

Understanding Organizational Cultural Influences in Multisector Multi-Team Systems

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Introduction

Complex problems require complex teams of individuals with different backgrounds, skills, and perspectives to work effectively toward their solution. Increasingly, this is being accomplished through the creation of multi-team systems (MTS) that are developed and implemented in alignment with team science-based strategies. MTS are comprised of individual teams with their own goals, tasks, and mandates that are interconnected and work collaboratively toward a larger, common goal [1]. Attitudinal (cohesion, trust, commitment), behavioral (coordination, communication, shared leadership), and cognitive (situational awareness, shared mental models) competencies support MTS effectiveness [2], [3]. Multisector MTS are even more complex, as team members bring aspects of their organizational culture as well as their personal and professional lived experiences into the MTS, and if priorities and practices are not well aligned, team function and effectiveness can suffer. Thus, for multisector MTS to work, they must begin with a foundational understanding of the components, that is, each organization's culture and priorities, and how – or if – they align for the success of the collaborative [4]. When cultures and priorities are taken for granted, ambiguous, or interpreted differently by individuals across organizations, misunderstandings or differential experiences can lead to issues arising in MTS. This is further compounded by individual team member's experiences within the same organization [5].

Project Background

We created a multisector MTS to develop and implement a project funded by the National Science Foundation's (NSF's) Scholarships in Science, Technology, Engineering and Mathematics (S-STEM) program titled "Improving Access to Career and Educational Development (I-ACED) for Talented, Low-Income Students through the Flexible Internships-Research-Education Model." The project's objectives are to:

- increase the number of domestic low-income academically talented students with demonstrated financial need to obtain master's degrees in supported disciplines and that enter the U.S. STEM workforce.
- implement and evaluate the impact of our Flexible Internship-Research-Education (FIRE) model, which integrates evidence-based strategies that provide student career and educational development support, on student success.
- and implement, study, and disseminate an MTS model for multi-organizational collaboration toward career and educational development.

I-ACED partners include four universities – three Carnegie R2 public Historically Black Colleges and Universities (HBCUs) and one Carnegie R1 private, highly selective admissions institution. As part of the project, each of these institutions awards scholarships to master's students in engineering, computer science, and related disciplines. The workforce partner is a major government employer of STEM professionals with advanced degrees.

Six teams comprise our MTS (Figure 1):

- Project Administration and Management (PAM)
- Educational and Behavioral Research (EBR)
- Career and Educational Development (CED)
- Faculty and Practitioner Mentoring (FPM)
- Cohort Development and Engagement (CDE)
- Scholar Recruitment and Retention (SRR)

The EBR team is based at a public Carnegie R1 institution that does not award scholarships as part of this project (i.e., it is solely a research subawardee). It includes a member from one of the HBCU partners. The workforce partner and each institution that awards scholarships have representatives on all teams, except the EBR team.

Research Question

We collected baseline data to help us understand how each organization's culture influenced – or might potentially influence – team interactions. The guiding research question for this study is: In what ways – positive or negative – do partner organizations' cultures impact team members' engagement with the project? We were interested in gauging how organizational culture manifested in team members' engagement with the MTS. We measured this by operationalizing performance values such as rewarding individual performance versus team performance, the culture of communication (transparent vs. need-to-know, clarity, frequency), how an organization approaches conflict resolution, and the presence of either collaborative or competitive environments in both the organization and the department of the individual. We also explored how – or if – their organization's priorities aligned with the overall project's aims and what specific areas might be sources of support and/or challenges as the teams progressed.

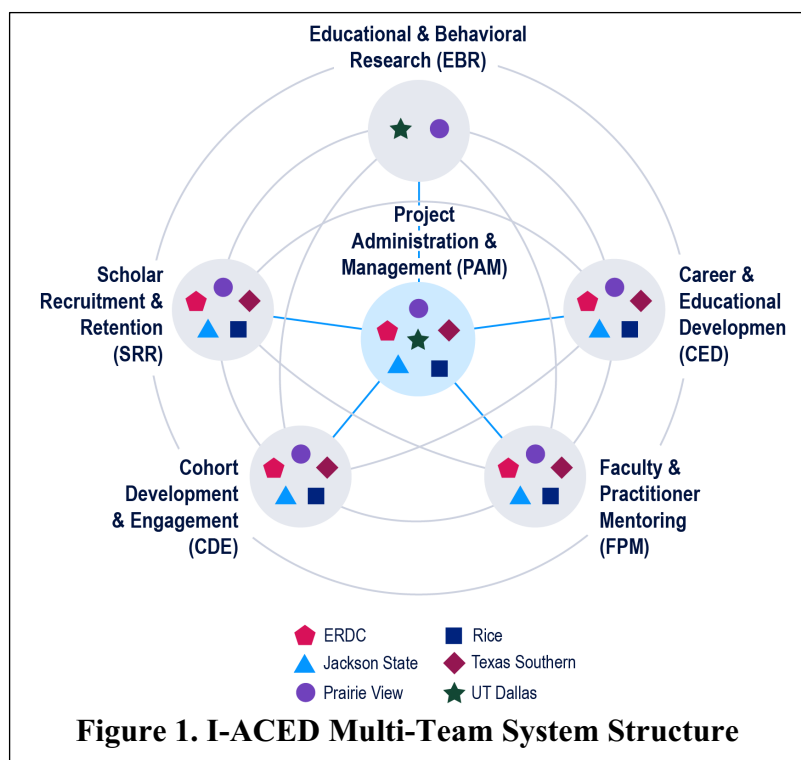


Figure 1. I-ACED Multi-Team System Structure

Guiding Theory and Framework

The literature on managing multisector MTS is limited. Our approach has been grounded in work by Clarke and Braun [6], namely conducting thematic analyses of data collected from semi-structured interviews of team members and observations of team meetings (the latter is not part

of the present study). Grounded in Schein's theoretical framework for organizational culture [7], our data collection aims to reveal assumptions, attitudes, values, and artifacts that define the cultures of partner organizations. This framework states that the underlying assumptions of a culture must be probed in interviews to ultimately be revealed. These assumptions describe the way of life in an organization and dictate the values held by members and the surface-level artifacts observed in the environment and normative behaviors [8]. Our thematic analyses resulted in emergent themes, allowing us to develop a framework of the factors that define each culture and how they vary. This paper summarizes preliminary findings from our initial stage of data collection. The next steps, which are beyond the scope of the present study, will include validation, assessment, and refinement of the framework.

Study Design and Methods

Research Population

This study is a component of a larger research project, which is a multifaceted investigation of the development, implementation, assessment, and dissemination of a multisector MTS model for collaboration toward career and educational development for STEM master's students. Our population for this study was principal investigators (PIs), co-PIs, and other senior personnel on the NSF-funded grant. These are faculty members, staff members, and administrators from each academic institution, as well as leaders from the workforce partner. Eight participants engaged in interviews that formed the basis of this study. Because of the size of the sample, full demographic data cannot be provided without rendering our participants potentially identifiable; however, we offer some key descriptors for greater context.

Of the eight interviewees, six were faculty (five at the public R2 HBCUs and one at the private R1); two were administrators (one at the private R1 and one at the workforce partner). All teams, except EBR, were represented among the interviewees; most served on two or three of the project teams. While we did not collect demographic data about race and gender, we applied ascribed or "street race and gender," the race and gender that society assigns to an individual in mundane, everyday societal interactions in describing participants as Black and non-Black and man and woman [9]. Three participants were Black; five were non-Black. Two participants were men; six were women.

Data Collection and Analysis

Toward the end of the second year of the project (the first year was a planning year), we conducted open-ended, semi-structured interviews with project team members who each served on at least one of the six teams. We attempted to capture a variety of team member experiences and perspectives, including those from practitioners outside of academia. The full interview protocol contained 19 questions. The four interview questions we focused on for this study were:

- In your organization, which is valued and rewarded more – Individual performance? Team performance? Or are they both valued and rewarded equally? Please provide examples that exemplify your response. Does this differ for your department? If so, how?

- How would you describe the communication flow in your organization? (Prompt, if needed: Clear, transparent, need-to-know, frequency?)
- How are conflicts resolved in your organization? Or is it more likely for conflicts to be ignored?
- Would you describe the culture in your department as collaborative or competitive? Why? (Definitions if needed: Collaborative – people and departments coordinate and cooperate well to achieve goals and outcomes. Competitive – people and departments compete internally to achieve goals and outcomes)

Interviews were conducted and transcribed using Microsoft Teams. After the interview recordings were transcribed and the transcripts cleaned, we began to complete content and thematic analyses using ATLAS.ti to understand how team members spoke about their organizational influences and engagements within and among the teams. The interviews underwent two rounds of coding - the first round focused on coding immediate findings to the questions from the interview protocol. In the second round, we coded thematic findings that were outside the scope of the research instrument but that shed light on what participants thought was important to express and that gave us a deeper context of the different organizations, departments, and teams in which the participants were engaged. After the two rounds of coding, artificial intelligence (AI) reports were pulled for each interview to ensure the coding schema aligned with the main themes and ideas shared in the document. This was done to measure coder reliability and ensure that the coding was not biased by the coder's personal lenses, positionality, or theoretical frameworks.

Results and Discussion

Preliminary Findings on Organizational Culture

Ideas of the organizational culture were largely subjective and, demographic data suggests, may have been influenced by race, gender, leadership positions, and the level of financial resources and compensation at the participant's disposal. While the culture differed amongst universities, the organizational culture was also at times perceived differently by different members of the same institution. Some participants maintained that the organizational culture of which they were a part was generally positive and supportive. Other respondents shared that their perceptions of the organization's culture shifted as their role and level of responsibility changed within the organization. Constant turnover of executive leadership also impacted the perception of the institutional culture for some. Finally, one area in which there seemed to be unanimous agreement amongst participants regardless of affiliation was that their organizational vision ultimately aligned with the goals of the project.

Organizational Value for Team versus Individual Performance. Most participants shared that their organization equally valued both individual and team-based work with a couple of notable exceptions. One respondent shared that their organizational value was "mission first, people always" and described this mindset as "organizational goals and successes are at the top of the list, but I would say that the individual- we also go out of our way to make sure that individuals are recognized too." Other participants shared similar values noting that individuals were valued insofar as they were able to work collaboratively within larger team projects, which aligned with

how the institution prioritized lab and classroom curricula that teach students how to work in teams successfully instead of as “individuals working together on a small project.” One HBCU participant mentioned that while both were valued, individual performance counted for more “because you tend to stand out if you're individually accomplishing things.” Elaborating on this, they shared, “If you are on an NSF project or a \$3 million one, the PI's [name] is the one that gets taken more often than the co-PI. “In general, the organizational value of teamwork seemed to be present in some way (however small) in each of the participant's answers. It can reasonably be assumed, therefore, that the organizational value of teamwork may have carried over into or impacted the teams-based nature of this project.

Organizational Communications. Participants shared challenges within organizational communication. The workforce partner expressed how their organization struggled to strike a balance between too frequent and too little communication and that because of the sheer size of the organization, there were challenges in “communicating effectively what is important to everybody.” That is, because of the various departmental foci and mandates, it was difficult to ensure that the communication shared by the organization aligned with what was important to all organizational members. Institutional partners also shared that there was infrequent communication at the organizational level and indicated that the majority of communication and conflict resulting from poor communication occurred at the departmental level. Some team members shared that the communication in their department was “clear, transparent, frequent [and] anything that [the] department chair gets [they] share with us... so it's pretty transparent with everything clear.” All non-Black faculty at HBCUs shared that communication in their departments was on a “need-to-know” basis, or only when necessary, and usually not in face-to-face interactions. Three participants relayed that the level and quality of communication in their departments depended on leadership, with one sharing that they have “had a lot of turnover in the chair position and so... we've seen no communication.”

Communication tools were also used differently at different organizations and different meanings were ascribed to some of these tools. For example, where the team member from the workforce partner saw emails as a standard business practice and one of the communication tools most used across their organization, other participants who were accustomed to a face-to-face culture and departmental meetings viewed email as an impersonal tool that was reserved for need-to-know communication. These differences in assigned meaning to communication tools can potentially lead to misunderstandings in MTS environments if the context diversity of team members and how they interpret the use of these tools is not discussed or understood within and across teams [10].

Conflict Resolution. As with communication, participants spoke about conflict resolution within the context of their institutional departments rather than the organization as a whole and responses varied. In general, speaking about conflict seemed to create a feeling of apprehension amongst participants, and in several interviews, there was a noticeable shift in tone and what appeared to be measured words.

A respondent from an R1 organization felt they could address conflict in their department head-on and felt that they were “very upfront” and discussed issues as they arose, leading them to describe their department as a “peaceful place.” Some respondents at HBCUs felt otherwise. One

participant expressed how conflict *should* be handled but gave no indication if this was their own prescription or how the conflict was handled within the department. Another expressed that “conflicts in their department were prevalent” and that the question was “going to be really painful, a really painful history [because] a lot of these grievances involved me.” In this instance, conflict resolution was escalated to the provost’s office although the conflict eventually fizzled out instead of being resolved through the proper channels.

Within the context of our MTS, at first, participants did not feel that there was any conflict either within their own sub-team or amongst the larger team of teams. When probed further, however, a couple of participants revealed similar sentiments that conflicts on their sub-teams were never resolved but were ignored. Interestingly, another participant from the same sub-team firmly stated that conflict was not present within the sub-team. A participant of a different sub-team shared that on the rare occasion that conflict had arisen, they “like[d] the fact that everyone was free to express [their thoughts], so it was a safe environment.” Within the context of the larger MTS, a participant shared that conflict “was ignored as long as things continue[d] to move forward. If there’s some kind of conflict... then they’ll just figure out what’s best for their individual organization and keep moving forward. The conflict isn’t quite resolved, but it’s ignored [as long as it’s] not holding the program back.” Overall, teams lacked a strategy for conflict resolution, and ultimately seemed to employ the strategies they utilized in their organizations that still allowed the project work to continue.

Collaborative versus Competitive Organizational Culture. One participant from a private R1 institution described the organization’s “culture of care” as “one of its hallmarks” and viewed the culture as one that was “not cutthroat” but described it instead as a “very collaborative” environment where we “celebrate each other.” Similarly, an HBCU faculty member shared that their environment was collaborative and that “to complete goals we do work well together and a lot of times... when I have grants I’m writing, I will reach out to others to see if they would like to be a part of the grant.” Further, they felt that this practice was reciprocated by other faculty members within their organization as well. Another faculty member at the same institution agreed that it was a largely collaborative environment, but that it was nuanced and there were instances where they had to convince colleagues to work collaboratively instead of viewing each other as competitors. They shared that these instances “boil[ed] down to relationships that may have gone wrong in the beginning” and where a sense of trust may have been potentially lost early on. However, while there were a few examples of competitiveness within largely collaborative settings, no participants felt that their institution or department was wholly competitive.

Findings Beyond Organizational Culture

Personal Identities. Organizational culture is not the only thing that matters in MTS effectiveness. It is important to understand how organizational culture is interpreted and spoken about differently depending on the identity of the participant. For example, in interviews of team members employed at HBCUs, the team members’ race appeared to have an impact on their interpretation of the organizational culture. While Black team members expressed a more understanding or forgiving attitude toward a lack of resources, funding, and support and talked about how they navigated these realities of their institutions, non-Black team members at these

same universities spoke about struggles as impediments and, at times, focused more on what was wrong with the institution instead of expressing ways they routinely worked around them. Whereas some of the Black participants were both products of and faculty at HBCUs and understood how to navigate the historical context of discriminatory funding practices, deliberate underinvestment, small endowments, and lack of resources within these institutions [11-15], this context was not considered by the non-Black team members who spoke about their organizational challenges in more negative ways, as institutional deficits rather than systemic failures in the broader higher education landscape.

Perceptions of Prioritization. There seemed to be a lack of awareness and understanding of the organizational and institutional challenges that are prevalent at the partner HBCUs by non-HBCU team members. For example, at times, the slow pace at which project components were approved at HBCUs was interpreted by other team members as a lack of prioritization or commitment. However, instead of checking in with their fellow team members about this concern, one team member expressed that they just did the work themselves. This can lead to further misunderstandings, miscommunication, and a build-up of frustration and resentment amongst team members [16].

There were some instances where the project was seen as a lower priority than other projects and institutional duties by team members who were overcommitted or confused about their roles on the project. Some of these reasons for deprioritizing the project could have been mitigated with more upfront conversations amongst teammates. For instance, across interviews, a common theme was a sense of confusion or trepidation about whether they correctly understood the aims of the project and the tasks that were assigned to their team. Some team members did not remember the names of their teams; this could be due to several reasons, including the sheer scope of the project and the reality that several individuals are members of more than one team.

Another reason participants cited for deprioritizing the work of their team on this project was a shift in institutional responsibilities. Several of the participants expressed how they had taken on new projects because of the expectations of their department or discipline or that they had assumed leadership responsibilities in their department or at the institutional level. Similarly, other team members found themselves taking on more responsibilities and tasks due to budget cuts; faculty members leaving departments during hiring freezes, which led to them taking on the work of their former colleagues; and otherwise, being overcommitted.

Conclusion

Multiple factors impact the effectiveness of multisector MTS. Consistent with the limited literature on MTS, we found that factors within an organization's culture impact how team members engage with each other across teams and organizational contexts. We found that team members' organizations varied concerning whether they valued individual accomplishments or teamwork more; however, regardless of how much attention was paid to teamwork, all team members articulated that it held some amount of value in their organizational culture. Organizational communication also varied, ranging from frequent and transparent to need-to-know, and in some cases, little to no communication at all. The value of tools used for

communication amongst the teams varied depending on how they were utilized in the participants' respective organizations. Conflict resolution varied across organizations and teams as well. Conflicts seemed to have only been addressed in instances where they caused direct pain and harm, and so long as it could be ignored without impacting organizational or project goals, conflict is rarely addressed. While there were differences in the levels of collaborative versus competitive organizational culture, a spirit of collaboration seemed to drive each of the organizations to which team members belonged. We further found some evidence that personal identities, namely race, impacted how some individuals described and operated within their organization's culture and that there was little to no awareness or understanding of challenges across organizational cultures.

Given all these factors, we are finding team members are adaptable; regardless of individual or organizational priorities, when challenges arise, they can re-center on the project's aims and work collaboratively toward the project's, and therefore the students', success. Seeing the increased success of students from low-income backgrounds, many of whom are from minoritized racial and ethnic identities, was the biggest source of motivation to continue, even when team members felt confused, frustrated, or overwhelmed with other responsibilities. The sustainability of the multisector MTS and the well-being of team members require that we look for ways to address many of these issues before a project begins.

Recommendations

Based on our preliminary analyses and additional insights from the first two years of project implementation, we offer the following recommendations for consideration when forming a multisector MTS.

- Hold a series of initial meetings in which team members are transparent about organizational processes, resources, differences in organizational culture and priorities, bureaucracy issues, and other elements that might impact project outcomes.
- Develop a transparent process for addressing sub-team and MTS conflicts geared toward resolution.
- Routinely engage in "pulse-checks" throughout the life of the project to ensure all team members feel engaged and are aware of what their roles are, and that they still have the capacity to carry on the work.
- Create a system of project sustainability that includes contingency plans for replacing team members who must leave the project. The plan should include not only onboarding new team members but also accounting for how their experiences in their organization will shape their engagement.

Limitations

Although we identified some differences in responses from HBCU faculty members based on race, we did not ask participants questions that would probe how their personal identities (race, gender, socioeconomic status as a student, or intersections of these or other identities) might influence their experiences or engagement within their organizations or with this project. While

we asked about individual assets and barriers across organizational boundaries, we did not ask questions to determine if team members understood the assets and challenges their fellow team members experienced based on organizational culture. As we complete more analyses to determine where further details are needed, we anticipate revising the interview protocol to capture some of these nuances.

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