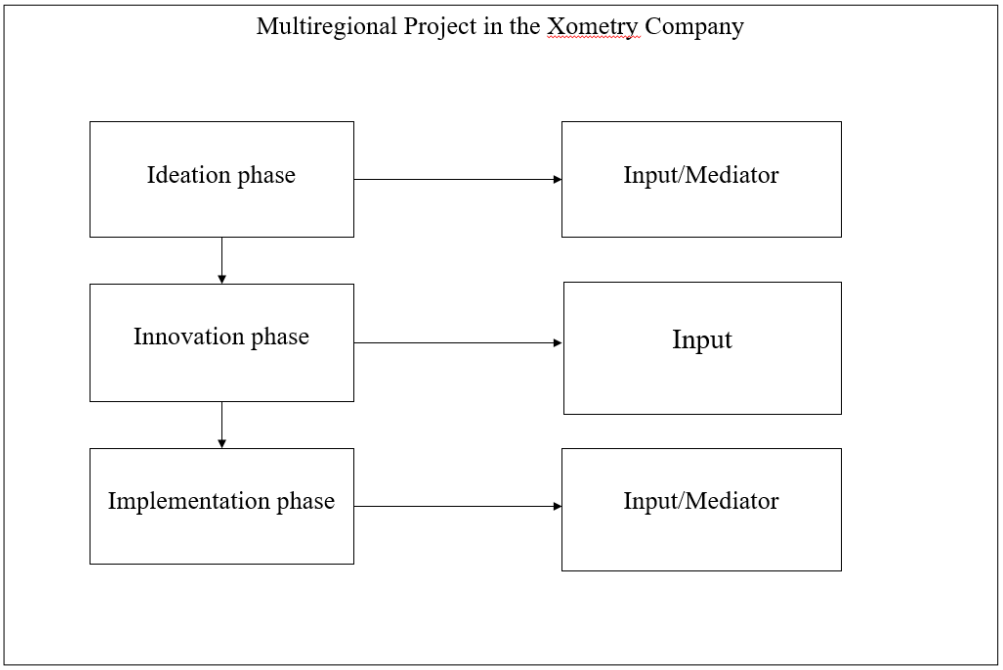
Research objectives:

1. Through face-to-face interview investigate how innovation implementation process works in practice in technological Company on the example of Xometry Company and its multiregional projects.
2. Identify the key challenges specific to multi-regional projects that affect team innovativeness.
3. Investigate how top managers and product managers guide the transitions between innovation phases and support the development of ideas in the context of multiregional projects.
4. Develop recommendations for strengthening the innovation environment and increasing the innovative effectiveness of multi-regional project teams.

Research object: Technical director, Product manager, team innovation process in the multiregional context

Figure 3

Research model



Source: prepared by the author

2.2 RESEARCH PROCESS AND METHOD

This chapter outlines the research process and methodological choices applied in this study. The process followed in this study aligns with established qualitative research frameworks (Creswell & Creswell, 2018) and consists of several systematic stages, described below.

First of all, the research process began with a review of academic articles, primarily to become familiar with the concept of innovative behavior within the context of organizational and management theory, as well as social and psychological perspectives. Since this concept is very broad, we gradually narrowed it down to team innovative behavior, identifying frameworks in the literature suitable for studying such behavior. Based on this, we formulated the research problem.

Following the traditional research design image (Babbie, xxx), next step is conceptualization, where we specified the meaning of the concepts of Innovative behavior in teams and outlined the variables of the study. The research problem of this study defines the choice of the research methodology. As we stated above, research goal and objectives of the study are focused mainly on investigation and identification of factors of the team innovation process through the implementation of a multi-regional project at Xometry. The topic is relatively new and there is no enough information on innovative behavior in multiregional teams, this determines the

choice of qualitative approach. As it was outlined by Morse, 1991: *"This type of approach may be needed because the topic is new, the topic has never been addressed with a certain sample or group of people, and existing theories do not apply with the particular sample or group under study."*

Sampling strategy: A purposive sampling technique was used to select participants who possess relevant knowledge of innovation activities within multiregional projects.
The sample includes:

- a technical director;
- product manager;

The aim was not to achieve statistical representativeness but to gather deep and context-rich insights from individuals directly involved in innovation-related processes. Small sample sizes are consistent with qualitative case studies (Guest, Bunce & Johnson, 2006).

Data collection method: Semi-structured online interviews were used in order to gain information from the practitioners who manage and work with and in teams in multiregional projects.

Data analysis method: theoretical thematic analysis**.**

Date of the research: The interviews with respondents were conducted in 2025 November 28th – December 5th.

2.3. RESPONDENTS

We managed to conduct online interviews with the Technical Director and the Product Manager. Both are senior-level managers, and their responses represent insider (non-public) information. The Technical Director is directly involved in making strategic and technical decisions related to business development and the opening of new regions. Earlier, he was the founder of the startup, which was acquired by Xometry Europe The Product Manager previously led the finance team in the same startup and is currently responsible for establishing the subsidiary in India as part of Xometry Europe. Both of them are professionals who have worked with innovations on different levels for a long time.

2.4. DATA COLLECTION PROCESS

The questions for the interview were prepared, and the interview dates were set. The second interview had to be rescheduled once due to the respondent's busy schedule. Assistance from a

mediator, a company employee, was required. This person served as an intermediary between the respondents and the researcher, facilitating the arrangement and negotiation of the interviews. To avoid the use of academic jargon, the wording of the questions was simplified to make them easier for respondents to understand, allowing them to discuss their experiences more freely without feeling that they were being considered irrelevant.

For the interviews *Google Meet* platform was used as a research tool. Respondents gave the permission for audio recording. The duration of each interview was around 40 minutes, as it was suggested and agreed by interviewees. After the interviews were finished, the audio files were transcribed as text files with use of *Turboscribe* service. The interviews were held in Russian language.

The data were analyzed through theoretical thematic analysis. The interview included 15 questions, with 5 questions dedicated to each stage of the team innovation process (Reif et al., 2025). For technical director and product manager the questions were formulated differently according to their roles. The lists of questions are presented in Appendix 1.

In this study, themes were not generated inductively from the data but were derived deductively from the theoretical framework. The three phases of the team innovation process (ideation, transition, implementation) served as predetermined thematic categories, and interview data were coded and organized according to these theoretically informed themes.

The interview questions were developed based on the theoretical framework of team innovation processes, which distinguishes three core stages: ideation, transition, and implementation (Reif et al., 2025). The structure of the interview guide reflects these stages, with five questions dedicated to each phase.

The content of the questions was informed by prior empirical studies on innovative work behavior, team climate, cross-regional collaboration, and organizational barriers to innovation. To ensure conceptual alignment, each question was mapped to a specific construct identified in the literature—such as information sharing, psychological safety, coordination mechanisms, autonomy, resource constraints, and leadership support.

This process ensured that the interview protocol was both theoretically grounded and directly connected to the research objectives. The questions were intentionally open-ended, enabling participants to elaborate on their experiences while allowing the researcher to capture data relevant to the predetermined thematic categories established for the subsequent theoretical thematic analysis.

3. RESULTS

In this chapter, the results of theoretical thematic analysis are presented. Themes were defined deductively, based on the stages and key dimensions of the innovation process identified in the theoretical framework. The analysis focused on how these theoretically derived themes were reflected in the collected empirical data. Themes were guided by the existing (ImpAct) Model of Team Innovation and used as an analytical lens to interpret interview responses.

During the interview, we clarified the types of projects the respondents were willing to share information about, as well as the role of the product manager within these projects. Research results based on personal experiences of top managers, who are constantly working with teams and being part of the project teams that are working on opening new subsidiaries in Turkey and India. The product manager serves as the liaison between different teams, attending daily conference calls and coordinating the activities of these teams.

While evaluating the transcripts of the interviews, we have outlined several subthemes derived from the empirical data: barriers to the innovation process in the implementation of multiregional projects; the Technical Director mentioned several times the role of team design in influencing the final product.

The main theme that encompasses all stages of the team innovation process and is directly and indirectly present in the respondents' answers is the theme of unifying processes within the Company. In the context of international business, unification refers to the alignment and standardization of workflows, procedures, and coordination across organizational units, often implemented to support control in multi-regional or international contexts. Unification of processes often includes the use of shared platforms, software, and software tools; applying common rules, procedures, and performance metrics; and overall developing organizational consistency by reducing local variation. Academic literature mentions *"Process unification is often pursued as part of global integration strategies aimed at achieving consistency and coordination across regions* (Bartlett & Ghoshal, 1989)." *"Standardization of processes functions as a coordination mechanism within complex organizations* (Mintzberg, 1979)."

3.1. RESULTS FOR IDEATION PHASE

The ideation stage in the studied multiregional projects was characterized by a predominantly top-down and strategy-driven information processing logic, rather than a bottom-up approach to idea generation within project teams. From the perspective of the Technical

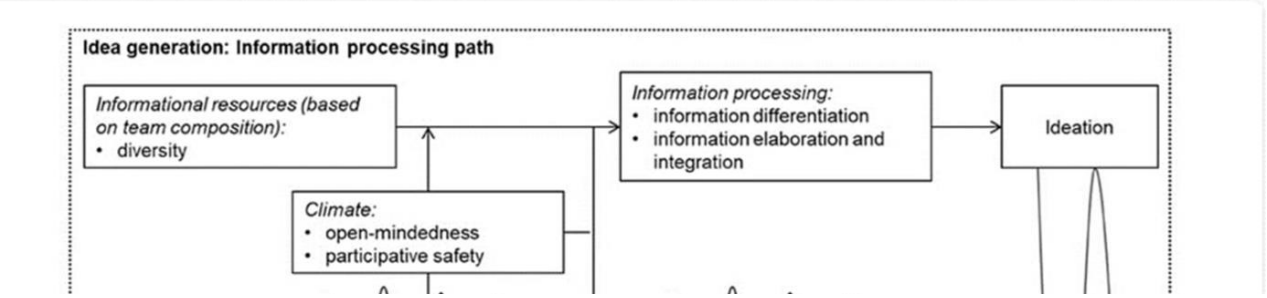
Director, ideas at this stage emerged primarily from strategic analysis of markets, cost structures, and existing organizational capabilities, rather than from spontaneous creative initiatives within operational teams.

Information sharing between regions also occurs from the top down – from the head office in the US, where key strategic decisions were made and then sent to subsidiaries.

Input-mediator-output logic of this Model on Ideation phase in the Xometry Company is arranged as follows.

Figure 4

Ideation phase of the ImpAct Model



Source: Reif et al., 2025

The ideation process for multi-regional projects is based on the idea that the company's advantage lies not in the technological innovation, but in business model innovation, which is based on geographical expansion (based on Ding et al., (2021) internationalization generally strengthens innovation) . This underpins the strategic understanding that the platform should provide low-cost manufacturing partners for clients:

"You want to produce where it's cheaper to do so."

The selection of a new region is based on the company's strategic concepts, although it may simply be a specific location and individual preferences – both of these factors support the opening of the Indian region:

"When it comes to India, it was a fairly obvious decision that had been made even before the word 'India' was actually mentioned — we knew we needed new manufacturing markets. The question was simple: where else could we produce? India was an obvious option, just like Vietnam was also a very obvious choice."

"On the other hand, a lot of it comes down to personality. Look, in companies, people are playing the decisive role. I think our branch manager in India had someone he genuinely believed

could handle the job, so he brought him in. It wasn't a case where there were ten candidates for the India director role and a big committee carefully selecting one of them. There were a few candidates, but essentially there was one person the U.S. CEO trusted. He said, 'I'd put my bet on this guy,' and that guy got the role and started building things.

To open a branch in a new region, the team must be able to integrate into the company's existing technical structure. This is a key principle. Then, when analyzing a specific region, a decision is made to achieve this goal using a Build or Buy strategy: if there's an existing team in the region's market, but without its own sophisticated technological base, it can be acquired and used to build a branch. If such a company doesn't exist, it's better to build a branch from scratch. However, the key factor for Xometry is the ability to integrate the regional team into the existing system, as the company has learned from its own experience the need for unification.

"From an organizational perspective, if there had been an existing team of around ten people already working on this kind of business, and if we had found them and felt they were a good fit, we probably would have acquired them as well. But we didn't come across anything like that in India."

"And if you hire, say, two full-stack developers who work on both sides, you'll most likely end up with a single repository where everything is mixed together."

"And when you decide to launch, for example, in India, it may actually be harmful to set up a dedicated technical team there, because they will essentially start developing in their own direction. As a result, it becomes much harder to balance a unified platform codebase—which you want to keep universal—with all kinds of India-specific customizations."

According to the ImpAct Model team climate serves as a mediator in the ideation process. Top managers are open to different opinions, but based on past mistakes (for example, problems with the Chinese region), this openness to ideas now has one crucial condition: the company must strive for technological unification as much as possible to prevent its regions from breaking away. The Chinese region broke away precisely due to the inexperience of the company's early management efforts, and today it is not possible to reintegrate its technological structure back into the company.

"When we launched in China, our European platform was still weak and underdeveloped, so it was easier for us to allocate individual developers to work on the Chinese branch, essentially. And that branch went far, and now it would be too expensive and too difficult to pull them back together. That's why, in China, for example, we have separate teams, a separate product, separate

developers—everything separate. But when we did Turkey and the UK, we did it a year later, and by then we had already learned our lesson—we didn't want to repeat the same mistakes. So we put a lot of effort into making sure that Turkey, the UK, Europe, and now India, were all supported by a single team, even if it had to grow in size. And this ensures that in India, a completely separate arm or branch, with its own platform, doesn't emerge."

An ideal ideation process requires all participants to recognize the importance of maintaining regions within a single technological framework, despite their distinct regional characteristics. Therefore, it's crucial that all team members and other involved employees always keep the need for unification in mind and base their ideas on this core principle. It's this fundamental principle that guides the company's differentiation and development of information during the ideation stage, while autonomy is avoided as much as possible.

"Yes, absolutely. If there had been someone within the regions who was genuinely interested in trusting the processes being imposed on them, that would have certainly helped a lot. But in our case, it was more like a desire to invent their own processes. I mean, our product wasn't fully mature yet—in the sense that we're not… In the development stage? Yes, we're not SAP, we're not Oracle; we don't have a boxed solution where every button is covered by five volumes of instructions and guides. We have a product that we built for ourselves, and now we're trying to roll it out everywhere. And so, in some places it's not obvious, and in some places it's very specific to us. And if the initiative had been aimed at creating a dialogue—like, 'Guys, let me understand how you do things, this is how we do things, this part doesn't work for us'—that would have really made a difference."

"The American management merged with the European management, and the European teams merged with the Turkish teams. But now this context is becoming less and less relevant. The Turkish and European teams are more like regular DFM teams, for example… Literally, the teams are now mixed. There is no separate Turkish DFM anymore. Now there is just DFM serving all regions. The same goes for logistics."

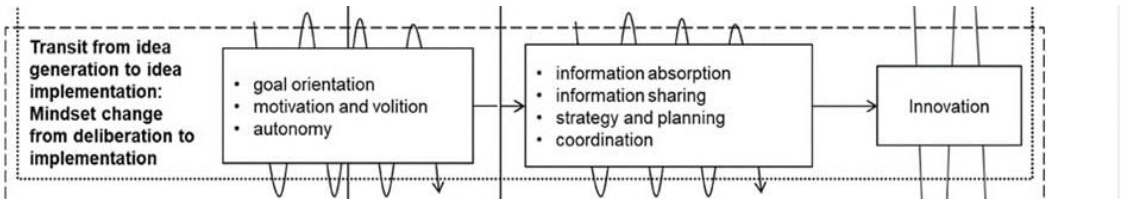
Thus, at the ideation stage of multiregional projects, in which top management is largely involved, the primary filter through which information is processed is the priority placed on technological and process unification. However, top management may not realize that unification is not always possible and that there are limits to its implementation; these issues may simply not be considered in the ideation phase:

"India needs to have some kind of accounting. And our savvy American management uses a program called 'Intact,' which works in the EU and in the US. And they're like, 'Here, an accounting program, Intact, great!' Meanwhile, this Intact isn't available in India at all — it doesn't support any Indian reports, it doesn't know any Indian regulations. And it's completely unclear how all of this is supposed to work in India now."

3.2. RESULTS FOR INNOVATION PHASE

Figure 5

Innovation phase of the ImpAct Model



Source: Reif et al., 2025

In the innovation phase, where the transition from idea generation to implementation occurs, two important input factors—goal orientation and autonomy—are crucial for Xometry's multi-regional projects. As the company's previous experience has shown, it's crucial that all project's team members consciously strive to achieve maximum technological and procedural unification.

On the other hand, complete unification is unattainable—regional specificities are inevitable; therefore, the product manager and project participants need to possess autonomy to the extent where their autonomy helps to avoid unviable unification solutions.

"India needs to have some kind of accounting. And our savvy American management uses a program called 'Intact,' which works in the EU and in the US. And they're like, 'Here, an accounting program, Intact, great!' Meanwhile, this Intact isn't available in India at all — it doesn't support any Indian reports, it doesn't know any Indian regulations. And it's completely unclear how all of this is supposed to work in India now."

"So my task is to figure out which system is in place and adapt to it. The Indian accounting team isn't ready yet to accept any American decision."

"Here in Europe, we have Americans, we have Turks, we have Indians, we have Chinese. And we have the same business. That is, we produce custom parts. We get the drawings, we make them. But when we start talking with the Americans, we call the same processes completely

different names. We have different contexts, we have different parts. From a high-level view, it's the same business. But when you zoom in on the process, everything is called differently. And it's this billion little differences, just the difference in contexts…"

"Overall, actually, with these interregional projects, the main problem is really in the distribution of information. And in the differences in contexts."

Thus, we see that employee autonomy, on the one hand, can be a hindrance, leading the company toward decentralization. On the other hand, if employees share a focus on unification and use their autonomy to mitigate the consequences of ill-considered decisions—this is the approach that the product manager of Xometry's multiregional projects considers the most advantageous. Therefore, at this stage, we see a key role for the product manager, who receives information from top management and the lower levels and manages this information among stakeholders (information absorption and sharing). They must also adapt the unification process to real regional differences (strategic planning and coordination)—as demonstrated by the failure to implement the unified Intacct accounting platform in India and the resulting impossibility of unification.

At this level, the product manager sees the ideal team member on a multiregional project as one having a good understanding of how the company's processes operate outside the new region, and not to try to change processes to suit his local procedures, but to adapt them to the company's processes:

"Yes, absolutely, if there were someone within the regions who was genuinely interested in engaging with the processes imposed on them, that would, of course, have significantly eased things."

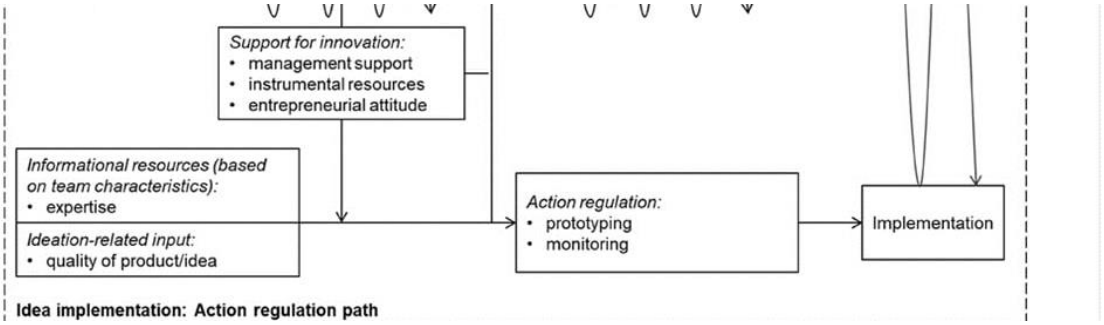
Therefore, for the innovation stage, the most valuable behavior was one in which the project participant combined information absorption, strategy, and planning to understand where to adapt to the company's existing processes and technologies and where not to. This requires a distinct skill from the team member—an understanding of how to work with standardization within the company; it is the employee's constructive ability to integrate their regional specifics into the strategic process unification program is required:

"Guys, let me understand how things work on your side, and here's how we do it, and this is different, and what you have doesn't really fit us. That would, of course, be exactly what could make a real difference."

3.3. RESULTS FOR IMPLEMENTATION PHASE

Figure 6

Implementation phase of the ImpAct Model



Source: Reif et al., 2025

The quality of the idea and the expertise of the team members in the implementation phase are key input factors. As we've discovered, for geographic expansion, the quality of the idea is based on the core strategic principles of targeting regions with low-cost manufacturers, thereby offering the best price to the end customer and increasing the company's margins.

"So, it might be more profitable to start doing what we do well in another country, rather than trying something new in a market we already know well."

For Xometry's multi-regional project, this strategy is typical and quite reliable. The only risk this approach posed, as the company learned from experience, was the risk of alienating a region and making it impossible to reintegrate it. Therefore, the quality of the idea should be assessed based on how well integrated the region will be into the company and how processes are standardized.

"And if you decide to launch, for example, in India, it might actually be harmful to create a dedicated tech team there, because they will basically start going their own way, and it will become harder for you to balance the unified platform code—which you want to keep universal—with some India-specific tweaks."

"When we launched in China, our European platform was still weak and underdeveloped, so it was easier for us to allocate individual developers to work on the Chinese branch, essentially. And that branch went far, and now it would be too expensive and too difficult to pull them back together. But when we did Turkey and the UK, we did it a year later, and by then we had already learned our lesson—we didn't want to repeat the same mistakes. So we put a lot of effort into making sure that Turkey, the UK, Europe, and now India, were all supported by a single team."

The team members' expertise for the multi-regional project now also follows this principle of unification—the company has begun to avoid regional teams, creating multi-regional teams that bring together employees of the same profession from different regions:

"If you need to, say, hire four more people to strengthen the team for India, it might be better not to group them into a separate team and call it the Indian IT team. Instead, you could distribute these people across the relevant domains in the global team, where more customization or reinforcement is needed."

Management support and entrepreneurial attitude serve as a mediator during the implementation stage, and the product manager plays a key role here, striving for standardization but also taking into account regional specificities. If the product manager neglects this process at the task and prototype generation stage, regional differences will increase. Moreover, as the product manager himself reports, his own efforts alone are insufficient in this process; support from top management is critically needed.

"The American management mixed with the European management, and the European teams mixed with the Turkish teams. Now, though, this context is gradually fading. The Turkish and European teams are more like regular DFM teams, for example, which have to operate according to shared rules. But this change actually happened quite recently, when Oscar joined us… We got a new Ops Director who is responsible for all of this. He started bringing everyone together at a single table every day, created unified centers of responsibility, and it seems things got more coordinated… Literally, the teams are now integrated. There is no longer a separate Turkish DFM; there's just DFM serving all regions. The same goes for logistics."

The idea of unification also needs to be supported at the team level, otherwise the product manager's job becomes too difficult.

"Listen, well, it really depends on the details. You can say it doesn't work, or you can ask how it's supposed to work. Am I really understanding correctly that it's supposed to work like this and not another way? Like, with some kind of counterproposal. Yes, absolutely, if there had been someone within the regions who was genuinely interested in trusting the processes imposed on them, that would have definitely eased things a lot. But in our case, it was more like a desire to invent their own processes."

Thus, we see that in a multiregional project, one of the distinctive elements of the ideation process is the intent to unify the processes of the regional branch with the existing processes in the company.

Also, during the innovation phase of a multiregional project, team members themselves must develop a distinct skill for understanding how to work with unification within the company aiming to integrate their regional specifics into the strategic process of standardization.

In the Implementation phase, we find a critical need for top management to initiate team unification processes, eliminating divisions based on regional characteristics, and assigning a dedicated manager responsible for this. At the same time at the lower levels of the company hierarchy, team members need understanding how to work with unification.

Comparing the opinions of the Technical Director and the Product Manager, both independently mentioned existing barriers and coordination complexity, as well as the need to strive for unification. However, there is a difference in the Product Manager's perspective, as this role involves direct communication with team members. From his viewpoint, certain localization aspects are inevitable, while top management often makes decisions regarding process unification without fully understanding the nuances that arise at the team level. Therefore, for the Product Manager, it was more evident that team members need to understand the parent company's processes and consciously strive toward unification.

4. DISCUSSION AND PRACTICAL IMPLICATIONS

4.1. RESEARCH RESULT RELATIONS WITH THE IMPACT MODEL

The whole research process was based on the approach of *"distinct theorizing on ideation, implementation and their transit as crucial but different phases of innovation in teams"* (Reif et al., 2025) by using the ImpAct model of team innovation as a framework for exploring the innovation process in teams during the implementation of multiregional projects in the Xometry Company. There is no enough studies on innovation implementation in teams and our research was aiming to explore the innovation process in teams during real project activities in the Xometry Company. From ImpAct Model we differentiated innovation process on three phases: Ideation, Innovation and Implementation.

As it was mentioned earlier in the theoretical part of this work, most innovations fail to occur because ideas fail to be implemented. And also implementation is the hardest part of innovation process because team needs to go for organizational support: *"the main challenges to implementation typically lie outside of the team (Leifer et al., 2000) in realizing support from senior management, collaborations with other departments, etc." (as cited in van Knippenberg, 2017).*

During our research we looked closely at every stage of team innovation process in the Xometry Company during the implementation of multiregional projects and now it can be said that during the project implementation phase in Xometry Company there is indeed a strong support from representative of top management (product manager), who coordinates and provides resource support. As a result, the company is successfully expanding its operations by opening subsidiaries in other regions. The innovative component here lies in opening subsidiaries to create a better price offer for clients and a better margin, which helps to increase revenue. The challenge for the Company is that this strategy has its own complexities that require close management.

According to the input-mediator-output logic of the ImpAct Model during the ideation phase, the aim for the unification appears as mediator alongside the information processing and action regulation categories. We can describe the model as follows: the diversity of the team remains as the input, which is moderated by the team climate, and then goes to the mediator step where the aim for the unification is applied. As described by the technical director, the project team may be diverse with diverse knowledge and intentions, they can express their ideas, but they will pass through the step of test on unification. Ideas should work on unification. Therefore, we contend that at the ideation phase in multiregional projects, aim for unification appears as mediator. At the

implementation phase, aim for unification appears as input and mediator. Aim for unification as input implies that the idea passed along to this stage already possesses (or not) unification qualities. Aim for unification as mediator implies that the support of top management during the project implementation and their support particularly of unification remains required and serves as mediator in the ImpAct model.

Based on the interviews materials we have found how the innovative behavior in teams manifests itself and what practical ways exist to improve it. What we learned from the managers can be summarized as follows: members of cross-regional teams need to be aware that process unification across regional units is something that must be considered and actively pursued. In practice, this is reflected in concrete proposals aimed at improving process unification, in the early identification of emerging problems, and in proposing solutions to mitigate the consequences of process misalignment.

Necessary to emphasize that the Head Office should accumulate lessons learned from unsuccessful experiences and take them into account when making decisions for each region. This need was clearly illustrated by the example of implementing the *Intacct* accounting software, which initially did not comply with Indian legal requirements.

We have found that, during the ideation phase, Xometry teams and management rely on a strategic logic that directly shapes both information processing and information integration. This logic determines which ideas are considered relevant to the company's strategy and, consequently, which ideas are taken forward for further consideration at all. Within this strategic framework, the company has also considered projects aimed at acquiring teams from other regions that do not possess a complex technological environment, thereby enabling their faster and smoother integration into Xometry's internal infrastructure.

In academic literature, we have found articles that support the validity of our research findings from different perspectives.

There are articles dedicated to the connection between innovation and standardization. The article by Zarzycka, E., Dobroszek, J., Lepistö, L. *et al.* „Coexistence of innovation and standardization: evidence from the lean environment of business process outsourcing" provided the insight into the relationship between innovation, standardization and management control in general. "*Analyzing the relationship between different levers of control and their nature, we found that process and management innovations can coexist with standardization of those processes. This is an important finding as it overcomes the traditional view that standardization represents*

an organizational control that impede innovation" (Birkinshaw et al. 2008; Wright et al. 2012). The aim of the study was to explore how *controls can support the coexistence of process and management innovations with standardization in the context of management accounting services.* The example of accounting services is highly relevant to our research.

Dr. Sruthi Pillai & Dr. R Ramakrishnan concluded in the article under title "Can Standardization Lead to Innovation?" following "The basic idea remains that standardization and innovation are two different and opposite things yet powerful individuals which are interrelated." "When it comes to task level process/ procedure, you may not be able to and would not want to standardize-let innovation come there. However, when you are defining and creating higher-level processes, standardization can fit in. If innovation brings new idea, standardization makes it compatible at the minimum cost."

For the innovation phase, interviews with respondents showed what kind of team behavior can be considered innovative in the context of multiregional projects. In particular, respondents highlighted that when acquiring an existing team or opening a subsidiary, teams need to go through a shift in mindset, that is aligned with the ImpAct Model.

At Xometry, in multiregional projects, this shift is defined as a change in how employees see their work: instead of viewing themselves as fully autonomous units, they start to see their role as part of a larger organizational system. Their work therefore requires a new perspective, where employees contribute to improving processes at the company level, not only within the region in which they are physically located.

This situation was described as a structure–freedom paradox, reflecting the tension between autonomy and coordination at the innovation stage, which requires explicit management (Potočnik et al., 2022). As noted by Reif et al. (2025), such paradoxes illustrate the ambidextrous nature of innovation. When teams successfully pass this stage and "cross the Rubicon," innovation moves into the implementation phase.

This finding is consistent with the academic literature, which highlights the important role of top management as a source of strategic vision and support for innovation (Lek et al., 2022). Standardization is seen as part of a continuous improvement process that helps unify best practices and communication tools across teams (Koval et al., 2022).

4.2. RECOMMENDATIONS FOR ENHANCING THE INNOVATIVE BEHAVIOR OF PROJECT TEAMS DURING THE IMPLEMENTATION OF MULTIREGIONAL PROJECTS OF THE XOMETRY COMPANY

Based on these findings, the results of this study can be further developed into recommendations for Xometry teams working in multiregional projects. In particular, teams should pay attention to methods that strengthen information sharing and to the development of design thinking programs aimed at supporting the unification process.

Regarding the implementation stage, as presented in the ImpAct Model, managerial support for innovation implementation plays an important role. In Xometry's multiregional projects, the product manager supports and coordinates teams, provides a sense of direction, and ensures that team efforts are not spent on region-specific prototypes that are not relevant for the overall project.

Xometry business model innovation is highly dependent on geographical expansion because the company seeks to find cheaper production capacities and connect them with higher paying customers in more expensive regions. Based on Ding et all. (2021), internationalization creates better conditions for innovation, but it does not automatically provide active growth of innovative activity. Internationalization also brings additional risks related to complexity of coordination across geographies, additional costs for management; cultural, legal and institutional barriers. Xometry has been able to address these issues at the ideation and innovation phases as per the ImpAct model, having mostly engaged top and middle management in alignment with the aim for unification; however, at the implementation phase where teams mainly operate, the majority of team members have not been engaged in aiming for unification. Such teams as DFM (Design for Manufacturing) engineers have already started working as multiregional teams. It does not necessarily also mean that they developed a mindset aimed at working towards unification. Therefore, based on the research, our recommendation is to keep creating multiregional teams (team design) and develop cultural mindset aimed towards unification (workshops, seminars, multiregional team buildings) where the team members across regions would know the parent company processes and procedures and their meaning; would be able to assess how those differ from what is required at the regional level and seek to find and adopt such processes within their region, which would be aligned with the unified company processes everywhere where it is possible, as this is what keeps the company together as a unified entity rather than a collection of subsidiaries, cut costs and time on innovation.

5. CONCLUSIONS AND IMPLICATION FOR A FUTURE STUDIES

The findings of this study could be interesting for managers and teams, working in multiregional projects in international companies. Regarding objectives of this work formulated in the beginning, we can draw the following conclusions:

1. Face-to-face interviews were conducted with a Technical Director and a Product Manager to explore the innovation process within teams working on multiregional projects. Xometry respondents described opening of subsidiaries in China, Turkey, and India, partly in the UK. Subsidiaries were opened during certain periods in the company's history: China being the earliest. The Chinese subsidiary illuminated the wrong decisions made by the company at the time, which they also describe as, perhaps, unavoidable in their circumstances. The biggest issue they encountered in the case of the China subsidiary is that the subsidiary when being built, created too many local differences from the parent company that at this point it cannot be merged into the main company structure all other subsidiaries are integrated into. These initial mistakes formed the company's vision of proper multiregional expansion and their model innovation management. Product Manager and Technical Director described how they guide innovation process, which we further interpreted through the ImpAct model and analyzed their innovation behavior via the three phases of the ImpAct model; identified the key characteristic (aim for unification) required for innovation in multiregional projects; as well as how this key characteristic reveals itself at the three phases of the ImpAct model and which barriers it encounters.

2. The key finding emerged as a theme, which emerged in both the Technical Director and Product Manager narratives: aiming for process unification. It remains a significant challenge in multiregional projects, which, if disregarded, can lead the company to non-manageable collection of semi-autonomous regions. Process unification enables integration of regional subsidiaries into one unified structure, allows avoiding cases where subsidiary veers away from the company's technological and procedural basis to such a degree that it becomes too costly to re-integrate this subsidiary back into the company. Aiming for process unification, if adopted at all levels, increases the innovativeness of the teams at the three innovation phases as described by the ImpAct model during the implementation of multiregional projects (subsidiary opening, integration of accounting software in the new subsidiary, standardization of processes among different teams in different regions). Aiming for process unification in a multiregional context leads to smoother and more cost- and time-effective project implementations.

3. This study investigated how top managers and product managers guide transitions between innovation stages and support idea development in the context of multiregional projects. The findings demonstrate that managerial guidance plays a critical structuring role throughout the ideation, innovation, and implementation phases of the innovation process. Top managers need to initiate the unification process, assign responsible managers who introduce procedures establishing the unification processes in the company. Therefore, the role of top managers during the *ideation* phase and as mediators at the *implementation* phase are important: for successful innovation, it requires that they set the strategic intent regarding unification of processes across regions, provide dedicated management for the unification processes and allocate resources. Product managers, in turn, act as key intermediaries between strategic intent and operational execution. Their role is especially important during the *innovation* phase of the ImpAct model, where they translate high-level strategic goals into actionable requirements, facilitate alignment between regional teams over the guiding principle of unification, and they also identify where local divergences are necessary for operating under different regulatory, cultural, and organizational conditions. Product Managers experience the interest clash between the top management's intent to unify and the local subsidiary's intent to adopt the process to their local condition. To solve the issue of that interest clash, the Product Manager suggests that idea of aiming for unification (knowing the parent company processes and assessing local needs in the perspective of the parent company's processes) also needs to be supported at the team level, otherwise the product manager's job becomes difficult and inhibits innovation.

4. Overall, the findings suggest that the distinct aspect of effective innovation in multiregional projects is the intent for unification, which depends less on isolated creative individual initiatives, but more, on the one hand, on the ability of top managers and product managers to deliberately design structures, communication mechanisms, and responsibility centers that enable unification of processes and integration of decentralized teams into one company structure; on the other hand, on the understanding of the importance of the process of unification at the team level and the team's willingness to abide by this principle.

Among the challenges affecting Xometry's teams innovation, several interrelated barriers were identified. Based on their experience with multiregional projects, respondents consistently emphasized the complexity of coordination across regions. This complexity stemmed primarily from the need to keep the balance of unified company basis with differences in structures, processes, and internal rules and lack of multiregional operation skills of employees, which are

factors hindering the alignment of teams working within the same business model and leading to decentralization.

Regional team members highlighted regulatory and market differences across regions as a significant constraint for unification processes, particularly in relation to legal and compliance requirements that limited the applicability of standardized solutions.

Communication barriers were identified. Respondents noted that information sharing across regions was problematic due to employees in regions lacking skills of multiregional operation where they need to know the parent company's processes and aim for unification where possible only adjusting to necessary local needs. Even within identical business activities, regional teams tended to operate with distinct local contexts, terminology, and assumptions, which reduced technical integration and slowed innovation-related decision-making.

The company has recently started to address these barriers by introducing management responsible for unification, which lead to forming multiregional teams based more on the employees job title, rather than their region. The top management devises strategies of geographical expansion with the guiding aim for unification in mind: based on this principle, the company decides whether they buy a company in a new region or develop it from scratch. At the top level, management, however, lacks understanding when unification is not possible, and this is resolved at the product manager level. However, what remains untackled yet and what keeps deranging the product manager work is team level, where only part of employees have started working multi-regionally and started to develop multi-regional working mentality aiming for unification of processes. More cross-regional integration and intentional study of multi-regional operation at the team level can be made by the company to solve this issue.

Implication for future studies

Future research could extend the present study by employing a broader and more diverse sample of respondents. In particular, incorporating the perspectives of team members operating across different regions would allow for a more nuanced understanding of how multiregional project contexts shape team innovation processes. Another direction for future research concerns the role of leadership in fostering innovation within multiregional project teams. Specifically, studies could investigate how different leadership styles, coordination mechanisms, and communication practices influence innovation outcomes in geographically dispersed teams.

LIST OF LITERATURE

1. Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior, 10, 123–167.*
2. Amabile, T. M. (1996). Creativity in context. Westview Press.
3. Ancona, D. G., & Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. Organization Science, 3(3), 321–341. https://doi.org/10.1287/orsc.3.3.321
4. Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. Academy of Management Journal, 57(5), 1297–1333. https://doi.org/10.5465/amj.2014.0010
5. Ashford, S. J., & Black, J. S. (1996). Proactivity during organizational entry: The role of desire for control. Journal of Applied Psychology, 81(2), 199–214. https://doi.org/10.1037/0021-9010.81.2.199
6. Buckley, P. J. (2009). The impact of the global factory on economic development. Journal of World Business, 44(2), 131–143. https://doi.org/10.1016/j.jwb.2008.05.003
7. Byron, K., Keem, S., Darden, T. R., Shalley, C. E., & Zhou, J. (2022). Building blocks of idea generation and implementation in teams: A meta-analysis of team design and team creativity and innovation. Personnel Psychology, 76(1), 249–278. https://doi.org/10.1111/peps.12501
8. Chatzi, V., Nikolaou, I., & Anderson, N. (2023). How team personality diversity shapes innovation: The mediating role of team climate. Group & Organization Management, 48(4), 740–774. https://doi.org/10.1177/10596011221150711
9. Chesbrough, H. (2006). Open innovation: The new imperative for creating and profiting from technology. Harvard Business Press.
10. Crant, J. M. (2000). Proactive behavior in organizations. Journal of Management, 26(3), 435–462. https://doi.org/10.1177/014920630002600304
11. De Jong, J. P. J., & Den Hartog, D. N. (2010). Measuring innovative work behaviour. Creativity and Innovation Management, 19(1), 23–36. https://doi.org/10.1111/j.1467-8691.2010.00547.x
12. De Jong, J. P. J., & Vermeulen, P. A. M. (2005). Organizing successful new service development: A literature review. Management Decision, 43(9), 1183–1202. https://doi.org/10.1108/00251740510626297

13. Ding, S., McDonald, F., & Wei, Y. (2021). Is internationalization beneficial to innovation? Evidence from a meta-analysis. *Management International Review, 61*(4), 469–519. https://doi.org/10.1007/s11575-021-00451-0
14. Dorenbosch, L., Van Engen, M. L., & Verhagen, M. (2005). On-the-job innovation: The impact of job design and human resource management through production ownership. Creativity and Innovation Management, 14(2), 129–141. https://doi.org/10.1111/j.1476-8691.2005.00333.x
15. Edmondson, A. C. (2012). Teaming: How organizations learn, innovate, and compete in the knowledge economy. Jossey-Bass.
16. Fernández, I. A. (2023). Innovation and international business: A systematic literature review. Journal of International Business Review, 32(4), 101108. https://doi.org/10.1016/j.ibusrev.2023.101108
17. Gallagher, S. (2015). Time, risk, and innovation: Creating space in your day to solve meaningful problems. Paper presented at PMI Global Congress 2015—EMEA, London, England. Project Management Institute.
18. Galbraith, J. R. (2014). Designing organizations: Strategy, structure, and process at the business unit and enterprise levels (3rd ed.). Jossey-Bass.
19. Griffith, T. L., Sawyer, J. E., & Neale, M. A. (2003). Virtualness and knowledge in teams: Managing the love triangle of organizations, individuals, and information technology. MIS Quarterly, 27(2), 265–287. https://doi.org/10.2307/30036530
20. Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. Journal of Applied Psychology, 94(5), 1128–1145. https://doi.org/10.1037/a0015978
21. International Organization for Standardization. (2018). Occupational health and safety management systems—Requirements with guidance for use (ISO Standard No. 45001:2018). https://www.iso.org/standard/63787.html
22. Jankelová, N., Joniaková, Z., & Mišún, J. (2021). Innovative work behavior and its impact on performance and sustainability. Sustainability, 13(15), 8357. https://doi.org/10.3390/su13158357
23. Kanter, R. M. (1988). When a thousand flowers bloom: Structural, collective, and social conditions for innovation in organizations. Research in Organizational Behavior, 10, 169–211.

24. Lin, H. F., Chen, J. C., & Chiu, Y. C. (2018). Factors affecting employees' innovative behavior in the workplace. Industrial Management & Data Systems, 118(1), 28–48. https://doi.org/10.1108/IMDS-08-2017-0328
25. Majchrzak, A., More, P. H. B., & Faraj, S. (2012). Transcending knowledge differences in cross-functional teams. Organization Science, 23(4), 951–970. https://doi.org/10.1287/orsc.1110.0677
26. March, J. G. (1991). Exploration and exploitation in organizational learning. Organization Science, 2(1), 71–87. https://doi.org/10.1287/orsc.2.1.71
27. Martini, A., Massa, S., & Testa, S. (2013). Customer-centric knowledge management practices for innovation: The case of a food and beverage company. International Journal of Information Management, 33(5), 738–747. https://doi.org/10.1016/j.ijinfomgt.2013.06.001
28. Martins, E. C., & Terblanche, F. (2003). Building organizational culture that stimulates creativity and innovation. European Journal of Innovation Management, 6(1), 64–74. https://doi.org/10.1108/14601060310456337
29. Miller, D. J., Zhao, M., & Calantone, R. J. (2020). Adding interpersonal learning and tacit knowledge transfer to the absorptive capacity construct. Academy of Management Review, 45(3), 577–601. https://doi.org/10.5465/amr.2017.0235
30. Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. MIS Quarterly, 41(1), 223–238. https://doi.org/10.25300/MISQ/2017/41.1.17
31. Nonaka, I., & Takeuchi, H. (1995). The knowledge-creating company: How Japanese companies create the dynamics of innovation. Oxford University Press.
32. OECD/Eurostat. (2018). Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation (4th ed.). OECD Publishing. https://doi.org/10.1787/9789264304604-en
33. Parker, S. K., Bindl, U. K., & Strauss, K. (2010). Making things happen: A model of proactive motivation. Journal of Management, 36(4), 827–856. https://doi.org/10.1177/0149206310363732
34. Robbins, S. P., & Judge, T. A. (2022). Essentials of organizational behavior (15th ed.). Pearson Education.

35. Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. Academy of Management Journal, 37(3), 580–607. https://doi.org/10.2307/256701
36. Sinnemann, M. F., & Weiss, M. M. (2025). Team virtuality and innovation: A meta-analysis of the moderating role of team design. Journal of Organizational Behavior, 46, 867–888. https://doi.org/10.1002/job.2889
37. Speitel, R. E. (2005). Leadership in project management. PM Network, 19(10), 34–35.
38. Staw, B. M., & Boettger, R. D. (1990). Task revision: A neglected form of work performance. Academy of Management Journal, 33(3), 534–559. https://doi.org/10.5465/256581
39. Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing, and public policy. Research Policy, 15(6), 285–305. https://doi.org/10.1016/0048-7333(86)90027-2
40. Thurlings, M., Evers, A., & Vermeulen, M. (2015). Toward a model of explaining teachers' innovative behavior: A literature review. Review of Educational Research, 85(3), 430–471. https://doi.org/10.3102/0034654314557949
41. van Knippenberg, D., & Hoever, I. J. (2021). Team diversity and innovation: A comprehensive review. Annual Review of Organizational Psychology and Organizational Behavior, 8, 47–70. https://doi.org/10.1146/annurev-orgpsych-012420-055856
42. Venaik, S., & Brewer, P. (2010). Avoiding uncertainty in international business: A multidimensional analysis of uncertainty avoidance. International Business Review, 19(5), 491–507. https://doi.org/10.1016/j.ibusrev.2010.02.010
43. West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. Applied Psychology, 51(3), 355–387. https://doi.org/10.1111/1464-0597.00951
44. West, M. A., & Anderson, N. R. (1996). Innovation in top management teams. Journal of Applied Psychology, 81(6), 680–693. https://doi.org/10.1037/0021-9010.81.6.680
45. West, M. A., & Farr, J. L. (1990). Innovation and creativity at work: Psychological and organizational strategies. Wiley.
46. Wu, C. H., & Parker, S. K. (2013). The role of leader support in facilitating proactive work behavior: A meta-analysis. Journal of Management, 39(5), 1228–1254. https://doi.org/10.1177/0149206312471394

47. Xometry. (2023, July 18). Xometry expands its Teamspace collaboration solution. https://xometry.eu/en/xometry-expands-its-teamspace-collaboration-solution/
48. Xometry Europe. (2019, December 3). Xometry acquires Shift, Europe's largest on-demand manufacturing marketplace. https://xometry.eu/en/xometry-acquires-shift-europes-largest-on-demand-manufacturing-marketplace/
49. Yuan, F., & Woodman, R. W. (2010). Innovative behavior in the workplace: The role of performance and image outcome expectations. Academy of Management Journal, 53(2), 323–342. https://doi.org/10.5465/amj.2010.49388995
50. Zakaria, N., Amelinckx, A., & Wilemon, D. (2004). Working together apart? Building a knowledge-sharing culture for global virtual teams. Creativity and Innovation Management, 13(1), 15–29. https://doi.org/10.1111/j.1467-8691.2004.00290.x
51. Zander, U., & Butler, C. (2010). Leadership modes and the internalization of organizational social capital. Organization Studies, 31(3), 331–355. https://doi.org/10.1177/0170840609357389

APPENDICES

Appendix 1

Interview Questionnaire

Technical Director	Ideation phase	How do ideas usually emerge in your team, and how do you decide which of them should be developed further?
		How do you evaluate proposed ideas — what matters most to you at this stage?
		In your experience, how important is a supportive team climate (an atmosphere where people feel safe to propose new or unconventional ideas)? Is this something you intentionally work on during the project?
		In your view, what were the biggest obstacles to idea generation in a multi-regional team (for example, distance, coordination challenges, cultural differences)? What kind of leadership support is needed to overcome them?
		Did ideas come from various team members and different teams, or mostly from the technical team? In other words, where did the innovation primarily originate?
	Transition phase	How did the transition from broad idea exploration to selecting one or two priority concepts usually happen? Who typically initiates this shift?
		To what extent were team members autonomous in this project? And how much strategic guidance was needed to align everyone on the tasks and direction?

		What role did planning, coordination, and cross-regional alignment lay at this stage?
		How would you assess the team's motivation after the decision to move forward with the project was made? How focused was the team on the goal, and how safe did people feel to actively contribute?
		What multi-regional barriers (coordination, access to resources, alignment of goals and incentives) tended to arise most often during this transition phase?
	Innovation phase	In your experience, what type of managerial support was most critical for implementing innovative ideas — resources, time, tools, or something else?
		Once the project reached the implementation stage, what challenges did you encounter? For example, did you discover that the concept needed adjustments or that prototypes had to be redone? Why did this happen — were certain factors overlooked earlier, or was there a lack of specific knowledge within the team?
		To what extent did cross-regional coordination slow down or accelerate the implementation of the project?
		What challenges arose around resource allocation in the project, and how did you address them?
		In your view, what determines whether an idea becomes a fully implemented innovation rather than remaining just a concept?

Product Manager	Ideation phase	How do you organize information sharing and brainstorming among people from different regions?
		What helps team members feel comfortable enough to propose ideas, even unusual ones?
		How does the team gather information from external sources — other departments, regions, or partners?
		How do you determine which ideas should be documented and explored further?
		What cross-regional barriers make it harder for new ideas to emerge in your team?
	Transition phase	How do you help the team move from broad discussions to more focused decisions?
		How do you ensure that people from different regions share common goals and understand where the project is heading?
		What coordination challenges usually appear at this stage, and how do you address them?
		How do you support the team's motivation once the work on specific ideas begins?
		How do team autonomy, planning, and strategic discussions influence this transition phase?
	Innovation phase	What resources (technical, tools, managerial support) do you need to implement ideas successfully?
		How do you coordinate the work when different parts of the project are carried out in several regions?

		How do you track progress and collect feedback during prototyping and implementation?
		What obstacles most often disrupt implementation: time-zone differences, unclear ownership, lack of tools, leadership support, or something else?
		How do you help the team reflect on their experience and learn from it to improve the implementation process?