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IMPLEMENTING CII PRACTICES
THE IMPLEMENTATION PLANNING MODEL:
STEPS TO SUCCESS

UNIVERSITY OF COLORADO–BOULDER

PAUL S. CHINOWSKY

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IMPLEMENTING CII PRACTICES
THE IMPLEMENTATION PLANNING MODEL: STEPS TO SUCCESS

by

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University of Colorado–Boulder

A Report to
Construction Industry Institute
The University of Texas at Austin

Under the Guidance of
Implementation Strategy Committee

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EXECUTIVE SUMMARY

New ideas and new practices are the life blood of an organization that desires to remain competitive in a changing business environment. The absence of these new ideas will eventually lead to stagnation and a role as an industry follower. Based on a long history of research in many industries, the challenge to organizations is how to navigate the many barriers that appear during an implementation process and change these ideas into practices. Within organizations that invest in, develop, build, and design capital facilities, this challenge is amplified based on long-held industry practices and a necessary focus on minimizing risk. However, even the capital facility investment industry is being forced to recognize the need to adapt to changing business conditions through new practices.

The current Construction Industry Institute approach to assisting capital facility investment organizations in addressing this implementation challenge is a focus on the Implementation Pyramid introduced by the Implementation Strategy Committee as an overall model for the implementation process. This research effort builds upon the Implementation Pyramid by recognizing that the greatest challenge to organizations initiating change and new practices is the development of an implementation plan. Specifically, organizations require an implementation plan that provides enough detail that all parties impacted by the process understand the roadmap that is going to be followed during the implementation process. As documented in the current research, organizations undertaking an implementation process often fail to establish a roadmap or vision for implementing a proposed practice. The original Implementation Pyramid recognized the need for a plan, but did not provide the specific outlines that an organization should follow when developing a plan for a specific implementation process.

The current work fills this essential gap by primarily focusing on the expansion of the fourth level of the pyramid, “Implementation Plan and Goals.”

This document describes the background that led to the development of the Staircase Implementation Model and the individual components of the model. The Staircase Implementation Model introduces a series of phased steps to implementation that are intended to provide an organization with a stepwise approach to successful implementation. The Implementation Strategy Committee recommends that organizations use the new model to enhance current implementation processes by developing an implementation plan that fully addresses the challenges and opportunities afforded by a proposed new¹ practice.

¹ A “new” practice is used in this guide to refer to any practice that is being introduced to a given group within an organization. The practice may not be new to other parts of the organization, but it is new to that group or is not being fully utilized by a group.

CHAPTER 1 - INTRODUCTION

The introduction of new² processes, even proposed best practices, is a challenge for organizations of every size and type. The reasons for this challenge are varied and heavily dependent on organization culture, market demands, competition, and workforce demographics to name a few. However, even with these varied forces working for and against change, an organization must resolve itself to the need to improve and modify procedures on a regular and continuing basis. No organization can continue status quo for an indefinite period of time. Examples of this fundamental fact of business can be seen in every industry and in every sector within that industry. Additionally, this need for new procedures is not limited to organizations of a specific age. Within organizations that invest in, develop, build, or design capital facilities, half of the companies that fail have been in existence over ten years (Chinowsky 2001). Thus, the age of the organization **does not** make it immune to the need for new behaviors and the successful implementation of practices. Given this demand for continuous change and the introduction of new practices, the question arises as to why the capital facility investment industry has been traditionally reluctant to introduce and implement best practices. Of particular concern is the question of why the practices identified through CII research efforts still face implementation resistance within CII organizations.

This resistance within the capital facility investment industry is neither new nor limited in scope to specific sectors, project types, or organization size. Rather, resistance to implementing practices is a traditional response founded in the need to focus on life safety, budget and schedule concerns, and a reliance on established procedures. This emphasis on tradition is

² A “new” practice is used in this guide to refer to any practice that is being introduced to a given group within an organization. The practice may not be new to other parts of the organization, but it is new to that group or is not being fully utilized by a group.

rational considering these concerns and the ultimate need to deliver facilities that will last 50 to 100 years with minimal questions of reliability. When combined with the conflicting demands within a project from multiple project participants and multiple legal jurisdictions, the desire to rely on established practices and procedures can be further understood.

Given this need for stability, the introduction of change can be daunting for even the most senior of industry professionals. However, the changes in the industry are preventing this stand from continuing to be standard practice. Specifically, the introduction of globalization, new technologies, changing worker demographics, and increasingly shorter project schedules requires capital facility investment organizations to consider implementing improved practices in even the most successful engineering and construction departments. **The requirement to aggressively consider the adoption of new practices and the need to facilitate this adoption prompted the CII Implementation Strategy Committee to undertake the current research effort into how to effectively implement practices.**

1.1 Background

The need to enhance an organization's productivity and effectiveness in response to changing environments is a recurring theme through business literature in particular and all areas of production in general. As outlined by Collins (2001), the greatest threat to achieving greatness is an organization that is content with being very good at what it does. In the context of new practices, this thought transfers to the greatest threat to greatness being content with established practices that have achieved acceptable and above average results. This focus on moving from a position of being successful in a specific area or context to one that potentially excels above the competition can be daunting to many organizations. Specifically, the cost-benefit analysis for

introducing the disruption to existing processes can be difficult to establish due to the unknowns involved with the process. This uncertainty goes against the risk perspective of the capital project investment industry in general and leads directly to the desire to remain with established practices.

The evidence for this reluctance to introduce new practices is well-documented in the literature. In general, this literature focuses on the topic of change management. Although change management and new practice implementation have a close relationship, the two topics should not be used interchangeably. Specifically, the relationship between change management and new practice implementation can be viewed as a causal link. At the beginning of this link is a trigger for an organization to examine its practices for improvement opportunities. This trigger can be competition, economics, new business opportunities, customer demand, or the result of an internal gap analysis. In each case, this trigger initiates an opportunity for improvement through new or improved practices. Once the opportunity is identified and an implementation path is laid out, the implementation process will result in the need for change. In this manner, the implementation of new or improved practices is the driver for change management. *More importantly, implementation of a practice gives a specific context for change management to occur and establishes a need for a specific plan to be introduced that both manages change and leads to the successful implementation of the practice.* The research outlined in this document follows this relationship and builds upon change management principles to provide a foundation for the greater detail required for a successful practice implementation plan.

Given this relationship between new practice implementation and change management, foundational work in the area of change management can be used as background for the current research. Arguably the greatest impact from this body of work was introduced by Kotter (1995).

In this work, Kotter studied organizations to determine why change efforts were unsuccessful and why change efforts encountered barriers that appeared insurmountable. The results of this investigation led Kotter to explicitly state that change management and leadership are intertwined and successful change management efforts are directly dependent on the capabilities of the leader leading the change. To assist leaders in directing the change management process, Kotter introduced his eight elements of a successful change management effort. These areas are reflected in the change audit process introduced in the implementation model developed within the current effort.

A second research effort that is essential to the implementation process was introduced by Suchman (1987). In this work, Suchman studied the variance between change plans and actual implementation efforts. Through this research, Suchman found that change management plans must be used as guide rather than a blueprint, and deviations should be expected and actively managed rather than seen as a failure. This finding emphasized that both internal and external forces will act upon a change process and more likely than not, these forces will result in changes occurring throughout the process. These changes should be expected and accommodated rather than viewed as a failure of the plan. This complements the work of Mosier et. al. (2000) who stated that risk is an integral part of change and the ability to accept that risk will be directly related to the ability of the organization to succeed in the overall process.

A third thread in the change literature that is relevant to new processes is the concept that change impacts multiple areas within an organization and that in turn requires a group of individuals to be responsible for the process rather than a single individual (Yarberry 2005). This recognition will have two beneficial consequences; 1) it should prompt the group of individuals to meet on a regular basis to discuss the change process and any deviations from the original plan

that may be necessary, and 2) should prompt the change group to anticipate potential barriers that are being recognized early in the process (Rowden 2001). In each case, the incorporation of a group perspective should enhance the overall change process by bringing multiple perspectives and levels of responsibility to bear on a single change effort.

Finally, change management and new practice implementation owe a significant debt to the work of Peter Senge and the development of systems as an approach to organizational change (Senge 1990). Specifically, Senge introduced the concept that a shared vision was critical for effectively communicating the reasons for undertaking organizational transformation. In this shared vision, the organization must understand the imperative for change as well as the consequences for not incorporating change into the system. Since the organization is a dynamic system that is in a constant state of environmental response, the introduction of change is not only beneficial, but it is imperative to successfully survive environmental turbulence.

1.2 The Current Research Effort

In response to the need to both enhance practice implementation and modify generic business studies to specifically address the capital investment industry concerns, the Implementation Strategy Committee initiated the current research study on Successfully Implementing New Practices. The goal of the research effort was the development of an implementation planning model for CII organizations to enhance the process for implementing new practices, either new to the organization, new to a group, or new in terms of the practice not being fully utilized prior to this point. The research effort adopted a long-term perspective on change within industry organizations and the enhancement of current implementation practices. The proposed Staircase Implementation Model is intended to build upon existing CII work as

well as the experience of the Implementation Strategy Committee to address the need for greater detail in the best practice implementation process.

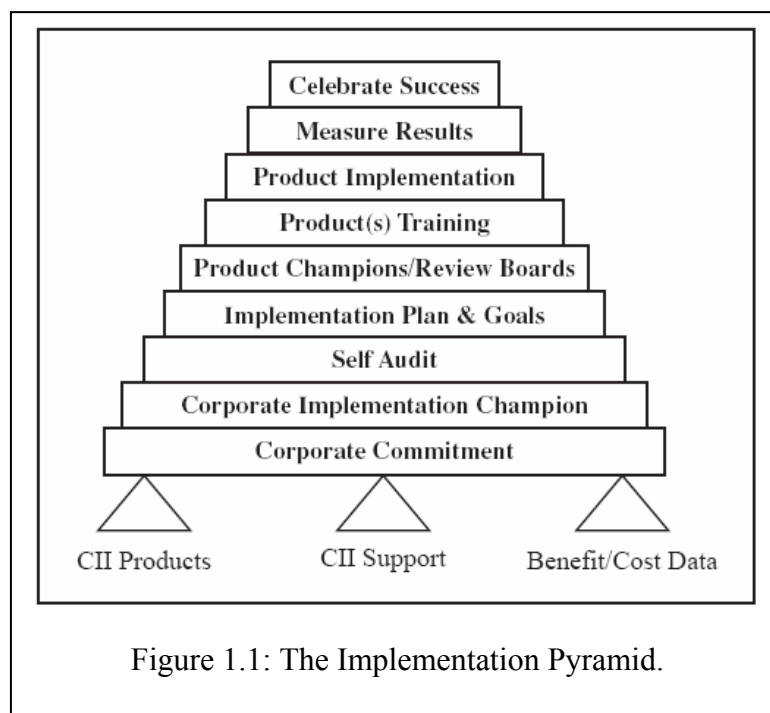
The current research effort focused on three specific objectives to enhance the implementation process.

- a. **Implementation Benchmarking** – As a continuation of previous efforts to benchmark the implementation and success of Best Practices, the research team focused on establishing a set of statistical benchmarks from which CII members could analyze and determine current trends in practice implementation. This objective is highlighted in the Measurements section of the planning model where benchmarks are outlined as a key tool to gauge implementation progress.
- b. **Barrier and Success Identification** – The key to successfully implementing practices is to understand potential barriers to implementation as well as keys to successful implementation. In response to this need, the research team established the identification of potential barriers and strategies to address these barriers as key points that every CII member should understand and address during best practice implementation.
- c. **Implementation Framework** – Although every organization has individual objectives and forces that guide its implementation path, the research team developed a model that provides guidelines for approaching the implementation of practices. The framework includes checkpoints, key decision points, as well as benchmarking questions to determine progress within the framework.

These objectives provided the basis for initiating the current research effort. The resulting research provides CII member companies with a new implementation model including an implementation methodology, guidelines, and long-term planning outline that specifically addresses issue of implementation within the context of the capital facilities industry.

1.3 Relationship to Implementation Pyramid

The previous work in change management should not be interpreted that the capital facilities industry or CII have not been active in this domain. Rather, the CII Implementation Strategy Committee has focused on this topic extensively over the last decade. Of particular relevance to the current effort is the Implementation Pyramid introduced by the ISC as a best practice for implementing results introduced by CII research (Figure 1.1).



The current effort builds upon the Implementation Pyramid by recognizing that the greatest challenge to organizations initiating change and new practices is the development of an implementation plan that provides enough detail that all parties impacted by the process understand the roadmap that is going to be followed during the implementation process. The original Implementation Pyramid recognized the need for a plan, but did not provide the specific outlines that an organization should follow when developing a plan for a specific implementation process. The current work fills this essential gap by primarily focusing on the expansion of the fourth level of the pyramid, “Implementation Plan and Goals.”

By using the two models in an integrated manner, the Implementation Pyramid can provide an organization with a big picture model of the steps required in the implementation process. However, when the need is established to introduce a plan for implementing the new practice, the Staircase Implementation Model introduced in this document can be adopted to develop a specific plan for a practice improvement opportunity. In this manner, the models provide a comprehensive support structure for an organization that is approaching the implementation of new practices.

1.4 Reader Guide

The Staircase Implementation Model introduced in this document introduces a number of new terms and processes related to new practice implementation. Additionally, the model introduces a number of new levels of analysis for an organization to evaluate during the implementation process. The combination of these items can make it challenging for the reader to understand the complete model at one time. The authors recognize this challenge and recommend that the reader approach the development of an implementation plan as a process

rather than a single effort. Specifically, the reader should not be tempted to write a plan from this document at one sitting following the directions from beginning to end. **Rather, it is more important to understand the concepts introduced in the document and develop a plan that integrates the original Implementation Pyramid, the new Staircase Implementation Model, and the implementation measurements.**

1.4.1 The Chapters

Chapter 2 – Methodology – Provides an overview of how the new Staircase Implementation Model was developed and the steps used to validate the model.

Chapter 3 – The Implementation Survey - As a starting point for developing the model, a survey was implemented to collect industry data on implementation practices. This data in turn served as a foundation for the model.

Chapter 4 – The Staircase Implementation Model – This chapter provides an overview of the model and each component of the model. The chapter introduces the concept of Implementation Steps as the key to a successful implementation process.

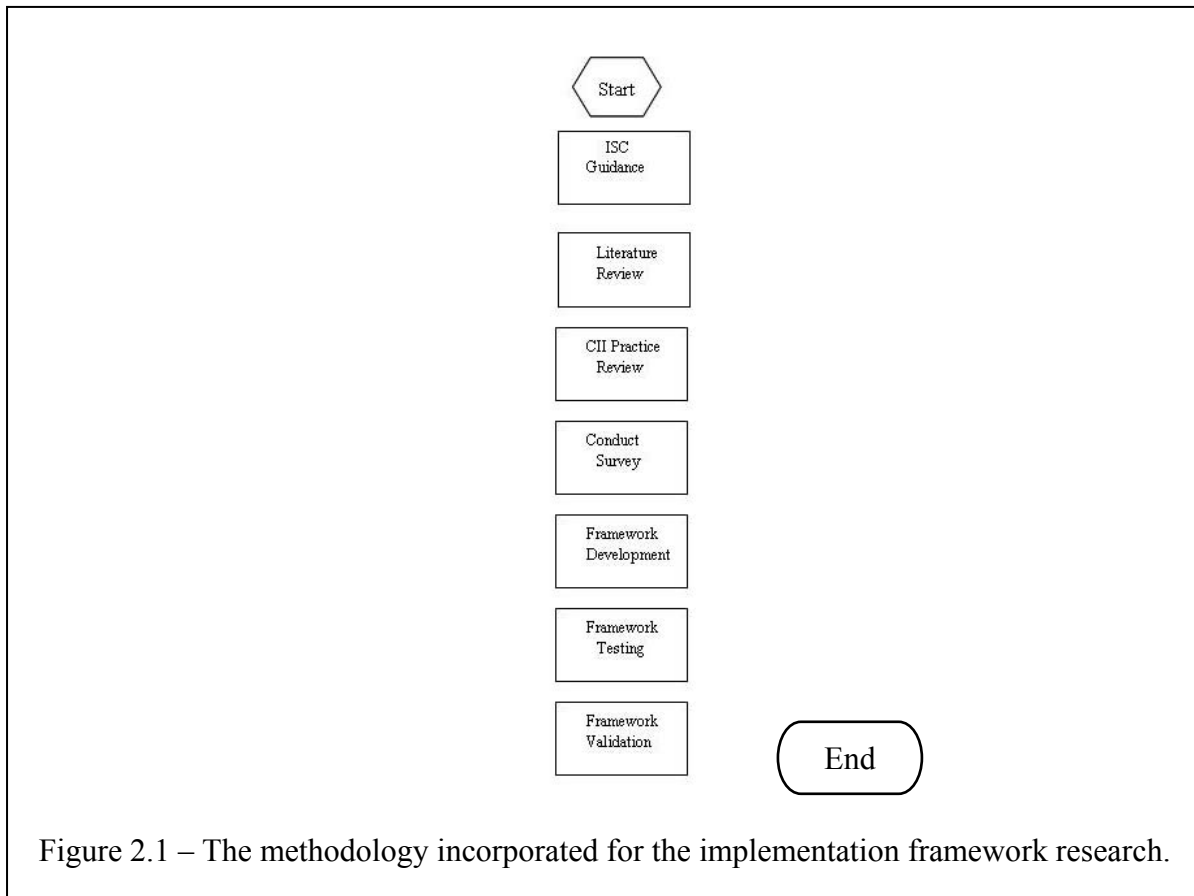
Chapter 5 – Approaching New Practices – This chapter provides readers with a further level of detail on how to prepare for the implementation process. Of particular importance in this chapter is the introduction of the Change Audit which is a fundamental tool to determine if the organization is prepared to implement the new practice.

Chapter 6 – Step Evaluations – This chapter provides readers with a complement to the Change Audit by introducing Step Evaluations which assist the organization in determining whether it has completed an individual step along the implementation process.

Chapter 7 – Conclusion – The final chapter provides readers with issues that must be considered when approaching a new implementation process.

CHAPTER 2 - METHODOLOGY

The development of an expanded implementation planning model was undertaken by the ISC following the established methodology of study, sample, develop, and test. This methodology emphasized obtaining as many perspectives as possible to develop a framework that reflected the implementation requirements of all members of the CII community. The methodology emphasized both the analysis of existing research and the development of new knowledge based on the research findings. The primary steps in the methodology were 1) Literature and Practice Review, 2) Survey, 3) Framework Development, 4) Testing, and 5) Validation (Figure 2.1).



2.1 Literature and Practice Review

The first step in the development process emphasized examining existing CII documents on implementation and current literature. The former focus, the CII documents, focused on the existing work by CII on the development of implementation guidelines for suggested practices. The intent of this review was to determine how the current research integrated with existing documents to minimize overlap and conflicts. The latter review focused extensively on work related to implementation barriers. As summarized below, this review moved rapidly to the area of change management as a focus since much of the research on implementation emphasizes change management as the key element in successful implementation efforts.

2.1.1 Evaluation of Current Implementation Resource

CII currently has several tools to assist member organizations in implementing new practices and operations. Dating back over ten years, this topic has been a central focus of the CII Implementation Strategy Committee (ISC) and is one of the foundational elements of the CII organization. However, even with this extraordinary commitment, the level of implementation by member organizations of many proposed practices is still not at the level that is desired by CII. The issue of concern here is why this level is not being achieved given the resources that are available and the research data supporting practice implementation benefits. Although the answer to this issue has several components that are both internal to an organization and generic to all change management efforts, the issue here is how to improve the resources available to the CII members.

As a first step in addressing this issue, a review of the current resources available to member organizations was made to determine where immediate enhancements could be

delivered. At the core of this review were documents 166-2 and 42-2, both developed through the Implementation Strategy Committee and both focusing on Guidelines for Implementation of CII Concepts. Although an implementation tool box does exist and implementation workshops are regularly held, the focus of this review is mainly on the documents which are widely available to all members.

As an overall evaluation of the current resources, the impression that is taken from these resources is that a substantial amount of work was put into developing the Implementation Model in 166-2. This model covers the complete scope of required implementation activities from Corporate Commitment through Celebrating Success. This overall strategy is documented in 166-2 with an overview of each step in the process. Similarly, 42-2 provides checklists and an initial identification of potential barriers that may exist during the implementation process.

The high level approach taken in 166-2 to implementing practices is both the strength and weakness of the document. It is a strength in that it appears easy to comprehend by senior organization management. This ease of comprehension probably attracts people to its contents and to the overall message of implementation. However, this approach is also the fundamental weakness of the document. Specifically, the document leaves the reader with the impression that implementation of best practices is a straight path with a few potential barriers that are easily overcome. Although 42-2 emphasizes potential barriers to a greater degree, both documents stick to an overall strategy approach to implementation. The conclusion of the review process determined that a greater focus on how to achieve implementation success, how other organizations are progressing along this path, and what barriers exist to implementation success is required.

2.1.2 Literature Review

The second component of the background phase of the research emphasized examining current literature in the area of implementation practices. This review process quickly discovered that the implementation of new practices was a change management process at its core. The reason for this connection lies in the fact that implementing new practices requires individuals and groups to change existing practices and processes. This requirement is a change management process and thus the heart of successful implementation is the successful management of change within the organization. The overall results from this review are outlined in the Background section in Chapter 1. However, to summarize the findings from this effort, the following observations were obtained during the literature review:

- Change management and leadership are intertwined and successful change management efforts are directly dependent on the capabilities of the leader leading the change (Kotter 1995).
- A plan for implementing change and new practices should be used as guide rather than a blueprint, and deviations should be expected and actively managed rather than seen as a failure (Suchman 1987).
- Risk management is an integral component of change, but risks must be managed and accepted as part of the process with an acceptance that some risk is acceptable and a necessary component of implementing change (Mosier et al 2000).
- The implementation of change and new processes can be more efficient if the group responsible for the change meets regularly to ensure all participants are aware of changing conditions and potential barriers (Yarberry 2005).

- Change and new processes should be viewed as integral with organizational change. Specifically, the implementation of new processes often requires organizational change and this connection cannot be overlooked or minimized during the implementation process (Strategic Direction 2004).
- Barriers will be encountered during the adoption of new processes and these barriers must be anticipated prior to the adoption of an implementation effort (Rowden 2001).
- The implementation of new processes requires building a *shared vision* that effectively communicates the reasoning for undertaking organizational transformation. (Senge 1990).

The results of this analysis provided the foundation for both the survey and the implementation framework presented in this report.

2.2 Implementation Practice Review

At the conclusion of the literature review, the ISC research team focused on obtaining insights into the practices of CII members in regards to implementing new practices. The goal of this Implementation Practice Review was to identify the current issues that CII companies were encountering during the implementation of new practices. The study was undertaken through the use of a survey instrument.

The survey focused on analyzing CII member companies to determine where the membership currently stands in terms of successfully implementing proposed practices. The survey included major topics related to preparing for change, barriers, strategies, organization support, and focal points for change (Appendix A). Thirty-three of the member companies

responded to the survey, giving the project team a solid understanding of current implementation issues within CII. Although this response is limited in its scope by focusing on a specific demographic, the results provided the team with sufficient background to develop the implementation framework discussed later. In summary, the results of the survey illustrated that EPC and owner organizations were marginally successful in implementing new practices with the majority of organizations facing significant challenges in supporting new practices outside of an initial test case. The survey illustrated that few companies were currently successful in adopting new practices on an organization-wide scale. Rather, most companies were currently facing difficulties in terms of organization culture, resource allocation, and the availability of process champions.

2.3 Model Development

Upon completion of the survey effort, the ISC research team began to synthesize the results of the survey effort into the development of an implementation model. The model had three fundamental goals; outline the steps to a successful implementation effort, identify the barriers and strategies that could be expected during the implementation process, and provide a roadmap to assist an organization in developing a plan for the implementation process. The process of developing this model relied on the collected expertise of the ISC members. Through a series of meetings, the members collectively refined the characteristics of the model based on group knowledge, input from the literature review, and analysis of the survey results. The results of these discussions are reflected in the phased step approach adopted for the model. Finally, the team refined the model by adding a temporal component to implementing the steps. Through a series of test cases, the team adopted a four-step implementation model. Chapter 4 contains a

detailed explanation of the developed model and its use in developing a successful implementation effort.

2.4 Testing

The completion of the implementation model provided the opportunity for the ISC research team to conduct a series of tests with participating companies to determine the accuracy and the usefulness of the model. In each test case, the participating company matched their implementation process to the proposed model to determine where potential changes to their internal process should be made. The participating companies applied the proposed model to their implementation effort to determine what refinements were required to enhance its usefulness or eliminate gaps in its structure. The results of this process revealed several issues including the need for a simplified version of the model for introduction purposes, and acknowledgements that individual organizations may need to modify issues such as completion of the steps according to their accepted business practices. The model illustrated in Chapter 4 reflects the changes implemented during the testing process.

CHAPTER 3 - IMPLEMENTATION SURVEY

The research team's first step in analyzing the current issues associated with implementing new practices in the CII community was the administration of a survey to obtain general information concerning the implementation of new practices and policies. The overall goal of the CII survey was to analyze the current methods associated with implementing new practices, from the initial stages of implementation through the expansion of practices to accepted procedures. Of particular interest in this process was the identification of barriers to implementation and the strategies used to overcome these barriers. In addition to this key information, the survey focused on how organizations prepared for the introduction of processes and practices.

As discussed in the "Preparing for Change" section later in this document, this last aspect of implementation is significant since it represents the organization's focus on preparing the foundation for a successful implementation process. Although this emphasis is similar to general change management issues, it has specific relevance to practice implementation. Specifically, the organization that focuses on preparing a plan will have the greater opportunity to establish a roadmap for the successful implementation process. This long-term impact on the process provided the motivation for crafting a significant focus of the survey on initial change preparations.

As the following data illustrates, EPC and owner organizations encounter similar issues and barriers during the implementation process. However, a segment of these organizations have had greater success overcoming these barriers through plans that focus on broad organization strategies and/or reinforcing personal communications with organization employees.

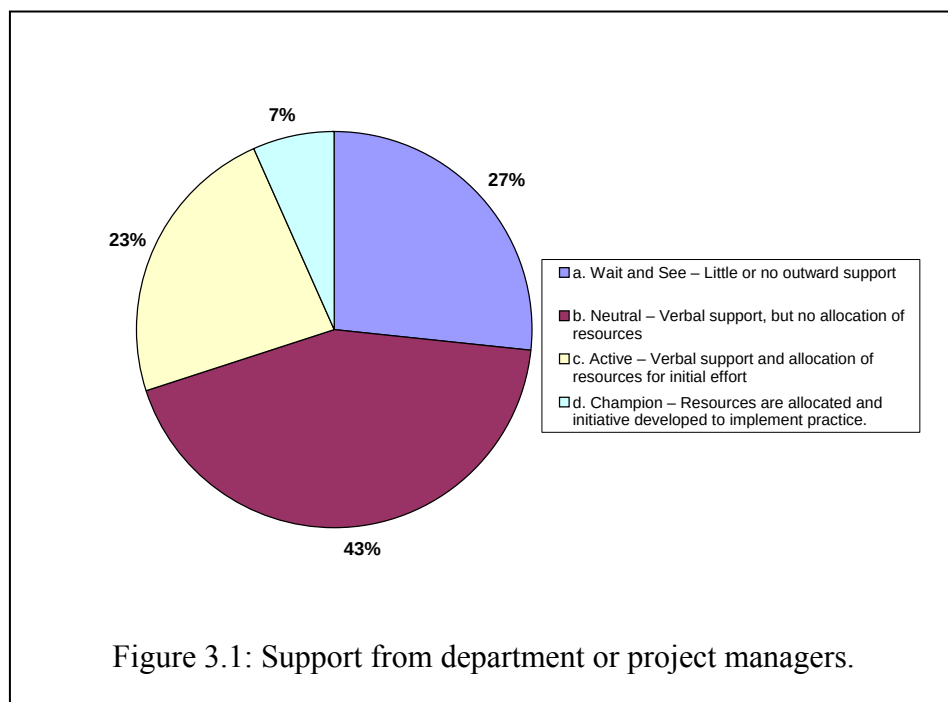
3.1 Survey Results

The CII survey was provided to CII members through a combination of direct e-mail correspondence and participation through the Product Implementation Workshops. The survey questions are provided in Appendix C. About one-third of the CII membership responded to the survey. Although this result does not necessarily reflect the total membership position on implementing new practices, it does provide a good indicator of the process of implementing new practices in the capital facilities industry. Of particular interest to the team were three specific survey areas: 1) were organizations preparing for new practice implementation, 2) what barriers were being encountered during implementation, and 3) what strategies were being employed to overcome implementation barriers. The following results highlight these areas.

3.1.1 Implementation Preparation

The first of the focus areas, implementation preparation, focused on the eight areas of implementation preparation outlined in the Preparing for Change section later in this document. To determine if companies were taking the appropriate preparation steps, a series of nine questions were introduced in the survey. As seen in Figures 3.1 - 3.3, three of the nine questions revealed significant preparation issues in terms of putting in place adequate preparation procedures. The first of these issues, Figure 3.1, focused on the question of whether new practices received support from other project or department managers. This is a key implementation issue to ensure that expansion of the practice beyond a single project is possible without encountering resistance from peer level managers. As seen in the graph, 70% of the respondents stated that managers provided no support or took a neutral stance. Only 7% of the respondents actually stated that other managers championed the new practice. Even in these

cases, there were common responses saying that champions were appointed for a topic, but resources were delayed until evidence of success were generated by the use of the practice. This delay can defeat the implementation process by using the classic, responsibility without authority, approach that removes the ability of the champion to be effective during the implementation process.



The second area of preparation interest in the survey was whether companies were establishing a long-term goal for the new practice. The manner in which the survey analyzed this issue was to ask if companies were putting in a clear and concise vision for the new practice. As illustrated in Figure 3.2, only 7% of respondents indicated that a clear and easy to understand vision was put in place. This is significant because the first step towards a successful implementation is establishing the vision for where the implementation is going to lead the