11th International Conference of Management and Industrial Engineering 2023. Bucharest

ISSN 2344-0937
ISSN-L 2344-0937
Volume 11
Website: https://icmie-faima-upb.ro

PROPOSED PRACTICES AND APPROACHES FOR ADDRESSING SOURCES OF CONFLICT IN CROSS-CULTURAL AND CROSS-FUNCTIONAL IT PROJECTS

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Abstract: *IT projects are becoming more and more complex, requiring a culturally and functionally diverse mix of individuals [1] to be part of the project teams and acknowledging that investment in diversity (including cultural) should be a "future focus for the post-pandemic world" [2] . On top of this, there are a few takeaways from the COVID pandemic also. If we look at it through the perspective of what it meant for the projects that had to find a solution, then we think of projects that had to deliver a product in an unprecedented short time, with people working in different domains, even interorganizational or private sector working with public sector (academic centres and government).*
If we look at it through the perspective of what it will mean from now on, we can say that during the COVID pandemic working remotely was a norm for the IT industry, so there was a big investment in improving the tools and processes that supported this and will continue to do so.
In this context, where we foresee more and more cross-discipline, cross-functional and cross-cultural teams, we need to address the challenges of managing such a team, which could make the difference between failing fast or fostering innovation at its best. This paper`s central focus is the study of some of the biggest sources of conflict (when the IT project set-up involves teams that are cross-cultural and cross-functional) and addressing them in a more formal way, by proposing practices such as the use of an adapted team charter and a communication manifesto.

Keywords: cross-cultural, cross-functional, conflicts, enhanced team charter, communication manifesto

1.INTRODUCTION

Cross-cultural and inter-professional project teams are more and more a reality when it comes to IT projects. In fact, most of the time, because of the multiple roles within an IT project team (that correspond to different domains of knowledge), we can consider as self-implied that those teams are cross-functional / inter-professional. In [2] research report, Stephane Kasriel (former CEO of Upwork) underlines the trend of having an increasing number of cross-cultural teams: "One of the positive outcomes of the current crisis would be that companies embrace, even faster, this ides of a future of work that is more distributed, more independent, more inclusive and more diverse. And that we come out of it with a stronger economy". Indeed, with the digital transformation (now having the necessary tools, processes and experience to work remotely in a virtual environment) and the post-pandemic lessons that involved crossing boundaries from multiple perspectives (cross-discipline, cross-organizations, cross-culture, cross-institutions etc.), we are now more prepared for working with cross-cultural teams. Another aspect mentioned in [3] is that "To survive and thrive in economic uncertainty, project managers look for critical factors that determine project success", so "a focus beyond the classic iron triangle of scope, cost, and time, would expand the capabilities and practices that facilitate innovation, competitiveness, and sustainability".

Communication conflicts within the project with a complex team componence can represent risks that are easier to identify (because they are expected) and with a bigger probability to occur. So, when we are talking about cross-cultural and cross-functional teams, we can already consider a set of risks corresponding to this, so we should have prepared an impact analysis and an answer. Taking it a step further, should we identify and treat this only as a risk? Or can we already say that in fact this should be handled by installing a practice and cultivating a way of thinking where communicating effectively and efficiently is a central and constant preoccupation?

In [4] are presented the methods used by High Reliability Organizations (such as nuclear plants, carriers, and flight controls) that make them capable of maintaining their obligation to offer reliable, fault-free products and services. Needless to say, these organizations cannot afford to make mistakes as minor mistakes imply major impacts. Some of

these methods are: preoccupation with failures (cultivating a way of thinking based on an increased preoccupation for identifying potential errors), reluctance to simplify interpretation (simplify less to see and understand more), creating a culture in which the decision-making is done in the first line of expertise regardless of the existing hierarchy etc.
So, cultivating a way of thinking where the central focus is solving issues that for sure are bound to happen (in one form or another) and extending this focus at organization level (integrating it in the organizational culture) could represent a potential answer.

In this sense, if we are to think of a cross-disciplinary or cross-functional project teams, then one of the major problems is the specialized language specific to each domain of knowledge. In a team that would be conscientious and preoccupied by this issue, the team members would be more open to identifying and addressing the communication barriers. Creating and maintaining a "team vocabulary" (as it is defined in another article currently under review) and using a "communication manifesto" (described in the next section of this article) would become an important practice. On the other hand, there could be differences of opinion even in the case of two specialists from the same domain of knowledge that were formed in different schools. They could have different convictions, which could alter their objectivity when it comes to the conducted research. This is an even more complex issue and addressing it is not in the scope of this article. In this case the team vocabulary and communication manifesto could be helpful, but it will not suffice to tackle the issue.

If we are to think about cross-cultural teams then we should have an increased focus on the potential issues that are linked to work ethics, different meanings and interpretations, different ways of expressing and interaction. Also, in this case the team vocabulary can help in terms of communication (minimizing also the gap when it comes to low-context and high-context communicators), but it is not enough. A dedicated and tailored way of working should be established within the team and an artefact that could support this is the proposed enhanced team charter as presented in the next section.

2. EXPERIMENTAL

2.1 Sources of conflict in cross-cultural and cross-functional project teams

As part of the primary research (literature survey) we have identified potential sources of conflict when it comes to cross-cultural and cross-disciplinary project teams. Most of the characteristics and considerations regarding the sources of conflict that apply to cross-disciplinary teams as defined in [5] can be considered valid for cross-functional teams as well. Even though there is a difference as cross-disciplinary has more of an academic character, while cross-functional has a professional character, both make use of specialized vocabulary and use different rules and rule systems.

[5] acknowledges the fact that more and more software development project teams will be multicultural. Given cultural diversity can lead to gaps in understanding, conflicts and even determine the project`s failure or success, the case study aims to determine two things: the potential sources of conflict and what competencies should project managers be equipped with in order to be prepared to successfully manage these conflicts. For this purpose, a qualitative exploratory case study was conducted by collecting data using semi-structured interviews with the population of 12 project managers recruited from the Project Management Institute's credentialed project management professionals LinkedIn group. After a cross-case synthesis most recurrent themes where the following:

- the cross-cultural challenges /sources of conflicts were language barriers, mistrust and competitive attitude
- skills necessary for project managers to address these challenges: communication, negotiation and emotional intelligence

In [5] while dealing with cross-disciplinary teams, based on a vast professional experience, it is outlined that it is particularly challenging for team members to align and support each other as there are cultural, behavioural and attitudinal differences even with different divisions, disciplines and dimensions within same organization (with the same strategic direction and leadership).
There are some considerations regarding conflict, decision making and the implications they have on creativity and innovation. What is important to acknowledge is that in cross-disciplinary teams' collaboration does not come naturally and human nature makes people seek and accept what is like them, while rejecting and having an adversity towards differences. When we say cross-disciplinary, we also mean different rules and rule systems, and this can be a potential source of conflict. It is acknowledged that one of the biggest challenges in cross-disciplinary teams is the vocabulary used. And here the author gives an example from his experience when a company reviewed some Requests for Proposals (RFP) that contained the word "programme". They could not figure it out from the context if it referred to a program as in a big group of projects (in project management context) or an operational service provided for a specific subset of the population (in a government context).

The risk underlying in the case of such terms is that some professionals might think they know what they signify based on their previous experience and not identify they have a wrong understanding until later on in the project. The source of confusion is understanding terms by experience not by knowledge, "know-how" vs. "know-what".

When it comes to IT, in [6] it states that “they like inventing new terms to reference different concepts. What started for example just as database management and data analysis turned into data warehouses, turned into big data. We are all talking about the same essential concept, and we are applying different terms to be able to try to create subtle nuanced different meanings and to include ourselves to the people that actually appreciate that nuance and exclude those who don`t.” At a first glance a person with an analytics and database management background, would strongly disagree and perceive the affirmation as an exaggeration. The difference between those words is not just nuance, it is essential - they are describing different concepts. For a specialist in this field, those terms represent the validation of its own science and person. Looking at the definitions (Table 1) and making the exercise to see if they could be so much simplified as to just “database management and analysis”: at some level one could do so, but it depends a lot on what you want to achieve with that. There is value in explaining complex ideas in simple words and expressions, but the level of simplification depends on a lot of factors and makes sense only in specific contexts.

Table 1: Definitions of "Database management”, “Data warehouse" and "Big data" in Cambridge Dictionary Online

Word searched on September 2023	Cambridge Dictionary Online
Database management	the way a company organizes and uses the information it stores on computers
Data warehouse	a large amount of information stored on one computer, or on a number of computers in the same place
Big data	very large sets of data that are produced by people using the internet, and that can only be stored, understood, and used with the help of special tools and methods

For this example, if you're a developer talking to a product owner (or a business analyst) trying to establish the design of a new business workflow that requires adding a new field in the application with the only purpose of showing it: then you could choose the simplified way of expressing it and say that a field needs to be added in the database. And this should suffice if there are no further implications. On the other hand, if you don't just need to add and store that field, but do some complex calculations with it, it is relevant also from a business standpoint to be more precise and make a distinction between just making database operations or doing big data ones.

Although, at a very high level conceptually they might not differ much, because there are other mechanisms used in dealing with big data (data volume, variety, velocity, storage, pipelines alimentation and processing etc.), developing the feature might be more costly, complex, take more time and resources. This needs to be understood by the business (in this case, product owner) to evaluate:

- the impact of the request and decide if the cost vs. value is worth it
- other alternatives
- how this will impact future business features that need to be developed

In fact, the aim of this article is to address the potential conflicts that might be generated in a team by using specialized terms (that are a natural occurrence in a cross-disciplinary team). A proposed solution for minimizing the project team communication misunderstandings is assuring a shared understanding of commonly used specialized terms by having a simplified definition that “lives” in the context of a particular project.Such a solution would also have benefits in building trust and implicitly would have an impact on reducing cross-cultural team conflicts (mistrust is identified as one of top three challenges /source of conflict in cross-cultural teams in [4] , as it will be exemplified below. The practices that will be proposed in this article are in line with this approach.

2.2. Case study: Environments and code versioning misuse

Let's look at a scenario (inspired on my professional experience and observations as a program manager) that illustrates communication issues in cross-functional teams and more specifically unclear and unshared concepts and way of working which led to negative consequences on the team morale, project deliverable and customer satisfaction. We can refer to this scenario as “Environments and code versioning misuse”.

1) A project manager has newly joined a company and was assigned several projects that were on-going for several years. The project teams contained developers, devops engineers, quality assurance engineers, business analysts, product owners, architects, and project managers.
   Most of the team members were shared between projects with specific time allocations and they were using a tailored agile (scrum) approach that aimed to be homogenous within the organization.

2) For this particular project there was a specific context, there were a new QA and relatively new DevOps engineers added to the team and in the same time the other QA and DevOps engineers were preparing to leave the project in the near future.
3) Part of the project manager's induction was to study and try to understand the software development cycle and specifically struggled with clarifying how the different environments interacted (development and testing) and the code versioning system. During scrum meetings team members used to make affirmations such as "I have tested that on trunk" or "a change is merged on branch".
4) As part of the process of clarifying trunk and branch terminology, the project manager has interrogated different sources. The understanding was that:
    - Trunk would be the main body of development, originating from the start of the project until the present. (in the context of code versioning)
    - Branch will be a copy of code derived from a certain point in the trunk that is used for applying major changes to the code while preserving the integrity of the code in the trunk. If the major changes work according to plan, they are usually merged back into the trunk.
5) Moreover, trying to clarify and get an understanding of how these concepts were used in the projects by discussing with different team members:
    - The feedback was that the project contained two different third party applications that were integrating with a platform built in-house that was almost 80% custom made and built from scratch. So there were a lot of manual configurations to be made and keeping the environments up to date was very time consuming and required a lot of attention. There was no access to the source code of the two third party software so the knowledge was limited only to the configurations team members could perform as end users
    - Sometimes the team members had to wait a lot of time to have the environments ready and the good versions deployed (in order to be able to start the testing)
    - there were also discussions around the protocol used and how the versions were applied and on which environment in order to be able to test bug that might not likely be generated by the previous delivery (but older ones)
    - the JIRA user stories that were eligible to be deployed to production needed to be tested on branch prior to that.
6) The project manager documented what was his understanding, including the flows for the environments and code changes that needed to be performed and when. However, when confronting the schema with different team members from different project teams there was not a shared understanding on the topic.
7) When that sprint incrementation was done, during the Change-advisory board (CAB meeting) the version of the application that was supposed to be deployed was validated.
8) After the production deployment a severe bug occurred, although that specific increment did not contain some major or complex developments. The bug had a big impact on client satisfaction, financial losses and ultimately team morale.
9) The bug occurred because the increment that was deployed in production was not tested, and this happened for several reasons among which:
    - a developer added another feature and deployed it on branch (this was not shared with anybody from the team)
    - when deploying the devops took the version available in the repository (although it was not the same version that was tested and validated to go in production by CAB)
10) Some of the reasons for which this happened:
    - lack of shared understanding of the consequences regarding how each activity interacts
    - the formal and official procedure of the software development process has not been reinforced since a long time ago (everybody supposed it was used and very well understood).
    - difficulties because of the limited time allocations & synchronizations on the project for the DevOps and QA
    - on the project manager`s end, having a detailed understanding of those concepts and pitfalls might have enabled him to ask the right questions and identify a potential issue

In the case of "Environments and code versioning misuse" scenario there are several root causes among which is also the lack of shared understanding of specialized terms and the way they are tailored and used in the project.

So, when it comes to communication as a source of conflict, vocabulary in itself is a source of misunderstandings, as underlined also in [5]. Some of the reasons for this are:

- same word can have different meaning in the context of different disciplines (see the "programme" example above)
- specialized terms are used to symbolize the inclusion to a specific group, so from this perspective they can deliberately be more complicated to be understood for someone outside the group
- different words refer to similar concepts

3. RESULTS

Following the literature survey, the primary research (representative example and observations based on the author's professional experience) and the reflections around it,the novelty of this article consist in proposing a communication manifesto (or some rules of communications) and an enhanced team charter that aim to address the communication barriers, mistrust and competitive attitudes that could be experience in a cross-cultural and cross-functional project team.

3.1 Communication manifesto

Based on the aspects identified above regarding sources of conflict when it comes to communication, the following could be a proposition in terms of rules of communication that if applied could help aligning and eliminating some of the risks:

- **Simplify**: Scientifically accurate/correct and sufficiently simplified to keep it relevant for the project OVER 100% precise definitions, covering all particularities
- **Adapt**: keep it more general cross-disciplinary and more particular with inter-disciplinary discussions
- **Align**: build and promote a common vocabulary (build the grounds of a shared understanding)
- **Frame the abstract/ambiguous**: identify it and try to clarify it - give more context and examples when dealing with potentially ambiguous terms/concepts, especially when the same term might have different meaning in different disciplines. Go towards concrete as much as possible.
- **Agree**: make sure you reach an agreement with your counterpart over what is discussed, even if the conclusion is to agree to disagree. If topics discussed are not clear, ask questions and underline the fact that you don't understand so no conclusion can be reached until clarification is reached.

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3.2 Enhanced team charter

As described in [7] "The Project (Team) Charter summarizes the project or team's objectives, scope boundaries, behaviors, and cultural characteristics. The team collaborates to develop the Project (Team) Charter in order to define the common purpose they are working toward." In [8] there is a finding regarding the utility of team charters and some observations that " team charters may initially aid process improvement but not necessarily the quality of output" when comparing "formal written contracting versus informal psychological contracting".
The template proposed for the team charter in this article differs from other team charters by the fact that is incorporates categories and informations specific to cross-cultural and cross-functional teams that can minimize the gap in communication and collaboration

Table 2 : Template of the enhanced team charter

Application page	Category	Field	How to fill in
Team page	**Team info**	**Name**	e.g.
		Acronym	
		Mission	
		Product short description	During project kick-off, workshops should be organised with all the team to define the product/solution they will be working on. Key focus here is to make sure that: ● everybody is on the same page / has the same understanding ● you have involved all team members and valued the diverse knowledge existing in the team (multidiscipline fosters creativity) ● the team has given it`s buy-in in

	Team componence	**Name**	Should have integration with the used communication tool (Slack, Microsoft chat etc.).When you click on the name, a chat window with that team member will open.
		Photo	Here you can pick something less informal (can be something funny from a party or you doing a hobby activity etc.)
		Role	Eg. Developer, Business Analyst, Product Manager, Scrum Master
Team member page	**Team member**	**Preferred**	Any particular nickname or short version of your name you would prefer to be addressed by.
		Name pronunciation	
		Pronoun	
		Country	
		City	
		Working hours interval	
		Timezone	
		Spoken languages	You should state the languages in which you are fluent and the ones where you have basic knowledge.
		Time constraints	
		Known technologies	
		Knows business areas/ domains	
		Known areas in the project	
		Hobbies and areas of interest	
		An example of an activity I liked to work most	
Team page	**Team WOW (way of working)**	**Team manifesto**	
		Meeting protocols	
		Meeting rules	

		Out of office rules	
		Cell crisis situation	
		Planning time	
		How to: plan?	
		How to :demo/review?	
		How to : retrospective	
		How to : estimate?	
		How to: handle bugs?	
		How to: handle releases?	
		Tools	
		Raise risks	
	Team communication	**Communication rules**	
		Vocabulary	

3.3 Possible benefits in an agile context

For teams who use agile, let's take scrum framework for example, there are already a lot of meetings taking place (as it is described below) and people might be reluctant to spend time in more meetings versus actually working on their sprint goal. The scrum events are seen as formal opportunities to inspect and adapt and require the collaboration of all the team. If during these events some team members are using recurrently the same concepts as their input, wouldn`t it be more efficient to make sure those concepts are well understood by all the team? If you already spend almost 10% of all the time of a team on scrum events (see table 4 below), wouldn`t it be a pragmatic approach to make sure you are maximizing the collaboration and the quality of those events? You can balance the time spent on this exercise versus the advantages and the time you spend talking regularly about concepts that are understood by all team members.

In [9] the scrum framework and methodology are presented in the context of distributed research initiative. Sprints are defined as fixed duration cycles timeframe. Most common sprint lengths are 1 to 4 weeks.

For the purpose of the exercise proposed below we will consider a sprint as having a 2-week length. We will also consider the maximum number of team members recommended for scrum in [10] : 10 persons. During the sprint Sprint Planning, Daily Scrums, Sprint Review, and Sprint Retrospective events take place. According to [10] “Sprint Planning is timeboxed to a maximum of eight hours for a one-month Sprint”, so for the purpose of our 2 weeks sprint we can consider four hours. “The Sprint Review is the second to last event of the Sprint and is timeboxed to a maximum of four hours for a one-month Sprint”, so for our exercise we will consider a 2-hour length.” The Sprint Retrospective concludes the Sprint. It is timeboxed to a maximum of three hours for a one-month Sprint”, so we will consider it with a 1,5 hours length.

So, the assumptions made are:

1) a Sprint has a two-week length
2) the team contains 10 members
3) the Sprint planning meeting is set to 4 hours
4) the Daily Scrum meeting is 15 minutes
5) the Sprint Review is set to 2 hours

6) the Sprint Retrospective is set to 1,5 hours

Table 3 Time spent (in hours) by the team in scrum meetings during a Sprint

Meeting name	Occurrence (for a two-week sprint)	Duration (minutes)	Duration (hours, per sprint, for a team of 10 members)
Sprint planning	Every sprint	240	40
Standup	Daily	15	35
Sprint review	Every sprint	120	20
Sprint retrospective	Every sprint	90	15
Total time spent in meetings (hours)			**110**
Total time of team members in a sprint (hours)			**1120**
% Time spent on scrum events			**9.8**

Although using and integrating the enhanced team charter and communication manifesto might require investing the team's time, while looking at how much time is spent communicating and collaborating in minimal amount of meetings (Table 3), we can conclude that making it more efficient, could have a return of investment in terms of better alignment, avoiding recurring confusions, misunderstandings that could impact project's outcome etc.

DISCUSSION AND CONCLUSION

While doing an analogy with how High Reliability Organizations are handling the specific, rigid and known upfront needs [3], we can also consider that cultivating a way of thinking where the central focus is minimising the gaps in communication and collaboration for cross-cultural and cross-functional specific contexts could be a possible solution. This should be reflected in the project team related practices and integrated with the ways of working, with the purpose of addressing, reducing and in some cases even eliminating sources of conflicts specific to these types of project set-ups. With this aim, enhanced team charter and communication manifesto are introduced by this paper.
Further lines of study could be pursued in the area of validating these practices, methods to measure their success and methods to measure their benefits.

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