Construction Industry Institute

ALIGNMENT

During Pre-Project Planning

IR 113-3

A Key to Project Success

ALIGNMENT DURING PRE-PROJECT PLANNING

A Key to Project Success

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Contents

Executive Summary

Alignment is a relatively new concept in the capital investment process. As owner organizational structures continue to flatten, more projects are pursued using multi-disciplined teams and alliance partners. Alignment is needed to improve projects in this environment. CII research has shown a positive correlation between increased efforts to gain alignment in pre-project planning and project success. CII research also has identified issues that have the greatest effect on team alignment.

Executive-level project sponsors must do more than ensure that appropriate tools, technologies, and resources are being applied early in the project life cycle. They must realize the need for and benefits of alignment. They then must take a leadership role in nurturing and facilitating alignment.

This CII implementation resource explains the process of gaining and maintaining alignment. A diagnostic tool, the Alignment Thermometer, is included. It is an easy-to-use tool that measures project team alignment, indicates areas needing focus, and helps track team progress toward alignment.

As the pace of change in industry continues to accelerate, alignment will become increasingly critical. The concept of alignment is simple, yet must be managed as a key process. Talent and energy alone are not enough to ensure a successful project. Talent and energy must be focused on project objectives that support the business needs of the organization.

Chapter 1
Introduction and How to Use

1.1. Definition of Alignment*

As with any concept, a clear and specific definition is required so that the discussion can begin from a common starting point. *Webster's Dictionary* defines alignment as: "The condition of being in satisfactory adjustment or having the parts in proper relative position." The following definition of alignment provides a framework for the information presented in this implementation resource. In the context of capital projects, alignment may be defined more specifically as:

> *The condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives.*

These project objectives must meet business or mission requirements and the overall organization's strategy. They are formed in the early stages of project development and have a critical impact on the success of the project delivery process.

Without individual commitment, there is no alignment.

Whenever a project planning team is formed with people from different functional groups, each team member brings the values and goals of their specific functional group. Their values and goals often conflict with the values and goals of those from other functional groups and also may conflict with the organization's overall project goals. Aligning the team involves developing clearly understood objectives for all team members and gaining the commitment to work toward those goals. At the end of the alignment process, each member is focused on the same set of project objectives. This concept is graphically illustrated in Figure 1.1 by the arrows that are bending to "align" in the same direction. Note that

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**Note to readers: Those familiar with alignment as described in CII Research Summary 113-1 may wish to go directly to Chapter 3 for a discussion of the Alignment Thermometer.*

Alignment: The condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives.

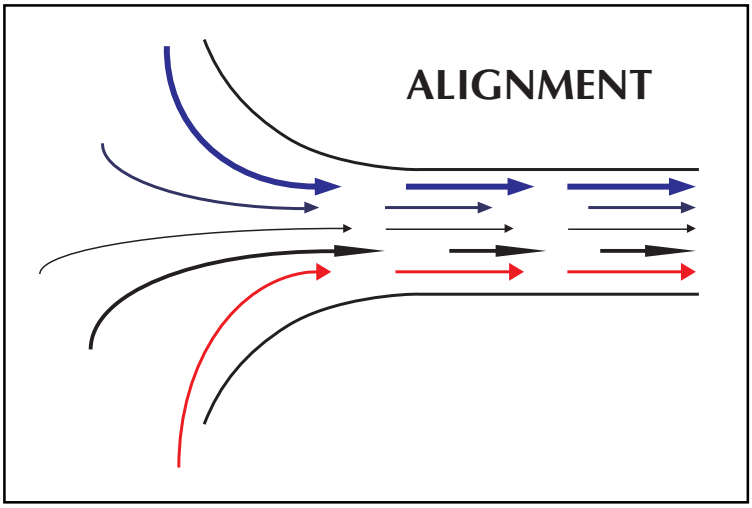


Figure 1.1. Graphical Representation of Alignment

each individual arrow illustrated is still unique, representing different experiences and specialties. Alignment does not imply eliminating differences, but focuses the different team members on the same objective(s).

An appropriate analogy of a misaligned project is that of driving a car with the front end out of alignment. Three unfortunate consequences may occur: the ride is uncomfortable for the passengers; the tires wear out quickly; and the car may run off the road. The same may be said of a project team out of alignment. None of the outcomes of the project is entirely satisfactory, and the participants are in a constant struggle to maintain their own individual viewpoints.

In the project environment, alignment exists in three dimensions. These three dimensions are illustrated in Figure 1.2. The first dimension, vertical, involves top-to-bottom alignment within an organization. The company executives, business managers, project managers, and functional specialists within each stakeholder organization must be well-aligned. The second, horizontal, involves the cross-organizational alignment between functional groups within organizations. Different organizations with a stake in the project must also be well-aligned. For example, the business,

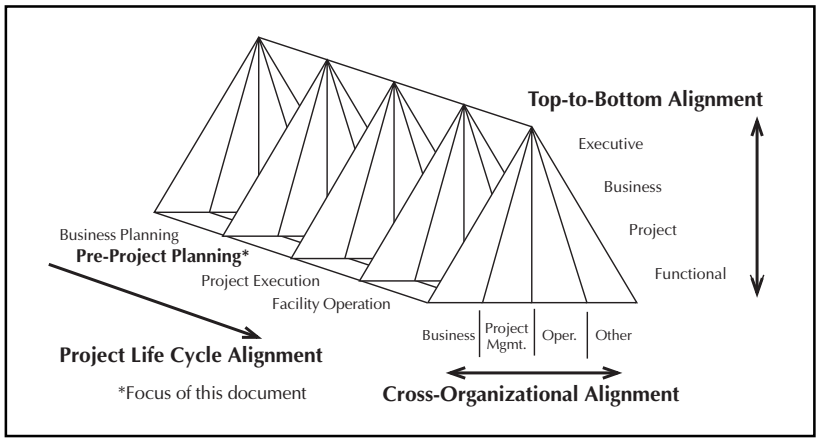


Figure 1.2. 3-D Schematic of Organizational Alignment for a Project

project management, and operations groups, as well as other stakeholder groups such as outside contractors, must be well-aligned with the project objectives and priorities. The third dimension, longitudinal, involves alignment of objectives throughout the project life cycle.

Projects are typically dynamic, especially in the early planning phases. The critical issues and decisions change as a project goes through its life cycle. The figure below (Figure 1.3) graphically illustrates this concept. The curve labeled "influence" in the figure reflects a team's ability to affect

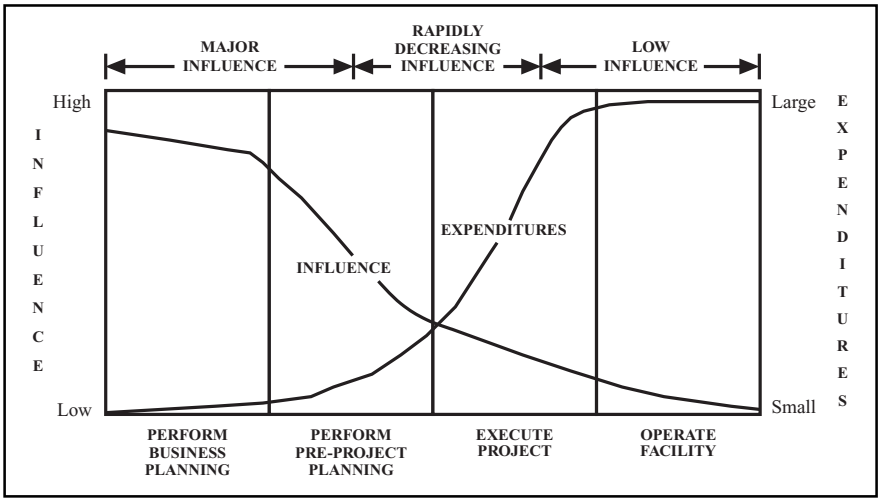


Figure 1.3. The Dynamics of Influence and Expenditures

the outcome of a project during the project life cycle. As the diagram indicates, it is much easier to influence a project's outcome during the early project stages, when expenditures are relatively minimal, than it is to affect the outcome during the later stages of the project (project execution and operation of the facility). Each successive stage must be well-aligned with the previous stage. Failure to address any one of the dimensions shown in Figure 1.3 can cause a serious breakdown.

This implementation resource focuses on alignment during pre-project planning.

This document is primarily focused on alignment during pre-project planning. Alignment, however, is important in all project phases.

CII defines pre-project planning as *the process of developing sufficient strategic information with which owners can address risk and decide to commit resources to maximize the chance for a successful project.* Pre-project planning has many aliases such as front-end loading, front-end planning, feasibility analysis, programming, conceptual planning, and others. Pre-project planning, in effect, bridges the gap between business planning and detailed design. Previous CII research has shown that good pre-project planning improves project performance.

Issues that effect alignment during pre-project planning can be divided into five categories. These categories identify areas that project teams can address to improve alignment. The five categories of alignment issues include:

1. **Culture:** The attitudes, values, behavior, and environment of the company and the pre-project planning team.
2. **Execution Processes:** Project systems, processes, and procedures.
3. **Information:** The data elements, including business objectives, used to define the scope of the project.

4. **Project Planning Tools:** Tools such as software programs, checklists, and aide-memoirs that are typically used to develop and manage projects.
5. **Barriers:** The obstacles to creating and maintaining alignment.

1.2. Why Teams Need Alignment

Managing capital projects is challenging. Many practitioners feel that the most challenging aspects of project management are more behavioral than quantitative. Proper alignment of the project team will positively affect behaviors and result in a team that is focused on a common set of project objectives. Alignment will help the team resolve conflicts and overcome barriers to the benefit of all. The following discussion outlines some of the problems that teams may face that must be dealt with through alignment.

Specialists tend to take off and "do their own thing."

Projects are becoming increasingly complex and competitive organizations must quickly adopt appropriate innovations or risk losing competitive advantages. No one can possibly keep up with all the advances in business, science, and engineering related to their industry. Different individuals within a company do try to stay current in specific fields. Wasted effort may result when different technology approaches are pursued for the same project.

Alignment during the pre-project planning phase helps to ensure that the individual specialties are represented and are given the opportunity to contribute their knowledge in forming the project objectives. Without proper alignment, critical knowledge may be ignored or not discovered until it is too late.

Mixed stakeholders cause project complexity.

The business environment under which projects are planned and executed is increasingly more integrated. Projects are developed using a wide range of relationships including joint ventures, partnerships with government, formal contracts, and associations of companies within the same industry. Mixed in with the formal relationships are the concerns of informal stakeholders such as government regulatory agencies and the public. As a result, a relatively simple project may have a large number of stakeholders. Obviously those different stakeholders will frequently have conflicting objectives for the same project.

Proper alignment during project planning involves the communication, negotiation, and compromise required to gain stakeholder commitment to overall project objectives. Remember, stakeholders are not just people involved directly in the project, but are individuals who can seriously hamper the project. Their needs must be considered as well.

Decentralized decision-makers increase the need for coordination. Multi-organizational, joint ventures with outside contractors or joint project sponsors only add to the problem of alignment.

Current trends in business structure are toward flatter organizations with more shared decision-making authority. In addition to less hierarchical structures, business conditions have resulted in companies outsourcing functions deemed not critical to the mission of the organization. These two trends produce project teams with decentralized decision-making authority.

On a complex project, different groups may be located in distant cities or even in different countries. These groups may be working for the owner, a contractor, or a consulting organization. In this dynamic environment,

many different team members are making critical project decisions on a daily basis. Without proper alignment, the many different decision makers are likely to make decisions that are in direct conflict with one another, as illustrated in Figure 1.4. Decisions that are in direct conflict tend to produce no progress in any direction. When the various decision makers on a project team are all aligned in the same direction, however, the resulting forces join to produce greater progress.

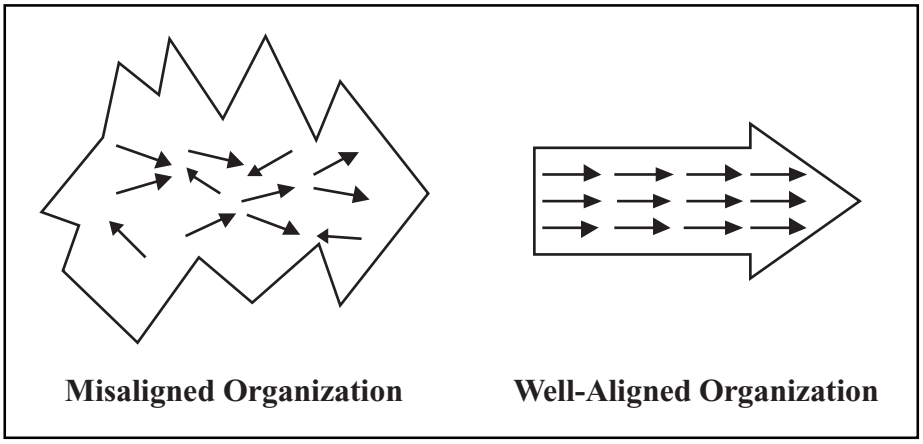


Figure 1.4. Illustration of Misaligned and Well-Aligned Organizations

The more critical project cycle time becomes, the more important alignment is.

Reducing project cycle time is a recurring theme in capital facility projects. Completion dates are often driven by external conditions beyond the control of the project team. Globalization of markets and increasing demand by customers have reduced market windows for products and services in virtually every industry. At the same time, available funds for capital projects continue to be limited. This situation requires more efficient use of capital in the selection, planning, and execution of capital facility projects.

Reason for project problem: "The pre-project planning phase took longer because of team alignment problems."

—An Owner's Project Manager

Limits on available time and money is nothing new to the industry, but the changing environment has put additional pressure on project schedules and budgets. A well-aligned team is focused on the correct project based on business objectives or mission, and is less likely to wander off course. This improved efficiency helps keep projects on the required time table.

Aligned teams work from the "same sheet of music."

Team alignment is critical to overcoming the obstacles commonly faced by project teams. Project complexity, diverse stakeholder groups with conflicting priorities, flat organizations with shared decision-making responsibility, and limits on both time and money are all addressed with proper team alignment during the pre-project planning phase. The question remains: How does a project team best develop and maintain alignment during the pre-project planning of a complex capital facility project?

1.3. Critical Alignment Issues

The 10 critical issues that have the greatest effect on team alignment during pre-project planning are:

1. Stakeholders are appropriately represented on the project team.
2. Project leadership is defined, effective, and accountable.
3. The priority between cost, schedule, and required project features is clear.
4. Communication within the team and with stakeholders is open and effective.
5. Team meetings are timely and productive.
6. The team culture fosters trust, honesty, and shared values.

7. The pre-project planning process includes sufficient funding, schedule, and scope to meet objectives.
8. The reward and recognition system promotes meeting project objectives.
9. Teamwork and team building programs are effective.
10. Planning tools (e.g., checklists, simulations, and work flow diagrams) are effectively used.

When project teams focus on these 10 issues during pre-project planning, alignment improves and the likelihood of a successful project are greatly increased. The 10 critical alignment issues are categorized in Table 1.1.

Table 1.1. Ten Alignment Issues Categorized

Category*	**Issue (rank)**
Culture	
	Effective Project Leadership (2) Open and Effective Communication (4) Trust, Honesty, and Shared Values (6)
Execution Processes	
	Appropriate Stakeholders Represented (1) Structured and Resourced Pre-Project Planning Process (7) Suitable Reward and Recognition Systems (8)
Information	
	Priority Between Costs, Schedule, and Features (3)
Tools	
	Timely and Productive Team Meetings (5) Teamwork and Team Building Programs (9) Use of Planning Tools (10)

*Barriers to alignment are typically the antithesis of these 10 issues and therefore are not included in this table.

1.4. How to Use This Book

The model given in Figure 1.5 will be used as a guide to introduce each topic of Chapter 2 and can aid in determining one's position in the process. Within each section, the highlighted icon represents the center of discussion.

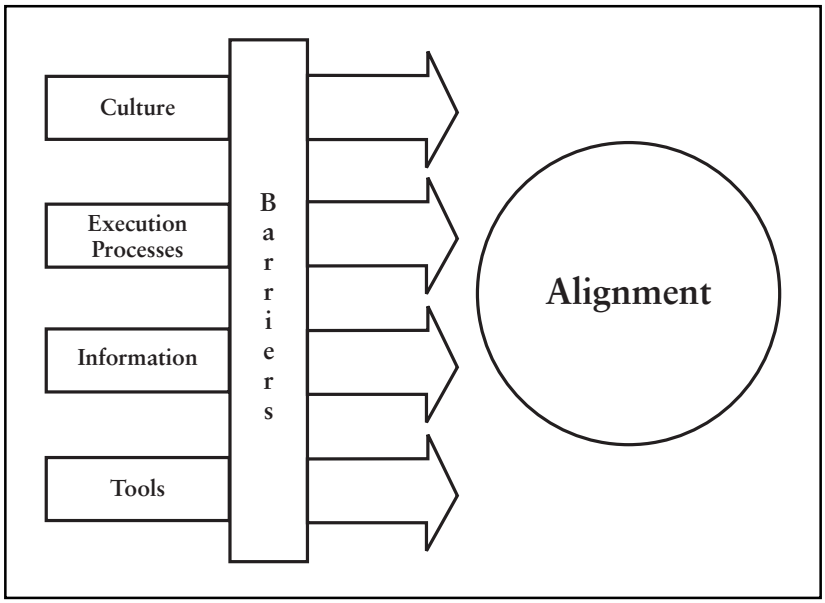


Figure 1.5. Alignment Process Icon

In addition, quotations are given to underscore the importance and applicability of the material. These quotations and other data introduced in the discussion were gathered during the detailed research investigation that forms basis for this document.

Chapter 3 introduces the Alignment Thermometer and includes an example of how to use it. It also includes its uses in gaining and maintaining alignment. Chapter 4 describes best practices and the integration of information developed by CII that can be used to improve the pre-project planning process on capital projects. Chapter 4 also presents a path forward for users of this implementation resource.

Chapter 2
Process of Gaining and Maintaining Alignment

This chapter discusses the 10 critical alignment issues in more detail, addresses how each affects alignment, and recommends practices to improve their performance.

"When we have gone back and done a postmortem on many of our projects that did not turn out well, several things seem to always come up and poor alignment is one of those things."

—A Business Unit Manager

The process for gaining and maintaining alignment is illustrated in Figure 2.1. Alignment itself is presented as a circle because it is a "state of being" that requires action throughout the project life cycle.

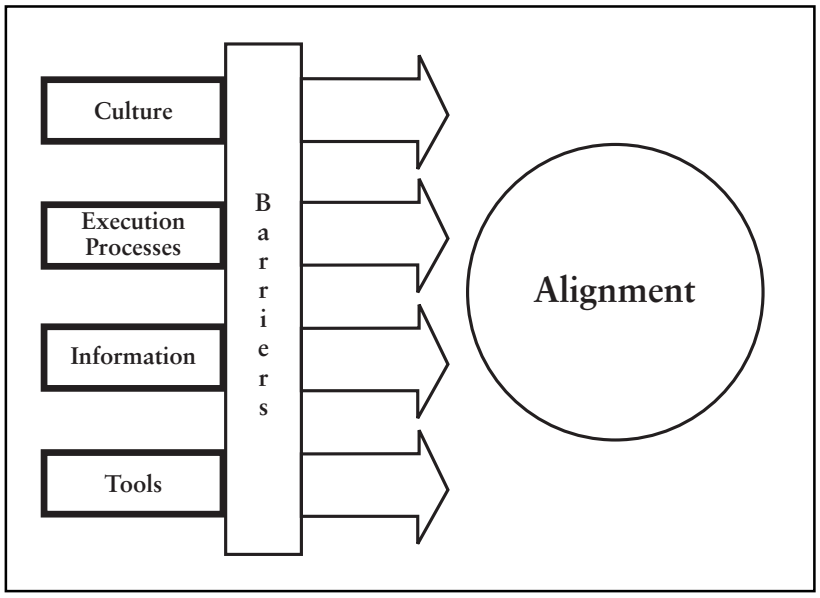


Figure 2.1. Process for Gaining and Maintaining Alignment

Each of the five categories shown in the diagram represents a different area that must be addressed to ensure alignment is gained and maintained. The project team and sponsors must:

- Establish the proper culture to support the project environment.
- Utilize standardized work processes during execution.
- Define and communicate project-related information effectively.
- Use appropriate project planning tools to enhance team performance.
- Be aware of barriers that can adversely affect the process and take steps to overcome them.

The following five subsections will address each of these categories in depth. The subsection will begin with a brief definition of the category (i.e., culture or information) followed by a discussion of the key issues making up that category. Each issue will be further described in terms of how it affects alignment, and recommended practices will be given to help the user foster alignment. These discussions will be augmented with an alignment process icon and selected quotes to clarify the intent of the issue. Each subsection will end with a discussion of other issues having an affect on the alignment category.

To help the reader, a glossary of related terms is contained in Appendix B. A list of related references for each subsection is presented in Appendix D. Related pre-project planning references are given in Appendix E.

2.1. Establish Culture

"Trust is the driver for everything. Within the company and between them as well as with the contractor. We are actively trying to change our culture."

— A Business Unit Manager

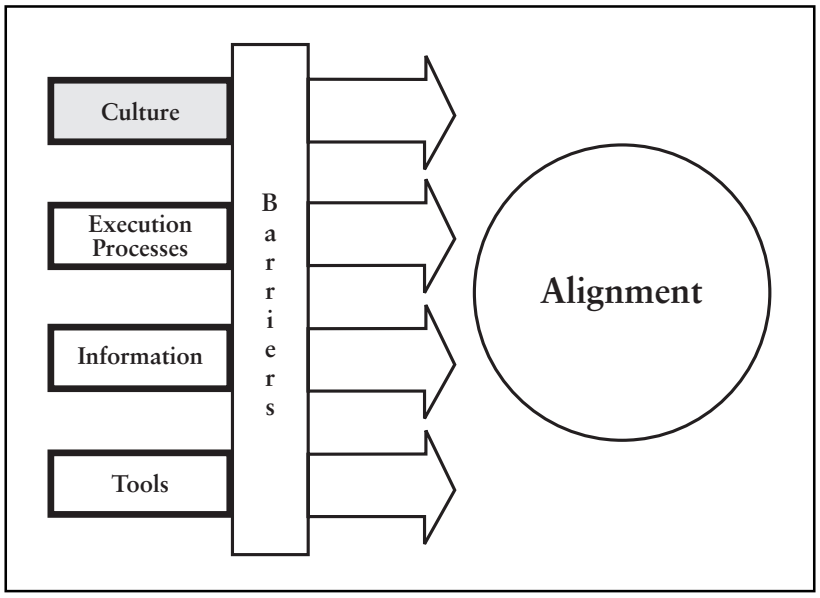
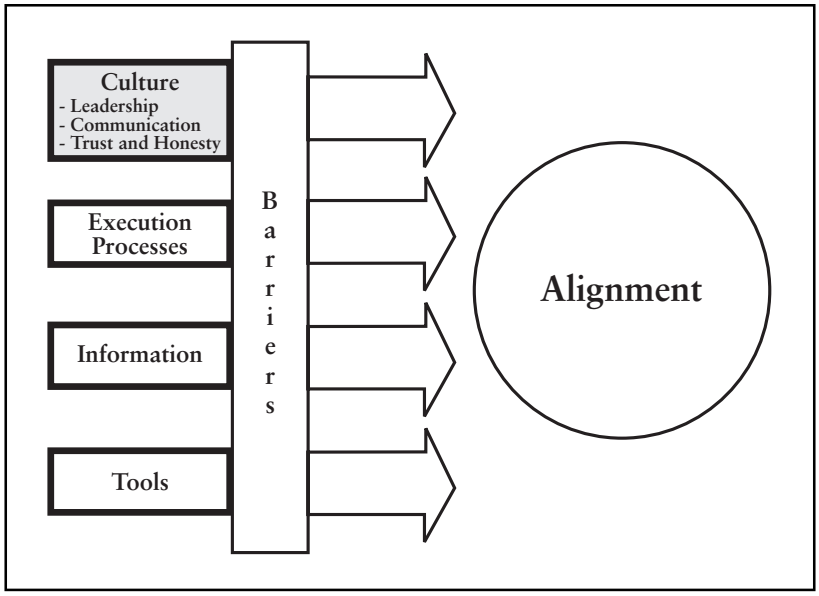


Figure 2.1. Process for Gaining and Maintaining Alignment

Definition



Culture is the attitudes, values, behavior, and environment of the organization that affect the relationship of individuals involved in day-to-day business operations.

Culture is a pattern of shared basic assumptions that a group teaches to new members as the correct way to perceive, think, feel, and behave. The topic of organizational culture has been extensively covered in a number of business and management publications. This document, however, is focused on identifying culture issues that have a significant effect on team alignment during the pre-project planning phase of a capital project. Three specific cultural issues deserve particular attention.

Key Issues

The three issues cited in this section are interrelated in many aspects. Effective leadership is essential to developing efficient communication. Clear and effective communication requires trust and honesty. Leadership is a driving force behind developing an environment of trust and honesty

Reason for project problem: ".....(needed a) better understanding of authority. Better owner team leadership."

— A Contractor Representative

on the team. This section discusses these three issues separately, however, any effort to affect cultural change needs to consider the interrelationship between these three issues.

> *Key Culture Issue #1: Project leadership is defined, effective, and accountable.*

Project sponsors must be committed to developing and supporting effective team leadership because it will positively influence team members' commitment to project objectives. The project leadership must be knowledgeable of the pre-project planning process and technically proficient. The leaders also should have defined responsibilities, be accountable for results, and remain focused.

The leader's primary objective should be to create an environment for the team to succeed.

How Defined, Effective, and Accountable Leadership Affects Alignment

CII defines leadership as "the process of providing a clear, unambiguous vision for a project, an unwavering commitment, full support and total involvement in the effort...doing the right things." During pre-project planning, the project leader functions as the focal point for all the various project stakeholders interested in the project.

The leader's primary role is that of communicator. The project leader is responsible for insuring that the project objectives are clearly defined, communicated, and understood by all the team members. In addition, a good leader will create and communicate the vision of a successful project. Effective leadership during this phase of the project must consider all the desires, opinions, and requirements of the many project stakeholders and form a unifying vision of the overall project goals and objectives.

Once this vision is formed, the leader is then responsible for selling that vision to the same people who contributed toward its development. Effective leaders are able to get the team excited about the vision, gain

commitment to reach that vision, and are diligent in their actions toward that vision. This process contributes to alignment by forming a common set of project objectives and by developing commitment to those objectives. As previously stated, commitment is critical to alignment.

Defined, Effective and Accountable Leadership: Recommended Practices

One concrete recommendation for organizations entering the pre-project planning process is to identify a leader skilled in pre-project planning and to support this leader when dealing with the various stakeholder functional groups. Pre-project planning should be treated as a separate "project" requiring a clearly identified leader complete with both responsibility for the results of the planning process and the authority to make it happen. Too many organizations do not place enough emphasis during this stage and the process is simply passed from functional group to functional group.

Identify and select the leader early in the project, and then support the leader.

Organizations must place emphasis on training key individuals in the pre-project planning process. All too often, a project team sets out to define and establish a plan for a new project, but it has no grasp of the pre-project planning process. Good people will flounder and develop a plan that is poorly defined, out of alignment, and difficult to execute.

During this phase, the leader's primary responsibility should be to:

1. Identify and communicate the business objectives.
2. Help the team to establish project goals in alignment with business objectives.
3. Produce a well defined scope of work.

The project leader serves as a gatherer of information, a negotiator, and facilitator of the pre-project planning process. This requires that the leader be technically competent in the areas covered by the project, and

Effective communication is the responsibility of the project leadership.

possess excellent listening and communicating skills. A primary function of the leader during this phase is to decide on competing alternatives. Tasks may include:

1. Seeking requirements (i.e., the needs and expectations) of stakeholders (empathic listening).
2. Seeking technical advice (gathering information).
3. Analyzing information for technical merit (information analysis).
4. Selling the selected alternative(s) to stakeholders (negotiation).

The leader should be a good listener.

Finally, the project leader sometimes does not possess a great deal of organizational power because the team members are assigned only part-time and individually supervised by other managers. The leader must have the ability to resolve conflicting input quickly, so that differences of opinion do not adversely impact team performance.

Reason for project problem: "Need open communication and higher levels of trust."

—An Owner's Project Manager

Key Culture Issue #2: Communication within the team and with stakeholders is open and effective.

Establishing open and effective communication between all members of the pre-project planning team is essential. This involves breaking down structural barriers to communication and utilizing advanced communications technologies to facilitate communication.

How Open and Effective Communication Affects Alignment

Managing communication during pre-project planning is difficult.

Communication includes all the activities and behaviors by which information or ideas are transferred to others. Communication during the pre-project planning phase is difficult for reasons such as the iterative nature of the pre-project planning process, the large amount of stakeholder involvement, the relative "non-dimensional" nature of the work, and so

on. The early planning phase of a project is characterized by many decisions that will significantly affect the entire project. Examples include site selection, technology alternatives, execution approaches, and trade-offs between cost and schedule constraints. Communication is critical because on most projects this is a period of dramatically changing scope, limited amounts of time, and resources available.

Many project problems can be attributed to poor communication. A project team consisting of individuals with poor communication skills will be less than successful. Creating an environment for honest, open communication is the challenge for the leader and every team member. If communication cannot be established, alignment is impossible and the chances of a successful project are diminished.

Communication must be two-way.

Good communication keeps people informed of these decisions. This cycle of information sharing and feedback not only contributes to alignment by informing team members of the project objectives and important decisions, but also develops commitment by providing opportunities for feedback and participation in those decisions.

Open and Effective Communication: Recommended Practices

In order for an exchange of information to be defined as true communication, it must be two-way. All channels and forms of communication must be two-way so that the ideas and requirements of the project stakeholders are actually received and evaluated. Use of communication graphics for the project to illustrate lines of communication between different stakeholder groups may be helpful. These diagrams can illustrate complexities and the hierarchy of information flow. Modern technologies such as voice mail, facsimile, e-mail, video conferencing, group-ware, and computerized information management systems are all tools available to improve the two-way flow of information and ideas.

Use tools and technology to enhance communication.

Communication should be open and timely. Team meetings, newsletters, web sites, storyboards, and other methods can be used to keep the team informed of progress and problems. Team members and key stakeholders should constantly be in contact.

CII has published a user tool, Compass (IR 105-2), for evaluating the effectiveness of team communication. It is designed to identify critical issues in communication and to focus on areas needing improvement. Evaluation tools such as this are helpful in understanding an effective communication system and what can be done to improve it.

Key Culture Issue #3: The team culture fosters trust, honesty, and shared values.

"We need to improve the level of trust — focus on the problems. History of past project failures are related to relationships between groups within the company."

— A Business Manager

Trust and honesty are major aspects of the culture of an organization. Cultural change is difficult, however, and requires a great deal of time and commitment. Team leadership should develop a *team* culture of trust and honesty so that members can maintain open, synergistic relationships. This culture is influenced by the organizational cultures that interact with it, however, the team must ensure that trust and honesty are fostered.

Treat others as you would like to be treated.

CII defines trust as "the confidence and reliance one party has in the professional competence and integrity of the other party to successfully execute a project in the spirit of open communication and fairness." CII research has shown a direct relationship between trust among project participants during the design and construction of the facility and the cost of the constructed facility. This relationship is magnified during pre-project planning.

How Fostering Trust and Honesty Affects Alignment

Project teams are made up of different functional groups with seemingly conflicting priorities for the same project. These groups often have no history of working together and do not understand everyone's role in the project. This condition fosters an environment of distrust and conflict. As project decisions are negotiated, these groups often view one another as adversaries and approach the decision as a "win–lose" proposition. Without trust and honesty on the project team, each group will not be as cooperative in understanding the other side's needs. As a result, decisions may be based on incomplete information which can result in a less than optimal outcome.

In an environment of trust and honesty, project decisions are based on the best available information. The entire team is more likely to be committed to those decisions because they feel comfortable that their interests were considered and that they were treated fairly.

Without trust and honesty, mistrust and no cooperation become evident.

Fostering Trust and Honesty: Recommended Practices

Teams often develop characteristics that reflect the culture of the organization(s) in which the team operates. The project leadership has a tremendous amount of influence on the team culture, and during the pre-project planning stage it should focus on promoting trust and honesty.

The leadership sets the example.

"Kick-off" meetings are important in establishing a positive tone for the team. Including project sponsors in the kickoff meeting often sets the proper tone for the project. Such meetings should be used to clearly communicate the need for trust and honesty on the team. Project leaders should provide the team with as much accurate information as possible regarding the business reasons for the project, economic basis of the project, priorities, and required market windows. Leaders should be honest and straightforward because project team members usually know

Trust is earned, but can be quickly lost through dishonesty and unfair behavior.

Reason for project problem:

"...project involved a new company we purchased. The culture clash between two companies when one is joined with the other is a problem."

— A Business Manager

when the leadership is not giving them all the relevant information. If the leadership is unwilling to confide in the team, how can it expect the team to develop a culture of trust and honesty? If budget and schedule estimates are not believable, how can trust be fostered?

Throughout the entire pre-project planning process, the project team should approach conflicts and important decisions by honestly portraying the situation and not hiding relevant information. Many books on negotiation techniques discuss the "win–win" approach to resolving conflicts. The project team should also address all major project decisions as a collaborative negotiation that seeks to find a "win–win" solution.

Other Related Culture Issues

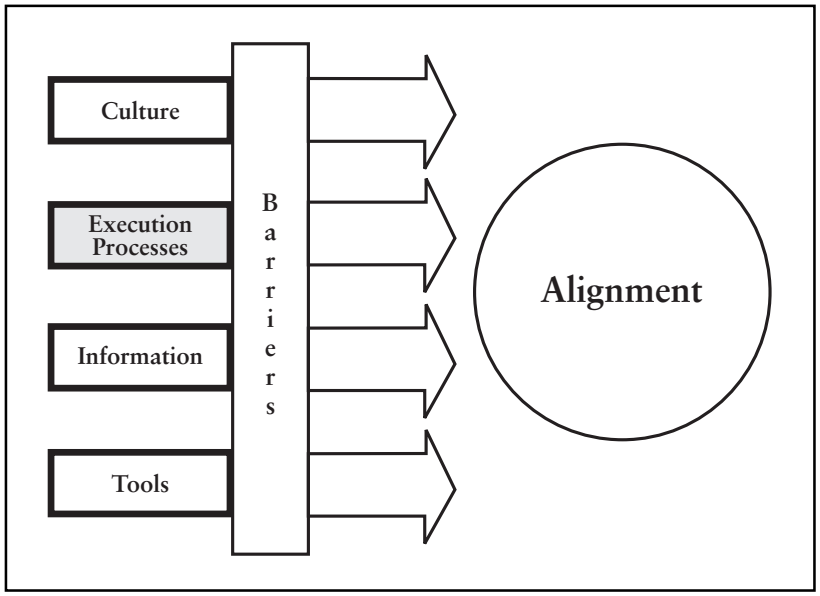
In addition to the three key issues cited in this section, the project team may also wish to evaluate their performance in these two areas:

- *Clear corporate mission and vision.* A clear corporate mission and vision can help the team direct its efforts. Without such guidance, team members may have difficulty understanding their roles and resort to parochialism.
- *Uniform and clear approach to risk*. A clear approach to risk communicated by the organization or sponsor can help the team pursue a shared approach to the development of scope and foster the team culture.

2.2. Utilize Execution Processes

Definition

Execution Processes are project systems, processes, and procedures that enhance alignment of the project team during pre-project planning.



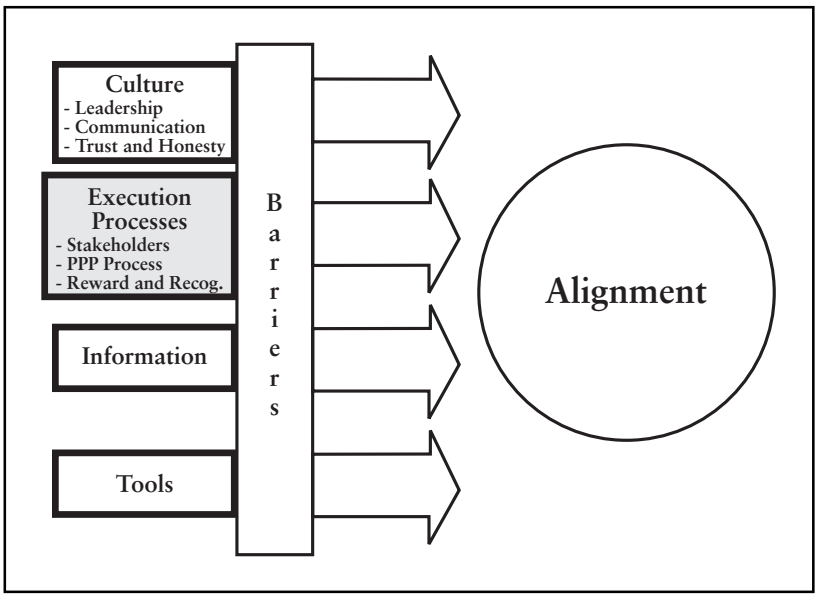
Reason for project problem: "...project involved a new company we purchased. The culture clash between two companies when one is joined with the other is a problem."

— A Business Manager

Execution processes encompass the formalized systems adopted by the project organization. In some organizations these systems are uniformly applied from project to project, while others begin every project with no firmly established procedures.

Three specific execution processes are significant in achieving and maintaining team alignment. These three processes are issues that need to be addressed by the owner organization beginning at project inception and should be incorporated into a standard approach to implementing capital projects. In this section, each of the three issues are discussed in detail.

Key Issues



Reason for project problem: "...needed more involvement by operations group."

— An Owner's Project Manager

Key Execution Process Issue #1: Stakeholders are appropriately represented on the project team.

The pre-project planning team should include representatives from all significant project stakeholders. Stakeholders are defined as those directly or indirectly associated with the project, those affected by the project and its activities, and those interested in the outcome of the project. The team needs to include representatives from operations, construction, business management, and other stakeholder groups as well as project management and engineering. Those projects involving joint ventures, complex internal business organizations, or outside consultants should be especially cognizant of this issue.

How Appropriately Represented Stakeholders Affect Alignment

Project teams need access to project sponsors, either by empowered representatives on the pre-project planning team, or by meeting with

project sponsors (key stakeholders). The team must be supported by timely decisions and input from the sponsors and must have general corporate support where needed. These needs occur early in the pre-project planning process and have a critical impact on the effort.

Access to project sponsors and their timely input is critical.

Proper stakeholder input provides the team with diverse expertise that covers all of the technical and management areas of the project. This diverse expertise brings with it better information and better solutions to the problems faced by the team. These, in turn, help to improve alignment by providing a sound foundation.

Stakeholder input gives the team better information and the ability to make better solutions to problems.

Some stakeholder groups that are typically involved in the project during the later project stages such as maintenance and operations have a chance to provide input into the plan when the cost of change is still relatively low. This input from groups normally not involved in the pre-project planning will help in maintaining alignment by reducing the costly rework and conflict from changes identified after authorization.

Early, appropriate maintenance and operation information leads to fewer changes later.

Individuals from these and other stakeholder groups also feel "connected" to the planning process and are more likely to be committed to the project plan and support the project concept during the execution and start-up phases. Simple human nature shows that people are more likely to be committed to a plan to which they were able to contribute. Everyone wants to be heard, but they are more likely to disagree and find fault with a plan when they are excluded from the process.

Stakeholder involvement leads to commitment.

Other appropriate input may come from construction contractors, design consultants, and specialist consultants. Having outside contractors involved in the pre-project planning process will improve alignment by providing them with a better understanding of what the owner organization expects from the project. Otherwise, they are limited to filtered information provided by the project team after the pre-project planning process is complete.

Contractor involvement in pre-project planning improves project execution.

Appropriate Stakeholder Representation: Recommended Practices

The project manager is responsible for stakeholder representation.

Proper stakeholder representation on the pre-project planning team is not automatic. Leadership should evaluate the project and identify significant project stakeholders. If all these stakeholders were included, the team would be too large to function. It is recommended, however, to select a core team (those who have the most interest in project success) and then identify additional stakeholders who can be consulted or enlisted on an "as required" basis.

A common mistake is to assign people to the core team based on availability rather than skill, knowledge, and experience.

The project manager, with sponsor support, should appoint representatives from each of the project stakeholder groups. These individuals should be at the right level within the organization. It is especially important to get representation from business, operations, and technology in addition to project management. A difficulty is to keep the team small enough to be productive, but inclusive enough to insure buy-in from as many stakeholders as possible. Examples of stakeholder groups to consider are shown in Table 2.1:

Table 2.1. Example Stakeholder Groups

BUSINESS: • Business and Market Evaluation • Financial Analyst • Human Resources • Labor Relations • Legal Advisor • Project Sponsor • Public Relations	**PROJECT MANAGEMENT:** • Cost and Schedule • Environment • Estimating • General Engineering • Project Controls • Process Engineering • Project Manager • Quality/Inspection
OPERATIONS: • Facility Operations • Maintenance • Procurement • Research and Development • Safety • Warehousing	**OTHERS:** • Construction • General Public • Information Management • Specialist Engineering

If certain stakeholder groups cannot be represented, the team should at least try to consider their view-points in its work.

Factors that affect team composition include the size of the project, resources available, degree of participation desired, the degree of pre-project planning detail desired, and project specific objectives. Select the correct people based on the skills and experience required and not on the fact that a person is available to fill the slot regardless of their experience or skills. Long-term continuity is an issue to consider. When selecting team members, it is desirable to provide for continuity of key pre-project planning team members throughout the life of the project. This continuity helps assure the original objectives and project intent are met by providing people with full project background knowledge of how things were determined, why decisions were made, who did particular tasks, where information is stored, and so forth.

Continuity of key personnel throughout the life cycle will help maintain alignment.

Key Execution Process Issue #2: The pre-project planning process includes sufficient funding, schedule, and scope to meet objectives.

The pre-project planning phase of a project should follow a clearly structured process with definite starting and ending steps. This process should be well-documented and tailored to the specific needs of the organization and the industry segment in which it operates. The structured pre-project planning process also should be supported by sufficient budget and schedule to meet objectives.

Reason for project problem: "Insufficient time was allocated to develop sound (project) premise and definition...we had a time crunch due to market window of opportunity."

— An Owner's Project Manager

How Following the Pre-Project Planning Process Affects Alignment

Following a structured, well-documented pre-project planning process will help to eliminate the doubts about how to get started and also will help to reduce delays. This process functions as a checklist that shows important decisions and milestones for the project plan. If the team starts with a clear process, a large part of job uncertainty is defined and the team then will have more confidence and enthusiasm for the project. This will in turn reduce team confusion and conflict and improve alignment.

A structured pre-project planning process helps the team understand the extent of resources needed for the effort.

A structured process helps with team communications by clearly indicating where the team is in the process and where they are going. A pre-project planning process map functions as a communication tool to let everyone know the current status and what is yet to be done.

Insufficient schedule and budget for pre-project planning can cause conflict within the team and reduce alignment. A good, structured process allows the team to focus on critical issues in the event of limited resources.

Consistency of effort is key.

Finally, a structured process helps to ensure that pre-project planning is fully completed prior to formal authorization for expenditure. Without a plan, the team cannot be sure that they are ready to submit the plan for authorization. This may produce confusion and conflict within the team.

Pre-Project Planning Process: Recommended Practices

Pre-Project Planning Handbook *outlines the process required for good pre-project planning.*

As with ensuring stakeholder representation, the owner organization is responsible for establishing and following a pre-project planning process. CII has published the *Pre-Project Planning Handbook*, which provides a generic process designed for owners to implement in their organizations. The reader is referred to that publication for a comprehensive discussion of establishing a pre-project planning process. Each company should tailor this process to its specific needs and projects.

In terms of alignment, a separate budget and schedule for pre-project planning need to be established. Doing so provides a way to measure and control the process and gives the team an understanding of the relative amount of effort required from its perspective.

Key Execution Process Issue #3: The reward and recognition systems promote meeting project objectives.

Cause of project problem: "(Needed a) reward and recognition system that supports project objectives. Our corporation has taken steps to modify the reward system."

—An Owner's Project Manager

Management should develop and implement a reward and recognition system for team members, including outside contractors, that supports overall project objectives. Conflicting reward structures for different team members may cause decisions regarding project planning and objectives to be in direct opposition.

How a Reward and Recognition System Affects Alignment

Establishing a clear reward and recognition system that supports the overall project objectives forces the project sponsors and leaders to identify those objectives. Implementing an effective system that can be applied to workers from different functional groups and companies with varying degrees of project involvement can be a formidable challenge.

Reward and recognition affect human nature.

Human nature dictates that individual behavior is affected by the reward and recognition that the individual receives. A properly designed reward system will help align the behaviors of individual team members. A related theory is that of equity. Equity theory holds that employee satisfaction and motivation depend on how fairly the employee believes that he or she is treated in comparison to peers. If members from different functional groups are rewarded based on different measurements, their behavior and motivation will also differ. This difference in behavior may negatively affect alignment, and subsequently the work that is performed on the project.

Reward and Recognition Systems: Recommended Practices

A reward and recognition system is the responsibility of the project sponsor.

Designing a reward and recognition system is the responsibility of the project sponsor. It is critical to realize that reward and recognition is much more than a monetary system to pay employees for better performance. It is a comprehensive attitude by everyone on the team that when something goes well, the individuals responsible should be congratulated and recognized for their success. Conversely, when things do not go so well, the situation is discussed to determine how to improve it the next time. The recognition for success ranges from verbal acknowledgment to small perks (e.g., dinner or sports tickets) to significant financial bonuses. The positive attitude that comes from a successful reward and recognition program results in improved communication and participation across the team.

The following outlines a brief process for project sponsors to use in designing a comprehensive reward and recognition system that supports the overall project objectives:

- Clearly spell out project objectives and priorities for the project.
- Make sure that everyone on the team is involved in the reward and recognition system.
- Be sure to include all internal groups and outside contractors.
- Design a reward system that will modify behavior that focuses on a common set of project objectives and priorities.
- Explore the wide range of available contracting options available for outside contractors.
- A good system should ideally tie some amount of the reward to the ultimate outcome of the project. Rewarding some groups based entirely on the results of an early project stage will often produce short-sighted decisions that may not be to the benefit of the overall project.

Other Related Execution Process Issues

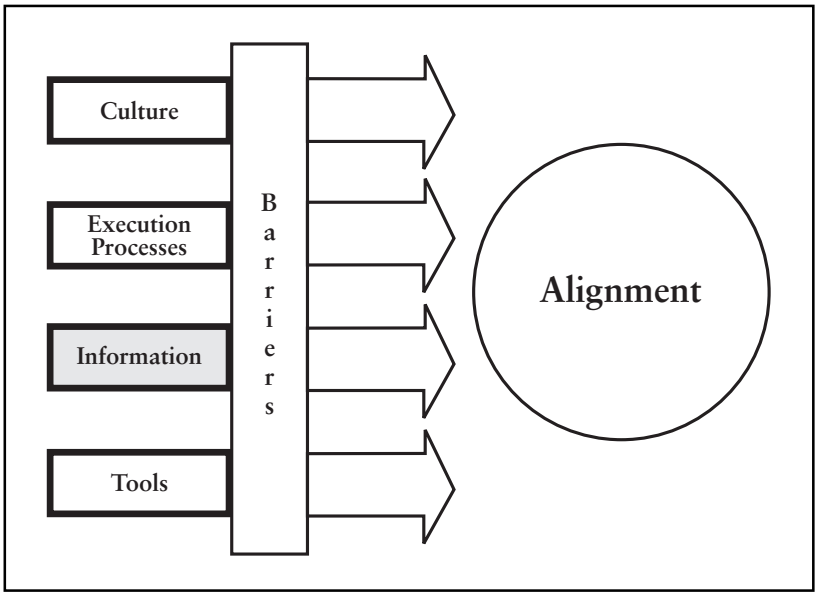
A project team may also wish to evaluate its performance in these areas:

- *Process for identifying project objectives*. Project objective setting is extremely important in ensuring that the project meets the business or mission needs of the facility. Having a standard process that develops objectives is important.
- *Involvement by outside contractors*. Outside contractors bring additional expertise and perspective into the project. Structured outside review and participation provides an avenue to perform tasks that may not be possible by in-house personnel.
- *Involvement by operations*. Operations personnel will have a say in the project at some time during its life. Having a structured (meaningful) review process by operations during pre-project planning should reduce changes later and improve commitment and alignment throughout project execution.

2.3. Communicate Information Requirements

Reason for project problem: "On our project, the contractor should have been involved in the up-front information like the financial model and maintenance philosophy."

— A Business Unit Manager

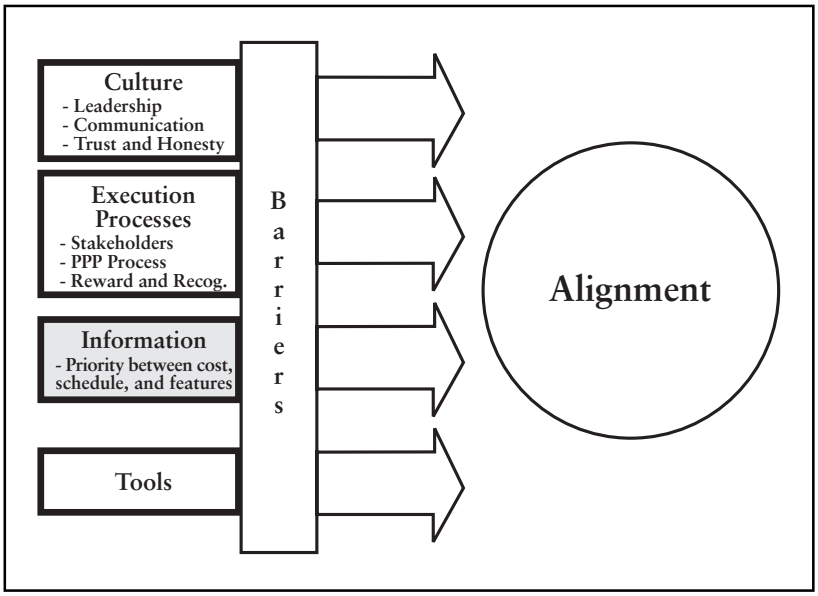


Definition

Information is the data elements, including business objectives, used to develop the scope of the project during the pre-project planning process.

The pre-project planning process is complex and involves many iterative tasks. The project team must constantly check with the project sponsor to make sure that it is on track. The information provided by the sponsor is vital to project success. A project team would be lost during pre-project planning if it were to initiate the process with "muddy" information.

Key Issue



Key Information Issue: The priority between the costs, schedule, and required project features is clear.

Reason for project problem: "(Needed) clearer ranking of priorities between cost, schedule, and required features."

— A Contractor Representative

Clearly stated priorities between cost, schedule, and project quality features will assist all team members in making more uniform and correct decisions regarding the project and its objectives. In addition, these priorities save time when team members have to make decisions by allowing more empowered decision making.

How This Priority Affects Alignment

The project sponsor provides a priority between cost, schedule, and required project features.

The priority between the cost, schedule, and required project features is one element of information provided by the project sponsor. Many project sponsors find this difficult to determine because they feel that they should get all three. Some sponsors will even claim that all three are of

equal importance. This lack of priority leads to wrong assumptions, delays and gaps in pre-project planning, and subsequently substantial numbers of late changes.

Project organizations are becoming increasingly "flatter," with a wider distribution of decision-making responsibility. Since more people are making project decisions, each should operate on the same set of priorities. Each participant must have a common understanding of the relationship between cost, schedule, and value-adding quality features.

Other information from sponsors is important as well.

Many other important elements of information are provided by the project sponsor, but the priority between cost, schedule, and required features most affects team alignment and project success. Information such as project safety goals, project quality goals, the products to be produced by the facility, schedule constraints, budget constraints, required production capacity, and site selection criteria are examples of other important elements of information needed by the team.

Prioritization: Recommended Practices

Project sponsors may resist prioritization of cost, schedule, and features.

Project leaders should ask the project sponsors to explicitly spell out the priorities between cost, schedule, and required features. They will often face resistance because many sponsors are not comfortable in committing to ranking these three project elements.

One tool available in determining the priorities between these three characteristics is a sensitivity analysis. Sensitivity analysis is a process of simulating changes in variables to measure the effect that change has on project viability. The capital budgeting process involves modeling the economic forecasts of a proposed project. Potential income, operating costs, market conditions, interest rates, and desired return on investment are all entered into a mathematical model. The variable(s) with the most effect on project viability should receive the most attention and have the highest priority during project planning.

The CII Agreement Matrix is an efficient tool for identifying, prioritizing, communicating, reinforcing, and controlling project objectives. This tool quantifies agreement between various project participants. (CII Publication 12-1, *Setting Project Objectives*, provides a complete description of the development and uses of the Agreement Matrix.)

If changes occur, let the team know.

No matter what method is used to develop the priorities, the project sponsor needs to communicate clearly the relative importance of each project characteristic to the project team. If priorities change, the new rules need to be communicated as well.

Other Related Information Issues

In addition to the key issue previously cited in this section, the following elements of information can have a significant influence on alignment, as misunderstanding in any of these areas can cause lack of alignment. The project team should be aware of and understanding these areas:

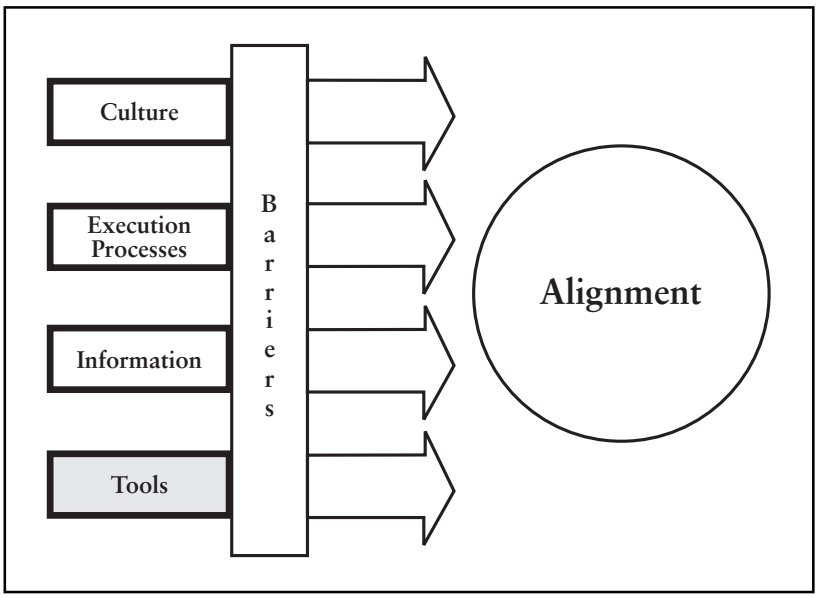
- *Budget constraints*. The specifics of any unusual budget constraints need to be communicated. These budget constraints may be related to dollars available for pre-project planning, financing restrictions, maximum dollars available, joint venture constraints, and so forth.
- *Schedule constraints*. Specific information regarding interface with other projects or facilities, weather-related blackouts, access to the site, or production need dates should be investigated because each can significantly affect the pre-project planning effort.
- *Project operations and maintenance philosophy*. If a standard operations and maintenance philosophy is not available, the design basis for the project is difficult to develop. Specifics such as spares philosophy, maintenance platforms and access, plant shutdown and turnaround, and life-cycle operational philosophy are important to understand.

- *Financial model on which the project is based*. Having team members with knowledge of the financing specifics gives them the ability to make trade-offs that can enhance the financial performance of the facility. Giving contractors that knowledge, under certain circumstances, can enhance performance as well.

2.4 Use Project Planning Tools

"Since this project, the contractor has implemented a formal lessons learned program. They have developed early planning checklists and initiated a rigorous inter-company study of the piping effort. All of these tools, if available two and a half years ago, would have been used on this project."

—An Owner's Project Manager

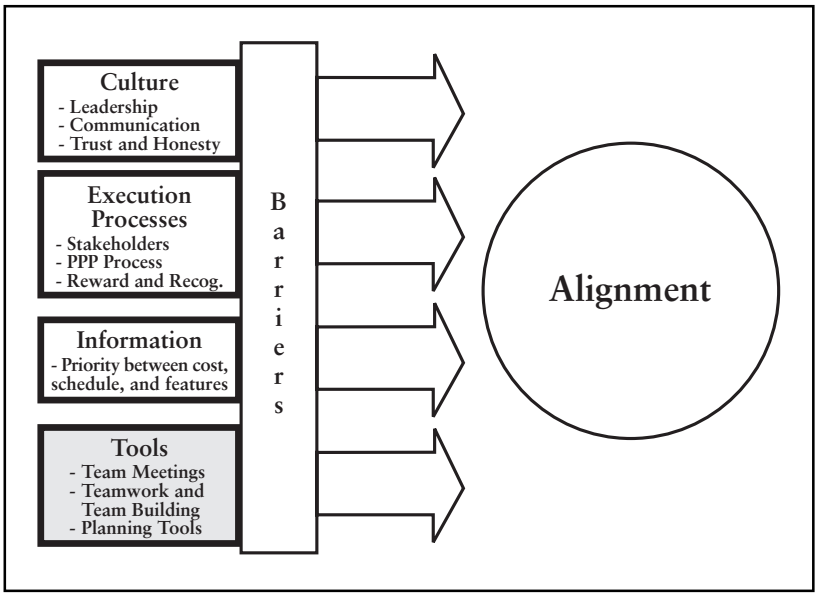


Definition

Project planning tools are defined as software programs, checklists, and aide-memoirs which are typically used to assist in alignment of the project team during pre-project planning.

Many project planning tools are available to help in organizing, planning, and executing pre-project planning. Examples include: critical path scheduling method (CPM), risk analysis, cost control variance analysis, quality control techniques, functional analysis diagrams, and constructability studies. In particular, the three tools discussed in this section have a significant effect on team alignment.

Key Issues



Key Tools Issue #1: Team meetings are timely and productive.

Concerning Tools:

"...the real benefit is getting the various parties involved...it may not be the end product that is so important, but the process of talking."

— An Owner Executive

The team leadership should conduct frequent and productive project meetings designed to both inform and obtain input from the team members. The team should follow good meeting practices by providing an agenda, taking meeting minutes, assigning meeting roles, and evaluating meeting performance.

How Timely and Productive Team Meetings Affect Alignment

Well-planned team meetings are essential.

Meetings are often treated as things to avoid because they can be unproductive and boring. Despite all the fear and loathing, the fact is that meetings are important to a project. Teams meet because the people performing different jobs have to cooperate to get the project accomplished. It is during project meetings that conflicts are resolved, decisions are reached, problems are solved, information is distributed, assignments are made, and new ideas and concepts are explored.

Poorly-planned team meetings are alignment killers.

Poor meetings hurt team alignment because information is not effectively shared with the entire team, people are not interested in participating, time is wasted, and morale suffers. Conversely, effective meetings influence alignment during pre-project planning by improving communications, by giving all team members a chance to contribute to the plan, and by developing a collaborative environment for making decisions and solving problems.

Timely and Productive Team Meetings: Recommended Practice

Follow a standard meeting process.

In order to avoid unproductive team meetings, the team should follow a standard process to help create the right environment for each meeting. Meetings typically should: be well-attended, be well-planned, follow an agenda with times posted, maintain focus and pace, be effectively closed with action items assigned, end with the next meeting time and place set, and be followed quickly with detailed minutes.

Area for Improvement:

"(We) need to improve our meeting skills. We have poor participation in meetings."

— An Owner's Manager

Many people think of each meeting as a discrete event, but in most cases, they are interconnected. Frequency and timing of meetings should follow a strategy designed to exert control in part by determining whether and when work is performed. People may do little work on issues the day after a meeting and will increase their work on that topic shortly before the next scheduled meeting. Figure 2.2 shows this relationship referred to as the "scallop" pattern of work on an issue. Team members should be given enough time to get work completed between meetings.

Timing of meetings is important.

> *Key Tools Issue #2: Teamwork and team building programs are effective.*

"Next time we should improve teamwork. We've had too many cowboys."

—Operations Manager

It is important that teamwork is developed through formalized and informal team building programs. Proper alignment requires that a group of diverse individuals from different functional groups is able to work

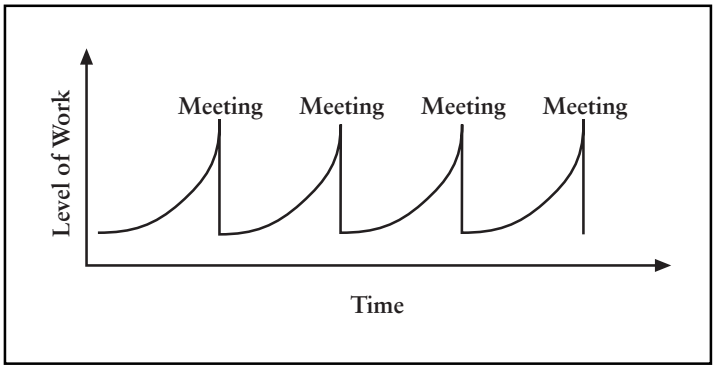


Figure 2.2. Scallop Pattern of Work on an Issue (Drew 1994)

together as a team. The team building effort should be focused on the project team.

How Teamwork and Team Building Programs Affect Alignment

CII defines an effective project team as "a group which shares a common mission or a reason for working together, is interdependent in effectively achieving shared goals, shares a commitment to working together toward identifying and solving problems and is accountable as a functioning unit within a larger inter-organization context."

"Our team building program was formed too late."

—A Business Unit Manager

Simply assembling a group of people does not necessarily form a true team. Team building is "a project-focused process that brings together key stakeholders in the project outcome...It seeks to resolve differences, remove roadblocks, and build and develop trust and commitment, a common mission statement, shared goals, interdependence, accountability among team members, and problem solving skills." It is the process of deliberately creating a team from a newly formed or existing group of people.

Team building should be proactive.

Effective team building contributes to alignment by helping a group evolve from a collection of individuals into a true team that meets the above definition. A true team must have shared goals, interdependence,

commitment, and accountability for the outcome. These characteristics are essential to alignment. Team building is a proactive program designed to build the cooperative environment behind a uniform set of project objectives that are essential to proper alignment. A discussion of the differences between teamwork, team building, and alignment is presented in Appendix D.

Teamwork and Team Building Programs: Recommended Practices

Developing good teamwork can be broken down into several basic steps that represent the evolution of a team from a poorly-aligned group of people to a true team working together:

- Planning: In this stage, the sponsor and team leaders draft the mission statement, critical success factors, objectives, deliverables, milestones, due dates, and activities the team will have to complete in order to be successful.
- Team Formation: During this stage, the sponsor and the team members meet for the first time. The team is launched using a kick-off meeting where the team's mission, critical success factors, strengths and weaknesses, and roles and responsibilities are discussed and refined. Some individuals may complain about the team building process. Team leaders should counsel these individuals and determine whether the team would benefit by their participation. Some organizations utilize a facilitator for this initial stage of team building.
- Development: During this stage, team members will formulate or refine their goals, objectives, and work processes. Teams begin to work on the business issues at hand, to self-assess how they are operating, and to take on more responsibility for the work to be done.

"Teamwork is a big part of our company culture. It is one of the keys to our quality program and I would say that it is one of our strengths."

— A Business Unit Manager

- Independence: During this stage, team members begin to function as a working group and become less dependent on the project sponsor. The primary goal is for the team to take on more responsibility for ensuring that its performance aligns with the business goals, mission, and objectives.
- Self-Direction: Team members plan and perform the work, managing all of the responsibilities. They are working as a cooperative unit resolving conflicts that may arise with no external intervention.

A formal team building program is a viable approach to dealing with this issue. Building an effective team is a process. The process is usually project-focused, involves key stakeholders, and seeks to develop a commitment to working together toward identifying and solving problems. Achieving accountability is an important aspect of building an effective team. This accountability takes two forms: team member to team member and the team to other parts of the organization(s). Common team building techniques include:

- Use of at least one "retreat" type meeting of the group at which shared goals are developed and essential decision-making and dispute resolution procedures are worked out.
- Involving a facilitator who does not have a direct stake in the outcome of the project.
- Regular job site meetings of the team.
- Follow-up meetings to reinforce concepts and to integrate new members.
- Recognition awards and ceremonies, celebrations, and social outings.

Reason for project problem: "We needed earlier team building."

—A Business Unit Manager

The costs associated with formal team building programs and the difficulty in quantifying the results may be barriers to acceptance. Some projects stand out as obvious candidates for formal team building programs:

long running projects that bring together numerous high-caliber people who have not worked together previously, projects that are part of a series of new projects, projects that have large budgets, projects that require interaction with different cultural groups, and projects that require interaction of sharply different or new technologies. Projects with small budgets, short schedules, simple technologies, and ongoing teams are best left to informal team building programs.

Team building on a large project often begins with an off-site session facilitated by a professional team building consultant. Instead of an outside consultant, the team leader may select an internal facilitator with team building skills. In either case, team building is not a one-time effort. Teams must be reinforced periodically regardless of the project size or number of team members. The session is built around developing a team charter or the outline of the project execution plan or both. The best team building sessions involve all stakeholders in the project, even those whose contribution may be only part-time. The session often ends with a report to senior management in order to achieve their commitment and buy-in.

Team building is important on small projects.

The size of a project does not diminish the importance of formal team building. This merely implies that the team will consist of a smaller group with a more focused objective. The time and budget for these activities are often not available. An informal team building process can be condensed to a half-day session or even a series of extended lunch hours.

Reason for project problems: "Most project management tools were not used during pre-project planning. There was a lack of detail during pre-project planning."

— An Owner Project Manager

Key Tools Issue #3: Project planning tools (e.g., checklists, simulations, and work flow diagrams) are effectively used.

Tools should be used to develop and manage project organization, scope, schedule, estimate, and work processes during pre-project planning to foster alignment. The entire team should be involved in their use. The greatest value in using these tools is that they foster open communication

and acceptance to the approved project scope, estimates, schedule, and work processes. Examples of such tools include work process diagrams, scope definition checklists (such as the Project Definition Rating Index (PDRI)), scheduling techniques, and risk analysis techniques.

How Project Planning Tools Affect Alignment

The major product of the pre-project planning phase is a detailed project definition package ready for authorization. Project planning tools are the many tools and techniques available to assist in developing this package.

Modern technologies have spawned the development of many computer-based planning tools like scheduling, estimating and cost control software, and simulation programs that can model a plan and test different scenarios using mathematical techniques. In addition to the new computer-based tools, "low tech" planning tools have been used by countless project teams. Examples include bar charts, organizational charts, checklists, work breakdown structures, and simple work flow diagrams.

There is not one dominant planning tool that, by itself, has a significant effect on alignment during pre-project planning. Having the entire project team take part in using these tools strengthens alignment by encouraging communications and promoting acceptance of the approved project scope, estimates, schedule, and work processes.

It has been said that "Plans are worthless, but planning is everything."

Project Planning Tools: Recommended Practices

Project teams need to be aware of the many available project planning tools and be open to trying them out during pre-project planning. Several of the references listed in Appendix D provide in-depth descriptions of the available tools. Using tools during pre-project planning helps to improve alignment by involving the entire team in the planning process.

The process of using planning tools promotes team alignment.

The most important thing to consider when using project planning tools is to involve the entire team in the process. For example, one mistake often made by teams is to send the young, computer-literate engineer off by himself/herself to develop a complex computerized CPM schedule. Invariably, no matter how well it is done, no one else on the team will use the schedule and it will be filed away, never to be seen again. However, if a schedule is developed using input from the entire team, it is more likely to be accurate and subsequently utilized as a control tool. The same principle applies to all the other available tools. *The process of using the tool is as important as the tool itself in developing alignment.*

Teams that do not use tools during pre-project planning have a tendency to splinter. Without a structured approach to answering questions and ensuring that risk is addressed, the team can complete pre-project planning with glaring deficiencies, poor focus, and a weak execution approach for the detailed engineering, construction, and start-up of the project.

To promote alignment, a project team may wish to use these specific tools:

- *Scheduling techniques*. Gantt and CPM scheduling techniques including the use of scheduling software (e.g., Primavera Project Planner or Microsoft Project) may help facilitate team alignment.
- *Scope definition checklists*. Tools such as CII's Project Definition Rating Index (PDRI) foster understanding and communication between team members.

- *Work process flow diagrams*. These foster understanding and communication, particularly when they are focused on the activities needed to do pre-project planning.
- *Lessons-learned databases*. Understanding past success and failure can help focus the team on its tasks.

Other Related Project Planning Tools

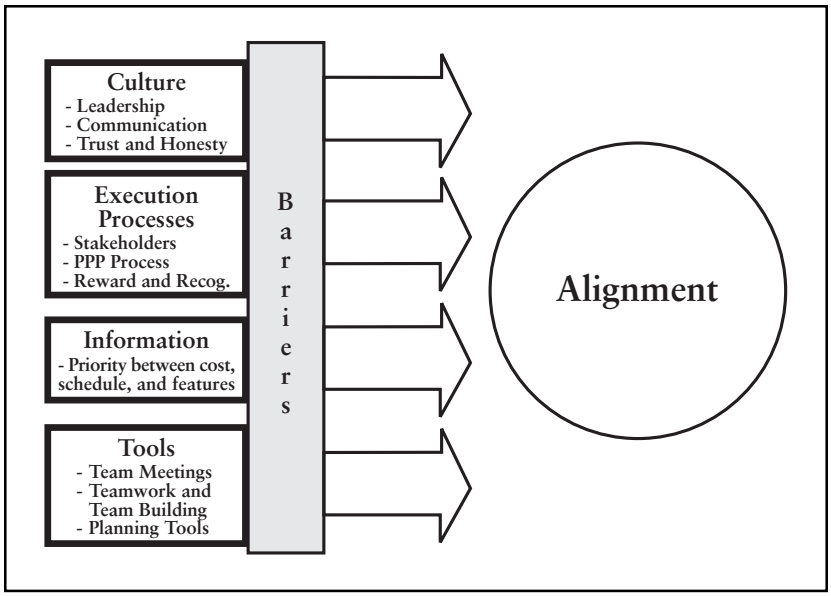
Other tools that may be helpful in promoting alignment during pre-project planning include:

- Action item lists
- Alignment Thermometer
- Communications systems (e.g., video-conferencing, e-mail, integrated databases, group-ware, etc.)
- Constructability
- Deployment flowcharts
- Hoshin planning
- Mission/Vision statements
- Numerical Simulation
- Quality Function Deployment
- Responsibility matrices
- Scenario Analysis
- Work planning grids

2.5. Overcome Barriers to Alignment

"Some barriers we faced on this project included different geographical locations of team members, a lack of experience with a new technology, significant changes in the project schedule, poorly defined budget, and lack of clear project objectives."

—An Operations Manager



Definition

Barriers are the obstacles to creating and maintaining alignment during pre-project planning.

Barriers to alignment are typically the reasons that project teams do not perform the actions that they say they should. Barriers are company-specific and are often ingrained in the company culture. They insidiously creep into standard operating procedures and become accepted practices. The reasons for this include excuses such as "We've always done it this way" or "We don't have the time to do it right this time, but we'll take care of it later."

How Barriers Affect Alignment

In many cases, barriers are the lack or the opposite of the issues previously discussed in this chapter. In particular, lack of project leadership is a formidable barrier to project alignment. Another barrier to alignment is the lack of sufficient budget for pre-project planning. If these barriers are not dealt with in a timely manner, the team can quickly flounder and alignment will be lost.

Significant improvement will come from analyzing the specific barriers to alignment for each project. The most important barrier is often times a lack of understanding that pre-project planning, and particularly alignment, is critical to project success.

Overcome Barriers to Alignment: Recommended Practices

If the 10 key issues discussed in previous sections are proactively addressed, barriers can be diminished. The project leadership and the team members should be focused on overcoming the following typical barriers to project alignment:

- Lack of leadership
- Insufficient time for pre-project planning
- Insufficient budget for pre-project planning
- Unclear definition of team members' roles and responsibilities
- Authorizing the project for execution before pre-project planning is complete

- Turnover of key team members during pre-project planning
- Poor communication between team members
- Lack of a clear process for pre-project planning
- Lack of consensus regarding project goals and alternatives previously selected
- Leadership unable to make objective decisions (too close to the project)
- Working the budget to "a number that can be approved"
- Preferred team members cannot be released from other projects.

An important segment of any team building program should be devoted to identifying and prioritizing the barriers that could have the most impact in disrupting alignment. Without appropriate action, barriers will surface and result in a misaligned and ill-defined project scope. The team should develop action plans to insure that the identified barriers will not cause problems.

Chapter 3
Alignment Thermometer

This chapter describes a tool, the Alignment Thermometer, that can help the project team evaluate and improve its performance in each of the 10 critical alignment issues. It discusses how to use the tool in evaluating project team alignment and what to do with the results. A copy of the Alignment Thermometer is included in Appendix A and a laminated color copy is also provided with this implementation resource.

3.1. The Alignment Thermometer

The Alignment Thermometer is a self-evaluation survey that is designed to be used during the pre-project planning phase of the project. Copies of the thermometer should be given to all the planning team members for them to complete and return to the person administering the survey. The basic process is as follows:

- The questionnaire consists of 10 simple statements.
- The survey should take less than 10 minutes to complete and can be administered as frequently as desired.
- Respondents are asked to read and rate on a scale of 1 to 5 how strongly they agree with each statement.
- The answer sheets are then scored and the results are plotted on the appropriate graphs.
- Results are shared with the team, which will help in understanding its current alignment and will help in planning a path forward.

Detailed, step-by-step instructions are presented in the following section. Results from two sample projects are also presented.

3.2 Instructions for Use

Step One: *Circle the number in the column that best shows your "Level of Agreement" with each of the statements in the table.*

Give each team member a copy of the Alignment Thermometer and for each of the 10 statements, ask them to read the statement and then circle the number in the column that corresponds to their individual level of agreement with the statement. A level of agreement of "1" indicates that the respondent "strongly disagrees" with the statement and a level of agreement of "5" indicates that the respondent "strongly agrees" with the statement. Each level of agreement has a corresponding score that is indicated in the column. For example, a level of agreement of "2" has a

Project Name: Sample Survey Sheet	LEVEL OF AGREEMENT					
ALIGNMENT ISSUES	1	2	3	4	5	SCORE
1. Stakeholders are appropriately represented on the Project Team.	0	3	5	8	(10)	
2. Project leadership is defined, effective, and accountable.	0	3	(5)	8	10	
3. The priority between cost, schedule and required project features is clear.	0	3	5	(8)	10	
4. Communication within the team and with stakeholders is open and effective.	0	3	5	(8)	10	
5. Team meetings are timely and productive.	0	3	5	8	(10)	
6. Our team culture fosters trust, honesty, and shared values.	0	3	5	(8)	10	
7. The Pre-Project Planning process includes sufficient funding, schedule and scope to meet our objectives.	0	3	5	8	(10)	
8. Reward and recognition systems promote meeting project objectives.	0	3	5	(8)	10	
9. Teamwork and team building programs are effective.	0	3	5	(8)	10	
10. Planning tools (e.g. checklists, simulations and work flow diagrams) are effectively used.	0	3	5	8	(10)	
				TOTAL SCORE		

Figure 3.1. Example of Survey Sheet

numerical score of 3 and a level of alignment of "4" has a numerical score of 8; these are presented in the appropriate columns to the right of the statements. Figure 3.1 is an example of this action completed by a team member.

Step Two: *Place the circled number in the Score column. Add the column to obtain your individual total score.*

Either the respondent or the survey administrator should transfer the score given for each statement to the "Score" column at the far right side of the table. The 10 individual scores are then totaled and entered in the last row entitled "Total Score." Figure 3.2 gives an example of this step.

Project Name: Sample Survey Sheet	**LEVEL OF AGREEMENT**					
ALIGNMENT ISSUES	**1**	**2**	**3**	**4**	**5**	**SCORE**
1. Stakeholders are appropriately represented on the Project Team.	0	3	5	8	(10)	**10**
2. Project leadership is defined, effective, and accountable.	0	3	(5)	8	10	**5**
3. The priority between cost, schedule and required project features is clear.	0	3	5	(8)	10	**8**
4. Communication within the team and with stakeholders is open and effective.	0	3	5	(8)	10	**8**
5. Team meetings are timely and productive.	0	3	5	8	(10)	**10**
6. Our team culture fosters trust, honesty, and shared values.	0	3	5	(8)	10	**8**
7. The Pre-Project Planning process includes sufficient funding, schedule and scope to meet our objectives.	0	3	5	8	(10)	**10**
8. Reward and recognition systems promote meeting project objectives.	0	3	5	(8)	10	**8**
9. Teamwork and team building programs are effective.	0	3	5	(8)	10	**8**
10. Planning tools (e.g. checklists, simulations and work flow diagrams) are effectively used.	0	3	5	8	(10)	**10**
				TOTAL SCORE		**77**

Figure 3.2. Example of Survey Sheet with Total

Step Three: *Plot your team's answers in the appropriate column and calculate the Average, Range (high score – low score), and Range ÷ Average.*

This step of the process should be completed by the survey administrator once all the individual surveys are returned. The table used for this step is on page 2 of the Alignment Thermometer. Each column represents a team member. (Note: The version of the Alignment Thermometer provided in this handbook has only seven columns due to space limitations. Naturally, if your pre-project planning team has more than seven team members, make as many copies of this table as required.) Once all the individual survey scores are entered into the table, calculate the "Average" score, the "Range," and the "Range ÷ Average" for each of the 10 issues. The range is defined as the high score minus the low score given for each issue. Calculate the total score for the "Calculated Average" column and enter this value in the last row entitled "Total." Figure 3.3 is an example of a completed table from this section of the survey for a fictional team of seven members.

TEAM SCORE	Respondent									
Issue	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Calculated Average	Calculated Range	Range/ Average
1	10	8	8	8	8	8	10	8.6	2	0.23
2	5	8	8	8	8	5	8	7.1	3	0.42
3	8	8	8	5	8	8	8	7.6	3	0.40
4	8	8	10	8	10	8	8	8.6	3	0.35
5	10	8	8	5	5	8	8	7.4	5	0.67
6	8	8	8	5	8	8	5	7.1	3	0.42
7	10	5	5	10	8	10	8	8.0	5	0.63
8	8	8	8	5	7	8	8	7.4	3	0.40
9	8	8	5	8	8	5	8	7.1	3	0.42
10	10	8	8	8	10	8	10	8.9	2	0.23
						TOTAL		**77.9**		

Figure 3.3. Example of Worksheet for Step 3

Step Four: *Plot the Average and Range for each statement and then plot the Total Average Score on the Thermometer.*

There are two target diagrams and a graphic representing a typical thermometer on page 2 of the Alignment Thermometer. These diagrams are designed to be used in displaying and evaluating the results of the survey.

The first target diagram is designed for the "Calculated Average" scores developed in Step Three. Each spoke on the target corresponds to each of the 10 alignment issues. The spokes are divided into 10 units with the center point representing the maximum score of 10 and the outermost ring representing the minimum score of zero. To plot the team's average scores on this diagram, make a dot on each issue corresponding to the average score calculated for that issue and then connect the dots to form a spider diagram.

Figure 3.4 shows the results for two sample projects studied in the research. The diagram on the left is from a project that was well-aligned and the diagram on the right is from a project that was not well-aligned.

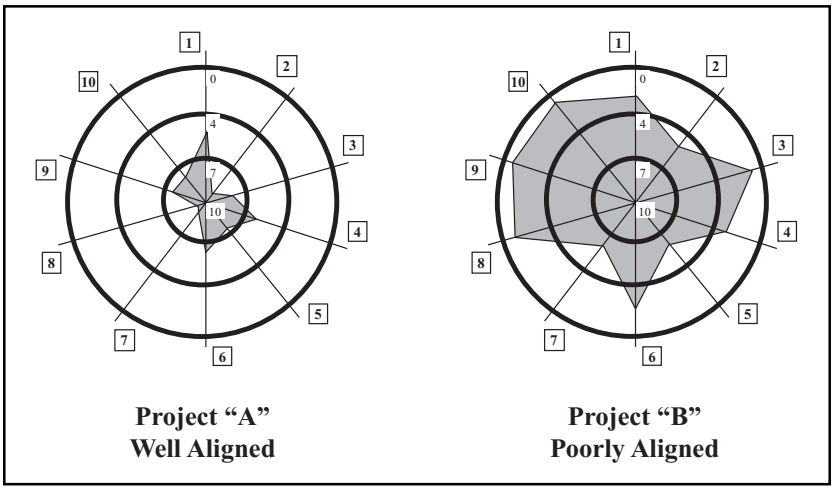


Figure 3.4. Spider Diagram for Average Scores for Each Issue

Note how the poorly aligned project has a much larger "spider web" reaching further out to the lower average scores.

The second target is designed for the scores calculated in the "Range" column from Step Three. As with the "Average" target, each spoke represents one of the 10 alignment issues. However, each spoke in this diagram is divided into 10 units, with the center representing a range of zero and the outermost ring representing a range of 10 (the maximum possible range of scores).

Figure 3.5 shows two examples of this diagram from the same two sample projects as above. Again, project "A" is a well-aligned project and project "B" is a poorly-aligned project. The poorly-aligned project has a spider web that is larger and reaches close to the outer limits of the diagram.

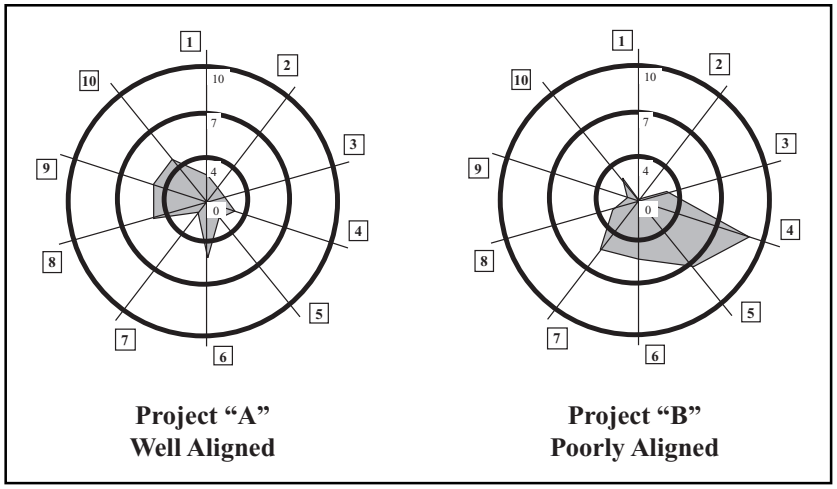


Figure 3.5. Spider Diagram for Range of Each Issue

The third diagram represents a thermometer. This diagram is designed to show the "Total Average" score calculated in Step Three. Simply draw a line at the point on the thermometer that corresponds to your project's "Total Average" score. The scale of the thermometer is from the minimum

available alignment score of zero to the maximum available alignment score of 100. Figure 3.6 is an example of this diagram with the "Total Average" scores for projects "A" and "B" plotted on the thermometer. This diagram also shows the average score for the sample projects studied in the research. Note that the well-aligned project had a "Total Average" score of 76 and the poorly-aligned project had a "Total Average" score of 33.

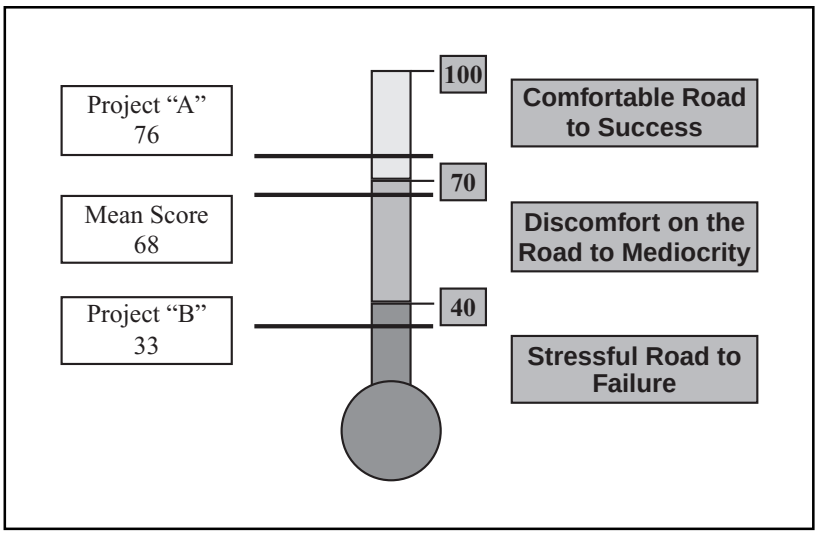


Figure 3.6. Alignment Thermometer

Step Five: *All issues with results in the outer ring require further discussion to either improve the situation or to determine why it is not an important issue for this project. A large Range ÷ Average likely indicates an issue of special concern.*

The results of this survey should be shared with the entire team for discussion, evaluation, and action. The next step in the process is to evaluate why any issues received low "Calculated Average" scores or high "Calculated Range" scores, and discuss ways to either improve the situation or determine that it is not an important issue for the subject

project. For example, the project manager for Project "B" should address alignment issues #1, #3, #4, #6, #8, #9, and #10 to determine reasons for such low average scores for these issues. The same project manager and team should also evaluate the large disagreement on issues #4 and #5 as shown on the range graph. The two spider graphs help to identify specific alignment issues that warrant particular attention. The graphs plot weak issues toward the extreme outer ring of the target where they can be quickly seen by the team members.

The range ÷ average value is a rough indicator of standard deviation (variation) and is therefore an indicator of an issue that needs to be evaluated. As an example, in Figure 3.3, issue #7 dealing with the pre-project process and budget would be of most concern.

When specific issues are identified, refer to Chapter 2 for a complete definition of the issue, a discussion of how the issue affects team alignment, and a description of recommended practices to address it. A list of related references is contained in Appendix D.

The two sample projects used as examples in this section were studied as part of the data collection effort. The project outcomes clearly show the correlation between the Alignment Thermometer results and project success. Project "A" had a "Total Average" score of 76 while project "B" had a "Total Average" score of only 33. Table 3.1 is a summary of the two sample projects along with project outcomes. Project "A" was a more successful project in all outcome measurement categories. Project "B" was both over budget and behind schedule and did not achieve the planned design capacity or plant utilization.

Table 3.1. Summary Information for Project "A" and Project "B"

Characteristic	Project "A"	Project "B"
Project Type	Petr. Refinery	Fossil Power
Alignment Index Score	76	33
Number of Interviews	3	2
Authorized Budget	$135 million	$98 million
Actual Cost Variance from Authorization	–10%	+2%
Actual Schedule Variance from Authorization	–22%	+8%
Percent of Planned Design Capacity at 6 Months	100%	90%
Percent of Planned Utilization at 6 Months	100%	50%
Financial Objectives Met (1 = "far below" to 5 = "far exceed")	5	2

3.3. Summary

The Alignment Thermometer is a tool designed to provide a quick measure of team alignment and to identify potential areas of disagreement that will require additional discussion and exploration. The Alignment Thermometer should be used periodically throughout pre-project planning as team members are added or as the project evolves.

The Alignment Thermometer can be used effectively at a team meeting by following these steps:

1. Prior to the meeting, make enough copies of the front of the Thermometer for each team member.
2. Ask each member to spend five minutes scoring the 10 questions by circling the appropriate column.
3. Use the colored, laminated Thermometer to tally the individual scores using an erasable ink pen. Calculate the average score and range for each question as well as the average total score, and mark them on the form.

4. Post the scores on the targets for the "Average," "Range," and "Total."
5. All issues showing results in the outer ring require discussion either to improve the situation or to determine why it is not an important issue for this project.
6. Identify the status of the project on the total Thermometer. This score has a correlation with ultimate success or failure if the present level of alignment is maintained throughout the life of the project. Discuss ways for the team's score to either stay at its present high level or to improve.
7. Alignment is dynamic. Post your results in the open for the team to refer to from time to time and the whole process (10 minutes) should be repeated periodically or when major events occur on the project.

The Alignment Thermometer might be used to start the kick-off meeting or the first off-site team building session. It could then be administered at the beginning of monthly project review meetings. By keeping track of scores over time, trends can be assessed and discussed with team members.

The 10 issues and their scores can easily be typed into a spreadsheet and shared on a computer network. Team members can fill in the spreadsheet on the same day every month and e-mail it to one person who would collate and disseminate the results.

In whatever manner the project manager chooses to administer the Alignment Thermometer, the results should be communicated with the team. Feedback to team members must be part of the process.

Chapter 4
Key Insights and Conclusions

4.1. Key Insights for Management

As part of the background studies that form the basis for this document, interviews were conducted with participants at many management levels from both owner and contractor companies. Insights from high levels within these organizations were particularly profound. **There was one uniform consensus that manifested itself—alignment is important to having a successful project.** The following insights are given in order to enhance management's understanding of alignment from an organization-wide standpoint.

"When we have gone back and done a postmortem on many of our projects that did not turn out well, several things seem to always come up and poor alignment is one of those things."

—An Owner Executive

"It's (alignment) not a big issue on every project, but if you don't have it, it's a big issue. You know when it's missing."

—An Owner Executive

Specific business measures for team alignment are difficult to obtain. Specific processes to address alignment can help. Many companies have begun to address alignment issues. They have compiled detailed processes, complete with checklists, to cover the pre-project planning phase of the project and to ensure that all stakeholders are suitably represented in the process. One approach is to set up a special steering committee to give critical guidance to developing projects. Another approach is to provide internal facilitators to help the project team in negotiating conflicting requirements and to finally arrive at the project goals or direction.

"One of the real benefits of having them (operators) involved is the ability to draw on their knowledge of the actual systems in place so that new designs can interface well with existing systems. If the design is close, go with the same system as is already in the field."

—An Owner Executive

Getting appropriate stakeholder representation on the pre-project planning team is critical. In particular, operations and maintenance involvement early in the project has a tendency to enhance alignment. This input many times requires top management support.

"This is one area of considerable opportunity. We are a long way from achieving this goal....For example: exploration is rewarded on volume and offshore gets rewarded on cash flow generated. Those two can get out of alignment. We have some work to do to align rewards with strategy."

—An Owner Executive

A fundamental alignment issue that must be addressed by management is a reward and recognition system. Whereas different project stakeholders typically have reward and recognition systems tied to their home departments (operations, business unit, etc.), the company must devise one common reward and recognition system for all project stakeholders. This helps move all project stakeholders in the same direction with common goals.

Contractors should aggressively address client requirements and expectations from the early stages of a project. Getting caught in the middle between miss-aligned business units or joint venture partners is not pleasant. Checklists and surveys can be used to obtain appropriate feedback. These can be used monthly as an alignment tool.

"There is the 'marathon race effect'....You have thousands starting at the same time. Some will finish much sooner than others. Not everyone learns at the same rate. We need to have everyone over the finish line to have the core competency. We are now entering a training phase."

—An Owner Executive

Arriving at alignment may appear to be relatively easy and trivial. Changing corporate culture to permit and encourage alignment is not. **To have an environment that supports alignment, many companies must do just that — change the corporate culture.** Companies continue to form joint ventures and alliances. Getting multiple companies to align themselves effectively is challenging. It is less difficult when management understands the need for the culture change and has a plan. One strategy is to seek out alliance partners that have similar cultures to minimize the need for cultural adjustment.

It is important to realize that the alignment process continues well beyond the pre-project planning phase. In fact, alignment should be addressed continuously throughout the project life cycle.

4.2 Keys to Alignment

The key alignment categories and issues are illustrated in Figure 4.1. Alignment issues fall into these five categories:

1. **Culture:** The attitudes, values, behavior, and environment of the company and the pre-project planning team.
2. **Execution Processes:** Project systems, processes, and procedures.
3. **Information:** The data elements, including business objectives, used to define the scope of the project.
4. **Project Planning Tools:** Tools such as software programs, checklists, and aide-memoirs that are typically used to develop and manage projects.
5. **Barriers:** The obstacles to creating and maintaining alignment.

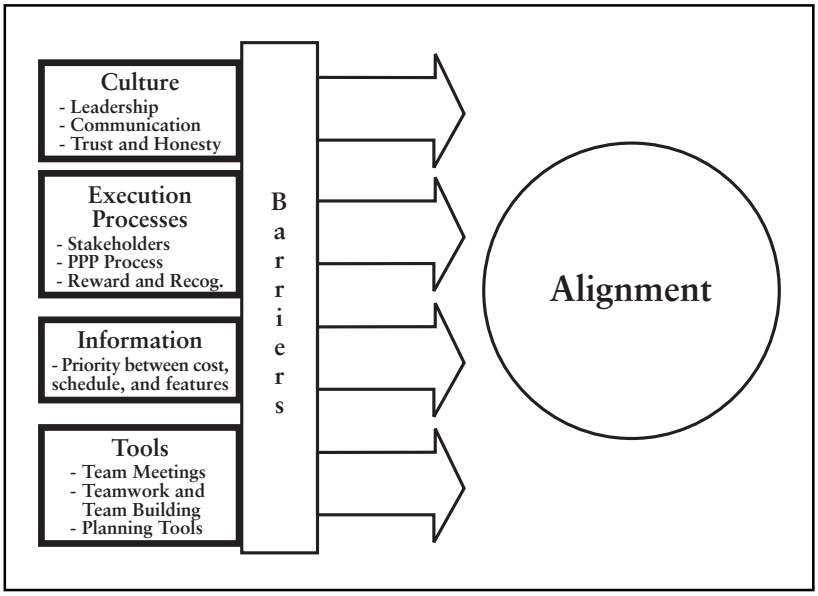


Figure 4.1. Alignment Key Issues Diagram

In order to enhance alignment, management must ensure that:

1. Stakeholders are appropriately represented on the project team.
2. Project leadership is defined, effective, and accountable.
3. The priority between cost, schedule, and required project features is clear.
4. Communication within the team and with stakeholders is open and effective.
5. Team meetings are timely and productive.
6. The team culture fosters trust, honesty, and shared values.
7. The pre-project planning process includes sufficient funding, schedule, and scope to meet objectives.
8. The reward and recognition system promotes meeting project objectives.
9. Teamwork and team building programs are effective.

10. Planning tools (e.g., checklists, simulations, and work flow diagrams) are effectively used.

Although alignment is critical to the success of a project, it alone cannot guarantee a world class facility. It must be combined with excellent scope definition, sound project management practices, rational business decision-making, and efficient project execution.

4.3 Recommended Actions

The early planning phases offer the greatest opportunities for influencing the outcome of projects.

Four excellent CII resources address critical pre-project planning implementation issues.

The research team recommends the following four CII resources to help manage the pre-project planning process and to increase the chances for a successful project:

1. This document, *Alignment During Pre-Project Planning*, Implementation Resource 113-3, should be used by team members to address issues that can cause alignment problems. This implementation resource outlines the process required to gain and maintain alignment, as well as the Alignment Thermometer that can be used to determine whether the team is focusing its limited resources on the issues and processes that have a substantial effect on team alignment during this critical phase of the project life-cycle.
2. The Agreement Matrix is an efficient tool for identifying, communicating, reinforcing, and controlling project objectives. This tool quantifies agreement between various project participants. CII Publication 12-1, *Setting Project Objectives*, provides a complete description of the development and uses of the Agreement Matrix.

3. The *Pre-Project Planning Handbook,* CII Special Publication 39-2, provides a pattern for an organization's pre-project planning process and gives insight into critical tasks that must be performed.
4. The PDRI can be used to measure completeness of scope definition and to manage the pre-project planning process by evaluating whether the project is ready for formal authorization. Implementation Resource 113-2, *Project Definition Rating Index, Industrial Projects*, gives the user the requisite knowledge needed to use this tool.

In actuality, these tools should be used several times during pre-project planning so that any changes to the team's status can be promptly detected and addressed.

4.4. Conclusions

Most people have heard the saying:

> *People don't plan to fail, they fail to plan.*

Planning is hard work and it is always tempting to skip it and get right on with doing the "real" work of executing the project. Since 1991, CII has studied the histories of 104 capital projects representing nearly $7.5 billion in authorized cost, and interviewed almost 300 individuals involved in those projects and the pre-project planning process. The results clearly show that:

> *Better pre-project planning produces more successful projects.*

The list of references in Appendix E represents the complete body of work to date resulting from the research into pre-project planning by the CII Pre-Project Planning Research Team and the CII Front End Planning Research Team. The reader is encouraged to review these resources and

learn how to formalize the pre-project planning process, align the team with the overall project objectives, and measure the progress through the entire process.

The future only points to more competition, more limits on available resources, and more pressure on capital budgets. Better pre-project planning will help teams succeed in this difficult environment and produce the correct project within budget and on schedule.

Appendix A: Alignment Thermometer

A complete copy of the Alignment Thermometer is presented on the next two pages. Chapter 3 presents this tool and outlines detailed instructions and uses. A color laminated copy of the Alignment Thermometer is provided as part of this document. If the separate laminated Alignment Thermometer is missing, contact the Construction Industry Institute to order additional copies.

Appendix A: Alignment Thermometer

Pre-Project Planning (PPP) Alignment Thermometer

(Five Steps to Greater Success)

Step 1. Circle the number in the column that best shows your "Level of Agreement" with each of the following statements: Legend: 1 = Strongly Disagree, 5 = Strongly Agree

Project Name:	LEVEL OF AGREEMENT					
ALIGNMENT ISSUES	1	2	3	4	5	SCORE
1. Stakeholders are appropriately represented on the Project Team.	0	3	5	8	10	
2. Project leadership is defined, effective, and accountable.	0	3	5	8	10	
3. The priority between cost, schedule and required project features is clear.	0	3	5	8	10	
4. Communication within the team and with stakeholders is open and effective.	0	3	5	8	10	
5. Team meetings are timely and productive.	0	3	5	8	10	
6. Our team culture fosters trust, honesty, and shared values.	0	3	5	8	10	
7. The PPP process includes sufficient funding, schedule and scope to meet our objectives.	0	3	5	8	10	
8. Reward and recognition systems promote meeting project objectives.	0	3	5	8	10	
9. Teamwork and team building programs are effective	0	3	5	8	10	
10. Planning tools (e.g., checklists, simulations and work flow diagrams) are effectively used.	0	3	5	8	10	
TOTAL SCORE						

Step 2. Place the circled number in the Score column. Add the column to obtain your total score.

For more information contact:

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The University of Texas at Austin
3208 Red River - Suite 300
Austin, Texas 78705-2650
(512) 471-4319, Fax (512) 499-8101

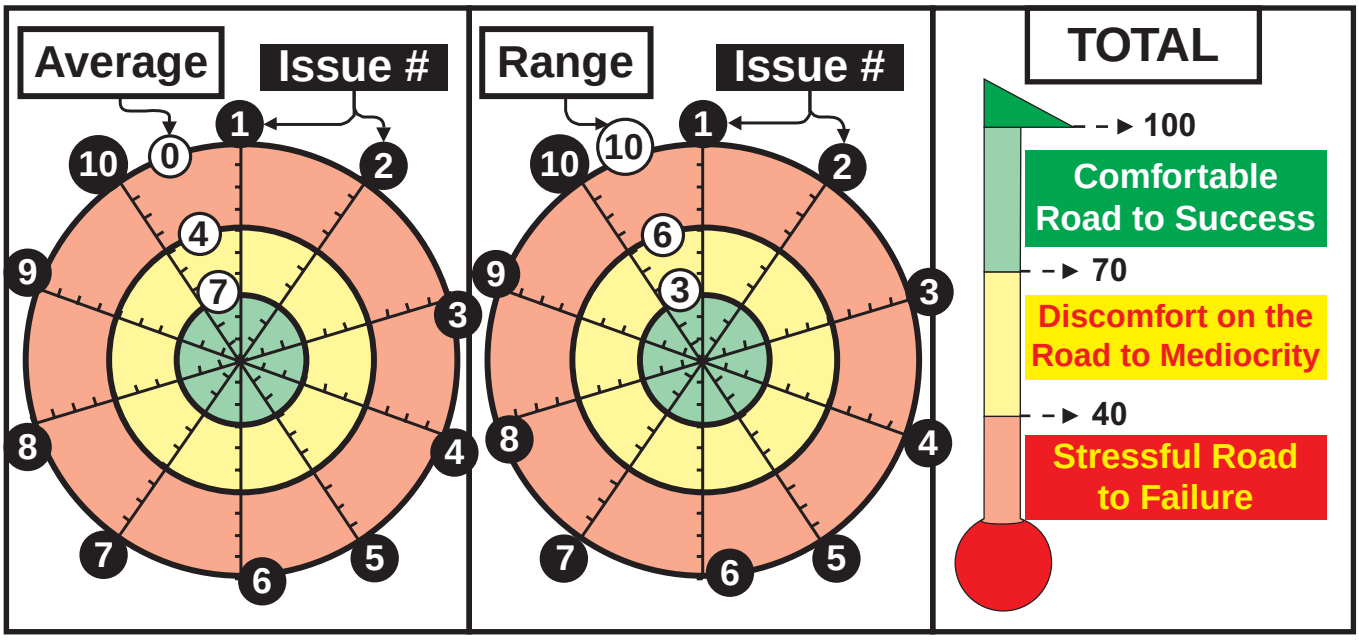
References/ Additional Resources:

- Pre-Project Planning Handbook, CII SP 39-2
- PDRI, CII IR 113-2
- Alignment Handbook, CII IR 113-3
- Setting Project Objectives, CII Pub. 12-1

Step 3. **Plot your team's answers in the appropriate column and calculate the Average, Range (high score – low score) and Range ÷ Average.**

TEAM SCORE	Respondent									
Issue	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Calculated Average	Calculated Range	Range/ Average
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
						TOTAL				

Step 4. **Plot the Average and Range for each question and the Total on the Thermometer.**



Step 5. **All questions with results in the outer ring require discussion to either improve the situation or to determine why it is not an important issue for this project. A large Range ÷ Average likely indicates an issue for special concern.**

Helpful Hints:

- **Poll all appropriate stakeholders (including business and operations).**
- **Poll periodically and keep track of score (team meetings, monthly, quarterly).**
- **Identify issues for discussion and areas for remedial action.**
- **Use the results to facilitate/design team building activities.**
- **Modify questionnaire and substitute project specific issues as required.**

Appendix B: Glossary of Terms

Alignment: The condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives. These project objectives must meet business requirements and the overall corporate strategy. They are formed in the early stages of project development and have a critical impact on the success of the project delivery process.

Barriers: Obstacles to creating and maintaining alignment.

Business objectives: The reason or purpose for funding a business venture.

Business planning: Strategic planning involving the goals and objectives of a business entity.

Communication: Two-way effort, involving the transmission of information and understanding from one person or group to another through the use of common symbols.

Company culture: The attitudes, values, behavior, and environment of the company.

Control guidelines: The method to identify, collect, process, and disseminate that information which is needed to successfully execute the project, including planning and scheduling, cost information, management information systems, change management, etc.

Critical Path Method (CPM): A network analysis scheduling technique used to predict project duration by analyzing which sequences of activities has the least amount of scheduling flexibility.

Decision: A formal determination as to whether or not to provide the resources necessary to proceed with the execution of a project.

Execution approach: The methods that will be used to complete the engineering and design, procurement, construction, and start-up of the project including management of the project. These include identification of project participants, the roles and interrelationships of the participants, contracting strategy, etc.

Execution processes: Project systems, processes, and procedures.

Index: Measurement based on responses to more than one question or measurement regarding the same general topic.

Information: Data elements used to define the scope of the project. These data elements are typically passed to the pre-project planning team as part of the validated project concept and come from the project sponsors. This information may also be provided to the pre-project planning team during the pre-project planning process.

Leadership: The process that provides direction and guidance toward a specific goal or objective. It includes influencing the task objectives and strategies of a group or organization, influencing people in the organization to implement the strategies to achieve the objectives, and influencing the culture of the organization.

Project objectives: A series of key measurable targets, the fulfillment of which satisfies owner's expectations and leads to project success.

Organizational behavior: The study of human behavior in the workplace, the interaction between people and the organization, and the organization itself.

Planning tools: Checklists, computer software, analysis techniques, and any other aide-memoirs used to plan and control projects.

Pre-project planning: The process of developing sufficient strategic information with which owners can address risk and decide to commit resources to maximize the chance for a successful project.

Pre-project planning team: Personnel involved in and responsible for pre-project planning. These personnel may include owners, users, planners, and consultants united in the planning process.

Project Definition Rating Index (PDRI): A tool designed to measure project scope definition for completeness. It is a comprehensive, weighted checklist of 70 scope definition elements.

Required features: Characteristic of the project that define the project quality in the sense of the features incorporated into the project. Issues related to required features include redundancy, operability, durability, and tolerances.

Reward and Recognition System: Processes that provide special recognition and rewards to individuals and/or teams as they accomplish predetermined project goals, milestones, and objectives.

Sponsor(s): Individuals at higher levels in the owner organization than the project team who have or share responsibility for the success or failure of the project. Typically these individuals would include business unit managers, operations managers, or the manager of engineering and construction.

Staffing: Process of identifying, recruiting, and selecting individuals to become members of the pre-project planning team.

Stakeholders: Individuals and organizations who are involved in or may be affected by project activities.

Team: A group which shares a common mission or a reason for working together, is interdependent in effectively achieving shared goals, shares a commitment to working together toward identifying and solving problems and is accountable as a functioning unit within a larger inter-organization context.

Teamwork: The condition where individuals are functioning in concert to achieve a common objective and coordinating individual tasks to achieve those objectives all in an atmosphere where the individuals participating enjoy the experience and produce high quality results.

Team building: A project-focused process that brings together key stakeholders in the project outcome....It seeks to resolve differences, remove roadblocks, and build and develop trust and commitment, a common mission statement, shared goals, interdependence, accountability among team members and problem solving skills.

Appendix C: Teamwork and Team Building vs. Alignment

At first glance, teamwork, team building, and alignment appear to be the same and can be discussed interchangeably. However, teamwork, team building, and alignment are distinct concepts with complementary, yet different definitions. This appendix addresses the similarities and differences in order to draw a distinction between the three. Basically, the definitions of the three are:

"We did not have any team building or alignment programs. We are doing them now."

—An Owner's Project Manager

- Alignment concerns whether or not the team members are all working toward the same, correct goal.
- Teamwork involves how well the members interact, cooperate, and support one another while working together.
- Team building is the process used to enhance teamwork.

Alignment

As outlined in Chapter 1, alignment is defined as the condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives.

Teamwork is an integral part of alignment, but alignment is not just teamwork.

The key to alignment during pre-project planning is that the effort and priorities of the entire team are the same goals as those expressed by the project sponsors. These goals should be developed during the business planning phase and serve as the guiding principles throughout the entire pre-project planning process.

A well-aligned team should always be aware of the business premise under which the project was launched to make sure that they are still on track. Should the business premise change due to outside influences, a well-aligned team should be able to adjust its goals and priorities to align with the new project objectives. Alignment is based on the coordination between the organization's strategy, mission, or objectives (project sponsors, company executives, different functional groups).

Teamwork

CII defines an effective project team as "a group which shares a common mission or a reason for working together, is interdependent in effectively achieving shared goals, shares a commitment to working together toward identifying and solving problems and is accountable as a functioning unit within a larger inter-organization context."

Teamwork involves coordinating individual tasks to achieve the stated team objectives. Individuals on the team each perform different tasks designed to combine together to accomplish the desired results. On a basketball team, each player is assigned his/her own position and role on the court. To the casual observer, the players all appear to be running "helter-skelter." However, each player knows his/her role and understands the roles of the other players on the court. Great basketball players are able to pass the ball without looking to see their teammates. They understand the roles of each other so well that they know where everyone is on the court at any given time.

Teamwork should involve a certain amount of enjoyment in the experience, and camaraderie between the people participating in the team. The tasks themselves may not be enjoyable, but the experience of working as a team and successfully accomplishing the objectives bring with them a certain amount of satisfaction. Basketball teams that develop personality conflicts and poor relationships invariably develop poor teamwork and their performance suffers as a result.

A key aspect of teamwork is to produce high quality results from the team's effort. Rarely are poorly performing basketball teams described as having good teamwork.

Alignment vs. Teamwork

The above discussion presented descriptions of both alignment and teamwork. Alignment and teamwork both require clearly defined goals and objectives. The two concepts have many common aspects, but there are also aspects that highlight the difference between these two.

- Teamwork typically applies to groups who work together in a close working relationship. Alignment can involve groups working entirely apart but working toward the same overall project objective.
- Good teamwork involves making group decisions by consensus after a thorough discussion. Whereas good alignment may also involve different individuals making decisions independently but focused on the same overall project objectives.

Obviously, the distinctions drawn between teamwork and alignment are not absolute. Many of the issues outlined in Chapter 2 will help to improve teamwork as well as alignment. In summary:

- Teamwork reflects whether or not a team is working well together to achieve an objective.
- Alignment reflects whether or not a team is working on the same objectives in a collaborative manner and if those objectives are correct in terms of the organization's need or mission.

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