



CHALMERS
UNIVERSITY OF TECHNOLOGY



Preventing Communication Misalignment in Multicultural Hybrid Engineering Teams

Master's thesis in Design and Construction Project Management

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CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden 2026
www.chalmers.se

MASTER'S THESIS 2026

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Abstract

The adoption of Global Delivery Models (GDMs) and hybrid work arrangements has transformed how communication and coordination are carried out within project-based organizations (PBOs). Although these structures enable organizations to leverage larger competence networks and achieve greater flexibility, they simultaneously increase the complexity of communication, coordination, and alignment between geographically distributed units. The aim of the thesis is to examine how communication challenges emerge and how leaders structure communication and feedback to facilitate shared understanding in multicultural hybrid project-based engineering teams. The study was conducted in collaboration with a Scandinavian engineering consultancy operating through a Global Delivery Model. The empirical material consists of 22 semi-structured interviews with project managers, discipline leaders, and engineers across Sweden, Denmark, Poland, India, and Lithuania, as well as observations of project meetings. Using a qualitative and abductive research design, the study explores communication and coordination processes in multicultural and geographically distributed engineering teams. The findings indicate that communication challenges are primarily related to differences in how information is interpreted across cultural, disciplinary, and geographical boundaries rather than to a lack of communication itself. Communication misalignment was found to emerge through implicit assumptions, differing expectations regarding hierarchy and feedback, linguistic inconsistencies, and reduced contextual awareness in hybrid settings. The results further demonstrate that leaders can support alignment through explicit clarification, continuous verification of understanding, adaptive communication practices, and regular follow-up.

Keywords: AEC industry, Communication, Cross-cultural collaboration, Distributed teams, Engineering, Feedback processes, Global Delivery Models (GDM), Hybrid teams, Leadership, Misalignment, Project-based organizations, Virtual collaboration.

Preventing Communication Misalignment in Multicultural Hybrid Engineering Teams

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Sammanfattning

Införandet av globala leveransmodeller (Global Delivery Models, GDM) och hybrida arbetsformer har förändrat hur kommunikation och samordning genomförs inom projektbaserade organisationer (PBO). Trots att dessa strukturer möjliggör för organisationer att nyttja bredare kompetensnätverk och uppnå ökad flexibilitet, medför de samtidigt en ökad komplexitet i kommunikationen, samordningen och anpassningen mellan geografiskt spridda arbetsgrupper. Syftet med avhandlingen är att undersöka hur kommunikationsutmaningar uppstår samt hur ledare strukturerar kommunikation och återkoppling för att främja samsyn och gemensam förståelse mellan medlemmar i multikulturella, hybrida och projektbaserade team. Avhandlingen genomfördes i samarbete med ett skandinaviskt teknikonsultföretag som tillämpar en global leveransmodell. Det empiriska materialet omfattar 22 semistrukturerade intervjuer med projektledare, tekniskansvarig och ingenjörer i Sverige, Danmark, Polen, Indien och Litauen, samt observationer av projektmöten. Genom en kvalitativ och abduktiv forskningsdesign undersöker studien kommunikations- och samordningsprocesser i multikulturella och geografiskt distribuerade projektteam. Resultaten indikerar att kommunikationsutmaningarna huvudsakligen är kopplade till skillnader i hur information tolkas över kulturella, disciplinära och geografiska gränser, snarare än till bristande kommunikation. Kommunikationsrelaterade missförstånd uppstår till följd av implicita antaganden, skilda förväntningar på hierarki och återkoppling, språkliga inkonsekvenser samt minskad kontextuell förståelse i hybrida arbetsmiljöer. Vidare visar resultaten att ledare kan främja samordning och samsyn genom tydliga förtydliganden, kontinuerlig verifiering av förståelse, anpassade kommunikationsstrategier samt regelbunden uppföljning.

Nyckelord: AEC-industrin, kommunikation, tvärkulturellt samarbete, distribuerade team, ingenjörsverksamhet, feedbackprocesser, globala leveransmodeller (GDM), hybrida team, ledarskap, bristande samordning, projektbaserade organisationer, virtuellt samarbete.

Acknowledgements

This master's thesis was conducted during the spring of 2026 at Chalmers University of Technology within the Department of Technology Management and Economics, in collaboration with Tallinn University of Technology in School of Information Technologies.

We would like to express our sincere gratitude to everyone who contributed to this research throughout the thesis process. First and foremost, we would like to thank all interview participants for generously sharing their time, experiences, and reflections. Your openness and willingness to discuss the complexities of communication, coordination, and collaboration within international project environments, have been invaluable to this study and greatly contributed to our understanding of the research area.

Furthermore, we extend our sincere appreciation to our supervisor and examiner at Chalmers, Pernilla Gluch, for her continuous guidance, insightful feedback, and academic support throughout the research process. Her expertise within the AEC industry and organizational change processes has played an important role in strengthening both the direction and quality of this thesis. We are equally grateful to our supervisor at TalTech, Susanne Durst, for her enthusiasm and valuable input within the field of international business and cross-cultural research. In addition, this study would not have been possible without the support of our external supervisor, Fredrik Bergfeldt, who entrusted us with this case study and generously shared valuable industry insights, guidance, and access to his professional network throughout the research process.

We would also like to acknowledge our opponents and peers, Mirna Alnahi and Rasmus Staaf, whose constructive feedback and reflections contributed to valuable discussions throughout the thesis process. Our families and significant others deserve special recognition for their encouragement, understanding, and unwavering support throughout this journey. Lastly, we would like express gratitude for each other, for the collaboration across both cultural and disciplinary backgrounds, that has fundamentally shaped this research throughout the journey. Writing this thesis together has involved both challenging and rewarding periods, and the process would not have been the same without the trust, laughter, perseverance, and friendship.

Anna Hoang and Veroonika Tamm
Gothenburg, June 2026

List of Abbreviations and Terms

AEC industry	Architecture, Engineering and Construction Industry
AI	Artificial Intelligence
GDM	Global Delivery Models
MoM	Minutes of Meeting
PBO	Project-Based Organisation

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1. Introduction

1.1 Background

The Architecture, Engineering and Construction (AEC) industry is a project-based industry where multidisciplinary actors coordinate work under changing conditions and strict delivery schedules (Chartered Institute of Building 2015). Due to the interdisciplinary and interdependent nature of construction projects, engineering execution depends on the continuous coordination between multiple actors, where the progress of an activity often relies on timely and accurate input from others (Dainty et al. 2006). At the same time, large-scale construction projects are frequently associated with delays, cost overruns, and performance inefficiencies, reflecting the complexity of project environments where requirements, dependencies, and project conditions continuously evolve (Organisation for Economic Co-operation and Development 2023). As projects increase in scale and complexity, organizations are often required to engage in more international collaboration and to adopt greater flexibility and adaptability to manage changing project conditions (Geraldi et al. 2011).

As a response to increasing project complexity and pressure for more cost-efficient project delivery, stakeholders within the AEC industry have increasingly adopted geographically distributed structures within their organizations (Whyte 2019; Dainty et al. 2006). Such arrangements enable firms to access broader competence networks, improve organizational scalability, and remain competitive within increasingly globalized engineering markets (Lewin et al., 2009). Within engineering consultancy firms, these developments have contributed to the emergence of Global Delivery Models (GDMs), which are organizational delivery structures used to coordinate engineering work across multiple geographical locations (Manning et al. 2015). Organizations with these business models, integrate internationally distributed resources into the same project execution process. Technical work is therefore carried out across different offices and delivery centers while remaining embedded within shared workflows, project structures, and organizational systems. Consequently, project delivery increasingly relies on collaboration between actors operating across different cultural, organizational, and disciplinary contexts. At the same time, multicultural collaboration and communication has become increasingly important for organizational performance. Research suggests that companies in the top quartile for ethnic and cultural diversity are 36% more likely to outperform financially compared to less diverse organizations (McKinsey & Company 2020). This indicates that the ability to manage multicultural collaboration effectively may constitute an important organizational capability within increasingly globalized industries. While GDMs enable improved scalability and competitiveness, they can also increase the dependence on effective communication across multicultural project teams in geographically distributed environments.

Recent research on hybrid, virtual, and globally distributed teamwork has produced strong contributions on communication, coordination, and collaboration in virtual settings. This work shows that factors such as asynchronous communication, reduced contextual cues, and reliance on digital tools significantly influence how teams coordinate and perform (Choudhury et al. 2020; Parker et al. 2020). In parallel, studies on multicultural collaboration in virtual teams highlight how cultural differences affect communication behaviour, feedback interpretation, trust formation, and psychological safety (Wang et al. 2023; Gibson et al. 2011). Research has also examined cultural and coordination-related factors within IT and manufacturing project management in multicultural, globally distributed team settings. Whereas comparatively less attention has been directed toward similar dynamics in construction and engineering project delivery contexts (Mazur et al. 2025).

The key research gap is therefore not primarily related to identifying communication challenges or cultural differences in distributed collaboration, as these areas have already been explored in research on multicultural project environments, for example, by Ochieng et al. (2010) and Dainty et al. (2006). Thus, limited research has examined how misalignment in shared understanding develops over time through ongoing interaction within Global Delivery Model environments characterized by high interdependence across organizational, disciplinary, and geographical boundaries. Existing studies have often treated communication, feedback, and coordination as analytically separate phenomena, contributing to a relatively static understanding of misalignment as an outcome rather than a process shaped through repeated interaction. In addition, few studies combine interview-based insights with observational data capturing communication and feedback as they unfold during project execution. As a result, the interactional processes through which misunderstandings are reinforced, negotiated, or resolved in multicultural hybrid engineering teams remain insufficiently understood.

1.2 Problem Formulation and Case Study

This section presents the problem formulation in the study and introduces the case study context. It outlines the communication and coordination challenges associated with multicultural and geographically distributed engineering projects and describes the organizational setting in which the research was conducted.

1.2.1 Problem Formulation

Communication complexity further increases in multicultural collaboration environments where project actors may operate according to different communicative norms, assumptions, and interaction patterns. Previous research has highlighted how differences related to hierarchy sensitivity, indirect communication, contextual interpretation, and feedback practices influence how messages are interpreted and acted upon within multicultural project settings (Meyer 2014; Tenzer et al. 2014).

In geographically and organizationally distributed teams, such differences can further complicate coordination across disciplinary and cultural boundaries (Gilson et al. 2015; Ochieng et al. 2010). These communicative differences do not necessarily result in visible conflict or direct disagreement. Instead, Ochieng et al. (2010) emphasize that ambiguity may remain implicit within communication processes, particularly in situations where clarification is avoided, assumptions remain unexplored, or silence is interpreted as agreement. Under such conditions, project actors may appear aligned while simultaneously operating according to differing interpretations of tasks, expectations, or responsibilities. In this study, such conditions are conceptualized as misalignment, referring to situations in which perceived understandings differ, despite ongoing communication and perceived agreement, disrupt coordination across interdependent project activities (Majchrzak et al. 2011).

If not identified and addressed in a timely manner, misalignment may accumulate across project phases and develop into more systemic coordination challenges. Under such conditions, misalignment may remain latent in early stages of project execution but can progressively amplify as work becomes more interdependent and coordination demands increase over time. In complex engineering projects, minor interpretive discrepancies may propagate through interdependent workstreams, contributing to inefficiencies such as rework, design inconsistencies, delayed decision-making, and suboptimal resource allocation (Love et al. 2018; Eriksson et al. 2017). Over time, such inefficiencies can escalate into broader project-level performance issues, including reduced predictability, increased delivery risk, and compromised quality outcomes (Flyvbjerg 2014). In geographically distributed project environments, these effects are further reinforced by structural coordination constraints inherent in complex project systems, where interdependencies and separation of work reduce the immediacy of feedback and limit opportunities for informal clarification, thereby making emerging misalignments more difficult to detect and correct at an early stage (Geraldi et al. 2011; Stray et al. 2020). Consequently, misalignment not only affects communication efficiency but can also undermine overall project performance, cost control, and delivery reliability in complex, distributed engineering settings.

1.2.2 Case Study

This research was conducted in collaboration with a large Scandinavian engineering consultancy operating within infrastructure and civil engineering projects. The organization applies a Global Delivery Model, in which local engineering personnel collaborate with GDM employees located in international offices in India, Poland, and Lithuania on project deliveries in Sweden, Denmark, Norway, North America, and the United Kingdom. This organizational setup reflects broader developments within the AEC industry, where geographically distributed collaboration and international resource integration have become increasingly embedded in project execution and organizational strategy.

The case study focuses on three large-scale infrastructure projects located in Sweden, referred to in this thesis as Project A, Project B and Project C. All three projects involve public-sector clients and are characterized by high technical complexity, extensive interdisciplinary collaboration, and distributed project teams and were limited to the Construction Phase of the project life-cycle. Where project execution relies on continuous interaction between multiple, stakeholders, technical disciplines and organizational units contributing to shared project deliverables across locations. The different phases of a project life-cycle are presented below in Figure 1.

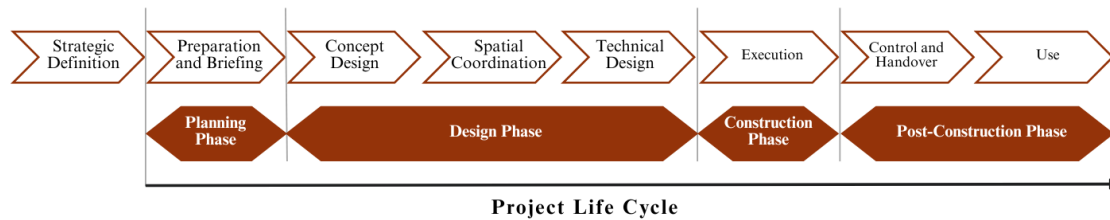


Figure 1. *Illustration of project life cycle in construction engineering.*

The organization in large scale projects, generally consists of a client representative, project management led by the Executive Project Manager and Project Manager, block leaders, engineering management, and multiple engineering disciplines. Project Managers are responsible for overall project coordination and stakeholder communication, while block leaders oversee specific project areas and discipline leaders coordinate technical work within their respective disciplines. Engineering activities are carried out by local engineers and GDM engineers, who perform similar tasks across different locations and countries. Collaboration between these roles is achieved through shared project processes, ensuring effective coordination, communication, and delivery of project objectives. The organization structure of large scale projects, in the case company, is illustrated in Figure 2.

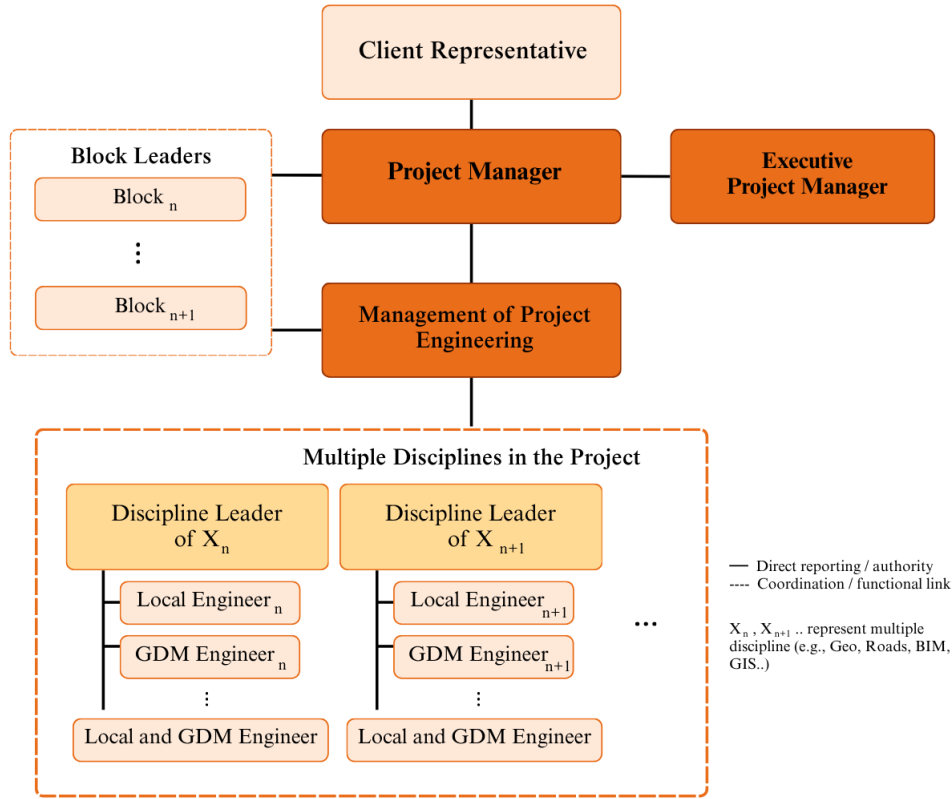


Figure 2. *Simplified organizational structure for large-scale projects in the case company.*

1.3 Aim and Research Questions

The aim of this study is to explore how leaders structure communication and feedback in multicultural project-based teams in order to promote shared understanding and mutual trust. The study seeks to examine the phenomenon of cross-cultural interaction between discipline leaders and engineers, as well as existing practices that support clarity, coordination, and mutual trust in hybrid and geographically distributed project environments. Through a qualitative case study in collaboration with a Scandinavian engineering company, the research aims to contribute to a deeper understanding of how communication practices can affect alignment and collaboration in multicultural project-based engineering teams.

This study is guided by two research questions that together address both the structuring of communication and the challenges that arise in multicultural project environments.

1. What communication challenges exist in multicultural hybrid project-based engineering teams?
2. How do leaders structure communication and feedback in multicultural hybrid project-based engineering teams, to facilitate shared understanding across diverse working environments?

The first research question examines the communication-related challenges associated with multicultural and geographically distributed collaboration in engineering project environments. Particular attention is directed toward how differences in communication practices, feedback norms, interpretation, and cultural expectations influence coordination across interdependent project activities. The question further addresses how discrepancies in understanding may persist within ongoing collaboration despite continuous communication between project actors.

The second research question examines how leaders structure communication and feedback to facilitate alignment and shared understanding across multicultural project teams. The question focuses on the leadership behaviors and coordination approaches to maintain clarity, reduce interpretive discrepancies, and support collaboration across organizational, disciplinary, and cultural boundaries.

2. Theoretical Framework

This chapter outlines the theoretical framework relevant to the research questions and introduces the concepts used in the analysis and discussion in later chapters.

2.1 Multicultural Project-Based Engineering Context

2.1.1 Project-Based Interdependence and Coordination

Project-based forms of organizing dominate the Architecture, Construction, and Engineering industry, where work is structured around temporary projects involving multiple actors, disciplines, and organizational units. Within this context, engineering consultancy plays a pivotal role as one of the main stakeholders. Engineering consultants contribute specialized expertise to manage projects, support design, planning, and decision-making processes across project phases. Such environments are characterized by high levels of task interdependence, meaning that the output of one actor directly conditions the work of others (Dainty et al. 2006). Coordination therefore becomes a central and continuous process, required to align contributions across interdependent activities, particularly in complex projects involving multiple stakeholders and specialized knowledge (Eriksson et al. 2017).

In engineering consultancy settings, coordination is further complicated by the fact that consultants often operate across organizational boundaries without direct authority over other project actors. Rather than relying on hierarchical control, coordination is achieved through the integration of knowledge, alignment of expectations, and continuous interaction with clients, contractors, and other disciplines. The temporary nature of project-based work limits the development of stable routines and shared practices, as each project introduces new constellations of actors and interfaces (Söderlund 2011). As a result, coordination in engineering consultancy contexts relies heavily on communication through which roles, responsibilities, and expectations are continuously clarified and negotiated (Miterev et al. 2017).

Under such conditions, interdependence becomes not only a technical issue but also a communicative one. Engineering consultants must translate specialized knowledge into actionable information while simultaneously aligning their contributions with the expectations of other actors in the project. Coordination failures are frequently linked to unclear responsibilities, fragmented communication, and insufficient feedback processes (Zhang et al. 2018). In consultancy settings, these challenges are often intensified by indirect influence and reliance on others to implement decisions, increasing dependence on shared understanding rather than formal control.

2.1.2 Multicultural Collaboration in Engineering Projects

Given that coordination in PBOs relies heavily on communication for aligning interdependent tasks, it becomes necessary to consider the context in which such communication takes place. Contemporary engineering projects are increasingly executed through globally distributed team structures, where collaboration extends across geographical, organizational, and institutional boundaries (Ochieng et al. 2010; Stahl et al. 2010). Within the construction and engineering sector, this development is closely linked to global project delivery models, in which specialized competencies are integrated across locations to support project execution (Eriksson et al. 2017).

In such environments, collaboration is shaped not only by structural interdependence but also by variations in communication practices and work-related expectations. Ochieng et al. (2010), drawing in part on earlier cross-cultural frameworks such as Hofstede's cultural dimensions (Hofstede et al. 2010), highlight that differences in language use and communication norms influence how information is conveyed and interpreted in construction project teams. Similarly, Dainty et al. (2006) argue that professional practices and contextual factors shape how actors engage in communication processes. However, these differences are not solely rooted in national culture, but also emerge from subcultural variations within project environments, including professional, organizational, and disciplinary backgrounds, which influence how actors interpret roles, responsibilities, and appropriate communication practices. While communication and coordination are inherently complex in any project-based setting, multicultural project environments introduce an additional layer of interpretive variability. Differences in communication norms, expectations of explicitness, and feedback practices can therefore amplify ambiguity in interactions that would otherwise be more easily resolved in culturally homogeneous settings.

As a result, coordination in multicultural project environments becomes more sensitive to ambiguity and interpretation. When actors operate with differing assumptions regarding clarity, responsibility, or appropriate communication practices, the risk of misinterpretation increases (Ochieng et al. 2010). These challenges are further intensified in distributed and hybrid work settings, where communication is mediated and opportunities for immediate clarification are limited, thereby constraining feedback processes and shared situational awareness. As Gilson et al. (2015) note, such conditions reduce opportunities for spontaneous interaction and clarification. Consequently, establishing shared understanding becomes less implicit and increasingly dependent on how communication is structured within the team.

2.1.3 Erin Meyer's Cultural Mapping Framework

Meyer's cultural mapping framework provides a structured approach for analysing systematic variations in communication and collaboration practices within international work environments. Meyer's cultural mapping framework builds on established cross-cultural research, including the work of Hofstede, the GLOBE project, and Hall's theory of high- and low-context communication, integrating these perspectives into a unified analytical model.

Rather than conceptualizing culture as a fixed or deterministic attribute, Meyer's framework treats culture as a set of behavioral tendencies that influence how individuals interpret, enact, and respond to communication in professional contexts (Meyer 2014). Importantly, the framework does not position individuals within rigid cultural categories, but instead emphasizes relative inclinations and contextual variation in communication and collaboration practices. This perspective is particularly relevant for the present study, where communication misalignment is understood to emerge not from a lack of communication itself, but from differences in interpretation, feedback practices, and expectations among actors operating in multicultural project-based environments.

Meyer's model is structured around multiple behavioral dimensions, each representing a continuum between two contrasting approaches to interaction in professional settings. These dimensions capture key areas in which cultural variation influences managerial and team behavior, particularly in international collaboration. Importantly, the framework does not categorize cultures into fixed types, but rather positions them along complex spectrums, enabling comparative analysis between actors operating within the same project environment.

Five of the original eight scales were selected and considered relevant in the case study. The dimensions Disagreeing, Persuading and Scheduling were excluded, as the study focuses primarily on communication alignment, coordination, feedback processes, and leadership structures rather than negotiation styles or conflict orientation. The dimensions this research will be focusing on are Communicating, Evaluating, Leading, Deciding and Trusting, illustrated below in Figure 3.

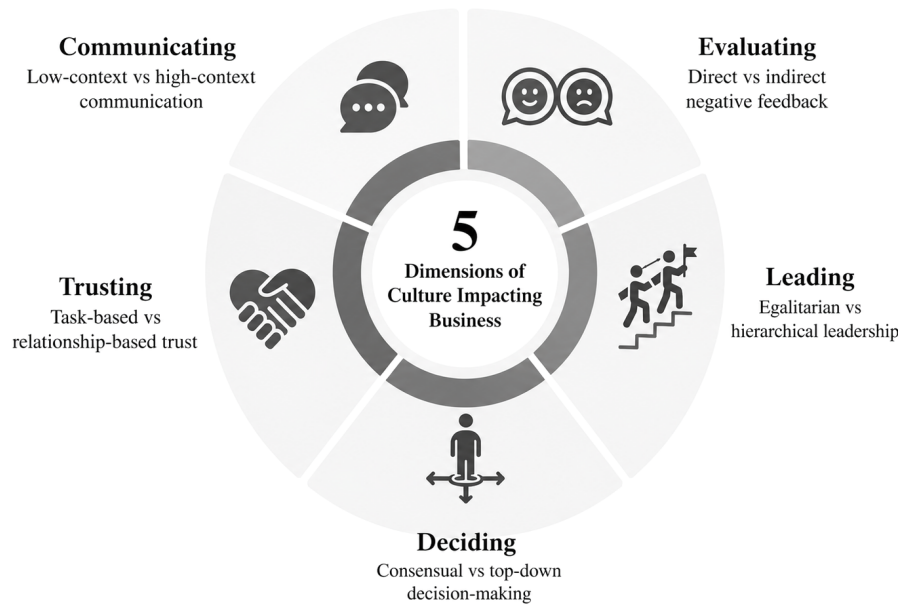


Figure 3. *Five of eight cultural scales that impact business, defined by Meyer (2014).*

- Communicating refers to how meaning is conveyed in interaction. At one end of the scale, communication is explicit and relies on clear and direct articulation and communication. At the other, meaning is conveyed more implicitly through context, relationships, and shared understanding. Defined as indirect communication. This dimension is closely related to issues of ambiguity and interpretation in distributed and hybrid teams.
- Evaluating concerns how negative feedback and criticism is expressed and interpreted. Direct negative feedback refers to communication styles in which criticism is expressed explicitly, frankly, and without significant mitigation. In contrast, indirect negative feedback refers to communication styles in which criticism is expressed more subtly and diplomatically. Thus feedback-style may significantly vary aimed at preserving relational harmony. This tension influences how feedback is interpreted and whether misunderstandings are effectively addressed.
- Leading addresses expectations regarding egalitarian and hierarchical view on leadership, often associated with power distance. In this context, power distance refers to the extent to which authority is accepted as unequal and centralized within a hierarchy, influencing whether communication and decision-making are guided by hierarchical structures or occur more across levels. It reflects the degree to which authority is centralized and the extent to which hierarchical structures guide interaction and decision-making processes.
- Deciding relates to how decisions are viewed to be made within teams. Approaches may range from consensual processes involving broad participation to top-down decision-making structures where one person is expected to make a decision. The dimension influences both participation patterns and the formation of shared understanding in cross-cultural environments.

- Trusting distinguishes between task-based and relationship-based trust. In some contexts, trust is primarily built through demonstrated competence and performance, while in others it is developed through interpersonal relationships and social interaction. This distinction becomes particularly relevant in hybrid environments where informal interaction is limited.

Meyer's Strategies for Alignment in Multicultural Collaboration

Meyer (2014) argues that misunderstandings in multicultural teams often emerge not only between direct and indirect communicators, but also between individuals from different high-context cultures who interpret implicit cues differently. In such environments, team members may assume that alignment has been achieved despite holding different understandings of tasks, priorities, or deadlines. These risks become particularly pronounced in hybrid and geographically distributed teams where digitally mediated communication limits opportunities for informal clarification.

To reduce interpretive ambiguity, Meyer (2014) suggests that multicultural collaborations benefit from low-context communication processes, where expectations, responsibilities, and follow-up procedures are made explicit. Practices such as written recaps, verbal summaries, clarification routines, and explicit confirmation of responsibilities help create shared reference points across culturally diverse teams. Rather than relying on assumed understanding, these processes function as mechanisms for continuously validating alignment.

Such strategies appear significantly relevant in project-based engineering environments characterized by interdependent tasks and distributed coordination. Asking team members to restate tasks in their own words or documenting meeting outcomes may help surface misunderstandings that would otherwise remain hidden. Meyer (2014)'s perspective therefore frames communication not only as information exchange, but as an ongoing process of verifying shared interpretation across multicultural collaboration contexts.

2.1.4 Communication Alignment in Multicultural Projects

In this study, communication is understood as a meaning-making process through which actors interpret and negotiate understanding of tasks, responsibilities, and expectations within project-based environments. Communication is therefore not limited to the transmission of information, but is seen as an ongoing process through which shared understanding is constructed and maintained in interaction between project participants.

From a project management perspective, communication alignment refers to the extent to which actors develop and maintain a shared understanding that enables the coordination of tasks and activities across organizational boundaries. Alignment is not treated as a static condition, but as a dynamic outcome of continuous communicative interaction in which expectations, responsibilities, and interpretations are clarified and adjusted over

time. Miterev et al. (2017) emphasize that managing interdependencies requires ongoing adjustment and mutual understanding among actors, while Eriksson et al. (2017) highlight the importance of collaborative practices in ensuring coordinated project execution. In this sense, alignment is produced through communication processes that enable actors to confirm responsibilities, negotiate meaning, and adapt their actions in relation to others.

Misalignment, in turn, refers to a condition in which actors do not develop a sufficiently shared understanding of tasks, responsibilities, or expectations, resulting in inconsistencies in coordination and action (Zhang et al. 2018). Rather than being understood as a complete absence of communication, misalignment is characterized by communication that does not successfully establish or maintain shared understanding among actors. In multicultural work environments, such divergences are often influenced by differences in values, norms, and communication practices, which shape how information is interpreted and acted upon (Irfan 2023). Zhang et al. (2018) further note that such breakdowns in construction projects are frequently associated with unclear role definitions, fragmented communication, and insufficient feedback mechanisms.

Importantly, misalignment does not necessarily arise from a lack of communication, but from situations in which communication does not sufficiently reduce ambiguity between actors. This may occur when expectations remain implicit, when responsibilities are not clearly articulated, or when feedback is limited or insufficiently structured. In such cases, actors are more likely to rely on individual assumptions rather than a shared interpretation of the situation. Ochieng et al. (2010) show that differences in communication practices can further complicate interpretation in multicultural project teams, increasing the likelihood of misunderstanding. In distributed and hybrid project settings, this challenge is reinforced by the absence of immediate opportunities for clarification, making communication more dependent on explicit articulation and deliberate structuring (Gilson et al. 2015).

2.2 Leadership as Communication Structuring

In PBOs, leadership can be understood as the process of influencing and coordinating collective action among interdependent actors to achieve shared objectives. In such settings, leadership is enacted primarily through communication structuring, expectation management, and alignment of distributed work, rather than relying solely on formal authority Müller et al. (2019). Given the temporary and distributed nature of these environments, coordination can therefore not be ensured through formal structures alone but depends on how effectively communication is facilitated across organisational, temporal, and disciplinary boundaries. Leadership therefore serves as a mechanism for clarifying and maintaining tasks, roles, and expectations throughout the project lifecycle Müller et al. (2019).

A key challenge is that expectations regarding responsibility, initiative, and participation are often implicit. Dainty et al. (2006) emphasize that communication in construction projects is shaped by professional and organizational norms, which influence how actors interpret tasks and responsibilities. In multicultural teams, these expectations vary further, particularly regarding autonomy and the extent to which individuals are expected to question or act independently (Ochieng et al. 2010). As a result, identical instructions may lead to different interpretations, creating ambiguity in task execution.

These cultural and hierarchical differences in communication also affect participation. In flatter organizational contexts, individuals are expected to contribute actively and raise concerns, whereas more hierarchical settings rely more on directive communication and formal approval. This influences how uncertainty is expressed, as agreement may reflect compliance rather than understanding. Consequently, misalignment may emerge not from a lack of communication, but from differences in how communication is interpreted (Gilson et al. 2015).

In addition to structural and cultural differences in communication, the effectiveness of coordination is also influenced by the degree of psychological safety within the team. Psychological safety refers to the shared perception that interpersonal risk-taking, such as asking questions, admitting uncertainty, or challenging assumptions, is not penalized (Edmondson 2011). In environments where psychological safety is low, individuals may refrain from expressing confusion or disagreement, even when communication structures encourage clarification. This can result in apparent agreement masking unresolved misunderstandings. Therefore, misalignment is not only a product of ambiguous or differently interpreted instructions, but also of constrained expression within hierarchical or cross-cultural interaction settings.

Leadership involves making expectations explicit and structuring participation. This includes clarifying responsibilities, specifying task requirements, and verifying understanding through follow-up practices. In hybrid environments, where informal clarification is limited, such structuring becomes more critical. Gilson et al. (2015) notes that distributed work increases the need for deliberate communication practices to compensate for reduced spontaneous interaction. Therefore, leadership requires balancing clarity with autonomy. Excessive control may limit initiative, while insufficient guidance increases ambiguity. This tension is reflected in recent work on micromanagement, which argues that it should not only be understood as excessive control but can also emerge as a temporary response to uncertainty and coordination needs in distributed teams Vu (2025). This tension is particularly pronounced in multicultural hybrid teams, where differences in communication norms and authority relations shape how responsibilities are enacted in practice (Hofstede et al. 2010; Ochieng et al. 2010). Leadership communication in distributed and multicultural engineering teams therefore appears closely dependent on situational and relational conditions shaping how actors interpret responsibility, authority, and participation within the project environment (Müller et al. 2019; Gilson et al. 2015; Ochieng et al. 2010).

2.3 Communication in Multicultural and Hybrid Project Settings

Section 2.3 examines how communication in multicultural and hybrid project environments is shaped by linguistic, cultural, and structural conditions that influence coordination and shared understanding. Particular attention is given to how language barriers, disciplinary terminology, cultural communication norms, and distributed collaboration practices contribute to ambiguity and interpretive misalignment in project execution. The section further explores how these dynamics may reinforce misunderstandings and coordination challenges across engineering teams.

2.3.1 Linguistic and Cultural Barriers

In project-based engineering environments, communication is central to coordination, yet the establishment of shared understanding is often challenged by linguistic and cultural differences. As Tenzer et al. (2014) highlight, language barriers can significantly affect trust and collaboration in multinational teams, while Meyer (2014) emphasizes that cultural differences shape communication practices and interpretations. Together, these perspectives underscore that communication in construction projects involves not only the transmission and interpretation of information, but also variability in language use, contextual understanding, and communicative norms across project actors.

A key challenge in multicultural engineering projects relates to the practical use of multiple languages within communication, documentation, and digital systems. Within such environments, digital tools increasingly mediate how meaning is constructed and shared across project actors, functioning as boundary objects that shape collaboration practices (Whyte 2019). Rather than replacing human interpretation, these tools distribute sensemaking across people and systems, where communication and coordination are co-produced through hybrid human–technical infrastructures (Stray et al. 2020). When interaction shifts between a shared project language and local languages, access to information may become unevenly distributed, particularly for actors who are not fluent in the dominant language. In distributed work environments, where opportunities for immediate clarification are limited (Gilson et al. 2015), such linguistic mediation may increase cognitive load and contribute to ambiguity in technically complex and time-sensitive tasks. This can be understood as a form of “language friction,” where translation and interpretation work introduces a hidden coordination cost embedded within routine engineering activity (Manning et al. 2015). In addition, language switching can be understood as a cognitive adaptation strategy that supports meaning construction under conditions of ambiguity and technical complexity, where the use of native or more familiar linguistic resources enhances epistemic precision and reduces interpretive uncertainty (Tenzer et al. 2014; Stahl et al. 2010).

Beyond language itself, discipline-specific terminology further complicates communication in engineering projects, where actors rely on specialized jargon, abbreviations, and context-dependent expressions. Dainty et al. (2006) argue that such linguistic practices may create isolated groups, where sub-groups communicate through exclusive professional codes that are not equally accessible to all team members. In multicultural and hybrid environments, this can produce communicative divisions that fragment shared understanding across disciplinary and geographical boundaries. As a result, communication becomes characterized by what Dainty et al. (2006) describes as cultural non-interoperability, referring to situations where actors are unable to fully interpret or translate meaning across professional and cultural contexts. Consequently, terminology and communication practices must continuously be clarified and negotiated to reduce ambiguity and prevent misinterpretation in coordination processes. Such challenges indicate that communication breakdowns in engineering environments are not primarily driven by a lack of information, but rather by semantic and interpretive misalignment, where identical terms or instructions are understood differently across disciplinary or cultural boundaries (Majchrzak et al. 2011; Eriksson et al. 2017).

Cultural differences in communication further influence how information is expressed and understood. Meyer (2014) highlights that communication varies along a spectrum from low-context, where meaning is conveyed explicitly through clear and direct language, to high-context, where meaning is embedded in implicit cues and shared assumptions. This distinction builds on well-established intercultural communication theory, particularly the work of Hall (1976), while also reflecting broader value-based cultural differences identified in cross-cultural research such as (Hofstede et al. 2010). In multicultural project environments, these differences affect how clarity, agreement, and understanding are interpreted. For example, direct communication may be perceived as clear and efficient in some contexts, while in others, indirect communication may be used to maintain relational harmony or avoid negative evaluation. Consequently, communication in project environments serves not only informational functions, but also relational and normative functions, where expressions such as agreement may signal social alignment or politeness rather than explicit confirmation of shared understanding (Meyer 2014; Ochieng et al. 2010).

These differences become particularly relevant in situations involving uncertainty or disagreement. In some cultural contexts, expressions of agreement may not indicate full understanding, but rather function as a signal of politeness or compliance. This aligns with findings in cross-cultural project research, where Ochieng et al. (2010) show that communication practices influence how openly individuals express uncertainty and seek clarification. As a result, ambiguity may remain unaddressed, and misunderstandings may only become visible at later stages of project execution. These dynamics are further reinforced by participation asymmetries in multicultural teams, where hierarchical structures, cultural norms, and differing expectations regarding authority and uncertainty expression

influence who contributes to discussions, how actively clarification is sought, and how interpretive responsibility is distributed across actors (Stahl et al. 2010). In distributed and hybrid environments, these asymmetries are amplified due to reduced opportunities for real-time clarification and increased reliance on asynchronous interpretation processes (Gilson et al. 2015).

2.3.2 Misalignment in Communication

Despite the presence of continuous communication, project-based engineering environments remain vulnerable to misalignment in shared understanding. Misalignment can be understood as a condition in which actors develop differing interpretations of tasks, expectations, responsibilities, or priorities, resulting in inconsistencies in coordination and project execution. In multicultural and hybrid work environments, such divergences are often reinforced by differences in communication norms, contextual interpretation, and structural communication conditions (Ochieng et al. 2010; Gilson et al. 2015). When responsibilities, assumptions, or task requirements remain implicit, actors may rely on interpretations shaped by their professional, organizational, or cultural background. As Meyer (2014) emphasizes through the Culture Map framework, communication within project environments is influenced by cultural dimensions that shape how information is understood, interpreted, and enacted in practice. Consequently, identical instructions may be interpreted differently across actors and teams, increasing the risk that divergent understandings remain undetected during project execution. Over time, such divergences may become embedded within coordination structures and workflows, meaning that misalignment is not only an interactional phenomenon but can also accumulate as a systemic property of project execution processes.

Misalignment may further be reinforced by uneven participation and differences in communicative expectations within multicultural project environments. Communication norms and hierarchical expectations may influence who actively contributes to discussions, raises concerns, or questions information. Stahl et al. (2010) highlight that participation patterns within multicultural teams are often shaped by differing expectations regarding authority and appropriate communicative behaviour. As a result, uncertainty and misunderstanding may remain unspoken during project interaction. These challenges become particularly pronounced in hybrid and geographically distributed environments, where opportunities for spontaneous clarification are reduced. Gilson et al. (2015) note that distributed collaboration increases reliance on individual initiative in managing communication and clarification processes. In such settings, responsibility for identifying ambiguity and initiating clarification may become unevenly distributed between project actors, creating situations where assumptions remain unverified and misunderstandings persist across project stages.

Similarly, misalignment may also persist through delayed clarification and false agreement. In some communication contexts, expressions of agreement may function more as signals of politeness, compliance, or relational harmony than as confirmation of shared understanding

(Meyer 2014). This may create an appearance of alignment despite underlying differences in interpretation. When clarification processes are delayed or absent, misunderstandings may remain undetected until inconsistencies emerge within project outputs, coordination processes, or technical deliverables.

Misalignment does not necessarily emerge from communication failure alone, but from how communication is interpreted, prioritized, and enacted across multicultural and geographically distributed project environments (Ochieng et al. 2010; Gilson et al. 2015). Differences in communicative expectations, professional routines, and contextual interpretation may therefore result in actors developing parallel understandings of tasks and responsibilities despite ongoing interaction. When assumptions remain implicit and clarification occurs unevenly across project interfaces, such differences may become embedded within everyday coordination practices. Misalignment therefore appears less as an isolated disruption in communication and more as a condition shaped by the structural and relational dynamics characterizing distributed project collaboration.

2.4 Feedback Mechanisms

Feedback constitutes an important mechanism for supporting coordination and maintaining shared understanding within project-based engineering environments. In complex and interdependent project settings, coordination depends not only on the initial communication of tasks and responsibilities, but also on continuous processes of clarification, adjustment, and verification throughout project execution. Feedback therefore functions as an ongoing communicative process through which actors confirm interpretations, refine expectations, and coordinate interdependent activities across distributed teams (Eriksson et al. 2017).

In practice, feedback may take both explicit and implicit forms. Explicit feedback involves direct clarification, correction, or confirmation of tasks and deliverables, whereas implicit feedback is often embedded within informal interaction or inferred through responses and behavioral cues. However, in multicultural environments, implicit forms of feedback may become more difficult to interpret due to variations in communicative norms concerning directness, critique, and relational sensitivity. Meyer (2014) highlights that communication in low-context cultures tends to rely on explicit articulation, whereas high-context communication involves greater reliance on indirect cues and contextual interpretation. Consequently, the interpretation of feedback may vary considerably between actors operating within multicultural project environments.

Feedback practices may further differ in terms of formality and organizational integration. Informal feedback often occurs through spontaneous clarifications, iterative comments, and continuous dialogue embedded within everyday project interaction. Anseel et al. (2015) emphasize that such feedback processes support rapid adjustments and continuous coordination in dynamic work environments. Formal feedback, in contrast, is typically embedded within structured organizational procedures such as evaluations, reviews, and

documented follow-up processes (London 2014). While formal mechanisms contribute to accountability and performance assessment, informal feedback practices often play a more immediate role in supporting ongoing coordination and clarification within project work.

The effectiveness of feedback processes is further influenced by organizational structures and communication hierarchies. London (2014) notes that feedback systems in organizations are shaped by structural and procedural mechanisms that influence how feedback is generated, interpreted, and acted upon across different organizational levels, thereby affecting how it is communicated, filtered, or redistributed within project environments. In geographically distributed and multicultural environments, these structural conditions may affect how quickly clarification occurs and how directly communication is exchanged between project actors.

2.5 Hybrid Work

Hybrid and distributed work environments reshape the conditions under which communication and coordination occur within project-based engineering teams. As collaboration increasingly relies on digital communication platforms, interaction becomes mediated rather than co-present, altering how actors interpret information, resolve uncertainty, and maintain shared understanding across interdependent activities. Research on virtual teams shows that digitally mediated collaboration reduces communicative immediacy and increases reliance on explicit communication practices to support coordination in distributed settings (Gilson et al. 2015).

These challenges are particularly visible in hybrid meetings where some participants are co-located while others join remotely. Stray et al. (2020) argue that such configurations often create unequal access to interaction, as communication tends to center on those physically present. Informal side conversations, spontaneous clarification, and references to shared physical materials may remain inaccessible to remote participants, despite formal inclusion in the same meeting. This can reduce their ability to follow evolving discussions and participate fully in coordination processes. To address this, distributed team research emphasizes increasing communication symmetry, for example by requiring all participants to join via individual devices even when co-located. This reduces parallel in-room interactions and can improve inclusion by situating all actors within the same digital interface (Stray et al. 2020).

Digitally mediated collaboration also reduces the visibility of interactional cues. In co-located settings, participants continuously rely on facial expressions, body language, and informal reactions to assess engagement and uncertainty. Limited access to such cues may hinder real-time interpretation and delay the detection of misunderstandings (Stray et al. 2020; Lioukas et al. 2026). The use of cameras may therefore support coordination by increasing social presence and enabling participants to observe reactions that facilitate clarification and feedback during interaction (Stray et al. 2020; Gilson et al.

2015). However, engineering collaboration is often centered on shared artifacts such as technical drawings, models, or screens. In such contexts, attention is primarily directed toward material content rather than interpersonal signals, making screen sharing more central to coordination than continuous visual presence. This illustrates how different communication modes support coordination differently depending on task structure and interactional focus (Maquil et al. 2024; Manole et al. 2025).

Reduced contextual visibility can further complicate the identification of ambiguity during ongoing project work. Lioukas et al. (2026) argue that limited feedback opportunities constrain actors' ability to iteratively adjust meaning during interaction. As a result, silence, delayed responses, or passive participation may be misinterpreted as agreement despite underlying uncertainty. Communication in hybrid environments therefore becomes increasingly dependent on explicit clarification, structured follow-up, and active verification of assumptions to maintain alignment across distributed actors (Lioukas et al. 2026). In this sense, communication extends beyond information exchange and becomes a continuous process of negotiating shared understanding.

2.5.1 Media Richness Theory

The communication challenges associated with hybrid work can be further understood through Media Richness Theory Daft et al. (1986), which explains how communication media differ in their ability to reduce equivocality, defined as situations where information can be interpreted in multiple ways. The theory proposes that richer media support immediate feedback, convey multiple social cues, and enable more effective clarification in uncertain situations, thereby improving interpretive alignment.

Within hybrid engineering environments, Lioukas et al. (2026) argue that media richness becomes particularly important where work is highly interdependent and coordination depends on continuous interaction. Rich media such as face-to-face communication and videoconferencing allow iterative clarification through immediate feedback and observation of reactions. Leaner media, including asynchronous and text-based channels, reduce opportunities for real-time adjustment and increase the risk of divergent interpretations across actors. In multicultural and multidisciplinary settings, this may lead participants to assume shared understanding despite differing interpretations of the same message.

However, contemporary research also challenges the assumption that communication effectiveness depends primarily on interpersonal cue richness. Instead, it emphasizes the role of shared digital workspaces, persistent artifacts, and awareness mechanisms in enabling coordination (Maquil et al. 2024). Studies of hybrid work show that access to integrated tools and synchronized artifacts can be more influential for coordination quality than physical co-location in artifact-intensive tasks (Manole et al. 2025). This suggests a shift away from purely media-centric explanations, toward perspectives emphasizing task-technology fit and shared artifact structures.

2.6 Analytical Framework for the Thesis: Structuring Communication for Alignment

The analytical framework developed for this thesis was designed to support the interpretation of communication and coordination processes within multicultural and hybrid project-based engineering environments. Building on the contextual literature related to multicultural collaboration, leadership, communication, feedback, and hybrid work presented in the preceding sections, the framework integrates these analytical perspectives into a coherent structure. It is applied to support a structured and objective interpretation of the empirical findings presented in Chapter 5, where it serves as an analytical lens for examining communication practices, feedback processes, and mechanisms of misalignment in the context of this case study.

To analyze how communication practices are interpreted across multicultural project environments, the framework incorporates Meyer (2014)'s cultural mapping framework, supported by (Hofstede et al. 2010). These perspectives are applied to examine how differences related to directness, hierarchy, authority expectations, decision-making, and feedback orientation influence participation, interpretation, and clarification practices within distributed teams.

The framework also draws upon Müller et al. (2019) and Edmondson (2011) to analyze leadership as a structuring mechanism for communication and coordination. Leadership is understood as the active organization of communication processes that support alignment across interdependent actors, while psychological safety is used to analyze participation, help-seeking behavior, and willingness to express uncertainty.

The framework further builds on research that conceptualizes communication as a coordination mechanism within PBOs. Dainty et al. (2006) is used to analyze communication as an interpretive process through which meaning, responsibilities, and expectations are continuously negotiated across actors and disciplines. Eriksson et al. (2017) further contributes by conceptualizing feedback as a continuous alignment process through which actors clarify interpretations, verify assumptions, and adjust coordination throughout project execution. Communication and feedback are therefore treated as interconnected processes that support the maintenance of shared understanding in ongoing project work.

Finally, perspectives related to hybrid collaboration are incorporated to account for the structural conditions shaping communication in geographically dispersed environments. Media Richness Theory, together with (Gilson et al. 2015; Stray et al. 2020), supports the analysis of reduced contextual cues, communication asymmetries, and limitations in clarification within digitally mediated interaction. Collectively, these perspectives constitute the primary analytical lens through which the empirical findings are interpreted, illustrated in Figure 4.

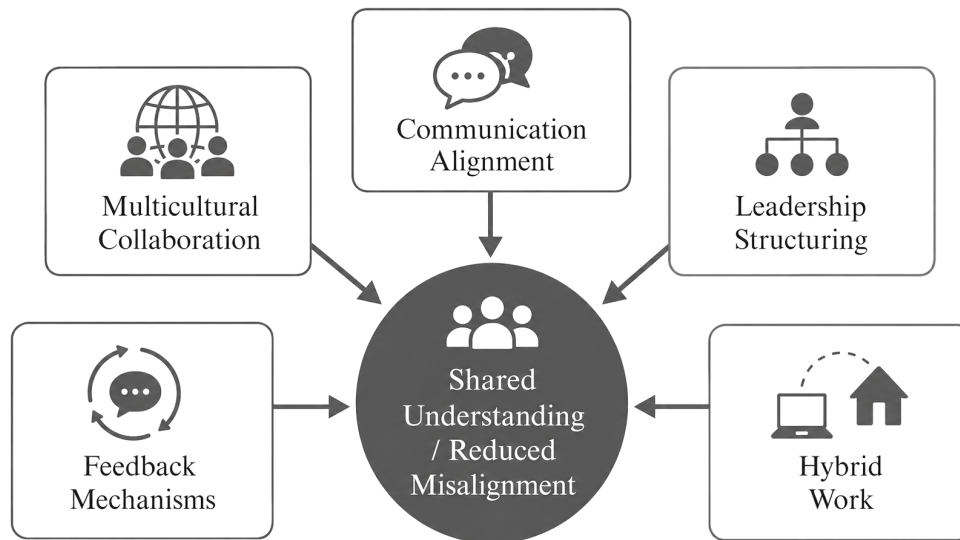


Figure 4. *Existing dimensions within the analytical framework used in this study.*

2.6.1 Critical Reflection on the Analytical Framework

While the framework provides a comparative lens for examining how cultural differences may influence communication preferences and interaction patterns in multicultural project environments, its use requires careful consideration. There is a risk of oversimplification if the dimensions are interpreted as fixed cultural characteristics rather than context-dependent tendencies. As emphasized in intercultural communication research, behavior is shaped not only by national culture but also by organizational, professional, and situational factors. Accordingly, in this study, Meyer's framework is applied as an interpretive analytical tool rather than a deterministic model. It supports the identification of tendencies in communication practices, while these inclinations are analyzed in relation to the specific project context, including hybrid work conditions and the structural characteristics of engineering consultancy.

3. Methodology

This chapter presents and explains the chosen methodology, with the aim of clarifying why this research approach was selected to meet the objectives of the thesis, and how the thesis was carried out.

3.1 Research Process

Since the purpose of this study is to examine communication practices within multicultural and hybrid project environments, it was considered important to adopt a research design capable of capturing organizational interactions and communication dynamics within their natural context. Communication in geographically distributed project teams is shaped by several interacting factors, including cultural differences, organizational structures, digital communication channels, and project-specific conditions. To create a deeper understanding of how communication, coordination, and leadership dynamics are experienced and enacted within these environments, the study therefore adopted a qualitative research design.

Qualitative research is suitable when the objective is to investigate social processes, organizational behaviors, and interactions within a contextual setting (Fellows et al. 2015). Building on this rationale, a qualitative case study design was adopted. Case study research is particularly suitable for investigating complex organizational phenomena situated within specific settings (Bell et al. 2018). This approach enabled an in-depth examination of communication practices and collaborative processes in their natural organizational environment, supporting a nuanced understanding of how communication dynamics emerge in multicultural and hybrid work settings.

An important objective of this study is to establish a coherent link between theoretical understanding and empirical findings. As outlined by Patel et al. (2019), deductive, inductive, and abductive approaches differ in how they relate theory to empirical material: deduction tests existing theory, induction builds theory from observations, while abduction combines both through iterative movement between data and theory. In line with this perspective, an abductive research strategy was adopted. This approach supports continuous interaction between empirical observations and theoretical interpretation, allowing emerging insights to inform the analytical direction (Alvesson et al. 2024). It is therefore well suited to exploring communication practices in complex multicultural and hybrid project environments, where theoretical framing and empirical development evolve in parallel. An overview of the research process is presented in a flowchart in Figure 5.

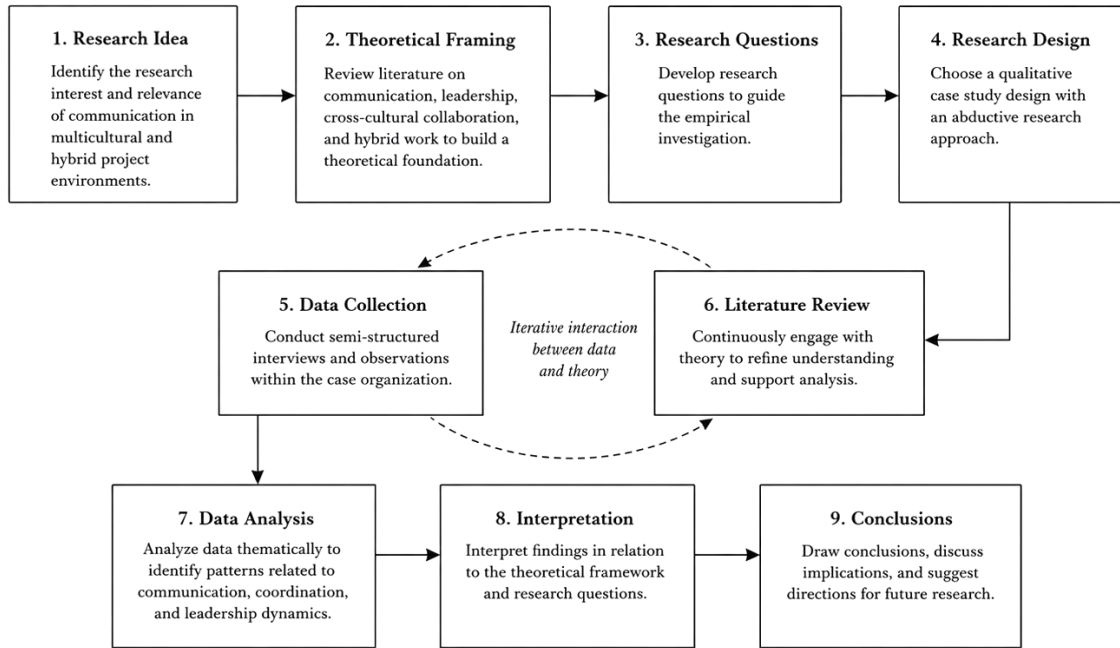


Figure 5. *Flowchart of the steps undertaken in this research, adapted from (Bell et al. 2018)*

3.2 Literature Review

The initial stage of the study involved reviewing existing literature to develop an understanding of communication and coordination within multicultural and hybrid project environments. Since the study followed an abductive research approach, the literature review was initiated early in the research process before the empirical investigation was fully defined. Rather than functioning as a separate phase, the literature review evolved continuously throughout the study in parallel with interviews and observations. As new empirical insights emerged in the pre-study, additional theoretical perspectives and research areas were explored to deepen the understanding of identified communication patterns and coordination challenges. According to Alvesson et al. (2024), abductive research is particularly effective when investigating complex social phenomena where existing theoretical explanations may be insufficient to fully capture the empirical reality. This was considered appropriate for the present study, as communication misalignment in multicultural hybrid engineering teams is shaped by the interplay of cultural, organizational, and interpersonal factors that are difficult to explain through a single theoretical perspective.

To ensure the theoretical framework was sufficiently contextualized, relevant and up to date literature was identified through searches in academic databases and search engines including Google Scholar, ResearchGate, Scopus, IEEE Xplore, and Chalmers Library Search. Following supervisory guidance, specifically targeted journals were searched within the case context environment and engineering industries, such as Construction Management and Economics, Journal of Construction Engineering and Management, and Architectural Engineering and Design Management. The search process primarily focused

on peer-reviewed journal articles, academic books, and conference papers published between 2006 and 2026 within the fields of project management, organizational studies, cross-cultural communication, and hybrid work. The focus area was further placed on identifying contextually relevant literature addressing multicultural collaboration and communication within international engineering and project-based environments. The reviewed literature included studies situated in regions characterized by extensive cross-cultural collaboration and globally distributed engineering workforces, including Europe, North America, Kenya, Hong Kong, and Australia, as well as contributions from established scholars within intercultural communication, project management, and organizational communication research.

3.3 Data Collection Method: Pre-Study and Main Interview Study

The interviews were conducted in two stages, consisting of an initial explorative pre-study, followed by a main interview study. The exploratory interviews in the pre-study served to familiarize the researchers with the organizational context and to identify recurring communication challenges within the case company. The pre-study findings indicated fragmented communication practices related to implicit assumptions, varying interpretations of feedback, and difficulties in establishing shared understanding across cultural and disciplinary boundaries. These recurring themes contributed to the development of the feedback loop, viewed in Figure 6. The feedback loop illustrates how tasks, clarification, and feedback move between leaders and engineers throughout the communication process. These insights formed both the refinement of the research focus and the development of the interview guide.

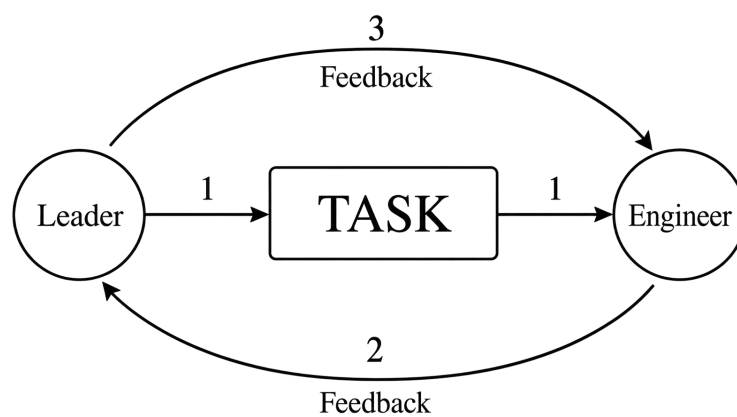


Figure 6. *The Feedback loop identified in the pre-study.*

The pre-study and the main empirical data collection consisted of 22 interviews in total, with interviewees within the case company. The interviewees occupied roles, characterized by extensive stakeholder and cross-cultural collaboration. The project-professions included; Project Managers, Discipline Leads, local engineers, and GDM engineers. Project Managers were responsible for overall project coordination and communication across stakeholders, while Discipline Leads ensured that technical deliverables within their respective disciplines were carried out according to contractual requirements and project plans. Local engineers primarily coordinated activities within the local office context, whereas GDM engineers operated within globally distributed project structures and collaborated across geographical boundaries. The 22 interviews in the pre-study and main interview study are presented in Table 1.

Table 1. *Overview of the conducted interviews and all interviewees in the case study*

Interviewee ID	Position	Project	Duration	Main Office
PM1	Project Manager	Project A	45 min	Sweden
PM2	Project Manager	Project A	45 min	Sweden
PM3	Project Manager	Project B	60 min	Denmark
PM4	Project Manager	Project C	60 min	Sweden
TA1	Discipline Leader	Project A	60 min	Denmark
TA2	Discipline Leader	Project A	60 min	India
TA3	Discipline Leader	Project A	60 min	India
TA4	Discipline Leader	Project A	60 min	Poland
TA5	Discipline Leader	Project A	60 min	Sweden
TA6	Discipline Leader	Project B	60 min	Denmark
TA7	Discipline Leader	Project B	60 min	Poland
TA8	Discipline Leader	Project C	60 min	Sweden
TA9	Discipline Leader	Project C	45 min	Sweden
EN1	Engineer	Project A	60 min	India
EN2	Engineer	Project A	60 min	Poland
EN3	Engineer	Project A	60 min	Poland
EN4	Engineer	Project B	60 min	India
EN5	Engineer	Project B	60 min	Poland
EN6	Engineer	Project B	60 min	Sweden
EN7	Engineer	Project C	60 min	Lithuania
EN8	Engineer	Project C	60 min	Poland
EN9	Engineer	Project C	60 min	Poland

The study employed semi-structured interviews, that provided a balance between pre-defined questions and flexibility to explore emerging topics during the interviews. This approach enabled comparability across interviews while also allowing participants to elaborate on experiences relevant to the research focus (Bell et al. 2018). The interview questions underpinning this study were formulated in accordance with the study's research questions. The interview guides were developed drawing on insights from the exploratory interviews, relevant academic literature, and established and previously tested interview protocols from prior research. This ensured that the interview design was grounded in both empirical context and established methodological practice. Two separate semi-structured interview guides were developed to reflect differences in roles and responsibilities among participants. One guide was tailored for engineers, while a second guide was developed for project managers and technical leaders. This separation ensured alignment between the interview questions and the participants' respective responsibilities and perspectives on communication and coordination processes within the case company.

The interview questions were organized around several thematic areas relevant to the study's research focus. The interview guidelines included background and organizational context, cross-cultural communication, task clarification and feedback processes, and perceptions of leadership within multicultural project environments. While the overall thematic structure remained consistent across both interview guidelines, the questions were adapted to reflect differences in responsibilities and experiences between engineers and managerial roles. The interviews combined descriptive, reflective, and exploratory types of questions. Certain questions were designed to capture how communication, coordination, and feedback processes were carried out in practice within cross-cultural and hybrid project settings. Other questions encouraged participants to reflect on experiences, perceived challenges, leadership dynamics, and situations involving misunderstandings or differing interpretations. In addition, open-ended follow-up questions allowed interviewees to elaborate on experiences and introduce perspectives not anticipated in advance, supporting a more exploratory understanding of communication practices within the case company.

Interviewees were selected through purposive sampling strategy, meaning that individuals were intentionally chosen based on their relevance to the research focus and their direct involvement in the communication processes under examination. The sampling specifically targeted actors with practical experience of working in cross-cultural project environments, where coordination across geographical, disciplinary, and cultural boundaries formed a central part of their daily work. These roles were considered particularly relevant due to their position within the project organization, where they were responsible for coordinating technical work, clarifying expectations, and maintaining alignment across distributed teams. As such, they were expected to provide information-rich insights into communication and feedback practices within the case context.

The interviews were conducted mainly digitally, with the exception of 2 interviews where they were conducted at the office. These interviews were transcribed with the interviewees' informed consent, and were supported through built-in functionality software in the communication platform used, after which transcripts were reviewed to ensure accuracy. Interviewees were informed of their right to withdraw from the study at any stage prior to publication, without providing justification.

All collected data has been stored in a restricted-access digital environment, accessible only to the researchers involved in the study and were deleted upon the completion of the research. Measures were taken to ensure confidentiality throughout the research process, including the anonymization of all personal identifiers and the project names. In the presentation of empirical material, interviewees are therefore referred to solely through position-based labels, reflecting their role within the organization rather than their identity. This approach was intended to create conditions that allow interviewees to express experiences and perspectives openly, while maintaining ethical standards of confidentiality and data protection.

3.4 Data collection method: Observations

In order to complement the interview data, three non-participant observations were conducted focusing on communication practices within ongoing project work. The combination of interviews and observations enabled methodological triangulation by allowing participants' reported experiences to be examined alongside communication practices as they unfolded in project interactions (Bell et al. 2018). The material consisted of three meetings, one for each of Project A, Project B, and Project C, involving a total of 30 participants across all observations. The meetings were conducted digitally and included two fully remote meetings and one hybrid meeting, where four participants were physically co-located in an office meeting room and joined the meeting via a shared computer connection. Participants joined from multiple geographical locations, including offices in Sweden, Denmark, Poland, and India, spanning different countries and time zones. The observed meetings included coordination activities, technical discussions, and project updates carried out through digital collaboration platforms within multicultural and geographically distributed teams.

The purpose of the observations was to mainly strengthen the interview findings. Particular attention was thus given to leadership practice, participant interaction, how ongoing work was coordinated, and hybrid and structural constraints. The focus was on recurring weekly meetings that functioned as coordination mechanisms for status tracking, workload distribution, and resource planning. During these meetings, participants reviewed ongoing tasks, discussed project progress, and assessed team capacity in relation to current work activities. Communication followed a structured format in which participants provided updates and clarifications under the guidance of the meeting facilitator. The meetings also included coordination activities, technical discussions, and project updates conducted

through digital collaboration platforms. In addition, attention was directed toward situations where alignment appeared to be assumed rather than explicitly confirmed, as such interactions are central to understanding how false alignment may develop. The material also provided insight into how digital and hybrid communication environments influenced clarification practices, feedback processes, and the emergence of misunderstandings among geographically distributed participants.

Field notes were documented separately by the researchers, according to the observation guidelines. Upon the completion of each session, the researcher organized collectively to support the analytical process. By combining observational material with interview data, the study captures both the articulated and enacted dimensions of communication within multicultural and hybrid project environments.

3.5 Data Analysis

The analysis of the data collected from the interviews and observational material followed a qualitative thematic approach aimed at identifying recurring themes and patterns within the dataset (Bell et al. 2018). Systematic and categorized coding was used to ensure that the analysis process remained structured and transparent. An abductive coding process was employed to investigate pre-determined concepts derived from the literature review while also allowing new themes to emerge from the empirical material (Thompson 2022). This approach combined theory-driven and data-driven analysis, integrating elements of both deductive and inductive reasoning. In addition, a narrative approach was used to complement the thematic analysis by incorporating illustrative examples from both interview data and observational field notes. This allowed individual experiences and naturally occurring communication events to be used as empirical illustrations, providing deeper insight into how communication practices, feedback processes, and instances of misalignment manifest in practice within multicultural and distributed project environments. The interview transcripts and observational notes were organized and coded using Google Docs, where initial manual coding and color coding were applied to identify relevant segments of data. The coded material was subsequently transferred into Google Sheets to support further categorization, comparison, and structuring of emerging themes across the dataset. This process facilitated the systematic organization of a large qualitative dataset and supported the iterative development of analytical categories. The analysis was conducted collaboratively by the researchers through repeated comparison and discussion of codes and themes in order to strengthen the consistency and reliability of the interpretation. Through this iterative process, themes were refined and aligned with the study's analytical framework, focusing on communication structures, feedback processes, and mechanisms of misalignment within multicultural and hybrid project teams.

3.6 Ethical and Reflexive Considerations and the Use of AI

The study is conducted in accordance with the General Data Protection Regulation (GDPR) and academic standards relating to informed consent, confidentiality, anonymity, and secure data handling. The processing of personal data is based on informed consent and adheres to principles of data minimization, purpose limitation, and storage limitation. Prior to each interview, participants were informed about the purpose of the study and provided consent to participate, as well as to have the interviews recorded and transcribed.

All empirical material has been pseudonymised through the use of role-based identifiers in place of personal names and directly identifiable organizational information. Any direct or indirect identifiers were removed or generalized during transcription to reduce the risk of re-identification. All digital files were kept in password-protected, access-restricted storage in accordance with institutional data management requirements, ensuring that only the researcher had access to the raw material. The empirical material was deleted upon the completion of the research.

Beyond these ethical considerations, the study acknowledges the influence of researcher bias on the interpretation of empirical material. As the research was conducted within a single embedded case study in a consultancy context, prior familiarity with the organization may have influenced how observations, interview accounts, and communication practices were interpreted and framed. This includes the risk of inadvertently aligning with dominant organizational perspectives, as well as reduced sensitivity toward alternative interpretations and culturally situated understandings of communication practices. Moreover, the conditions of access and the reliance on interview participants' accounts may have influenced both the type of information shared and the manner in which experiences and organizational realities were represented, thereby shaping the construction of the empirical findings.

To address these limitations, the empirical material was analyzed through the analytical framework presented in Chapter 2.6, which supported a systematic interpretation of the data and diminished the influence of culturally situated assumptions throughout the analytical process. In line with a reflexive research approach, interpretations were continuously compared against relevant literature and alternative explanations in order to critically evaluate assumptions and surface competing interpretations throughout the analysis.

3.6.1 Use of AI

In the context of this report, artificial intelligence (AI) tools have been used to aid in the writing process, specifically in improving sentence structure, generating ideas, editing illustrations and providing suggestions for clearer communication. The main AI tools were ChatGPT and Grammarly. These tools enhanced the clarity of text. In terms of critical thinking or academic originality, no concepts have been introduced by AI tools that have not been critically examined by the authors to ensure that no plagiarism or wrongful depiction of facts has been made. In the process of transcribing and analyzing the empirical data, all form of open-source AI was avoided to protect the integrity and anonymity of the participants. All transcription has been made using integrated functions in Microsoft Teams, supported by manual correction. The information shared with any other source has been made anonymous to ensure that the General Data Protection Regulation (GDPR) is thoroughly followed. Instead of using AI for coding, digital tools provided by Google, such as Docs, Sheets, and Forms, were utilized for their respective functions in manually sorting and analyzing data throughout the process.

4. Empirical Findings

This chapter presents the empirical findings of the thesis based on interviews and observations conducted within the case study.

4.1 Collaboration in Multicultural Engineering Projects

This section presents interviewees' reported observations of perceived differences in communication styles across distributed engineering teams. It provides illustrative examples from the data across different office locations to show how these differences are experienced in day-to-day collaboration.

4.1.1 Hierarchical vs Egalitarian Workplace Interaction Patterns

Interviewees described differences in how organizational hierarchy and authority were experienced across office locations. These descriptions focused on how visible roles and seniority are in everyday interactions, how freely employees engage with managers, and how authority is expressed in communication and decision-making contexts.

Some interviewees described Polish and Lithuanian workplaces as having more clearly defined hierarchies, with more visible distinctions between roles and levels of authority compared to more consensus-oriented environments. One discipline leader explained:

“In Poland .. you can feel who is the boss and who is .. the group lead and who is a group member. Not in a negative way but you can feel it.” –TA6

In contrast, several interviewees described Swedish and Danish workplaces as characterized by flatter interaction patterns, where role titles were perceived as less central in day-to-day communication. Direct communication with managers was described as common, alongside an expectation that everyone's views are included in decision-making processes. As one discipline leader described:

“In Sweden in particular, it's a very inclusive culture in the sense where everybody in the project should have an opinion and everybody on that project has the same weight or level of an opinion” –TA4

Similarly, another interviewee contrasted Danish workplace interactions with more hierarchical organizational cultures:

“In Denmark the hierarchy is very flat... here you can just sit and eat lunch with the CEO... it is a big difference.” –TA6

Several interviewees remarked that the colleagues in the Indian office were described

as having a stronger tendency to show formal respect toward senior roles, with clearer distinctions in how senior colleagues, managers, and counterparts are addressed and engaged with in work interactions.

“In India... if the boss says something then you need to follow.” –TA3

4.1.2 High- and Low-Context Communication Patterns

Some interviewees implied that colleagues based in Poland were perceived as communicating in a direct and straightforward manner, expressing their views explicitly rather than relying on implication or indirect phrasing. As expressed by an engineer:

“People in Poland are straightforward and I can also see this way. I usually say what I really mean. I don’t want other people to guess.” –EN9

Similarly, Danish colleagues were described as communicating in a direct and straightforward way, often going straight into problem-solving, speaking in a more blunt and less softened manner, and focusing on getting things done rather than worrying about risks, formalities, or how something is framed. As expressed by a project manager:

“If you work with Danes, they have pretty much, yeah, they just go head on straight into problem solving” –PM1

In contrast, Swedish colleagues were frequently described as communicating in a more diplomatic and softened manner. Interviewees noted that feedback and responses were often framed less directly and in ways that created more conversational space for others. This communication style was commonly associated with indirect phrasing and careful wording in interactions. As one engineer described:

“I would say the Polish, they’re more straightforward. . . I guess the Swedes, they’re more diplomatic and the Polish, they’re more direct.” –EN2

Similarly, colleagues based in India were often described as communicating in a more indirect and highly polite manner. Interviewees noted that questions, disagreements, or criticism were frequently expressed in softened ways, often framed through careful wording rather than stated explicitly. This communication style was also associated with a greater tendency to avoid direct confrontation and to communicate sensitive opinions more subtly, as one interviewee explained:

“the India team is very very polite and not directly but with a lot of very beautiful words around the questions” –EN5

4.1.3 Variation in Task Initiative and Ownership Across Cultures

Some interviewees described colleagues in the Polish office as preferring structured and clearly defined tasks, with expectations and responsibilities established upfront. As one engineer expressed:

“Polish people are... ordered, I mean. It’s not a chaotic way of working.” –EN9

A couple of interviewees highlighted a strong sense of ownership and responsibility among engineers in the Polish office, noting a strong commitment to delivering work and taking accountability for outcomes:

“I haven’t met people that are so proud of sort of what they do and sort of making sure that they do what they are supposed to do... They own their stuff 100% [in Poland].” –PM1

Some interviewees described colleagues in the India office as preferring clearly defined goals, explicit expectations, and managerial verification before proceeding with tasks, particularly in situations involving uncertainty or ambiguity. Ownership was often described as more hierarchical, with responsibility perceived as closely tied to managerial approval and direction rather than individual autonomy. A project manager reflected on these differences in expectations around initiative-taking:

“They don’t do the same initiative taking as you would see in Scandinavia, but on the other hand, they’re not wasting their time doing something that I didn’t want them to do.” –PM3

In contrast, Swedish and Danish workplaces were described as placing greater emphasis on individual autonomy and proactivity. Engineers were generally given freedom to work independently, provided that the expected outcomes were delivered, with less reliance on managerial direction. There was also an expectation that individuals take initiative in resolving uncertainties and moving tasks forward. Responsibility for correctness and delivery was primarily assigned to the person producing the work, rather than a separate checking function.

“They place a lot of responsibility on the preparer of the documents, whereas in the US, for example, the entire responsibility would be on the checker of the documents ... in Scandinavia ... it’s the person who prepares the documents. They should find the information, they should make sure it’s right, they should get it done.” –TA4

4.1.4 Variation in Help-Seeking Across Cultures

Swedish and Danish workplaces were described as characterized by open and direct communication norms, where it is common to speak directly to managers and ask questions freely. Asking for help is not perceived as problematic, including for basic questions or questions that arise from lack of prior knowledge, reflecting a strong emphasis on technical

accuracy over concerns about social judgment. At the same time, individuals are expected to take responsibility for actively searching for information and ensuring correctness independently, although seeking clarification from others is regarded as an appropriate and normal practice when needed.

“They’re not afraid of asking questions and then they’re not afraid of asking difficult questions to the project manager or line manager.” –TA7

In contrast, some interviewees described situations where Polish and Lithuanian colleagues were perceived as hesitant to openly admit challenges or ask for support, often attempting to resolve issues independently before involving others:

“In Poland, people will dig in themselves, they will find the answer and they will get back with the approach which is correct... probably it will take a longer time because they need to find it themselves.” –TA7

Similarly, another discipline leader reflected on situations where support could potentially have been requested earlier in the process:

“Sometimes I feel that the Polish [and Lithuanian] colleagues have been hesitant to contact me when they really needed to... trying to solve the issues on your own when you really could have benefited from reaching out a bit earlier.” –TA8

Similarly, several interviewees also described communication practices among colleagues in the India office where agreement is sometimes expressed even in situations where the task or information is not fully understood or when there are concerns regarding the accuracy of the information. One project manager explained:

“They say yes, even though they don’t understand... because they don’t want to lose any job... it’s more like a little bit taboo, like you should know this, don’t ask too many [questions]” –PM4

4.1.5 Decision-Making Processes Across Cultural Contexts

Decision-making processes were also described differently across office environments. Several interviewees highlighted the long and consensus-based decision-making process in the Swedish office, suggesting how the culture often involves everyone and can therefore take a long time, given the focus on including all input and reaching agreement rather than making quick individual decisions.

“In Sweden sometimes it’s really difficult to come to a decision... because all is so, so consensus based, you know. You want to hear different opinions and you try to, yeah, to include everyone and that takes time.” –TA4

In contrast, interviewees described the Danish office as having a more streamlined decision-

making structure, where responsibility is more clearly located with managers or designated decision-makers. This was associated with faster progression from discussion to action, as fewer actors need to align before decisions are implemented:

“Decision taking is, I think relatively fast because there’s always a kind a boss then eventually saying OK, you you need to do this and that or if you’re the boss yourself, then you can say OK, we do it that way” –TA6

Similarly, the Polish office was described as having a more hierarchical and formal structure, which appears to reduce the need for broad consensus-building and thereby supports quicker decision cycles:

“In Poland, the approach is closer to Germany: there is clearer hierarchy and less emphasis on consensus, leading to faster decision-making.” –TA6

Finally, the Indian office was described as operating with a stronger expectation that decisions are confirmed by those in higher positions. In this context, decision-making was associated with clearer direction from authority figures, with less expectation that individuals initiate or finalize decisions independently:

“they expect the decision taken by someone else than themselves.” –TA6

Some interviewees emphasized that communication differences were not always attributed solely to national culture. Instead, respondents highlighted the role of individual characteristics such as confidence, experience, personality, and working style, with one engineer stating that they “wouldn’t say there is [a difference] between the cultures,” suggesting that communication approaches depended more on the individual than on cultural background –EN2

4.2 Leadership as Communication Structuring

This section presents empirical findings on leadership approaches in globally distributed engineering teams, focusing on how leaders adapt communication, coordination, and accountability practices, as well as how trust is developed and maintained in multicultural project environments.

Some leaders emphasized adapting communication to ensure shared understanding, accountability, and continuity in distributed work, rather than relying on a single leadership style. A common approach was maintaining two-way communication while balancing informal interaction with structured updates, with one participant describing their leadership as “*kind of informal*” and emphasizing reliance on “*two-way communication*” supported through both “*infomails and then meetings*” –TA8.

Similarly, some leaders suggested the use of a more structured and directive communication approach, emphasizing leading by example, communicating expectations clearly, maintaining frequent communication, and reinforcing individual responsibility:

“I lead by example. So I always go forward and I expect everybody to do the same and I will communicate if they don’t do the same and everybody needs to take their responsibility. . . I will always take the time explaining exactly what I need. I communicate a lot, I write a lot, and I always do it with a positive mindset” –PM3

Several leaders highlighted listening and consensus-building as part of their leadership practice, particularly when working across diverse teams:

“I would say that I’m say work a lot with as a listening, trying to understand the background and... less kind of directive. I think here I’m more like also trying to to find a consensus.” –TA6

One interviewee highlighted the importance of interpersonal skills and emotional intelligence when communicating across geographically and culturally distributed teams:

“I think if you have emotional intelligence. You would know how to, you know, be tactical about dealing with people from different backgrounds [national and cultural].” –EN2

Many leaders conveyed that they sometimes adjust how they communicate depending on who they are working with, often changing their style based on cultural or organizational expectations. This includes being more direct in some contexts while using a softer or less dominant approach in others to fit how decisions are typically made:

“If you need to adjust your leadership style 100%, you need to be very agile in sort of changing your leadership style depending on who you’re talking to.” –PM1

Observations from team meetings further reinforced the importance of communication and coordination in distributed leadership practice. Across the observed meetings, communication followed a facilitator-driven structure in which one individual guided the agenda, managed turn-taking, and ensured that updates were collected from participants. While this centralized coordination structure was consistent across meetings, differences emerged in how leaders facilitated interaction. Some leaders adopted a more collaborative and discussion-oriented approach, encouraging joint problem-solving and participant engagement, whereas others demonstrated a more directive style characterized by top-down communication and stronger control of the discussion flow.

4.2.1 Building Trust

Several interviewees distinguished trust as a quality that develops with time through continued collaboration and familiarity among colleagues. Trust was perceived to increase through ongoing interaction and was associated with more open communication and collaboration within teams. Interviewees further implied that the establishment of trust contributed to a greater willingness among team members to acknowledge mistakes and engage openly with one another.

“When you get to know people... you gain their trust. And when you have people’s trust, they are much more open to admit they have done something wrong... when you have their trust, you have a much better collaboration.” –PM1

Several interviewees described using informal interactions and personal conversations to build trust. These included asking about personal or cultural events and engaging in conversations not directly related to work tasks. Interviewees noted that such interactions were used to get to know colleagues better and support communication within the team. One participant highlighted the value of *“talk[ing] about holidays, things people care about”* as a way of making interactions *“more fun”* and *“build[ing] trust between coworkers”* by showing interest in colleagues –TA6.

Some interviewees outlined the use of physical meetings at the beginning of collaboration to support communication and interaction within the team. These meetings were described as providing a more personal introduction and making it easier for team members to contact each other and ask questions later. Interviewees also noted that this could support ongoing collaboration after returning to remote work. As one interviewee stated:

“The benefit of having a physical meeting in the beginning is to give a more personal perspective... and make people more comfortable to reach out... it doesn’t become a barrier.” –TA5

“Meeting people in person really changes things... it’s not just an avatar on the Internet, it’s just a real person.” –EN9

4.2.2 Strategies for Clear Communication and Accountability

Many leaders emphasized written communication to ensure decisions and tasks remained traceable throughout project execution. Email was commonly used as an official record and reference point for later clarification. Some preferred it for formal approvals or verification, while others used it to document task receipt and completion. Several leaders also relied on MoM (Minutes of Meeting), which documents key discussions, decisions, and assigned tasks from a meeting. They noted that without it, it becomes difficult to recall what was discussed even days later. Few leaders also described follow-ups after meetings as important for checking task progress so that no ambiguity remained.

“I write a lot of emails... because I know when I attend the meeting, when I exit the meeting, I’ve actually forgotten 50%... therefore it’s super important to see it [meeting notes] in writing as well. I do minutes of meetings for every meeting.” –PM2

The majority of the leaders identified one-on-one interactions as an important mechanism for drawing out information that team members might be reluctant to share in larger group settings. One interviewee noted that open forums with many attendees make individuals uncomfortable asking questions they perceive as basic or repetitive, whereas smaller or private conversations lower that threshold. Another interviewee suggested making individual calls with each team member at least once per week specifically to surface information that would not emerge otherwise, describing the one-on-one format as the only reliable way to encourage open dialogue.

“I’m calling [in Teams] everybody on the team one-on-one at least once per week... to see if they have questions to kind of pull information out of it.” –TA4

Several leaders implied micromanagement as a situational strategy used under specific circumstances. One interviewee described it as necessary at the beginning of multicultural collaborations, using close oversight to establish communication norms and confirm that team members understood their tasks. A second interviewee described a trust-based trigger, noting that they initially offer flexibility and freedom but gradually increase control if a team member fails to demonstrate they can manage independently. A third interviewee expressed resorting to micromanagement when facing a high-pressure deadline, checking in individually with members across a large team to ensure work was being allocated properly and moving forward.

“When you’re collaborating with multicultural teams you need to micromanage in the beginning and I would say that people understand that if you explain it sort of because we need to find a way that we communicate.” –PM1

Some interviewees described strategies for verifying understanding beyond simple yes-or-no responses, including asking team members to restate tasks or key discussion points in their own words and using follow-up questions to probe comprehension more deeply, such as asking engineers to estimate the likelihood of completing a task.

“I ask: Can you please repeat what you need to do now and when do we need to deliver and what are you delivering? Because then you can also quickly figure out have we completely misaligned the task” –PM3

A few leaders described positioning themselves as a buffer between junior engineers and high-stakes client interactions, intervening when necessary while gradually stepping back as confidence grew. One interviewee noted that junior team members were given the opportunity to speak but that they would step in if a junior appeared lost or uncertain. The same interviewee described starting as a silent presence in meetings, offering support only

when needed, and slowly reducing their involvement over time as the junior became more capable of handling discussions independently. As one participant explained, they would “*simply sit as a bystander,*” “*provide a little bit of hand holding,*” and “*gradually... phase [themselves] out*” of discussions as competence developed –TA2

4.3 Communication in Multicultural and Hybrid Project Settings

This section presents empirical findings on multilingual communication challenges in distributed engineering teams, focusing on language switching, translation practices, and linguistic inconsistencies across professional contexts.

4.3.1 Multilingual Challenges

Some interviewees highlighted the occurrence of language switching in both formal and informal work settings, where discussions transitioned from the common project language, English, to the interviewees’ mother tongues. This phenomenon was more prevalent during deep technical evaluations or when navigating the complexities of local legislation and permitting, supported by the findings in the observations. Interviewees also noted that language switching frequently occurred in informal settings, such as during small talk at the start of online meetings or at the office in person. In these social contexts, conversations often began in English but naturally drifted into the local language.

“I have seen when we’ve had people come over [GDM engineers] that sit in fikarummet [cafeteria], people start maybe talking in English, but then all of a sudden just switch to Swedish and then not really including the people who don’t speak Swedish.” –PM4

Observational data further supported these patterns, capturing instances where Swedish terminology was interspersed within otherwise English-speaking meetings. During one observed coordination meeting, a participant stated:

“I have more than enough to do, de senaste månaderna [the last few months] have been intense.” –Participant (observed during coordination meeting)

Some interviewees noted that some client meetings are conducted in Swedish or Danish, or switch into these languages during the meeting, particularly when the contract or project language is not English. While technical meetings are often conducted in English, management-level discussions or senior stakeholders may prioritize their native language for personal comfort or legal clarity. To address this, some meetings are conducted in Swedish, followed by a brief summary in English for colleagues at the engineers in the GDM. In some cases, teams also use real-time translation tools during meetings to enable smoother participation and reduce the need for post-meeting summarization.

“They very often swap to Swedish, and I mean it’s their right to do so because it’s a Swedish project. And you know, in the contract there’s also always sentences that contract language is Swedish... and if there’s inconsistencies, then Swedish is prevailing.” –TA6

Some interviewees described challenges with written and technical materials, where documentation, GIS data or software interfaces were sometimes provided in Swedish or Danish, which can make it difficult for international engineers to work with these materials. Interviewees reported that they sometimes need to translate or interpret written material while performing technical tasks at the same time. Some mentioned using translation tools like ChatGPT, Copilot, Google Translate to translate Swedish reports and instructions into English to support understanding. These tools were viewed as helpful for getting a general sense of the content, but interviewees noted that they sometimes needed to double-check or clarify the translated output with colleagues.

“The project and delivery is in Swedish and the main challenge is translating everything in a proper way... Discipline leaders write tasks in Swedish and use work language and terms that are not directly understandable.” –TA9

“I would say that most miscommunication happens in emails or [...] Teams chat because you cannot feel the nuance of [...] humor [or] mood. Sometimes people think that you [were] angry, when you were not.” –TA9

4.3.2 Challenges with Working Language

Some interviewees identified challenges related to variations in fluency, the use of slang, and differences in the pace of communication. Even when English was the consistent working language, respondents noted that regional accents from the UK, the US, or India could make technical discussions more difficult to follow. Conversations with native speakers were characterized as being faster, while discussions involving non-native speakers were typically slower and required more repetition to ensure clarity. The observation findings further strengthened the notion that non-native speakers occasionally experienced moments of linguistic hesitation, requiring them to pause or use digital tools to find the correct terminology they wanted to use.

“Sometimes there are accents like... for example the Indian English and the American English. So it’s hard to understand and sometimes they use some kind of slang that is local.” –EN1

Several interviewees identified challenges regarding technical synonyms, terminological inconsistency, and the work language used across different engineering disciplines and client stakeholders. One interviewee noted that the use of multiple terms to describe the same object, such as using "railway," "lines," and "main lines" interchangeably can lead to confusion among non-native speakers. This confusion was suggestively frequently compounded by different disciplines using software-specific terms automatically or by

clients using varying technical terms for the same concept in different ways, which was insinuated as unclear. One interviewee shared that their team only recently realized they had been perceiving certain words as distinct concepts when the client actually meant the same thing, highlighting the need to establish precise, standardized wording. Furthermore, interviewees expressed instances where specific word choices led to direct misunderstandings due to language differences.

“One thing can be said in three different ways. So that has to be like some way where I understand that, OK, we need to be just using these words and then communicate that precisely.” –PM4

4.4 Feedback Mechanisms

This section presents empirical findings on feedback practices in globally distributed engineering teams, focusing on the role of informal and formal feedback mechanisms as well as cultural differences in how feedback is communicated and perceived across contexts.

4.4.1 Informal Feedback and the Culture of Appreciation

Several interviewees described informal feedback as a frequent and integrated part of daily communication, occurring both informally and as part of ongoing task-related discussions. This included short written messages, verbal acknowledgments, and expressions of appreciation, as well as feedback on improvements linked to specific tasks. Interviewees noted that feedback was often immediate, delivered through chat or meetings, and included both positive reinforcement and suggestions for how to address issues. It was also described as part of an iterative process, where work is reviewed and adjusted continuously during collaboration.

“Informal feedback, it’s always during the project when we talk about something and someone says, yeah, good job or yeah, we did it. Yeah, thank you for that.” - EN5

Some interviewees described the use of digital tools and informal channels to deliver feedback. This included internal chat groups, as well as the use of visual elements such as emojis, memes, and gifs. These were used alongside written comments to communicate reactions and responses in a more informal way, with one participant describing how they use “*memes, gifs*” within an “*internal group*” as part of “*totally informal communication*” aimed at creating a more relaxed interactional space (TA9).

Several interviewees described using shared digital platforms to give feedback on drawings, models, and tasks. They noted that documents could be uploaded and reviewed by multiple team members at the same time, where comments and mark-ups were added directly to the material. Interviewees acknowledged that this allowed feedback to be visible to other teammates in real-time. They also noted that models could be accessed remotely, making

it possible to check updates and confirm changes without waiting for formal submissions. In addition, interviewees described using task-based systems where feedback was written in comment sections linked to specific activities, allowing team members to ask questions, give updates, and respond within the same workflow.

“There is no confusion... everyone can go in and mark up and see the comments at the same time.” - EN4

4.4.2 Formal Feedback

Formal feedback was described as primarily structured through periodic evaluation processes that assess employee performance and development over time. These evaluations are typically conducted once or twice a year and supported by standardized frameworks such as individual development plans and performance dialogues. Employees are assessed against defined criteria including technical competence, communication, collaboration, and behavioral performance. The process is usually documented through digital forms where performance is rated on numerical scales. Formal feedback is also linked to organizational performance systems, where teams or departments may be evaluated through structured mechanisms such as satisfaction scoring, anonymous workplace surveys, or post-project assessments. In many cases, feedback is collected after major project milestones or phases, rather than continuously, and may be used to inform future planning, workload distribution, and organizational development decisions.

4.4.3 Cultural Differences in Feedback Expectations

Many interviewees described differences in how feedback is communicated and perceived across countries. Feedback in Denmark and Poland was described as more direct, with interviewees noting that colleagues both give and expect clear and sometimes can be interpreted as harsh. In contrast, feedback in Sweden was described as more softened in delivery and expressed in more of a polite manner. Some interviewees noted that Swedish colleagues frequently provide positive reinforcement and avoid direct criticism.

“Polish directness... can give feedback by saying ‘This is wrong, do this’... some people can take it too personally if they are not used to it.” - EN2

Additionally, interviewees described that feedback practices vary in frequency and emphasis across locations, with some contexts placing greater importance on regular feedback than others. In the Indian office, several interviewees described feedback as important and closely tied to motivation and career progression, with both verbal and written feedback being valued.

Some interviewees also described adjusting how feedback is communicated depending on the context. In some cases, feedback is shared with additional recipients within the organization:

"When I give feedback in India, I always ensure that their office boss is known... I send it to the employee and then CC their bosses... because it's a bit more hierarchy divided." - PM3

4.5 Hybrid Work

This section presents empirical findings on virtual collaboration practices in globally distributed engineering teams, focusing on the use of digital tools, hybrid and remote meeting formats, and the coordination of work across time zones and asynchronous communication structures.

4.5.1 Use of Digital Tools and Hybrid Meeting Practices

Interviewees described the use of different digital communication tools in their daily work, including chat platforms, video calls, emails, and screen-sharing during meetings. Some interviewees described using chat platforms for quick updates and informal communication, while emails were used to document information and share meeting summaries. Video and audio calls were described as being used for technical discussions and regular meetings. Interviewees also described using screen-sharing to explain tasks or problems during meetings. Interviewees also described the use of informal elements such as emojis, GIFs, and memes in digital communication.

"Oh, we use memes, gifs, memes and so on. Yeah, we have like we have internal GS group and we have totally informal communication there, just to be relaxed somewhere" - TA9

Most interviewees expressed a preference for fully remote meetings over hybrid formats, arguing that hybrid arrangements often exclude interviewees who are not physically present in the main meeting room. Several recurring issues in hybrid meetings were identified, including audio-visual limitations, reduced focus caused by side conversations in the physical room, and the use of physical tools, such as whiteboards, that remote participants could not access or see. These findings were further supported by observational data, where instances of small talk conducted in a non-working language were observed among physically co-located participants, effectively excluding colleagues who had joined remotely.

"I think I would prefer a pure remote to be honest... because [in hybrid] there are multiple smaller chats going on in the room and you [the remote interviewee] are often a little bit left out." -TA5

Some interviewees further described how fully digital meeting formats were often preferred even when colleagues were physically co-located, as they enabled all interviewees to work within the same digital environment. Individual workstations with access to multiple screens and shared digital materials were perceived to support collaboration more effectively than traditional meeting rooms. This was particularly emphasized in

engineering-related work, where sketches, drawings, and live markups functioned as central communication tools. Screen sharing and the collaborative updating of documents were described as important practices for maintaining alignment and shared understanding across distributed teams. This was also reflected in the observations, where shared digital documentation consistently structured communication, with screen sharing used in all meetings to anchor discussion and guide the progression through drawings, spreadsheets, and notes.

“We never go to a meeting room, even when we are sitting in the same area [...] because we need multiple screens to present different things. In a meeting room you only have one shared screen, whereas at your desk you can access all the materials you need.” -TA1

Several leaders described implementing practices intended to create more equal conditions for all participants to mitigate the inherent inequalities associated with hybrid meetings. One commonly adopted strategy involved standardizing the meeting experience by requiring all participants to join individually from their own laptops, even when physically located in the same office. This approach was described to create a more uniform meeting environment, enabling equal participation, consistent visibility, and improved focus among attendees.

“I would always prefer that you joined in, even though you’re sitting in the same room, join in so I get the same perspective of each of you in the camera.” -PM3

Many interviewees reported that video helps make digital interaction feel more human, as it allows attendees to see each other’s reactions rather than communicating through a less personal interface. They also noted that cameras are particularly important at the beginning of collaboration, where they support trust-building during introductions and early project alignment. However, in more technical phases such as detailed design work, attention tends to shift toward screen sharing and the camera becomes less central. This was further reflected in the observations, where camera usage differed across meetings: in one meeting all participants had cameras on due to a formal requirement, while in the others usage varied.

“It’s always better when you see... we talk with the cameras on because we know that we talk with a real person.” - EN6

4.5.2 Managing Time Zone Differences and Asynchronous Work

Some interviewees identified time zone differences as a recurring challenge in distributed collaboration, describing how limited overlap between working hours reduced opportunities for real-time communication and coordination. Some interviewees explained that they adjusted their schedules to participate in meetings across different time zones, including attending meetings during lunch breaks or outside regular working hours. Interviewees from countries with later working hours particularly described evening meetings as chal-

lenging when coordination with other offices was required. This was similarly reflected in the observations, where GDM engineers from the India office asked the discipline leader, during the meeting, if they could exit the meeting after they presented. The cause was due to the meeting extending beyond their regular working hours.

"Sometimes it so happens that some meetings are much further in the evening for us [in India]... the 3 1/2 hour is not a big deal, but sometimes... that can be a challenge." - EN

The lack of simultaneous availability necessitates the use of asynchronous documentation and structured MoM to ensure information is not lost during handovers. Some interviewees emphasized that written summaries are essential to mitigate the risk of communication delays and to provide a reference point for team members in different regions.

"Normally we request to have a... follow up e-mail or minutes of meeting... so that everything is crystal clear, you know, no ambiguity." - TA3

A few interviewees described working across different time zones as a key advantage for maintaining continuous project progress. They explained how tasks can be handed over between countries in different time zones, often using a short overlap at the end of the working day to align on feedback and next steps. Some interviewees said this enables implementation and updates to take place while other teams are offline, allowing work to continue overnight, so deliverables can be ready for review when teams return the next morning, which could reduce iteration time and accelerate delivery cycles. One leader also noted that during high-pressure phases, this distribution of work increases available capacity and helps teams meet tight deadlines that would be difficult to achieve within a single location.

"They have a different time zone so that they would work, we would comment and they can implement what we discuss, you know, while we are sleeping." - TA1

5. Analysis and Discussion

This chapter presents an analysis of the study's findings, structured around the same topics as in the empirical data results. The discussion draws on a more accumulated view of the data, allowing for a broader analysis of the recurring themes.

5.1 Leadership as Communication Structuring

The empirical findings suggest that leadership in multicultural and distributed project environments is enacted less through formal authority or fixed leadership styles and more through the continuous coordination of communication, relationships, and accountability structures. Interpreted through the analytical framework of communication structuring for alignment, leadership appears closely tied to the ongoing management of ambiguity, interpretation, and collaboration across geographically and culturally dispersed teams. Rather than operating as a stable managerial function, leadership emerged as a continuous coordination process through which alignment was negotiated and maintained under conditions characterized by fragmentation, interdependence, and hybrid work arrangements.

5.1.1 Communication and Coordination as Leadership Practice

A recurring pattern throughout the findings concerns the extent to which leadership becomes embedded within communication itself. Informal interaction, structured communication routines, clarification practices, and adaptive communicative strategies were simultaneously used to coordinate tasks and maintain shared understanding across distributed teams. Leadership therefore appeared less connected to directing work from a distance and more associated with continuously adjusting how information was communicated, interpreted, and reinforced throughout project execution.

Viewed through the analytical framework, this inclines that leadership functions as a form of communicative coordination work aimed at reducing ambiguity across organizational and cultural boundaries. Communication was not only used to distribute tasks or monitor progress, but also to negotiate expectations, clarify responsibilities, and maintain operational continuity within fragmented project environments. The findings align with Dainty et al. (2006), who emphasize that communication constitutes a central coordinating mechanism within project-based environments characterized by interdependence and temporary organizational structures. The empirical material further suggests that communication within distributed collaboration should not be understood as merely procedural or standardized. Instead, leaders appeared to continuously adapt communicative approaches depending on task complexity, cultural expectations, and relational dynamics, indicating that leadership communication becomes increasingly situational within multicultural hybrid project environments.

The empirical material additionally illustrated how leaders navigated tensions between directive clarity and consensus-oriented dialogue. In some situations, explicit and highly structured communication was used to reduce uncertainty and maintain efficiency, while in other situations more participative communication appeared necessary to preserve relational balance and collaborative engagement. These patterns also appear in decision-making processes, where consensus-oriented decision-making was described as allowing stronger shared understanding, while more hierarchical structures were associated with faster decision-making. However, these differences were not solely culturally determined, but were also shaped by individual agency, role positioning, and situational project conditions. Through Meyer (2014)'s cross-cultural framework, these adjustments may cause tensions due to the varied assumptions regarding hierarchy, directness, and decision-making within the team. However, the findings suggest that communicative adaptation was closely tied to both cultural sensitivity and the coordination demands inherent in distributed project work, where misunderstandings can easily escalate across geographical and disciplinary boundaries (Dainty et al. 2006). Leadership communication therefore seems to function simultaneously as a cultural negotiation process and a coordination strategy for sustaining alignment in complex project environments.

5.1.2 Leadership and Trust Formation in Distributed Collaboration

Another prominent tendency concerns the relational dimension of leadership and the role of trust in enabling collaboration across distributed teams. Trust appeared to develop gradually through repeated interaction, communicative consistency, and sustained collaboration rather than emerging automatically through formal organizational structures. Several interviewees described how openness, responsiveness, and informal interaction strengthened interpersonal relationships and reduced hesitation in collaborative problem-solving.

The findings suggest that leadership extends beyond task coordination toward maintaining the interpersonal conditions necessary for collaboration across distributed teams. Trust appeared connected not only to perceptions of competence and reliability, but also to relational familiarity and communicative accessibility. Viewed through Meyer (2014)'s trusting dimension, this may reflect how trust in multicultural environments develops through different combinations of task-based reliability and relational interaction depending on contextual and cultural expectations. The empirical material further indicates that trust-building within hybrid and geographically distributed environments requires greater intentionality compared to co-located work settings. In the absence of spontaneous interaction and informal proximity, relational continuity appeared increasingly dependent on deliberately maintained communicative practices. Previous research similarly emphasizes that distributed collaboration reduces opportunities for informal clarification and shared contextual understanding, thereby increasing dependence on continuous interaction to maintain collaboration and interpersonal cohesion across geographically dispersed teams (Stray et al. 2020; Gilson et al. 2015).

A similar pattern emerges in relation to psychological safety. Increased trust was associated with greater willingness to admit mistakes, ask clarifying questions, and communicate uncertainty openly. Through Edmondson (2011)'s concept of psychological safety, this may indicate that relational trust reduces perceived interpersonal risk within multicultural collaboration, thereby improving openness and reducing coordination gaps (Edmondson 2011). At the same time, the findings suggest that psychological safety within distributed environments may become more fragile due to reduced interpersonal visibility and fewer spontaneous interactions. Leadership, therefore appeared important not only for coordinating technical work, but also for actively maintaining communicative environments where clarification and uncertainty could be expressed without relational risk.

5.1.3 Control, Accountability, and Adaptive Leadership

The findings further indicate that leadership in distributed project environments involves continuous balancing between oversight, accountability, and autonomy. Formal documentation practices such as emails, meeting minutes, written follow-ups, and structured reporting routines were extensively used to maintain continuity and traceability across fragmented project settings. Several interviewees described how verbal agreements or meeting discussions could easily be forgotten or interpreted differently in the future, making written communication important for preserving alignment and accountability throughout project execution. This aligns with Söderlund (2011), who emphasizes coordination challenges in project-based environments characterized by fragmentation, where responsibility and information are distributed across multiple actors and must be integrated through formal and informal coordination mechanisms.

At the same time, accountability did not appear to rely solely on formal systems and documentation structures. One-on-one interactions emerged as particularly important for surfacing uncertainty, misunderstandings, or concerns that team members hesitated to raise within larger group settings. Interpreted through Edmondson (2011)'s psychological safety perspective, such interactions may reduce perceived interpersonal risk and create conditions where clarification becomes socially easier. Accountability therefore appeared sustained not only through procedural control mechanisms, but also through relational practices encouraging openness and communicative accessibility.

The findings additionally reveal how leadership practices shifted depending on uncertainty, task complexity, and the level of shared understanding established within the team. Micromanagement was not described as a permanent leadership style in the findings, but was selectively used during high-pressure situations or when competence and expectations remained unclear. This partially differs from literature that describes micromanagement as a negative form of excessive control. Participants instead described it as a temporary approach used to support alignment, manage uncertainty, and maintain coordination, which aligns with Vu (2025), who argues that micromanagement is often framed as uniformly negative in the literature despite its dependence on context and intent. Viewed through

the analytical framework of communication structuring for alignment, such oversight may function as a mechanism for reducing ambiguity and maintaining coordination when shared understanding has not yet been fully established (Dainty et al. 2006; Gilson et al. 2015; Zhang et al. 2018). Over time, however, leaders described gradually reducing direct involvement as employees demonstrated reliability and familiarity with project expectations. Leadership therefore appeared characterized by continuous adjustment between guidance and autonomy rather than a fixed approach to control. This suggests that accountability within hybrid project environments may emerge through the interaction between formal coordination structures, communicative clarification practices, and adaptive leadership responses to changing situational conditions.

A notable inclination concerns how some leaders deliberately verify shared interpretation throughout communication processes by asking employees to repeat back, summarize, or explain tasks in their own words. This was particularly evident in interactions between low-context leaders and high-context engineers. Rather than relying on assumed understanding following affirmative responses, these leaders introduced explicit clarification routines and verification mechanisms to reduce interpretive ambiguity. This practice aligns with Meyer (2014), who argue that multicultural collaboration is facilitated by low-context communication processes, and also supports Müller et al. (2019), who emphasize the leader's role in continuous clarification to maintain clarity in tasks, roles, and expectations. More broadly, these verification practices can be situated within the coordination and governance conditions of PBOs, where alignment depends not only on individual communication styles but also on how responsibilities and coordination mechanisms are distributed across organizational layers Müller et al. (2019). In this sense, the described routines function as situated managerial responses to the challenge of maintaining alignment, rather than merely as interpersonal coordination tools.

5.2 Communication in Multicultural and Hybrid Project Settings

5.2.1 Multilingual Challenges

The empirical findings show that language use in the project environment is highly fluid, characterised by systematic switching between English as the formal working language and local languages across both formal and informal settings. This aligns with research on multilingual teams conceptualising language as a situational resource rather than a fixed medium, deployed flexibly to balance efficiency, comprehension, and social cohesion (Tenzer et al. 2014; Ochieng et al. 2010). Language switching is most pronounced under conditions of high cognitive and technical complexity work environment. This is consistent with literature suggesting that increased task ambiguity and domain specificity encourage reliance on native languages to reduce cognitive load and improve epistemic precision (Tenzer et al. 2014; Stahl et al. 2010). Thus, switching functions as both a cognitive adaptation and an interactional mechanism for maintaining communicative accuracy in technically dense environments. Informal interactions similarly exhibit systematic switching, of-

ten beginning in English and transitioning into local languages. This reflects relational proximity and culturally embedded communication norms, consistent with high-context communication theory (Meyer 2014). Such dynamics also align with multicultural team research showing that informal settings can strengthen local cohesion while potentially introducing exclusionary effects for non-native speakers (Stahl et al. 2010).

5.2.2 Challenges with Working Language

Beyond interactional dynamics, language choice is shaped by institutional and communicative constraints. The use of Swedish in client-facing and contractual contexts reflects the influence of local legal and organisational logics over lingua franca efficiency. This supports research indicating that language selection in inter-organisational collaboration is often driven by legitimacy and legal clarity rather than communicative optimisation alone (Lioukas et al. 2026; Meyer 2014). Even when English functions as the default working language, variability in fluency, accent, pacing, and register introduces persistent communicative asymmetries. Prior research shows that such asymmetries increase cognitive load and reduce participation speed among non-native speakers, particularly in fast-paced technical exchanges (Tenzer et al. 2014; Gibson et al. 2011). These dynamics systematically shape interactional flow through repetition requirements and adjusted conversational pacing. The findings also reveal persistent terminological inconsistency across disciplines and stakeholders, reflected in multiple labels for identical technical constructs. This lack of shared semantic standardisation is a well-documented coordination challenge in complex engineering environments (Majchrzak et al. 2011; Eriksson et al. 2017), where misalignment often arises from divergent conceptual framing rather than information scarcity.

A further key finding concerns the translation burden embedded in multilingual engineering work. Engineers frequently engage in real-time interpretation of technical material alongside core tasks, reflecting a form of language friction identified as a hidden coordination cost in global delivery environments (Manning et al. 2015; Majchrzak et al. 2011). The increasing use of machine translation and generative AI tools indicates an emerging augmentation strategy. This extends established discussions on mediation and boundary objects in global teams (Whyte 2019; Stray et al. 2020). These tools are primarily used for sensemaking rather than authoritative translation, functioning as interpretive aids that support, rather than replace, domain-specific linguistic competence.

The findings corroborate established literature on multilingual coordination, cultural communication styles, and global engineering collaboration. They also extend this literature by highlighting how real-time digital translation tools and hybrid language practices increasingly mediate multilingual complexity in contemporary project-based engineering environments.

5.3 Feedback Mechanisms

Based on the empirical findings, informal feedback appeared considerably more embedded in everyday collaboration than formalized feedback systems. Formal feedback mechanisms will therefore not be further emphasized within this discussion.

5.3.1 Continuous Feedback and Interpretive Coordination

Viewed through the analytical framework of communication structuring for alignment, feedback appeared less as a discrete evaluative activity and more as an ongoing process through which actors continuously negotiated shared understanding throughout project execution. Clarifications, written comments, verbal acknowledgments, and iterative adjustments were not separated from technical work itself, but intertwined with the coordination of tasks, responsibilities, and expectations. Several interviewees described how misunderstandings were addressed gradually through continuous interaction rather than through formal correction after problems had already emerged. This suggests that alignment within multicultural project environments may depend less on isolated moments of control and more on the continuous maintenance of interpretive coherence across interdependent actors (Anseel et al. 2015). In this sense, the findings support previous research emphasizing the importance of informal feedback for enabling coordination and adaptation within project-based environments. This aligns with (Eriksson et al. 2017), who conceptualize coordination in engineering projects as a continuous mechanism for aligning interpretations across interdependent activities. Feedback in this sense functions as a stabilizing process that prevents local misunderstandings from scaling into downstream inefficiencies.

5.3.2 Digital Visibility and the Limits of Shared Understanding

At the same time, the findings indicate that these alignment processes are increasingly shaped by digital infrastructures structuring collaborative work. Shared platforms where actors could comment on drawings, track revisions, and revisit previous discussions appeared to make feedback collectively visible across organizational and geographical boundaries. Through the lens of the analytical framework, this may indicate that digital systems partly stabilize communication by externalizing clarification processes and reducing dependence on individual memory or isolated conversations. Yet, the findings simultaneously reveal a potential tension between informational visibility and interpretive alignment. Although actors technically accessed the same information, they did not necessarily attach the same meaning to it. Urgency, critique, or responsibility could still be interpreted differently depending on cultural expectations, professional background, or relational context. This nuances more technologically deterministic assumptions that increased transparency automatically improves coordination. Instead, the findings resonate with broader communication literature arguing that misalignment in project-based environments often emerges through differences in interpretation rather than through absence of information alone (Dainty et al. 2006).

5.3.3 Informal Feedback Practices

Another notable pattern concerns the relational dimension of informal feedback. The use of emojis, gifs, and informal communication channels may initially appear peripheral to project coordination. However, interpreted through the analytical framework, these practices seem to contribute to maintaining social continuity within geographically distributed teams where interaction is otherwise highly task-oriented. Particularly in hybrid settings, where spontaneous encounters and informal conversations become less frequent, such communicative practices may partially compensate for the absence of contextual and interpersonal cues typically available in co-located environments. Rather than functioning merely as casual interaction, informal expressions may therefore reduce relational distance and soften communicative rigidity within technically intensive project settings. To that notion, this empirical data corresponds with previous research suggesting that distributed teams often experience weakened interpersonal synchronization and reduced contextual awareness over time (Stray et al. 2020). The findings therefore suggest that alignment is not solely sustained through technical clarification, but also through communicative practices that preserve relational familiarity and interpersonal responsiveness across distance.

5.3.4 Cultural Interpretations of Feedback and Critique

The empirical material illustrates how feedback processes become intertwined with culturally embedded assumptions about appropriate communication, particularly through tensions in how direct feedback and support-seeking are expected to be expressed. These tensions are often reflected in differing communicative norms around explicitness, including variations in both feedback delivery and help-seeking practices. In relation to feedback, expectations around directness are further shaped by organizational feedback structures and communication hierarchies, which may contribute to ineffective feedback processes aligning with the analytical framework (London 2014). Similarly, in help-seeking practices, the timing and explicitness of requesting support varies across communicative settings characterized by differing expectations around hierarchical accessibility and individual responsibility for problem-solving. In some contexts, early and explicit clarification-seeking is normalized, while in others uncertainty is more often addressed through initial independent work before escalation, creating a tension between coordination efficiency through early clarification and expectations of autonomy, shaping when potential issues become visible in collaborative work. Thus, the empirical findings suggest that communicative directness cannot simply be categorized as effective or ineffective across contexts. Direct feedback and explicit help-seeking may in some situations signal engagement, efficiency, and transparency, while in other contexts be interpreted as unnecessarily confrontational or as premature escalation that may challenge expectations of autonomy. Conversely, more indirect approaches intended to preserve relational harmony or allow independent problem resolution may simultaneously create uncertainty regarding expectations or delay coordination. What emerges is therefore not merely a difference in communication style,

but a broader tension between clarity, autonomy, and relational preservation within collaborative work. Misalignment may consequently arise not because feedback or support is absent, but because communicative intentions are interpreted through different cultural and organizational frames of reference (Meyer 2014).

5.3.5 Hierarchy, Authority, and Feedback Legitimacy

A similar pattern appears in relation to hierarchy and authority. Interviewees described feedback as more closely connected to managerial visibility, motivation, and professional progression in contexts characterized by stronger hierarchical expectations, with supervisors frequently included in communication and decision-making processes. Through Meyer (2014)'s leading dimension, this may reflect how hierarchical expectations shape the legitimacy of communication and influence how accountability is distributed across organizational levels. The findings suggest that feedback practices are not interpreted independently from organizational relationships, but embedded within broader assumptions regarding authority, initiative-taking, and professional conduct. Therefore, alignment within multicultural engineering environments may depend not only on whether feedback is communicated, but on whether actors share sufficiently similar assumptions regarding how communication should be delivered, interpreted, and acted upon (Ochieng et al. 2010).

5.4 Hybrid Work

5.4.1 Use of Digital Tools and Hybrid Meeting Practices and Collaboration

Hybrid and distributed collaboration in globally dispersed engineering teams is characterized by persistent interactional asymmetries that are structurally embedded in hybrid meeting configurations. The empirical material indicates that interviewees experience hybrid meetings as less effective than fully remote arrangements due to uneven participation conditions, where co-located actors benefit from informal side conversations, shared physical tools, and non-verbal coordination cues that are not accessible to remote participants. This tendency reflects the structural asymmetries described by Stray et al. (2020), where co-location introduces parallel interaction channels that systematically privilege in-room participants. Observational data further show that such asymmetries are reinforced through unstructured in-room exchanges and the use of physical coordination tools, which limits shared visibility and increases the need for compensatory explicit communication practices, consistent with Gilson et al. (2015), who argue that reduced communicative immediacy in distributed settings increases reliance on structured coordination.

In response to these asymmetries, teams frequently adopt standardized participation practices in which all participants join via individual devices regardless of physical co-location. Tang et al. (2023) show that such configurations reduce participation inequities by enforcing a uniform communicative interface and shared artifact space, thereby limiting the

influence of in-room side interactions. This is reflected in the empirical material, where fully remote or fully digital meeting formats are often perceived as more equitable, as they enforce consistent access to communication channels and reduce interactional privilege associated with physical presence.

A further salient finding is that digital artifact-based collaboration functions as the primary coordination infrastructure in globally distributed engineering work, effectively superseding the traditional centrality of physical meeting spaces. The empirical evidence indicates that teams rely heavily on screen sharing, shared documentation environments, and real-time collaborative editing to structure discussions and maintain alignment across distributed participants, particularly in engineering tasks involving design materials such as drawings, sketches, and technical specifications. These artifacts do not merely support communication but actively structure it, aligning with Maquil et al. (2024), who emphasize that shared digital workspaces and persistent artifacts increasingly constitute the core coordination environment in engineering work. Observations confirm that these digital materials consistently anchor meeting progression and serve as the primary reference point for collective sense-making, suggesting that coordination is organized around artifact navigation rather than interpersonal interaction alone. In this context, Manole et al. (2025) further explains why synchronized access to shared tools can outweigh physical co-location, as simultaneous engagement with the same technical material enables distributed participants to maintain alignment despite reduced face-to-face interaction.

This centrality of artifacts also reframes the communication dynamics predicted by Media Richness Theory (Daft et al. 1986). While the theory suggests that richer media improve understanding by providing immediate feedback and multiple cues, the empirical findings indicate that effectiveness is not solely dependent on interpersonal cue richness but on whether the medium enables shared manipulation of technical content under conditions of high interdependence. Rich media such as video communication are indeed useful for early-stage coordination and relational grounding, supporting Gilson et al. (2015) in that social presence facilitates initial alignment. However, in later stages of technically intensive work, artifacts become the dominant coordination mechanism, and their capacity to externalize and stabilize complex information partially substitutes for the loss of embodied cues. This suggests a more context-dependent form of task-embedded richness, where interpretive clarity emerges from shared interaction with artifacts rather than from interpersonal channel richness alone.

Finally, the empirical findings indicate that hybrid collaboration environments are increasingly shaped by deliberate strategies aimed at standardizing participation conditions to mitigate structural inequalities inherent in distributed interaction. Teams and project leaders frequently implement practices in which all participants are required to join meetings individually via their own digital devices, even when physically co-located, thereby ensuring uniform access to communication channels and shared resources. This practice reflects an intentional effort to counteract the exclusionary effects associated with hybrid

configurations, particularly the dominance of in-room interactions and the fragmentation of attention. In line with (Eriksson et al. 2017), such asymmetries are particularly consequential in interdependent project environments, where uneven interpretation and partial information access can propagate through interconnected tasks. Hybrid communication conditions therefore increase the risk that local misalignment translate into broader coordination inefficiencies. Such standardization can be interpreted as an adaptive coordination mechanism that seeks to restore interactional symmetry by reducing variability in participation conditions. This aligns with prior research suggesting that virtual collaboration requires heightened explicit structuring of communication processes to maintain alignment and reduce ambiguity (Gilson et al. 2015), while also extending it by demonstrating how organizations actively redesign co-located work practices to conform to digital-first interaction norms. The underlying mechanism appears to be the recognition that hybrid settings introduce heterogeneous participation interfaces, which can compromise collective focus and equity unless normalized through procedural intervention. At the same time, this strategy may also reflect a broader transformation in workplace coordination norms, where digital equality is prioritized over physical co-presence as a principle of collaboration design. The broader implication is that hybrid work does not merely involve the integration of physical and virtual settings but increasingly entails the reconfiguration of physical environments themselves to align with digitally mediated coordination logics.

5.4.2 Managing Time Zone Differences and Asynchronous Work

Time zone differences act as an important structuring factor in distributed engineering work, as they shape how teams coordinate by limiting synchronous interaction and increasing reliance on asynchronous, artifact-based collaboration. The empirical material shows that limited overlap in working hours reduces opportunities for real-time communication. As a result, interviewees often need to adjust their schedules for cross-regional meetings, sometimes attending outside normal working hours. In some cases, this leads to fatigue when coordination regularly extends into the evening. Observations also indicate that this temporal misalignment can affect participation boundaries. For example, when interviewees leave meetings once their working hours have ended. At the same time, the data shows that asynchronous practices, especially written summaries and structured meeting notes are commonly used to maintain continuity and reduce misunderstandings across distributed teams. This is consistent with earlier research suggesting that temporal dispersion increases reliance on explicit documentation and weakens immediate feedback cycles in virtual teams (Gilson et al. 2015; Stray et al. 2020). However, the findings also extend this literature by showing that asynchronous documentation is not only a compensatory tool, but also functions as a core coordination mechanism that helps stabilize shared understanding across time zones.

The dual effect of time zone separation is also visible in descriptions of work organization, where tasks are passed between geographically distributed teams. This enables continuous progress and can speed up delivery cycles. It suggests that time differences can both

increase coordination effort and create productivity benefits by supporting sequential, around-the-clock workflows. Overall, the underlying shift is from co-located, real-time coordination to temporally distributed coordination, where alignment is achieved through structured artifacts and planned handovers rather than immediate interaction. Experiences vary across interviewees: some primarily see time zone differences as a barrier to communication quality and responsiveness, while others view them as an advantage for maintaining continuous workflow. In the case study context, the findings suggest that time zone differences do not simply restrict communication, but actively reshape how coordination is organized in globally distributed engineering teams.

6. Conclusion

In this chapter, the two research questions of the study will be answered. Based on the empirical findings, analysis and discussion, several conclusions can be drawn:

RQ1: What communication challenges emerge in multicultural hybrid project-based engineering teams?

The findings indicate that communication challenges within multicultural hybrid engineering teams were not primarily attributable to insufficient communication. Rather, the differences in how communicated information was interpreted across cultural and geographical boundaries. Although communication occurred continuously throughout project execution, shared understanding could not be assumed solely on the basis of information exchange. Instead, project actors frequently attached divergent meanings to expectations, responsibilities, priorities, and feedback, resulting in inconsistencies in understanding despite apparent agreement.

These interpretive discrepancies were shaped by differing communicative assumptions concerning hierarchy, initiative-taking, feedback practices, and decision-making processes. As such assumptions were rarely articulated explicitly, uncertainty often remained unresolved while silence or verbal agreement was interpreted as evidence of mutual understanding. Communication consequently became reliant on individual interpretation rather than systematic verification, increasing the likelihood of latent misunderstandings. The findings further suggest that hybrid collaboration intensified these challenges by creating unequal access to contextual information, informal interactions, and ongoing clarification processes. Consequently, project actors developed varying levels of situational awareness despite participating within the same formal communication structures.

Furthermore, linguistic variation and discipline-specific terminology introduced an additional layer of complexity, as technical concepts and project expectations were not always interpreted consistently across geographically distributed teams. Viewed from a broader perspective, the findings suggest that communication challenges emerged through the interaction between cultural diversity, hybrid modes of collaboration, and the highly interdependent nature of project-based engineering work. Misalignment therefore evolved gradually through accumulated differences in interpretation rather than through visible conflict or an absence of communication.

RQ2: How do leaders structure communication and feedback in multicultural hybrid project-based engineering teams, to facilitate shared understanding across diverse working environments?

The findings indicate that leaders facilitate alignment in multicultural hybrid engineering teams by actively structuring communication to support the development of shared understanding across culturally and geographically distributed work environments. Within highly interdependent project settings, the study indicates that misalignment could not emerge through information exchange alone. Thus, some leaders continuously facilitated the clarification, interpretation, and reinforcement of communicated information to ensure that project actors developed a common understanding of expectations, responsibilities, and project requirements.

This communicative and feedback coordination was characterized by a deliberate emphasis on explicitness, verification, and adaptation. Rather than relying on project actors to independently identify misunderstandings, leaders tend to monitor how information was interpreted and adjusted communication practices to address emerging discrepancies in understanding. Communication therefore functioned not merely as a mechanism for transferring information, but as an ongoing process through which meaning was negotiated, validated, and aligned across project actors.

The findings further suggest that effective communication structuring required leaders to adapt their leadership approaches to differing communicative expectations associated with cultural diversity and hybrid collaboration. Variations in attitudes towards hierarchy, feedback, participation, and uncertainty influenced how project actors engaged in communication and expressed concerns. Consequently, leaders played an important role in creating conditions that encouraged clarification, facilitated participation, and compensated for the reduced contextual awareness characteristic of geographically distributed work environments.

Across the investigated projects, a consistent pattern emerged whereby, the findings suggest that alignment was maintained through continuous communicative maintenance embedded within everyday project interactions. Leadership therefore involved actively shaping how communication was understood and enacted rather than simply ensuring that information was exchanged.

6.1 A Proposed Framework for Continuous Alignment Through Communication in Multicultural Teams

Based on the findings of this study, a framework has been developed that captures the continuous alignment of communication in multicultural and hybrid engineering teams. The framework integrates key communication vulnerabilities and demonstrates how these can be actively managed through leadership practices that sustain shared understanding throughout task execution. It consists of three main elements: the Communication Vulnerabilities Dimension which outlines sources of potential misalignment in distributed team communication, the Leadership Mitigation Dimension which describes how leadership practices reinforce clarity, feedback, and coordination during work processes, and the

Consequences Dimension which represents the resulting outcome of effective communication in the form of sustained shared understanding. Together, these elements illustrate how alignment is not a static state but an ongoing process supported through structured leadership interventions. An overview of the framework is illustrated in Figure 7.

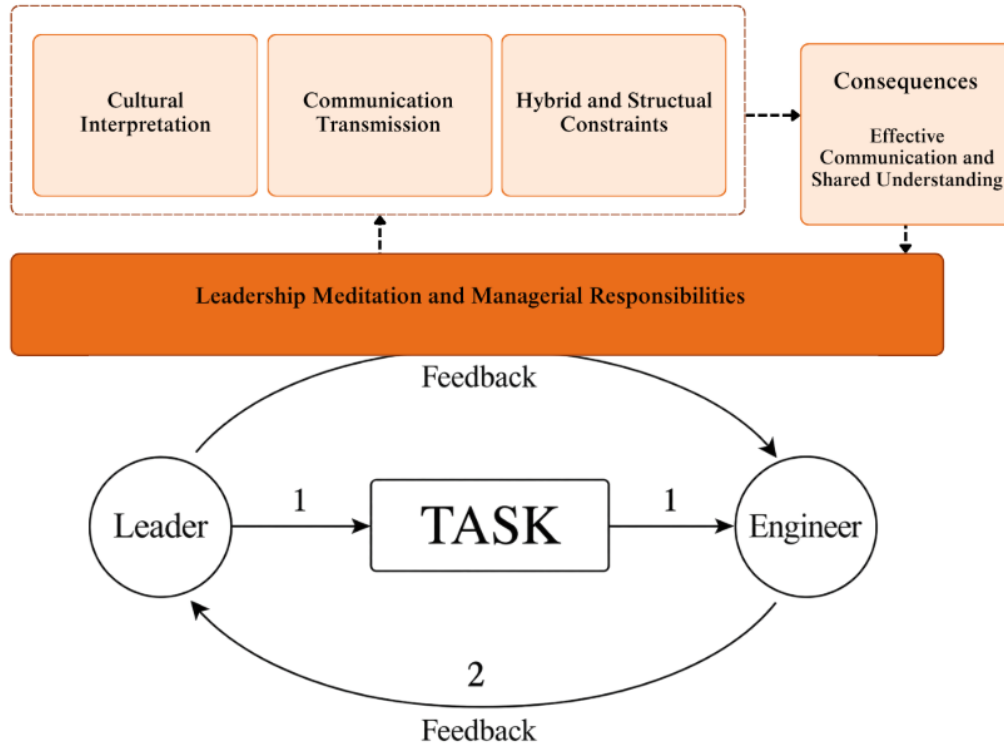


Figure 7. *Illustration of the Proposed framework for continuous alignment through communication in multicultural engineering teams.*

Communication Vulnerabilities Dimension

The first part in the framework is the Communication Vulnerabilities dimension, where we have sources of potential misalignment. These include differences in cultural interpretations and feedback practices, language-related communication challenges, and interaction imbalances caused by hybrid work structures. Cultural differences can lead to different expectations around communication, responsibility, and decision-making. For example, some team members may be expected to speak up and challenge ideas, while others may view silence or agreement as a sign of respect. Feedback styles can also vary, from direct and explicit to more indirect approaches, creating opportunities for misunderstanding. Communication is further affected by language barriers, accents, informal expressions, and inconsistent technical terminology, which can make information harder to understand and process. In hybrid teams, communication can become uneven as co-located participants often have more opportunities for discussion and clarification than remote colleagues. Time zone differences can also make coordination more difficult and slow down communication.

The Leadership Mitigation Dimension

To address these challenges, the framework introduces a Leadership Mitigation Dimension. This dimension strengthens the feedback loop between leaders and engineers by ensuring tasks are clearly defined from the outset and that clarification and feedback are provided continuously throughout execution rather than being delayed or treated as a one-off event. Leaders establish precise and consistent terminology, support all task definitions with written documentation such as structured summaries and meeting minutes, and build early relational trust through direct interaction that helps align expectations beyond formal task descriptions. Understanding is actively verified through structured dialogue where engineers restate objectives and reasoning in their own words, making implicit misunderstandings visible before work progresses. During execution, coordination is maintained through shared digital environments and collaborative artifacts, ensuring all participants work from the same evolving source of truth regardless of physical location. Feedback is then delivered in real time through digital tools in a direct but approachable manner, enabling rapid correction, reducing ambiguity, and sustaining both technical alignment and psychological safety across distributed teams.

The Consequences Dimension: Effective Communication and Shared Understanding

The Consequence Dimension represents the outcome of the framework, which is effective communication and shared understanding. Communication is treated as an ongoing process of building shared meaning, where alignment is continuously maintained rather than assumed. By balancing task clarity with trust, leadership helps bridge organizational, disciplinary, and cultural differences. This reduces misunderstandings, prevents rework in engineering processes, and improves coordination.

6.2 Recommendations

The findings of this study emphasize that multicultural hybrid engineering teams benefit from communication practices that increase interpretive clarity throughout ongoing project work. Since misunderstandings frequently emerged through implicit assumptions and uneven interpretation of responsibilities, project teams should prioritize continuous clarification and active verification of shared understanding during collaboration. The findings further indicate that recurring follow-up discussions, explicit task confirmations, and continuous feedback exchanges supported alignment across geographically distributed work processes. Within multicultural collaboration environments, greater awareness of differing communicative expectations regarding hierarchy, initiative-taking, may additionally contribute to reducing hidden misunderstandings within everyday coordination. In hybrid collaboration settings, maintaining inclusive communication practices also appeared particularly important, especially in situations where remote participants possessed reduced access to contextual understanding and informal project interaction.

The study further highlights the importance of leadership and organizational support in maintaining and facilitating communication quality across distributed engineering environments. Leaders appeared to play a significant role in structuring communication, facilitating clarification, and maintaining coordination continuity throughout project execution. Communication practices that involved repetitive follow-up, contextual explanation, and adaptive feedback structures contributed to increased alignment across multicultural teams.

At the organizational level, the findings indicate that communication challenges within Global Delivery Models should not be addressed solely through digital infrastructure or standardized procedures. Instead, multicultural hybrid collaboration requires organizational conditions that support continuous coordination, knowledge-sharing, and communicative accessibility across geographical locations. The findings indicate that recurring opportunities for physical co-presence remained important for strengthening relational trust, communicative openness, and shared contextual understanding within geographically distributed teams long term. Several participants described how face-to-face interaction reduced hesitation in communication, facilitated relationship-building, and improved later coordination within digitally mediated collaboration environments. In this sense, physical meetings appeared to support not only interpersonal relationships, but also the quality of ongoing communication and interpretive alignment throughout subsequent hybrid project work.

6.3 Future Research and Development

Given the contextual specificity of the case study, additional research across different organizational and cultural settings would contribute to a broader understanding of how communication and feedback practices are shaped within multicultural hybrid project environments. Since this study focused on a Scandinavian engineering consultancy operating within infrastructure projects, comparative studies involving organizations from different industries, national contexts, and project structures could provide further insight into how communication norms, leadership approaches, and feedback expectations vary across internationally distributed teams.

The findings additionally point toward the importance of examining communication beyond the internal project team itself. Large-scale infrastructure projects involve continuous interaction between consultants, contractors, clients, and external stakeholders, where coordination frequently extends across organizational boundaries. Future research could therefore explore how communication challenges, interpretive discrepancies, and alignment processes develop between multiple project actors operating within geographically dispersed project networks. Similarly, greater attention could be directed toward cross-functional collaboration between technical disciplines and project roles in distributed engineering environments.

Another area requiring further investigation concerns the temporal development of communication and misalignment throughout ongoing project execution. Since the findings indicate that misunderstandings frequently accumulated gradually through repeated interpretive discrepancies, longitudinal studies following project teams across longer project phases could contribute to a deeper understanding of how alignment is maintained, disrupted, and restored over time within hybrid collaboration settings.

The increasing integration of artificial intelligence within engineering consultancy practice also introduces new research opportunities related to communication and coordination in multicultural hybrid environments. Several participants referred to the growing use of AI-supported tools for translation, report writing, documentation support, and meeting assistance, particularly in situations involving multilingual communication and geographically distributed collaboration. While such technologies appeared to improve efficiency and accessibility in everyday project work, their broader influence on communication quality, shared understanding, and team interaction remains insufficiently understood.

Closely connected to this development is the emerging role of AI agents within engineering workflows. As these systems increasingly support structured technical and documentation-related tasks, questions arise concerning how automated support may influence professional learning, technical judgement, and competence development over time. This may become particularly relevant for early-career engineers, where routine project activities traditionally function as important learning processes within technical and organizational development.

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Appendix 1 - Interview Guidelines for Project Managers and Technical Leaders

Opening Questions

- May we record and transcribe this interview? (The transcription will only be available to the authors of this thesis, and all recorded material will be deleted upon the thesis completion.)
- Is it okay if we mention your professional role in the thesis? (Your name and other identifying information will be excluded.)

Background and Context

- Can you introduce yourself, including your background and your current role at the company?
- Could you describe the team you are currently working with? (Team size, how long you have been leading it, nationalities, work locations, on-site/remote, language)
- What is your general experience of working with colleagues from other offices?

Cross-Cultural and Hybrid Communication

- What differences, if any, have you noticed in how work is carried out when collaborating with colleagues from different countries compared to working only with colleagues from your own office?
- Based on your experience, what advantages or disadvantages tend to appear when people from different cultural backgrounds collaborate in a project?
- Do you have any strategies that help you communicate more effectively with people from different cultures, and what are they?
- Why these strategies? Any particular reason?
- Have there been other methods/strategies before?
- On a daily basis, what are the most common ways you communicate with your team? (written/spoken; emails, texts, reports, memos, presentations, meetings, negotiations)
- What makes those communication forms work well in your context?
- How would you describe communication in hybrid meetings within cross-cultural teams?
- Have you noticed any differences between hybrid meetings and fully in-person meetings?

Task, Feedback and Clarification

- When discussing technical work in team meetings, how do you ensure everyone understands the task or issue in the same way?
- How do you give informal feedback to engineers in your team?
- How do you give formal feedback to engineers in your team?
- Can you recall a situation where instructions or expectations were interpreted differently than intended?
- How comfortable do engineers feel about asking clarifying questions during meetings?
- Does the quality of questions vary depending on the form of the meeting?
- Have you observed hesitation in asking for clarification? If so, describe the situation and how you handled it.
- Have you observed differences in initiative-taking, feedback culture, or decision-making across cultures?

Leadership

- How would you generally describe your leadership style?
- Have you ever needed to adjust your leadership style due to cultural differences?
- Have you observed differences in views of a leader across cultures in the company?
- Have you taken any training courses or sessions in cross-cultural collaboration and communication?
- If so, what topics or themes did they include?
- When and how do you ask your team for feedback on your leadership?

Closing Questions

- Looking back, what have you learned about leadership and communication in multicultural teams?
- Is there anything else you would like to add that we have not discussed?

Appendix 2 – Interview Guidelines for Engineers

Opening Questions

- May we record and transcribe this interview? (The transcription will only be available to the authors of this thesis, and all recorded material will be deleted upon its completion.)
- Is it okay if we mention your professional role in the thesis? (Your name and other identifying information will be excluded.)

Background and Context

- Can you introduce yourself, including your background and your current role at the company?
- Could you describe the team you are currently working in? (Team size, nationalities, work locations, on-site/remote setup, language)
- Can you describe your experience working on projects with teams located in other countries?

Cross-Cultural Communication

- Have you noticed any differences in how work is approached when collaborating with colleagues from different countries? If so, could you share an example?
- Based on your experience, what kinds of opportunities or challenges tend to arise when people from different cultural backgrounds work together?
- Do you have any methods that help you communicate more effectively with people from different cultures? If so, what are they?
- On a daily basis, what is the most common way you communicate with your team? (e.g., face-to-face conversations, email, Teams meetings, chat, reports, presentations)
- How would you describe communication in hybrid meetings within cross-cultural teams?
- Have you noticed any differences between hybrid meetings and fully in-person meetings?

Task, Feedback, and Clarification

- When you receive a task from a project leader or discipline lead, how is it usually explained or discussed with you?
- How often do you ask follow-up questions if something about your task is unclear?
- Are you more likely to ask those questions in physical meetings, hybrid meetings, or both?

- To what extent are informal discussions (e.g., social, personal, or political topics) encouraged within your project team?
- How do leaders in international teams provide you with informal feedback?
- How do leaders in international teams provide you with formal feedback?
- Does this differ from feedback styles you have experienced in non-international teams?

Leadership Perception

- How would you describe your project leader or discipline lead?
- Is this different from leaders you have worked with in the past? If so, how?
- Are there any differences in the leader's expectations for your work?
- How would you describe the space for sharing ideas or raising questions within your team?
- How would you describe your involvement in team discussions and decision-making?
- From your perspective, what behaviors from leaders help create clear communication and effective collaboration in multicultural teams?
- Have you taken any training or sessions on cross-cultural collaboration or communication before joining an international team?
- If so, what topics or themes were included?

Closing Questions

- If you were advising a colleague about to join a cross-cultural project team for the first time, what would you tell them?
- Is there anything else you would like to add that has not been covered?

Appendix 3 - Observation Guidelines

Digital Setup

- Do they have a remote setup or a hybrid setup with people sitting together in the same office?
- Do they have their cameras on?
- Do they have their microphones on, or are they muted?
- Do people join on time or late?

Meeting Structure

- Are participants engaging in small talk?
- Is there a meeting agenda?
- Who initiates the meeting?

Communication and Participation

- Who speaks, and how often and for how long?
- Do participants only speak when prompted, or do they contribute spontaneously?
- Do participants ask questions?
- Are there interruptions or overlapping speech?
- What does the turn-taking structure look like?
- Are there dominant versus silent participants?

Meeting Content

- What are the key topics being discussed?

Decision Making

- How are decisions made, if at all?
- How are disagreements resolved, if they occur?

Use of Documents and Collaboration Tools

- How are documents or shared materials used during the meeting?
- What collaboration tools are used, if any?

After the Meeting

- Do participants leave immediately or linger afterward?
- Did the meeting stay on schedule?
- Is anything documented or summarized after the meeting?

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