

Elevating Project Team Alignment Partnering An Evidence-Based Mechanism to Support the Facilitation Process

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ABSTRACT

An appropriate project team alignment framework and facilitation process, if understood and adopted by the project delivery team, can result in (or lead to) significant improvements in project performance outcomes. This paper presents a two-phase investigation conducted with the State University Construction Fund (SUCF) of New York State that explored the identification of an optimal project delivery environment and the critical stakeholder alignment factors required for this New York State public owner to consistently deliver successful capital projects. The SUCF investigation resulted in the defining and utilization of a project delivery optimization framework termed *Rapid Alignment Initiated Delivery*[™] designed to function as both a project team alignment and risk management tool. The framework is used as an evidence-based mechanism to support the agency's partnering facilitation for the construction of the University at Albany - Emerging Technology and Entrepreneurship Complex (ETEC) building program.

Author Keywords:

Rapid Alignment Initiated Delivery[™]; Ethnographic and Action Research; Mission Critical Cannot Fail (MCCF); Stakeholder Alignment Proposition Elements (SAPEs); Partnering Facilitation; Project Team Alignment Assessment; Critical Stakeholder Alignment Factors.

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INTRODUCTION

Background

How many of us have been associated with a critical construction program where the desired project performance outcomes were not only achieved, but project team members came away with the feeling that they had just been a part of an extraordinary process. Chances are, you would find a delivery team that transformed itself into a seamless organization, one which was able to move beyond the traditional roles and operational silos occupied by owners, designers, and contractors to create a highly collaborative project delivery environment.

According to Egan (1998), process and team integration are the key drivers of changes necessary for the construction industry to become more successful. However, merely bringing people together does not necessarily ensure they will function effectively as a team. Effective teamwork or the development of high-performance teams does not occur automatically. It may be challenged by various issues, such as lack of organization, leadership, misaligned interest, misunderstandings, low levels of trust, poor communications, and inadequate participation from a team member — all contributing to a less than ideal project delivery environment. Therefore, it is crucial for construction project delivery teams to find a solution to help their team members work effectively together and create the delivery conditions that are correlated with high successful project outcomes.

Joining with the design and construction leadership from one of New York State's most significant public owners — the State University Construction Fund (SUCF), researchers at New York University's Tandon School of Engineering (NYU Tandon) examined this relationship between the effectiveness of the project delivery team, team culture, the project delivery environment, and resulting performance outcomes.

The SUCF investigation was initiated by asking the following questions:

- (1) What were the project delivery conditions, be it with process, engagement, or culture that supports the development of a high-performance team, linking it to a highly successful project outcome?

- (2) What are the critical success factors (CSFs) and metrics identified with the desired delivery conditions?
- (3) If those conditions can be identified, could they be consistently replicated?
- (4) Does a project delivery team behave differently when a project has no option for failure?
- (5) Can an assessment tool tasked with determining the potential effectiveness of the project delivery team be developed that is applicable for complex private and public sector building programs?
- (6) What would be the mechanism for facilitating team engagement and alignment? Partnering?

Public Sector Project Delivery in New York State

In 2018, New York State (NYS) had the fourth-largest construction industry in the nation, following California, Texas, and Florida, with the construction sector contributing significantly to the State's economy each year. According to the NYC Building Congress, overall construction activity in New York City for 2018 contributed nearly \$62 billion of the State's GDP of \$1.7 trillion. Public-sector activity accounted for nearly \$10 billion in New York City (NYC) with major public owners such as the Metropolitan Transit Authority, The Port Authority of New York and New Jersey, and the NYC School Construction Authority sponsoring significant capital construction programs. Furthermore, according to the Office of the New York State Comptroller, spending on public works capital projects will continue to rise for several years with funds for schools, rail, roads, bridges, and other infrastructure projects. Consequently, any improvement in capital project delivery will result in significant benefits to the public owner and the NYS taxpayer.

Underpinnings of a Best Value Alignment Process

The research leveraged 35 years of construction experience in the NYS public works arena to develop a more effective process to deliver value to construction projects. Mandated by state statute, SUCF, like most NYS public owners, employs a traditional design-bid-build (DBB) procurement system for delivering its construction projects. DBB only allows for a phased formation of the project delivery team (project owner, design consultants, and constructor) with the owner and design consultants coming together during the programming and design phases. The constructor is obtained through a separate independent bidding and

construction award mechanism, usually the “lowest responsible bidder,” thus remaining an unknown member of the project delivery team until the verification of the bid results and actual award. Of note, SUCF can award its work to a single prime, general contractor (GC). However, the state's “Wick's Law” statute guides most NYS public owner procurement requirements, mandating a minimum of four prime contracts (GC, mechanical, electrical, and plumbing) to construct the work, which may further impede the development of an integrated, aligned team (Matthews 2013, New York Bar 2009).

Notably, many public owners and project stakeholders strongly believe that desired performance outcomes can only be achieved through the language of the contract mechanism. Nevertheless, there exists a general perception by the local Architecture, Engineering, Construction (AEC) industry community that these agreements tend to be heavy-handed, with contract requirements put forth as a vehicle to first and foremost, transfer and mitigate risk to protect the project owner. It is not uncommon to hear contracting parties responsible for delivering design or construction services that they were either "holding their nose" or "closing their eyes" while executing the contract agreement. Furthermore, the current public sector delivery environment in NYS continues to exhibit an embedded "capture and punish" culture, where teams are generally combative in nature and claims coupled with litigation, are married to project outcomes. This culture contributes to a lack of trust and increased friction among team members, typically resulting in more adverse relationships. As a result, the ability of the NYS public owner to build an effective, fully integrated, high-performance team remains greatly inhibited.

Consequently, perceived as a much-desired remedy, alternative delivery methods (ADMs) such as construction management-at risk (CMR) and design-build (DB) are gaining some traction in the NYS. However, the widespread adoption of ADMs is mostly limited by legislative constraints and remains largely unavailable to the public owner other than a few earmarked agencies and projects. And while DB is currently being utilized on mega-projects such as the La Guardia Airport Redevelopment and MTA-LIRR Third Track Expansion programs, it is not uncommon for project stakeholders to view these procurement systems not as schemes that foster team integration and improved outcomes, but simply as vehicles to

transfer risk to a single point of responsibility for project execution. Still, some suggest that the use of ADMs does not necessarily guarantee a successful project outcome. Experienced industry practitioners understand that the success of any construction project is highly dependent upon the capabilities and cohesiveness of the delivery team and not necessarily the result of any specific procurement system, thus requiring additional tools to assist teams in achieving their full potential. The prevailing paradigm has created a critical need to provide the NYS public owner with tools designed to create collaborative delivery environments and desired team cultures.

Why Assess Team Effectiveness?

Projects fail because of people, not science or technology, and understanding the dimensions of the project team's effectiveness and its behavioral characteristics can be critical in delivering a successful project. Morris (2013) states that “effective teams are empowered and cohesive, and their members exhibit trust towards one another, work interdependently, communicate openly and strongly, are results (goal) oriented, are competent, have high energy, and celebrate.” According to Cantu (2007), some of the reasons for effective measurement in teams are based on the probability that the more effectively a team functions, the more benefits they are likely to realize from the work team structure.

Common to most public works construction programs, supportive, collegial relationships, the foundation of high-performance teams is simply neither the norm nor a team's focus. Uher and Loosemore (2004) conclude that a unique feature of construction teams is their composition, which can vary throughout the phases of a project's lifecycle — the continuous onboarding of project management personnel, design consultants, trade subcontractors, and material supply vendors require thoughtful integration into the team. Since construction teams encompass individuals with diverse backgrounds and interests, each possesses a unique set of requirements, he/she wishes to achieve. Therefore, fully understanding the interdependencies and alignment of the team and the operational environment is not only a critical function of the delivery team's leadership but essential to building a high-performance team. This interdependent network of project

team members requires an effective alignment of organizational interests, team behavior, team culture based on trust, and a vision for project execution to realize its desired performance outcomes (Pryke 2009).

Although there are numerous effectiveness measurements for teams within organizations operating as stand-alone business units, there is no single measurement tailored specifically for construction project teams, which temporarily come together for a one-off project. The ability to assess the potential effectiveness of the team through the early understanding of the existing delivery environment and team culture is critical to project success. Notably, the NYS mandated DBB procurement method, by design, creates contractual, operational silos for the project stakeholders. Furthermore, existing NYS and SUCF procurement rules discourage the development of personal relationships among team members, which at times may be the difference between collaboratively resolving issues and conflicts before they escalate into a claim or dispute.

Busseri et al. (2000) suggested it may be useful for team members to reflect on how well they are working together from time-to-time. Lowe (2009) indicated team performance can be increased by keeping basic teamwork principles at the forefront with a focus on people and not on the technical systems. This can be addressed by conducting systematic assessments and evaluations among team members with a focus on what they think is working well, what is not working well, and how it can be improved. Therefore, the aim of the SUCF study was twofold — the first being the identification of factors that contribute to conditions of environment, team culture and team effectiveness, and second, the introduction of a conditions and alignment model designed to help project owners, design consultants, and construction companies develop highly effective teams by means of conducting a series of evaluations and assessments.

Project Team Alignment Partnering

Despite New York State's move towards the adoption of ADM's, the industry continues to be stuck in a low-trust system, resulting in inappropriately allocated project risks and performance outcomes that continue to fall short of expectations. This suggests additional tools are required to improve team capabilities and performance outcomes. The tension between hard and soft systems is evident, where it has

been argued that project management has one root in engineering and the other in social sciences (Söderlund 2004). Pryke (2020) speaks in-depth to the industry's move towards informality in the governance of construction projects – one which recognizes that relationship management has brought with it a demand for methods to effectively manage these types of linkages between organizational effectiveness (strategy, culture, operations) and the project actors.

Partnering as a management strategy is intended to support the development of a collaborative work environment, encourage conflict resolution at the project management level, and facilitate the integration of teams. Partnering is not necessarily a contract requirement nor a “legal” partnership, but an attempt to establish non-adversarial working relationships among project participants, through mutual commitment and open communication, designed to build a high level of trust. Okhuysen and Bechky, (2009) suggest that a group process that opens doors to the performance of that group can help a team succeed. Furthermore, “A great group process is one that is responsive, that includes conflict, and where group members get along.” Partnering, characterized in the SUCF study as “Project Team Alignment Partnering,” can be used to improve relationships among contracting parties by way of a collaborative team engagement process and embracing "Project First Thinking" as a defining team culture. Project First Thinking requires team members to demonstrate a willingness to place the interest of the project ahead of individual, organizational interests. This requires the team to have a shared vision for project execution, a clear understanding of the project goals, and an understanding of what is important to each stakeholder.

Partnering Literature Review

The partnering concept for the construction industry made its debut in the United States in 1987 when the Construction Industry Institute (CII) established an industry/federal government task force to evaluate the feasibility of applying partnering to construction projects. The CII (2012) “Best Practices Guide: Improving Project Performance” refers to partnering as a “long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant’s resources.” Partnering requires the changing of traditional (siloed) relationships to one of a

shared culture across the organizational boundaries of the team — “the relationship is based upon trust, dedication to common goals, and an understanding of each other’s individual expectations and values”. The benefits of partnering include “improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality (CII 2012).

To some extent, the existing literature also defines the underpinnings of a structured "best practice" partnering framework, which includes the use of workshops, charter agreements, and team-building exercises. However, most owners and their delivery partners seldom understand and benchmark the conditions or the factors that contribute to the development of high-performance teams and highly successful project outcomes. For example, intuitively, most team members agree that a high level of trust is correlated with high-performance teams. “In high-trust relationships, individuals know that the other party will take their interests into account when making decisions. They can be confident that the relationship will have more upsides than downsides. Conflicts will be easier to resolve because each party understands the other, and they have too much invested in the relationship to put it at risk” (Lowe 2009). Therefore, it would be useful for the AEC industry to understand how and when the level of trust is evolving during the project delivery lifecycle and its impact on team behaviors and decision - making.

A recent study empirically investigated the impact of the partnering process on project performance including claims and disputes. The conclusions suggested that partnering agreements and their evolution into a more structured tool will improve risk identification and reduce the probability of claims and disputes (Mehany et al., 2018). Consequently, the primary message of this paper is the premise that an evidence-based mechanism designed to support the partnering framework will benefit the project delivery team in real-time, with future benefits also being realized through continued research of the captured data.

Partnering Facilitation in New York State

For nearly twenty years, the Associated General Contractors of New York State (AGC NYS) has been a leading provider of partnering facilitation services for the NYS public owner. However, the SUCF study

findings indicate that few NYS public owners consistently employ techniques or practices such as “partnering” to support the building of high-performance teams or a shared vision for a team culture (DarConte 2017).

Chan et al. (2003) grouped problems with partnering under nine major headings: misunderstanding of the partnering concept; relationship problems; cultural barriers, uneven commitment; communication problems; lack of continuous improvement; inefficient problem solving; insufficient efforts to keep partnering going; and discreditable reputation. The AGC NYS principal facilitator offers the following perspective regarding the utilization of partnering in NYS.

“While most knowledgeable industry players wouldn't say “Partnering” is not used in NYS, it is undoubtedly underutilized. Part of the problem is history. Too often, when partnering was used, it was for show. In other words, an initial workshop is held and then no follow-up. To make matters worse, the workshops were often conducted by “teambuilding professionals” instead of “construction professionals.” In those circumstances, the workshops were canned with typical teambuilding exercises that have been termed “pushing ropes around.”

“Because of that, the term “partnering” got a bad name. For that reason, the AGC NYS terms partnering as “Project Team Alignment” and stresses the need for a long-term approach where we delve deep into construction and project specific issues. To be effective, the process must be a 365 days per year process. While not absolutely necessary, a knowledgeable facilitator bringing a different perspective and ability to drive the conversation has often been found valuable in resolving or preventing issues from derailing a project.”

“That highlights an additional impediment. Many New York industry players believe this is something they do in their normal course of managing a project. This attitude is particularly prevalent among program managers, although I have worked with a few very enlightened PM's. In general, it has been my experience that partnering, or project team alignment is anything but the

normal course of managing a project in most cases. Even if one party has all good intentions, they often lack the skills or gravitas to overcome the tendency to lose sight of the forest for the trees or to be viewed as biased in the effort.”

“I would note the old adage that "You get what you focus on," and the purpose is to focus the team on the positive attributes of a highly effective team and the overarching project goals, re-enforce the positives and re-direct from the negatives. Then at the end, when we are speaking about the ETEC experience, we discuss what we are doing differently to make partnering effective. The RAID model defines a set of ideal delivery conditions we want to benchmark. Our Project Team Alignment Facilitation is the vehicle to create the desired team culture and behaviors that will allow us to achieve our performance outcomes.”

THE STATE UNIVERSITY CONSTRUCTION FUND RESEARCH STUDY

Phase 1 of the Investigation – Overview

The initial phase of the SUCF study attempted to define a set of optimal project delivery conditions and system framework for a project delivery optimization model, that was coined a *Best Value Alignment Process* with the resulting framework termed *Rapid Alignment Initiated Delivery*TM. The subsequent phase of the SUCF investigation focused on using a project team alignment mechanism (partnering facilitation) supported by data analytics to align the delivery team with the desired project delivery environment as defined by the Rapid Alignment Initiated DeliveryTM framework.

Phase 1 of the investigation was conducted with two research partners. The first, the United States Tennis Association, Billie Jean King National Tennis Center (USTA-NTC), a not-for-profit owner that functions as the governing body for the sport of tennis in the United States and the second, the State University Construction Fund, a NYS public benefit corporation responsible for the construction of academic facilities under the State University of New York (SUNY) jurisdiction. The investigation explored key stakeholder alignment and risk management issues impacting the efficient delivery of design and construction services.

The findings demonstrated for this public-sector owner, how “soft systems thinking” strategies build effective project delivery teams, optimize delivery procurement systems, and lead to successful project outcomes. Using the USTA-NTC West Campus Transportation Building (WCTB) development program as a baseline event, broader investigations were undertaken with the SUCF and the local AEC Industry to address relationships among critical stakeholder alignment factors (CSAFs) and resulting project performance outcomes.

The USTA-NTC WCTB Case Study

The USTA-NTC WCTB tournament facility served as the lead project for a projected five-year, 500-million-dollar campus-wide capital construction program at the Billie Jean King National Tennis Center. The USTA-NTC master plan was designed to replace existing tournament courts and provide state-of-the-art spectator and telecast experiences. Each unique project represented a critical component of the USTA-NTC master plan. Incorporating a new player's transportation building, broadcast booth, grandstands, viewing galleries, tournament, and practice courts, the WCTB program was no exception.

The study examined how a Mission Critical Cannot Fail (MCCF) project, point of departure impacted the team's risk management, decision-making process, team engagement, and alignment. The critical driver of all thinking, planning, and contract awards was the non-negotiable requirement for the facility to be ready for the commencement of the 2014 U.S. Open “play-in” rounds. Failure to have the WCTB project ready for tournament play was not an option for the USTA and its project delivery team. Hard schedule constraints—including strict timing windows for the curing of court surfaces, complex structural designs for the grandstands and viewing galleries, extensive below-grade utilities, state-of-the-art AV/IT systems, and challenging site conditions due to the commencement of the adjacent retractable roof project at Arthur Ashe Stadium—resulted in a design and construction schedule defined by multiple phases, unforgiving coordination requirements, and a critical path with no options for recovery and contingency measures.

The USTA-NTC WCTB program served as a real-world experiment to formulate the key strategies and best practices that facilitate the alignment of stakeholder interests and produce high-performance teams. The primary investigator (PI) and principal author of this paper served as the Construction Manager’s project executive for the delivery program. Throughout the planning and construction phases of the project, team leadership, as part of a risk assessment function, identified potential interpersonal and process alignment issues where the management and resolution of such were thought to be critical to project success. Completion of the program created an opportunity for the USTA - NTC and the delivery team’s leadership to assess the impact of key decisions and reflect on the effectiveness of the overall delivery process. *That reflection crystallized two ideas for consideration: the first, a shared vision for project execution exists that inspires delivery team members to work with one another for a common goal, and second, an ideal set of project delivery conditions exists that permits the team to function as a high-performance team.*

The delivery team’s primary stakeholders offered their individual perspective to define the conditions that led to the successful completion of the USTA-NTC WCTB program. Semi-structured interviewing, direct observation, and project documentation reviews were used to gather information and determine the conditions that were evident throughout the project’s construction. These observations resulted in the identification of twelve specific conditions (Table 2) linked together with nineteen CSAFs (Table 1). The Stakeholder Alignment Proposition Elements (SAPEs) (Table 3) were then derived to provide a preliminary mapping and modeling of a Best Value Alignment Process.

Table 1. USTA - NTC Critical Stakeholder Alignment Factors (CSAFs)

CSAF	CSAF	CSAF	CSAF
Agility and Flexibility	Organization Culture	Ethical Behavior	Responsibility
Transparency	Mutual Trust	Influence	Risk Allocation
Resources	Achievability	Clear Project Goals/Object.	Financial Objectives
Leadership	Relationships	Competencies & Experience	Capabilities
Engagement	Accountability	Team Integration and Collaboration	

Table 2. USTA - NTC Criterion Correlated with Critical Stakeholder Alignment Factors (CSAFs)

Criterion No.	USTA-NTC Criterion	Critical Stakeholder Alignment Factors (CSAFs)
Criterion No. 1	Selection of the Project Delivery Method	Agility and Flexibility; Level of Team Collaboration
Criterion No. 2	Ethical Behavior	Ethics; Mutual Trust; Organizational Culture; Transparency; Influence
Criterion No. 3	Clearly Defined Project Goals and Objectives	Clear Project Goals and Objectives; Accountability; Achievability
Criterion No. 4	Owner Experience and Leadership	Experience; Leadership; Influence; Resources; Competencies
Criterion No. 5	Design and Constructor Team Experiences	Experience; Capabilities; Competencies; Resources
Criterion No. 6	Trade Contractor Competencies and Capabilities	Experience; Capabilities; Competencies; Resources
Criterion No. 7	Leadership and Relationships	Leadership; Relationships; Organization Culture; Responsibility; Ethics; Mutual Trust; Accountability
Criterion No. 8	The Possibility of a Future Contract Award	Relationships; Engagement
Criterion No. 9	Fair Compensation	Risk Allocation; Financial Objectives; Transparency
Criterion No. 10	Timely Payment Process	Financial Objectives; Resources
Criterion No. 11	Change Management	Financial Objectives; Risk Allocation; Agility and Flexibility; Mutual Trust
Criterion No. 12	Early Contractor Involvement	Early Team Integration; Engagement; Relationships Team Collaboration; Accountability; Competencies

Key stakeholder alignment themes were then chosen after extensive dialogue with senior team management and the study’s research advisors, leading to the formation of the study’s SAPEs as shown in Table 3 and correlated with the CSAFs. The West Campus project experience initiated the formation of a “Best Value Alignment Process” or what was eventually labeled Rapid Alignment Initiated Delivery™.

Table 3. SAPE Grouping Correlated with Critical Stakeholder Alignment Factors (CSAFs)

Stakeholder Alignment Proposition Elements (SAPEs)	Critical Stakeholder Alignment Factors (CSAFs)
SAPE No. I Ethical Behavior	Ethical Behavior, Accountability
SAPE No. II Clearly Defined Goals and Objectives	Clear Project Goals and Objectives; Achievability
SAPE No. III Sustained Visible Leadership	Leadership, Ethical Behavior, Influence
SAPE No. IV Demonstrated Competencies and Capabilities	Competencies and Experience Level, Capabilities, Resources
SAPE No. V Relationships and Integrated Teams	Relationships; Team Integration and Collaboration, Mutual Trust, Engagement, Agility and Flexibility
SAPE No. VI Equitable Risk Allocation	Responsibility; Risk Allocation, Financial Objectives

Theoretical Contextualization

The USTA – NTC case study established the theoretical contextualization for the conditions, methods, and perspectives under which an optimized project delivery system can be found. Conditions were defined by each of the delivery team's primary stakeholders, holding their perspectives and understanding of events that led to the successful completion of the WCTB program. The case study provided a systematic account of phenomena leading to the formulation of central propositions by identifying relationships between the alignment variables and critical factors contributing to project success. The project revealed a unified group of stakeholder alignment propositions or principals that established the basis for an ideal set of project delivery conditions.

- **Proposition No. 1** - Ethical Behavior, transparency, and trust are the foundation for building an effective delivery team where all team members have a shared responsibility to uphold ethical behavior.
- **Proposition No. 2** - Clearly Defined Objectives and Goals will facilitate the alignment of stakeholder roles and interests, resulting in improved project outcomes.
- **Proposition No. 3** – Sustained Visible Leadership is key to enhancing and supporting collaboration among the project delivery primary stakeholders throughout the project lifecycle.
- **Proposition No. 4** - Competencies and Capabilities in design and construction must be demonstrated by the project team stakeholders for a successful project outcome.
- **Proposition No. 5** - Relationships and Integrated Teams that are developed and managed throughout the entire project lifecycle will enhance project outcomes.
- **Proposition No. 6** - Equitable Risk Allocation and the alignment of financial objectives facilitate a win-win-win proposition for each of the primary stakeholders contributing to project success.

The SUCF Investigation – Existing Project Database

Shortly after the completion of the USTA-NTC project, the researchers at NYU Tandon joined with the SUCF leadership to explore questions related to project team alignment and its impact on project success. The investigation provided insights into the SUCF project managers' perceptions regarding their project delivery team's effectiveness. It is important to note the success of both phases of the SUCF investigation reflects the agency's willingness to "know what they don't know." Early and unwavering, continued support from SUCF leadership has yielded unconditional access by the PIs to members of the delivery team, allowing for a robust sharing of information and perspectives. Similar investigations had been proposed with several NYC public agencies responsible for significant capital construction programs. However, there typically was not much appetite to "look under the hood" and share project data. Of significance was the unwillingness for some agencies to have project managers participate in a study of this kind, exemplified by one commissioner declaring, "why would I want my project managers even thinking about this stuff?"

Data gathered through the analysis of the SUCF projects provided insights into the behaviors and practices influencing Highly Successful (HS) and Significantly Challenged (SC) project outcomes. The SUCF project sample (HS and SC) were derived from a 180-project database. The projects were initially evaluated for cost growth, a metric for which the SUCF had tracked extensively. The twenty-best performing and twenty-worst performing projects were identified and became the sample group. HS projects were defined by a cost growth range of 0% to a high of 3.84% contrasted by SC projects characterized by a cost growth of 10.65% to a high of 32.06%. Although some may cast doubt that this is truly a random sample, the ability to compare these two groups was considered very important to the study. SUCF leadership was able to retrieve thirty-two of the forty archived projects whereby the project managers assigned to these programs responded to the Stakeholder Alignment Survey (SAS) questionnaire. Of note, the SUCF project manager was unaware of their specific project's designation at the time of the inquiry.

The SAS questionnaire was developed as a web-based instrument using the NYU Tandon supported, Qualtrics software platform. The survey was administered online and can convey some basic descriptive

statistical analysis within the Qualtrics platform, including the identification of the data mean, standard deviation, and variance. The SAPEs identified in the USTA-NTC case study were adapted as assessment categories (question blocks) for the SAS questionnaire. The survey instrument incorporated 108 questions to determine the most influential factors impacting project performance outcomes, project team alignment, and team effectiveness. The raw data was captured in a database where the relationships of the variables were examined with several statistical tools such as factor analysis/principal component analysis, reliability testing, bivariate correlation and regression, and multivariate regressions analysis.

The research findings revealed several process and team engagement conditions that were correlated with minimal project cost growth and the achievement of intended performance outcomes. Because of this study and a parallel local AEC industry-wide (AEC I-W) investigation, the principal researchers at NYU Tandon advanced a framework that not only suggests an ideal set of evidence-based conditions linked with highly successful project outcomes but also serves as a model to assess team and process alignment. The theoretical framework serves as the basis for the Rapid Alignment Initiated Delivery™ model. The findings from the SAS question CPE3 (Figure 1) is provided as an example of the respondents’ perspective — the relationship between project success and meeting predetermined cost performance goals.

Fig. 1. CPE3. *How successful was the project in meeting predetermined cost performance goals? (5 Point Likert Scale 1=Failed to meet any established goals to 5= Outstanding - Met all Cost Performance Goals)*

Survey Group	Low - High Response	Mean	Variance	Standard Deviation
SUCF HS	2 – 5	3.94	0.43	0.66
SUCF SC	1 – 3	2.27	0.64	0.80
AEC I-W HS	2 - 5	4.19	0.66	0.81
AEC I-W SC	1 – 4	2.27	1.22	1.10

RAPID ALIGNMENT INITIATED DELIVERY™

A Support Tool for Partnering Facilitation

Rapid Alignment Initiated Delivery™ is introduced as a change management tool to improve the process and the effectiveness of the project delivery team. The model represents the ideal project delivery conditions and cultural attributes needed for effective team engagement. Serving as a guide for the project delivery team to acquire insights that will allow leadership to make informed decisions regarding team behaviors and cultural change, the framework provides a method of benchmarking the alignment level and potential effectiveness of the team by working through several constructs - Stakeholder Alignment Proposition Elements or SAPEs found to be correlated to project delivery performance outcomes.

Model Description

The Rapid Alignment Initiated Delivery™ model presents six dimensions that impact project success and serves as the blueprint for building a high-performance project delivery team. The model diagram (Figure 2) is intended to convey the interdependency of the SAPEs, where changes to one element may prompt a change in other elements. The framework serves as a guide and evaluation tool intended to convey the interdependency of the SAPEs.

Fig. 2. The Rapid Alignment Initiated Delivery™ Model

ETHICAL BEHAVIOR

Characterized by honesty, accountability, and transparency that supports the conditions to build trust amongst the project stakeholders. A top-down attribute, leadership exhibiting ethical behavior will foster a culture of cooperation.

EQUITABLE RISK ALLOCATION

Reasoned risk allocation, prompt payment and change management practices all supported by fairness and equity in relationships.

CLEARLY DEFINED OBJECTIVES AND GOALS

Goal setting involves the team's conscious process of establishing high levels of performance and a shared vision for achievability to obtain desired performance outcomes.



SUSTAINED VISIBLE LEADERSHIP

The visible leader sets a clear vision for the project, creates a tone for engagement fostering a building of trust in relationships. Sustained visible leadership requires ethical leaders.

RELATIONSHIPS AND INTEGRATED TEAMS

Primary stakeholders working together in the best interest of the project (**Project First Thinking**).

The arrangement requires a willingness to share knowledge that supports an interdependent, team-based approach to the work.

DEMONSTRATED COMPETENCIES AND CAPABILITIES

Demonstrated competencies and capabilities lead to excellence in project team performance.

*Mission Critical Cannot Fail

The model functions on the theory that for the project delivery team to perform well within a MCCF project environment, the six SAPEs need to be aligned and mutually reinforcing. The model asserts that transformational change to the delivery process is about the relationships among the six SAPEs. The analysis is conducted within a system thinking paradigm where the model proposes six interdependent dimensions to measure the project delivery process. The model is used to help analyze the pre-construction phase team alignment, propose future team alignment, and identify gaps between them. As a result, the model can serve as an evidence-based instrument to support the Partnering facilitation. The usefulness of benchmarking the team using the model elements is straight forward. When data is brought to the forefront, intuition and perspective are then transformed into a useful Key Performance Indicator (KPI) providing insights that will get the attention of the delivery team. Tables 4 and 5 present key diagnostic areas that serve as the basis for KPI development and performance monitoring.

Table 4. Examples of Key Diagnostic Topics

SAPE Diagnostic Category	Example of Team Readiness Assessment Areas
SAPE I – Ethical Behavior	Shared Vision for Ethical Approach to the Work; Code of Conduct for Holding Stakeholders Accountable; Good faith effort in Change Order Negotiation; Trade Contractor Identification, and Selection; Accountability Mechanisms for all Team Members; Accepted Behavioral Norms; Ethical Leadership; Team Commitment to Develop a Culture of Trust.
SAPE II – Clearly Defined Goals/Objectives	Clarity of Vision and Goals that Guide the Project Delivery Team. Understanding of Cost, Schedule, and Quality Objectives. Priority issues made known to Primary Stakeholders. Determine Achievability of Objectives. Incentivizing Financial Objectives of Team Members linked with Performance. Project Scope Definition and Control.
SAPE III – Sustained Visible Leadership	Purpose of the Leadership Team; Consistent Stakeholder Representation with the Authority to make Decisions; Guide Project Team to Execute Objectives; Defines the Path to Project Achievability; Sets Ethical Barometer for the Team; Commitment to Develop a High-Performance Team Culture.
SAPE IV – Demonstrated Competencies and Capabilities	Early Disclosure of Team Members and Experience Levels; Knowledge and Skills Team Members hold for Project Execution; Value Engineering; Pre-planning; Supply Chain Management; Resources; Financial Capabilities; Effectiveness of Project Controls; Decision-Making.
SAPE V – Relationships and Integrated Teams	Engagement of Team Members; Pre-Construction Partnering Events; Timely Conflict and Issue Resolution; Early Involvement of Team Members and Project End Users; Urgency.
SAPE VI – Equitable Risk Allocation	Joint Representation for Strategic Planning and Risk Management; Assessment of Individual Stakeholder Interest; Determine whether Goals and Objectives of each Primary Stakeholder are consistent with those of the Collective Team; Understanding of Stakeholder/Team Member Risk Perception.

Table 5. Examples of Strategic Planning and Risk Management Tasks

SAPE Diagnostic Category	Example of Strategic Planning and Risk Management Tasks
SAPE I – Ethical Behavior	Project Safety – Zero Accident Policy; Prompt Payment to Constructor and Trade Contractors; Eliminate Practice of Holding Float; Identify True Value of Change Order Work and Pay Accordingly; Communicate all Relevant Information – Transparency; Develop Ethical Culture that Fosters Trust; Team Members Demonstrate Willingness to Mitigate Changes; Maintain Key Personnel Throughout the Delivery Process.
SAPE II – Clearly Defined Goals/Objectives	Align Goals of Cost, Quality, and Schedule. Define from Day One. Target Value Design, No Claims Goal, Zero Punchlist Goal; Achievability; Set Challenging Goals; Mission Critical Cannot Fail; Diversity Procurement – Establish Meaningful Participation Goals; Safety Objectives; Minimize Project Scope Creep.
SAPE III –Sustained Visible Leadership	Lead the Transformation of an Organizational Culture; Transparent Communication right down to the Trade Contractors if Necessary; Trades and Vendors need to know their Interests are Leadership’s Interest; Communicate a Shared Vision for Project Achievability; Foster a Willingness for Every Team Member to Meet the Challenge.
SAPE IV –Demonstrated Competencies and Capabilities	Early Disclosure of Team Members and Experience Levels; Knowledge and Skills; Best Value Selection of Trade Contractors and Vendors; Move Past Lowest Cost Objective; Identify Project Labor and Material Availability; Promote Innovative Practices; Supply Chain Management.
SAPE V – Relationships and Integrated Teams	Co-Location of Team Members; Build Consensus Decisions; Strip Away Unproductive Tasks; No Blame Culture that Supports Accountability; Trust in Communications – Keep it Real; Eliminate Practice Silos; Pre-Construction Project Team Alignment Workshop; Communicate Freely about Roles & Responsibilities; Move Away from “Capture and Punish” Culture; Seek Opportunities to Foster Open Communication and Continuous Improvement.
SAPE VI –Equitable Risk Allocation	Review of Contract-Damages Clauses; Accelerated Requisition Schedules coupled with Prompt Payments; Full Team Representation at Risk Management Workshops; Establish True Cost of Changes and Fairly Assign Responsibility; Understanding of Stakeholder Risk Perception – What Puts a Knot in Their Stomach.

TRANSITIONING FROM RESEARCH THEORY TO APPLIED PRACTICE

The Applied Research Design – Combining Ethnographic and Action Research

The purpose of applied research is to increase what is understood about a problem with the objective of discovering a better solution. Academic research in applied disciplines such as construction management has a dual purpose of contributing to answering practical industry questions while building theory and creating new knowledge (Azhar et al. 2010). An applied research design that is directed to solve a practical problem and end uses in a real-world environment is useful for conducting research in the built environment and facilitates the development of best practices (Fellows & Liu, 2008; Gaber, 2010). For Phase 2 of this study, a combined ethnographic and action research method was formalized as the research design.

“Ethnography is the art and science of describing a group or culture. The description may be of a small tribal group in an exotic land or a classroom in middle-class suburbia” (Fetterman, 2009). The use of ethnographic approaches developed in social anthropology and sociology hold considerable promise for addressing practical, problem-based research concerned with the construction site (Pink et al., 2010). Anthropologist David Fetterman speaks to the emic perspective – the insider’s or native’s perspective of reality as the defining construct to most ethnographic research. The insider's perception of reality is instrumental in understanding and accurately describing situations and behaviors (Fetterman, 2009). Indeed, it could be argued when evaluating project delivery teams, an emic perspective gives weight to understanding what puts a knot in an individual’s stomach and drives a team member’s decision-making.

Ethnographic research, familiar with sociologists and anthropologists, formally embeds the researcher within the community for long, continuous periods. Ethnographers usually join a group, organization, or community of practice or in the context of the SUCF study, the project delivery team—e.g., a contractor, design consultants, and the project owner. Cohen and Baily (1997) suggest that the assessment of project teams lag other types of teams (e.g. work teams and management teams) in the use of objective measures. In the U.S., participant observation, which is central to ethnographic research, is a strategy not typically linked to academic investigations focused on the delivery of large scale, complex projects. Project team outputs typically are viewed as existing too far in the future making it difficult for researchers and managers to compare teams in different functional areas, physical proximity, or facilities.

Applied ethnographic research in the built environment “offers a route for the coproduction of knowledge through the interactions between researchers and practitioners” (Pink et al., 2013). However, in an applied research setting such as the SUNY Albany - ETEC construction job site, observations by the PIs were non-continuous and spread over a two-year period. For this investigation, the PIs could apply ethnographic techniques, but in a clinical sense, could not conduct a rigorous ethnography. In this spirit, the ethnographic focus supported by an action research approach provided the PIs a route to knowledge that led to richer

insights to the culture of practice, proving to be of significant value to the academic and industry participants.

Action Research is a research approach used to bring about new tasks through the understandings of situational behaviors “in context.” Coined by Kurt Lewin in the mid – twentieth century, he articulated the approach as a method of generating knowledge of a social setting while at the same time, trying to change it (Azhar et al., 2010). Morris (2002) defines this personal knowledge embedded in individual experience as tacit knowledge. Tacit knowledge, embedded in people’s heads encompasses personal belief, perspective, and values that can provide very useful insights that contribute to knowledge. The approach increases the validity of research by recognizing contextual factors within the research environment that are often overlooked with more structured approaches. The action research method loops the findings into the initiative through observation and data analysis, resulting in the development and planning of new tasks.

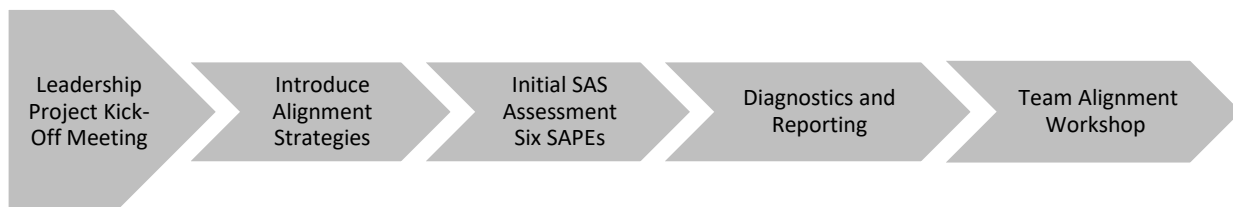
Being a co-participant of the inquiry through engagement with the team, researchers and practitioners generate new knowledge and learn together. According to Brady and Davies (2004) project capability-building consists of several levels of learning. First, it describes the bottom-up process of learning to capture lessons learned; transitioning to a final “project-to-organization” phase when an organization increases its capabilities to deliver many projects. Through this collaboration, researchers and team members resolve issues as a progression within a learning system — a shared process of reflection among the investigators and the participants, with the latter contributing data through surveys, interviews, and team alignment workshops. Combining data analytics and reflection, a direct feedback loop of continuous evaluation and improvement was created and brought the idea of “learning” to the forefront of the SUNY Albany - ETEC team. To that point, the combined ethnographic-action research method enabled the PIs and partnering facilitator to identify specific issues within the SUNY Albany-ETEC team and in close collaboration with its leadership, define actionable tasks to support changes in behaviors.

The Rapid Alignment Initiated Delivery™ (RAID) Team and Process Alignment Assessment Tool

The RAID team and process alignment assessment tool is intended to support an assessment process that investigates, measures, and evaluates the six elements of Rapid Alignment Initiated Delivery™. Figures 3 and 4 provide a visualization of the evaluation process – first, to assess a current state with an intended future state, and second as a temporary static picture to measure how effectively the project team is implementing its alignment strategy.

Initial RAID Kick-Off Assessment - Team and Process Alignment Assessment Tool

Fig. 3. Initial Rapid Alignment Initiated Delivery™ Kick-Off Assessment



The Stakeholder Alignment Survey (SAS) is action-oriented and serves as a data collection instrument and as a catalyst for change. Data is gathered for each of the six SAPE categories from the SAS findings and interviews with the key members of the project delivery team. The survey questions are designed to evaluate the current state of the delivery team through the perceptions of the primary stakeholders. The initial phase of the Rapid Alignment Initiated Delivery™ process assesses the impact of project delivery team interactions, prior to commencement of the work. Emphasis is placed on educating the team about the strategic fit and the management of the interdependency of the SAPEs. The process allows the delivery team leadership to move beyond intuition by uncovering the actual properties of the project team network through the capturing and analysis of data. According to Bresnen and Marshall (2000) an effective partnering process is dependent upon everyone on the team making a solid commitment to the process. To promote fundamental change, team member commitment is an essential ingredient. Implementation strategies included the involvement of SUCF and stakeholder leadership early in the planning stages of the program. Conducting the initial leadership workshop session proved to be essential to convey the process and gain team commitment. The importance of building commitment and gaining leadership buy-in cannot

be overstated. This message was reinforced with the issuance of the initial survey to the delivery team. The message was clear — sober, earnest participation with the completion of the survey was the best way for each respondent to demonstrate their commitment to the team.

Construction Phase – 90 Day Evaluations – Team Alignment and Process Assessment Tool

Data was gathered for each of the six SAPE categories from the findings of the Rapid Alignment Initiated Delivery™ – SAS and interviews with the key members of the project delivery team. The survey questions are designed to evaluate the current state of the delivery team through the perspective of the primary stakeholders. The process involves quarterly evaluation cycles of diagnosis, feedback, action planning, and change. Following analysis, the results are presented to the major stakeholders for the purpose of planning actionable tasks. A continuous improvement framework is adopted for the project duration to meet performance objectives.

Fig. 4. Construction Phase RAID Assessment (Continuous Monitoring) – Quarterly Evaluations (90 Days)



It is essential to recognize the connection between the PIs initial Phase 1 data collection relationship with the SUCF, the development of the Rapid Alignment Initiated Delivery™ model, and finally, transitioning the model from an academic research investigation to the application of the model in industry practice. The ability to maintain a continuing seven-year dialogue with the SUCF design and construction management leadership had led to a seamless onboarding and acceptance of the PIs as members of the SUNY Albany – ETEC project delivery team. The NYU Tandon PIs never felt like outsiders and had the ability to build long-term relationships and trust with members of the delivery team. Issues were discussed openly, and, on many occasions, it was common for a workshop participant to engage in additional one-on-one dialogue outside the field trailer after a session. This transition may have been made easier with the delivery team's knowledge that each of the PIs had enjoyed extensive industry experience before entering academia.

Of note, the ability for the PIs, as well as the AGC NYS partnering facilitator to knowledgeably converse in the industry lexicon, coupled with an in-depth understanding of practices and processes, brings to the applied research phase a valued perspective by the delivery team when interpreting the survey findings. This yielded a unique methodological position regarding the approach to the research design. One might argue that the investigators, serving in roles as data analysts and neutral facilitators, were acting more as management consultants than independent academic observers. However, the research design confirmed that significant insights can be gained through a combination of quantitative and qualitative methods - where data analytics support a facilitation process designed to grasp the meaning of the delivery team's perspectives and actions. As a result, this multi-prong method has provided the investigators and the team with richer insights into project management practices and conflict resolution than one might have expected. Furthermore, data collected as part of the project team alignment facilitation process serves two distinct research purposes. First, the obvious, real-time data collected at regular intervals support ongoing project risk management and team alignment tasks. However, the long-term collection of project data produces a second area of inquiry, one linked to determining causal connections between insights gained and final performance outcomes. It is suggested that NYU Tandon's role as a data repository creates a unique opportunity and support structure for future project delivery driven research.

University at Albany Emerging Technology and Entrepreneurship (ETEC) Complex

Pilot Project Background

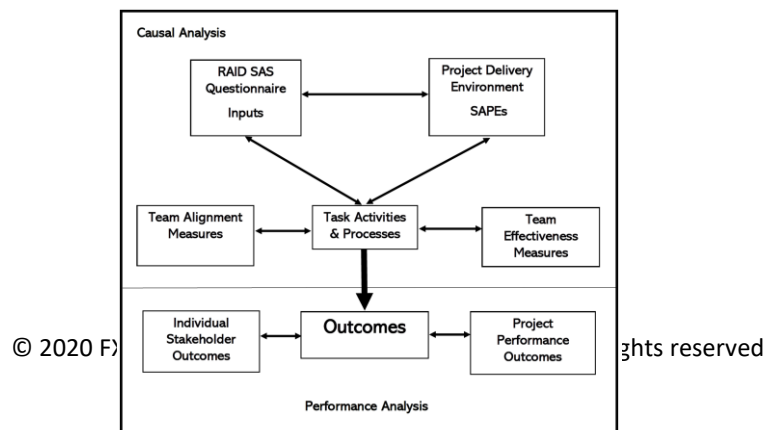
In the Spring of 2018, SUCF leadership identified an upcoming project to serve as a pilot program to introduce the Rapid Alignment Initiated Delivery™ model and alignment process. The framework would be utilized as a support mechanism for a partnering facilitation conducted during the construction of the State University of New York at Albany (SUNY Albany) - Emerging Technology and Entrepreneurship Complex (ETEC). SUNY Albany and SUCF originated the design and construction of the 243,000 square-foot academic building complex on a 12-acre parcel for a cost of approximately \$120,000,000. The project is intended to serve as a catalyst for advancements in research and technology and considered one of the

most important projects currently under construction in the SUCF portfolio. The PDM for the program is traditional DBB, where Consigli Construction, as the lowest responsible bidder, was awarded the general construction contract as a single prime contractor. The project requirements included a delivery schedule of approximately three years. Other team members included Turner Construction (construction manager representing SUCF), Cannon Design (project architect), SUCF, and SUNY Albany (end-user).

The ability to effectively transform the newly formed SUNY Albany - ETEC team into a high-performance team started with using individual perceptions to identify potential barriers to project success. CII suggests that teambuilding is a project-focused process that “builds and develops shared goals, interdependence, trust, commitment, and accountability among team members” (CII 2012). Rooke *et al.* (2002) argues that describing features of industry culture, is intended to promote greater understanding between different perspectives within the industry. The Rapid Alignment Initiated Delivery™ framework for performance analysis (Figure 5) is designed to support the transformation of the team through a benchmarking strategy intended to illuminate the following:

- (1) As a leader, does my team know something I don't know?
- (2) Does the team understand the basic constructs of an optimal set of project delivery conditions?
- (3) Are all critical project delivery elements in place to make this project a success?
- (4) Is there a shared vision for project success? Achievability?
- (5) Are the stakeholders aligned with the desired vision for team culture?
- (6) Understanding stakeholder interests and expectations to facilitate an alignment of interests.
- (7) What is working well? What is not working well?

Fig. 5. Rapid Alignment Initiated Delivery™ (RAID) Framework for Causal and Performance Analysis



Testing the Rapid Alignment Initiated Delivery™ Model

The researchers proposed using the Rapid Alignment Initiated Delivery™ model as the alignment framework for evaluating and understanding project team engagement and creating a desired delivery environment. The NYU Tandon PIs would provide project team alignment assessment and data analytics services to support a partnering facilitation effort conducted with representatives from the AGC NYS. The PIs were responsible for capturing stakeholder data, analysis, and identifying gaps in team and process alignment as defined by the Rapid Alignment Initiated Delivery™ model. Though the PIs were available for consultation during the pre-construction and construction phases of the program, it was clearly understood that beyond the interpretation of data, the SUNY Albany – ETEC project team members were responsible for developing actionable tasks to mitigate any issues. To enable the transfer of knowledge and assist the team in working through the survey findings via a partnering process, the AGC NYS partnering facilitator assisted the delivery team in determining the areas of focus. AGC NYS and NYU Tandon jointly conducted quarterly project team alignment workshops bringing forth insights to the team with a focus on what was working or not working.

An Evidence-Based Support Mechanism

The Rapid Alignment Initiated Delivery™ model was introduced to the newly formed SUNY Albany – ETEC team as an empirically developed diagnostic tool to investigate, measure, and evaluate the emerging needs of the team before the commencement of construction. The first step in the process was to capture team member perspectives and biases regarding their understanding of the optimal conditions for project delivery, development of high-performance teams, best practices, and the achievability of the project goals and objectives. The NYU Tandon researchers created a comprehensive survey and situational case study for evaluation by the team, as a means of gauging existing organizational culture and behaviors. After conducting information sessions at both the executive leadership and project management levels, the SUNY Albany – ETEC project delivery team participated in an anonymous online survey and subsequent 8-hour workshop held at the AGC NYS offices in Albany.

Team members, including representatives from SUCF, SUNY Albany, Turner Construction Corp., Consigli Construction, and Cannon Design, completed the questionnaire via the NYU – Qualtrics, web-based processing platform. The 145-question diagnostic tool is segmented over eight-question blocks. Question Block 1 focused on general background information that addresses the importance of the project to the team member and their organization where the delivery team’s point of departure is to treat the SUNY Albany - ETEC building program as a “Mission Critical Cannot Fail” (MCCF) project. Question Blocks 2 thru 7 measure levels alignment with the six SAPEs. Block 8 of the survey, serving as a group learning exercise, included 12 questions related to a single situational case study designed to capture an action or belief considered most appropriate. The situational case study represented a field condition that required conflict resolution.

When completing the questionnaire, the respondents found that there are no right or wrong answers. The assessment vehicle is designed to measure each team member’s perception along a 5-point Likert scale, benchmarking the findings against the Key Performance Indicators (KPIs) as defined by the model’s six constructs. Questions related to team effectiveness, the delivery process, and acceptable behaviors provide an understanding that it is quite possible for an individual, for example, the project architect, to have a vision for project success that is substantially different from the project constructor. And yet, the entire team would agree that their individual goals include a highly successful project outcome. The intent is to determine what is appropriate and have stakeholder visions aligned.

The survey questions are designed to identify strengths, weaknesses, gaps, and potential conflicts in the delivery team with the intent to evaluate the current state of the team through the perceptions of the primary stakeholders. Of significance, team members, through the safety of anonymity, were provided an opportunity to voice potentially explosive concerns through a series of single-phrase, write-in responses during the construction phase assessments. The questions and responses served as a feedback mechanism for the team and proved to be quite valuable where field-level insights were pushed up to the organizational leadership level for evaluation.

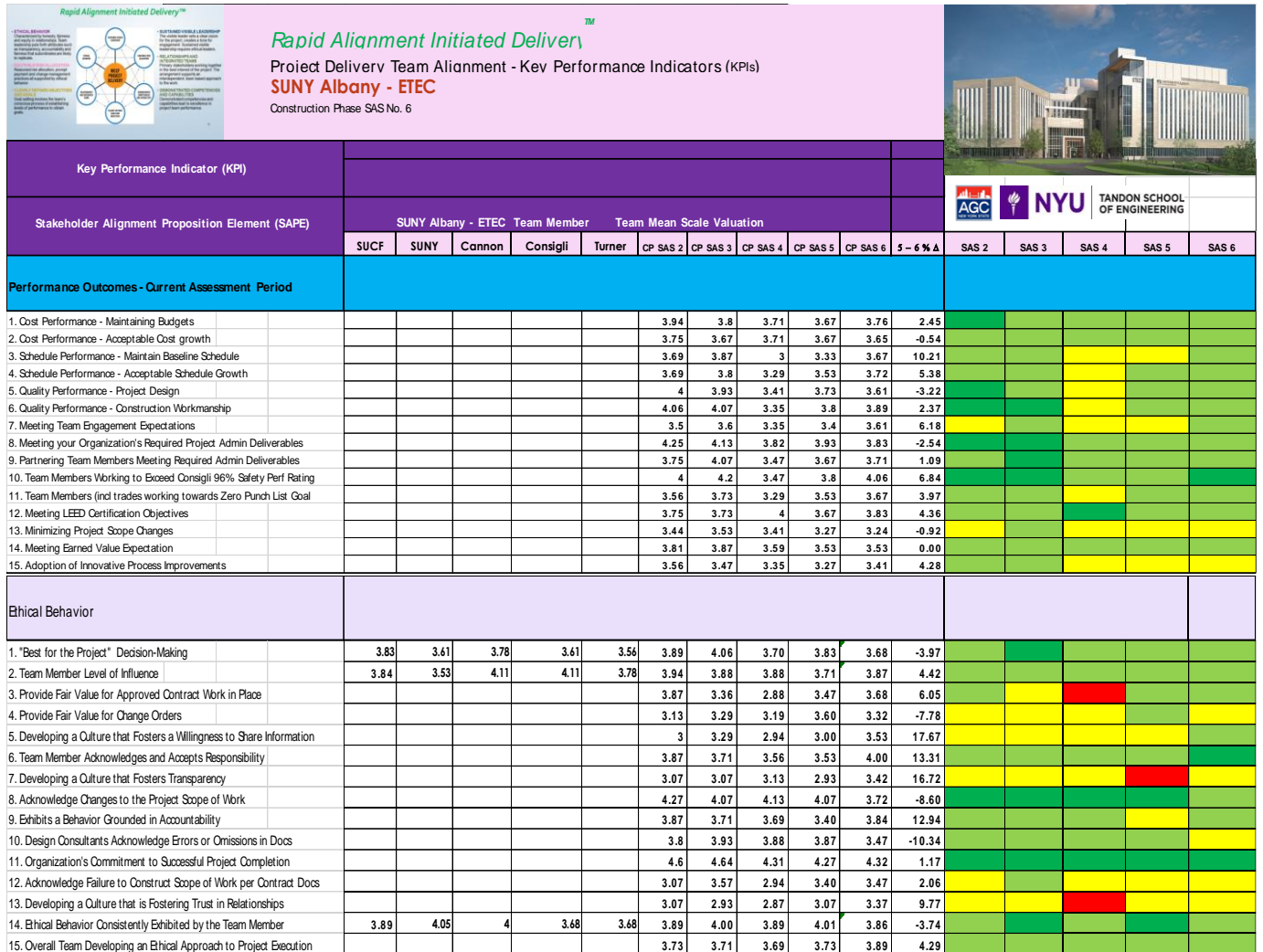
A Benchmarking Strategy - Key Performance Indicators (KPIs)

The basic premise of benchmarking is to learn something of value that will help the team perform more effectively and efficiently. Measuring performance outcomes and the team's perception of alignment was of considerable interest to the SUNY Albany – ETEC team's stakeholders as it provided a real-time snapshot of project team engagement and relative performance. The practice of benchmarking is used to evaluate the delivery team and functional activities or outputs against best practices or, in the case of this pilot program, the desired set of project delivery conditions as defined by the Rapid Alignment Initiated Delivery™ model.

The SAS serves as the input mechanism to monitor and measure not only perceptions of performance outcomes but the factors responsible for team effectiveness and alignment. Starting at the consideration stage, the survey findings, in the form of KPIs, served as a barometer of the team's performance against the benchmarks established by the Rapid Alignment Initiated Delivery™ model. This allowed the team to determine what was important and what needed improvement. Priority actions with a focus on “doing what should be done” was the consistent messaging conveyed by the AGC NYS facilitator during the alignment workshops and readily adopted by the team.

Benchmarking KPIs during the construction of the SUNY Albany – ETEC project is the foundation of the Rapid Alignment Initiated Delivery™ (RAID) evidence-based approach for evaluating the progress of the project delivery team. The primary objective of the 90-day “look-back” SAS is to provide additional insights to team effectiveness and monitor team evolution. The construction phase, quarterly survey, tracks nearly 85 KPIs correlated with team alignment and project success. An example of KPI data results for Performance Outcomes and one of the six SAPEs, Ethical Behavior is provided in Figure 6. The SUNY Albany – ETEC Construction Phase SAS No. 6 was conducted March 2020.

Fig. 6. Example - SUNY Albany – ETEC - KPI Summary Dashboard



Conclusion

The challenges facing the SUNY Albany - ETEC team echo those of other public sector project delivery teams; the need to engage a traditionally siloed workforce with a range of project-specific interests; the imperative to cultivate a team culture that aligns both project and individual stakeholder interest; and team leadership that may not fully commit to the team's development role as a strategic need—one that provides added value to the bottom line of the delivery program. All too often, individual organizations that comprise the project delivery team attempt to protect and optimize their interest, not understanding the delivery conditions that lead to highly successful project outcomes for all stakeholders.

The development of high-performance teams does not simply happen by chance. *An early takeaway and consensus from the SUNY Albany - ETEC delivery team leadership suggested the initial project team alignment assessment and facilitation workshop “gave the team permission to talk to one another.”* The realization that the team had a communication vehicle for the duration of the project to transmit an unfiltered voice yielded significant policy and operational improvements, most notably in processes tied to the development and negotiation of anticipated changes in construction project scope.

The recognition that a building program has no option for failure creates a sustained sense of urgency and enterprise that liberates the project team by placing project requirements and objectives ahead of self-interests. This requires the delivery team to look beyond contractual relationships to execute the work. “Project First Thinking” and “Being True to the Work” serves as the philosophical guidance for alignment strategies to create the desired team culture and the management of stakeholder interests. Furthermore, the investigation revealed that one of the challenges to building a cohesive team was at the project jobsite level. Executive leadership may be conscious of the strategies and constructs discussed in this paper but often encounter a layer of middle-level project management that lacks the understanding or resources for implementing the changes that affect their world. This team dynamic necessitates a bottom-up capturing of insights so leadership can communicate adjustments with top-down strategies—developing and maintaining a shared vision and understanding of project goals and achievability.

To conclude, the paper contributes to an AEC industry body of knowledge with the introduction of an alignment framework that increases the probability of having a successful project by defining a culture for stakeholder business operations and relationships. Rapid Alignment Initiated Delivery™, as defined by the six interdependent SAPEs, changes the traditional static nature of process to a dynamic process whereby the performance of the team is measured and addressed throughout the project lifecycle. Finally, the study contributes to a future research program where we can benchmark the project team’s behavior, and through the long-term collection of data, develop a predictive modeling capability for building high-performance teams and project success.

DATA AVAILABILITY STATEMENT

Some or all data, models, or code that support the findings of this study are available from the corresponding author upon reasonable request. Contact Information: fd508@nyu.edu

REFERENCES

Works Cited

- Azhar, S., I. Ahmad, and M.K. Sein. 2010. "Action Research as a Proactive Research Method for Construction Engineering and Management". *Journal of Construction Engineering and Management*, Vol. 136, No. 1, January 1, 2010. ©ASCE, ISSN0733-9364/2010/1-87-98 DOI: 10.1061/ASCECO.1943-7862.0000081
- Brady, T. and A. Davies. 2004. "Building project capabilities: from exploratory to exploitative learning", *Organizational Studies*, 26 (9), 1601-1621.
- Bresnen, M., and N. Marshall. 2000. "Partnering in construction: a critical review of issues, problems and dilemmas", *Construction Management & Economics*, 18:2, 229-237, DOI:10.1080/014461900370852
- Busseri, M.A., J.M Palmer, and T. Martin. 2000. "Improving teamwork: the effect of self-assessment on construction design teams". *Design Studies*, 21, (3), 223-238
- Cantu, C. J. 2007. "Evaluating team effectiveness: Examination of the TEAM Assessment Tool" thesis, presented to University of North Texas, TX, in a partial fulfillment of the requirements for the degree of Doctor of Philosophy.
- Chan, A. P. C., D.W.M Chan, and K.S.W. Ho. 2003. "Partnering in construction: Critical study of problems for implementation." *J. Manage. Eng.* 19 (3): 126–135. [https://doi.org/10.1061/\(ASCE\)0742-597X\(2003\)19:3\(126\)](https://doi.org/10.1061/(ASCE)0742-597X(2003)19:3(126)).
- CII 2012. CII Best Practices Guide: Improving Project Performance. Construction Industry Institute, Austin, TX.
- Cohen, S. G., and D.E Bailey 1997. "What Makes Teams Work: Group Effectiveness Research from the Shop Floor to the Executive Suite." *Journal of Management*, 23(3), 239-290.
- Dainty, A., S. Pink, and D. Tuft. 2013. *Ethnographic research in the construction industry*. London; New York: Routledge.
- DarConte, F.X. 2017. *Best Value Alignment Process for Public Works Construction in New York State*. thesis, presented to the Polytechnic Institute of New York University, in a partial fulfillment of the requirements for the degree of Doctor of Philosophy. Ann Arbor, 2017. ProQuest.
- Egan, J. 1998. "Rethinking construction". *The Report of the Construction Task Force on the Scope for Improving the Quality and Efficiency of UK Construction*. HMSO, London, UK.
- Fellows, R. and A. Liu. 2008. *Research Methods for Construction*. Chichester: John Wiley & Sons Ltd.

- Fetterman, D. M. 2009. "Ethnography". In L. Bickman & D. J. Rog *The SAGE handbook of applied social research methods* (pp. 543-588). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781483348858.n17
- Gaber, J. 2010. "Applied Research". In N. J. Salkind (Ed.), *Encyclopedia of research design* (pp. 36-37). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412961288.n13
- Lowe, G.S. 2009. "People and Performance". *Discussion Paper*, Building Trades of Alberta.
- Matthews, T. 2013. "Blueprint for Modernizing Built Environment Law: A View from the Budget". *Albany Government Law Review*, Volume 6, Issue 1, pp.155-157.
- Mehany, M.S.H.M., G. Bashettiyavar, B. Esmaeili, and G. Gad. 2018. "Claims and Project Performance between Traditional and Alternative Project Delivery Methods". *J. Leg. Aff. Dispute Resolut. Eng. Constr.*
- Morris, P.W. 2002. "Science, Objective Knowledge, and the Theory of Project Management." *Proceedings of ICE: Civil Engineering*, 150, pp. 82–90 Paper 1264.
- Morris, P. W. 2013. "Reconstructing project management". *Chichester, England: Wiley-Blackwell*.
- Okhuysen, G.A. and B.A. Bechky. 2009. "Making group process work: Harnessing collective intuition, task conflict, and pacing." Pages 309-326 in *Blackwell Handbook of Principles of Organizational Behavior*, E. A. Locke, ed. *Wiley-Blackwell Publishing*.
- Pink, S., D.E. Tutt, A.R.J. Dainty, and A.G. Gibb. 2010. "Ethnographic Methodologies for Construction Research: Knowing, Practice and Interventions". *Building Research and Information*, Vol.38, No.6, pp. 647-659.
- Pryke, S. 2009. "Construction Supply Chain Management (Innovation in the Built Environment)". *West Sussex. Chichester, UK: Wiley-Blackwell*.
- Pryke, S. 2020. "Successful Construction Supply Chain Management: Concepts and Case Studies". *Hoboken : Wiley Blackwell*.
- Rooke, J. and D. Seymour. 2002. "Ethnography in the construction industry: Competing bodies of knowledge in civil engineering", R. Fellows and D. Seymour (eds.) *Perspectives on Culture in Construction, CIB, Rotterdam*.
- Söderlund, J. 2004. "On the broadening scope of the research on projects: a review and a model for analysis". *International Journal of Project Management* 22: 655–667.
- The February 18, 2009 Report of the New York City Bar – Construction Law Committee, Comments to the New York State Asset Maximization Commission: Modernizing Public Construction Procurement for New York’s Public Owners – If not Now, When?
- Uher, T. E., and M. Loosemore. 2004. "Essentials of Construction Management". *UNSW Press, Sydney, Australia, 408*.