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A Standardized Approach to Identifying and Defining Owner Value Interests and Aligning the E&C Response

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**Prepared by
Construction Industry Institute
A Standardized Approach to Identify and Define Owner Value
Interests and Align the E&C Response Research Team**

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Executive Summary

One of the main challenges to project execution is the precise definition and effective communication of a value set that reflects all stakeholders' needs. Indeed, when owners fail to identify and convey what is important to them, a number of problems can arise. These problems may occur because not enough information is shared, because incorrect assumptions are made by one or both parties (owner/contractor), or because conflicting values have not been properly identified. Some project requirements such as budget, schedule, and physical specifications can be clearly defined and communicated because they are dictated by organizational decisions, market demands, and other constraints. Often though, other project value interests are difficult to define and even more difficult to measure and communicate. As a result, project values are many times only partially identified and communicated; frequently they are composed without a full understanding of the basis for their selection, without a method for their measurement, and without project team guidelines for appropriate departures from their set levels.

For these reasons, CII commissioned Research Team 266 to develop a new method of identifying and communicating owner value interests. The charge was to formulate a method and create a tool that would help identify the appropriate engineering & construction (E&C) responses (focus points). (In this research, "E&C" refers to any party contracted by an owner to perform engineering, architectural, procurement, and/or construction services.) The team was made up of industry professionals from both owner and contractor companies and principal investigators from academia. After performing an extensive review of the literature and an examination of existing practices, the research team conducted a survey of the industry. Using this initial research, the team developed a process to test its key hypotheses, and then created the CII ValueShare tool. An Excel™-based tool, CII ValueShare is designed to help owners and contractors better communicate and respond to project value interests.

The CII ValueShare tool provides 1) an operating environment for the identification of owners' value interests for particular projects, 2) a means to communicate value interests within the owner organizations and with E&Cs and suppliers, and 3) a decision-support process that can assist E&Cs in determining what their main focus should be in their responses to particular value interests.

Introduction

Constructed facilities are key to an organization's operations and to the achievement of its mission and strategic goals. These assets are planned, delivered, and managed in ways that maximize the value they bring to business operations. While there are many constants in the delivery of a typical construction project, each industry segment and project situation has different priorities and value interests. For example, while organizations in the manufacturing or petrochemical industries rely on facility performance over an extended period of time to support their core business operations, project developers typically do not have long-term equity in assets and therefore may focus more on minimizing project duration and construction cost. Clearly, the value interests will differ for different industry-specific project characteristics, business strategies, core business priorities, and other important project parameters.

Although owners strive to effectively communicate what is important in their capital projects, they are not always successful. Often, unintended ambiguity in communicating value interests leads to misunderstandings and conflicts between owners and E&C or suppliers, as well as among the different project stakeholders within owner organizations. These misunderstandings and conflicts have a history of affecting project success.

An owner's ambiguity about a project's value interests might manifest itself in one or more of the following communication failures:

- Not specifying the value interests that really matter
- Not specifying how the project's value interests are measured and weighed
- Not establishing the relationships among the project's value interests or the ways to address potential conflicts between them

- Not identifying acceptable trade-offs among value interests
- Not defining the terms used in the stated value interests—thus allowing for misinterpretation, since the same terms may be interpreted differently by different stakeholders.

An owner's ambiguity about project value interests is apparent in statements such as, "I want the product to be the lowest cost, of the highest quality, and delivered in the shortest time." Here, a communication failure may be (1) a lack of recognition that some of the stated value interests are in conflict with each other and (2) a lack of guidance on how to prioritize the stated value interests in order to resolve any conflicts. These kinds of conflicting project demands are not uncommon, and the E&C response is typically to take a "shotgun" approach—i.e., to focus on all value interests perceived as relevant. Such exchanges, especially at project inception, are suboptimal because the E&Cs waste resources on a proposed solution or strategy that owners will not necessarily value or feel will meet their needs.

The need to identify and incorporate value-adding elements and practices into a project is not a new research topic for CII. Research Team 233 (Planning for, Facilitating, and Evaluating Design Effectiveness) developed a process for identifying the practices that can enhance the ability of design to help achieve project objectives. Research Team 245 (Optimizing Engineering Value in Projects) incorporated the efforts of RT 233 and expanded the process to include identification and implementation of a number of value-adding engineering strategies. Research Team 204 (Owner's Role in Project Success) designed a process by which owners can identify the areas they should emphasize, based on how they prioritize project criteria. Research Team 214 produced a tool that classifies a project as either a cost- or schedule-driven project. The team also recommended techniques (including CII Best Practices) to achieve the specific cost or schedule objectives of the project. Research Team 184's Value Management Toolkit recommends various non-standard value-adding processes, along with advice on which ones may have a more significant impact on a project and when they can be implemented.

Although these studies stand as significant resources for value-adding practices, the industry still needs a standardized procedure and a protocol by which value-adding elements for all capital project phases—including operations and management (O&M)—can be identified and communicated between owners and E&Cs. Further, communication by itself is not necessarily a guarantee of successful implementation. In order for E&Cs to successfully respond to project values, they must know how the achievement of those values will be evaluated and, ideally, in which areas they might best focus their resources and efforts. In response to this need for a standardized approach to helping project teams identify both the value interests of owners and the best responses from contractors, the research team developed a method-based tool for owners to communicate their value interests and priorities to contractors.

More specifically, Research Team 266 had the following objectives:

1. Assist owners in the identification of value interests.

Based on the survey data collected, the team developed a model to support the identification of value interests from a set of project characteristics. It is important to note that the model output (i.e., ranked value interests) only provides suggestions on the basis of data collected from CII members operating in different industry sectors, each executing projects with similar characteristics.

2. Categorize and communicate identified value interests.

The team developed a standardized document to allow users to convey value interests and other key information needed for the optimal E&C response. As part of the tool, this document can be changed in such a way as to communicate only selected information.

3. Align E&C response to owner value interests.

To help E&C providers determine or highlight their expertise in response to the specified value interests, the team developed a focus point matrix. The development of this assessment function was based on the expertise of the industry members of the research team.

The scope of the research was limited to quantitative assessment of the link between project characteristics and value interests. The survey—issued to both owner and contractor firms (190 projects across 23 organizations)—collected perceived preferences of mid-level executives who were familiar with both engineering and business needs. Respondents were asked to choose from among the value interests developed by the research team for the project characteristics under consideration. The survey data reflect different contracting environments, since respondents were tasked with ranking value interests for actual projects (current or previous).

The remainder of this research summary is organized as follows:

- a brief summary of the methodology and process validation, as well as some of the key definitions used in the study
- major research findings
- discussion of the tool applications
- conclusions and recommendations.

Methodology

A brief summary of the methodology and the research process is presented below. This includes key definitions and a justification of the selected approach.

Value Interests

A value interest is *an owner-defined project attribute that adds some measure of value to the organization*. These attributes may be common requirements found in nearly all projects, such as cost and schedule, or they may be industry specific project attributes. They may also be dictated by the owner's business strategies and involve concerns such as the public image of the project or protection of intellectual property. Identifying and defining the value interests addressed here required significant research. Initially, a list of almost 70 value interests was developed by the team. This list was then refined to include the 48 value interests that were tested in the survey. To the team's surprise, the survey respondents selected all 48 value interests, indicating that they are all relevant to communicating what is important to owners.

Since the interpretation of the terms used to convey value interests may vary significantly from one organization to another, the team determined that it was critical to develop standard definitions for each. Thus, *value-added* definitions were developed within the context of each value interest, with a description of the benefit an owner would expect to receive from each interest. Each team member was assigned a subset of the value interests and asked to define and provide the benefits of each. The academics on the team then combined the basic definitions with the list of benefits of each value interest, and the final value-added definitions were revised and approved by the entire research team over the course of several meetings. The value interests and definitions are provided in the appendix. ***Safety is not included as a selectable value interest since it is a given and is always the most important priority***

on any project. *It has, however, been incorporated into the project deliverables. Specific methods for measuring and meeting project safety requirements should be determined by the owner and contractor.*

Project Characteristics

In order to recommend value interests, it is necessary to first define project characteristics. A project characteristic is a *feature that affects, governs, or determines a value interest(s)*. It is important to identify these characteristics, since some of them may strongly influence the selection of project values. Initially, the team considered characteristics that would describe the owner's organization, rather than the project. But, because an owner may perform vastly different types of projects, the team determined that the strongest drivers of a project's value interests are its characteristics. Consequently, characteristics were chosen that primarily describe the project—although, there are a few considerations of the owner in the project characteristics, such as the *level of owner involvement in the project and the importance of the project to the owner's organization*.

Eleven project characteristics were identified as representing strong drivers of project value interests. In addition, each project characteristic was assigned five specific levels; these levels were chosen to capture the degree of existing development and owner familiarity with the project site, from none at all to a very high degree. More details about the project characteristics used in this study and their levels can be found in Implementation Resource 266-2 and Research Report 266-11.

Survey and Model

Identifying the relationships between the 11 defined project characteristics and the 48 identified value interests required the collection of project data from industry. To gather this data, the team distributed a survey with the assistance of CII data liaisons and the Construction Users Round Table (CURT). The survey was directed at project managers and mid-level executives with experience in both the business and engineering aspects of projects.

In the survey, respondents were first asked to draw from their experience and describe a completed project; they did this by identifying one of the five levels for each of the 11 project characteristics. They were then prompted to choose the ten most relevant value interests from the list of 48 and to assign a weight to each. Finally, they were instructed to weight each value interest to reflect the relative importance of the value interests to the projects they described.

Eighty-three participants provided responses on 190 projects—with equal representation of both owners and contractors—over several months. The distribution of industries represented in the survey responses is shown in Figure 1. As the figure illustrates, nearly half of the responses came from companies in the oil, gas, and chemical industries.

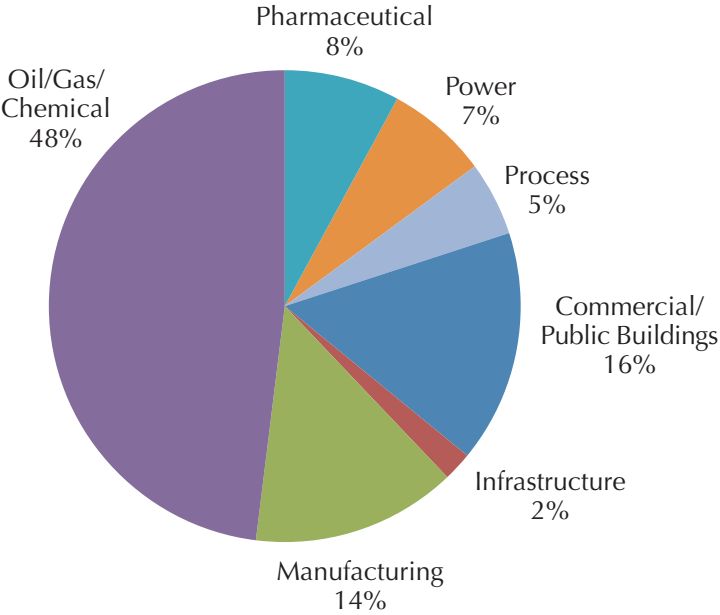


Figure 1. Distribution of industries participating in the survey

The survey data were then used to develop a model that would predict the applicability of each value interest, given the specific combination of project characteristic levels. Statistical models were applied to the survey data to identify the model that most accurately reflected the relationship between the project characteristic levels and the chosen value interests. The model that best fit the data was the logistic regression model. For more information regarding this model and statistical validation, see Research Report 266-11.

The team performed an additional test of the model fit by feeding data from a randomly selected set of surveys into the model and comparing the model results to the value interests chosen by the survey respondents. When the top ten value interests were compared, the result was that 80 percent of the test cases matched at least five out of the ten value interests. When the top three value interests were compared, over 80 percent of the test cases shared at least two of the three value interests. The high percentages of matches indicate the model provides a satisfactory fit with the survey data.

Because this model is based on an average “snapshot” of CII member companies, owners should consider the following circumstances when interpreting the output of this research:

- where their projects fit within the industry distribution if the survey data are representative of their project. (See Figure 1.)
- their own project-specific conditions
- their current industry and market environments.

Because the survey responses described projects of all sizes, the model was developed with data from both large and small projects. This diverse data sample helped ensure that the implementation of this process is the same for all projects, large or small. Moreover, it guarantees that the recommendations provided by the tool are valid for all project sizes.