A PILOT STUDY BASED ON CONTRACTOR PERCEPTIONS OF INTEGRATED TOTAL PROJECT SERVICES (ITPS)

By

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The way buildings and other structures are designed, built and managed—capital project delivery—is undergoing constant and dynamic changes. Contractors are becoming a much more integral part of the owners` facilities decision-making process and overall business strategies as they become more sophisticated and diversify their services portfolio to meet their clients` increasing demands. "Integrated Total Project Services (ITPS)," under these developments, has emerged as a new trend and caught the attention of the U.S. construction industry. Rising on the foundations of design/build (D/B) and the integrated services approaches to the delivery of capital facility projects, emerging owner trends such as outsourcing, teamwork, collaboration and strategic alliances lie at the core of the ITPS concept. Companies, in this trend, provide/offer not only their core/specialty AEC (architecture/engineering/construction) services; but also, as based on their capabilities, they provide planning, development, financing,

programming and in some cases even real-estate, facility management (FM), and operation and maintenance (O&M) services for their clients, capital facility project owners.

The intent of this research was to analyze, and identify the U.S private sector capital facility (project) owners` and contractors` emerging contractual approaches to how they are procuring/obtaining and providing all the necessary capital facility services/functions, respectively. The study was also aimed at developing an understanding of the emerging concept of "Integrated Total Project Services (ITPS)" through an extensive literature review that was also intended to introduce the reader to the subject and provide a conceptual basis for this research.

The methodology consisted of a literature review and a survey. The survey was organized in three parts. The first part of the survey includes questions regarding demographics information on the individuals and their companies. The second part includes question regarding as to how the contractors provide "Total Project Services" for their clients. The last section includes general questions pertaining to the ITPS concept and the future delivery of capital facilities.

The data collected through these surveys were not analyzed statistically due to the low response rate experienced; therefore a descriptive statistics method was used instead to analyze and evaluate the contractor perceptions of ITPS. The study concluded that the ITPS trend is still at its infancy both in the industry and in academia. Due to its very broad nature, future research should study it in phases, by focusing on smaller topic areas such as specific building/operation sectors or company types such as telecommunication/ transportation sectors and design-builders, construction management firms.

CHAPTER 1
INTRODUCTION

Corporate real estate (CRE) and facility management (FM) functions—with Building Construction placed amongst them—today play an important strategic role for the future of companies. The U.S design and construction industries, in the last few years, have witnessed a remarkable surge in the utilization of alternative project delivery systems such as design-build. Their flexibility, single-source authority (responsibility) and quick, effective response to emerging trends along with changing public and private procurement norms has increased their receptivity and popularity.

On the other hand, owners of capital facility projects, pressured by the economic environment to downsize and maximize profit, have become cost conscious, and more comfortable using design-build techniques and outside service providers from AEC-FM (architecture/engineering/construction-facility management) industries/markets; thus planning for increasing teamwork, collaboration, doing more outsourcing of capital facility services/functions and involvement in alliances (strategic) with outside service providers. Consequently, today, delivery of owners` capital facility projects (new/ modernization) is undergoing constant and dynamic changes.

> . . . as design-build project delivery grows, the idea of full-service or integrated design is also growing. A trend observed is that more and more firms are expanding their integrated services including maintaining and operating facilities after construction. (Design-Build Conference, San Diego, CA, October 12, 2000)

Integrated Total Project Services (ITPS), under these developments, has emerged as a new trend and caught the attention of U.S. construction industry during the Design

Build Institute of America's (DBIA) Eight Annual, 2000 Professional Design-Build Conference, entitled "I3: Integration * Innovation * Imagination." The ITPS concept rises on the foundations of design/build (D/B) and the integrated services approaches to the delivery of capital facility projects, which advanced D/B`s integrated design/construct and full-service ideas. Consequently, some construction companies—mostly design-builders,—have started to expand their integrated services to further include services on the upstream and downstream sides of construction. In other words, these companies provide/offer not only their core/specialty AEC (architecture/engineering/construction) services; but also, as based on their capabilities, they provide planning, development, financing, programming and in some cases even real-estate, facility management and operation and maintenance (O&M) services for their clients, capital facility project owners.

Today these companies, with other non-AEC originated firms in waiting line, are becoming a much more an integral part of their clients` facilities decision-making process and overall business strategies as they become more sophisticated and diversify their services portfolio to meet their clients` increasing demands. This is evidence of the tremendous shift that is now under way in how owners perceive their facilities and how they design, build and manage them.

1.1 Statement of the Problem

> DBIA doesn't take the evolution of design-build for granted. To retain and enhance the position of integrated services delivery, this year's Conference and Expo will focus on Integrated Project Solutions-Uniting the Stakeholders. We will be exploring design-build mega trends and the changing needs and demands of owners. (Beard 2001)

Perhaps the most important statement about ITPS, as a problem, is that it is relatively a new trend; however it is growing rapidly even if it lacks basic research and an

industry-wide familiarity when compared to other terms, concepts and trends in the industry such as design/build, construction management and etc. It is eventually about the capital project delivery process with all the necessary services and functions necessary for any and every capital facility project. The DBIA conference in 2000 started the discussion of the future of design-build and other advanced (alternative), flexible and single-source authority project delivery systems (design-build-operate, design-build-finance, etc.) as discussed by various practitioners and users of single-source, integrated project delivery.

> This is the evidence of the tremendous shift that is now under way in how owners perceive their facilities. The buildings themselves are now a much more integral part of overall business strategy. So, it is natural that owners are turning increasingly to design-builders to help them fit their facilities into the larger piece of the business puzzle. This is a big change in the paradigm, with traditional design-build at the heart and the common denominator is that the owner is the driving force behind the trend. (Silver 1999)

Apparently every owner has different approaches to the delivery of their capital projects (modernization or new construction) based on their unique needs dictated by their own business environment. Considering the numerous and complexity of the functions/services that go into a facility life-cycle, the 2001 DBIA meeting began focusing more on the capital facility owners` existing and increasing demand for complexity and sophistication in the industry which was imposed by the changing business climate. Discussions also started to focus on various issues and challenges around the design-build mindset: integrated project delivery; teamwork, collaboration; and various other topics that surround the future of capital project delivery. These with other developments in the AEC-FM (architecture/engineering/construction- facility management) markets lie in the core of the “Integrated Total Project Services (ITPS)”

trend. Some of the emerging trends in capital project delivery identified by Construction Industry Institute (CII) (1999) are as follows:

- Owner requirements resulting in expanded or modified contractor roles
- Improvement of effective communication, teamwork and especially alignment between the business leader, owner capital project professional, contractor, and suppliers.
- Reduced project cycle time caused by competitive pressures on time-to-market and globalization of the industry.

The Facility Management Institute (FMI) has also identified several emerging owner trends in capital project delivery (McComb 2002):

- Owner organizational changes
- Outsourcing of engineering, construction, facility maintenance and other capital facility services expertise
- Proliferation of (alternative) project delivery systems
- Collaborative Process: The High-Performing Team Model
- Strategic alliances
- Project financing

These emerging trends in capital project delivery provide the basis for ITPS research; however as mentioned earlier, every owner and service provider will have different approaches to the delivery of capital facility services according to their project needs, service capabilities, business types, sectors of operation and etc. This is one of the challenges that this study will try to address and to identify general trends in respect to these differences.

> I'm a proponent of a base of services, not just design and construction, but more of an integrated services approach to a project delivery that runs from site acquisition analysis, site studies, and zoning studies—the preconstruction services—to programming, budgeting, and design-building. This process can evolve into operation and long-term maintenance. If you manage the entire process for the

> owner, the service allows the owner to do what he does best: run his business. (Rieks 1999)

Today, design-build is envisioned within a larger framework of integration that solves or answers a spectrum of ever-changing client needs. Besides the proven speed of design-build, the biggest element affecting speed of delivery, however, may be the entry point of the integrated firm into the owner's thought process. In addition to pre-construction stage contractor involvement, with the trend toward upstream consulting, single-source firms are being asked to do much more than traditional design and construction by getting involved even in the strategic business planning phase of the owners` capital facility projects.

Integrated services firms, though still not the norm, are bundling more and more skills to provide one-stop shopping for demanding clients. Operating under an "I" services flag, these companies—some even refer themselves as “real” design-builders—are single-source providers of fully integrated (in-house) design and construction services. There are no more than a handful of these firms, but their impact on the industry has been significant. These companies have also brought up the discussion of “real” and “pretend” design-builders. Important differences do exist between integrated services firms, which house architects, engineers and constructors all under one roof, and their design-build competitors that lack one or more of those elements. Such companies are very different from the contractor or architect that occasionally teams up to perform design-build work. Therefore these integrated services firms, which are playing an important role in the ITPS trend, will be further studied in this research.

> Now corporations are looking at getting all services: acquisition, distribution, project management, property management, etc. Companies are looking at not just cost reduction but improved services, better asset management and greater value out of outsourcing. (Bergman 1997)

Essentially the outsourcing trend indulged in by corporate owners today is the biggest underlying cause of the rise of ITPS trend. In terms of what specific FM functions are routinely outsourced, a number of other trends have emerged. First, the days of the in-house architect appear to be over as over two-thirds of those surveyed listed A/E (architecture/engineering) services as something that is currently outsourced. Predictably, tasks that are not viewed as essential to a company's core business also score high on the outsourcing meter: *65% outsource custodial/janitorial needs while 63% outsource landscaping/grounds keeping. However, food service, even though it is not typically viewed as a core service, is farmed out by just over a third of respondents. Finally, the FM functions receiving the least support for outsourcing are real estate-based (lease management, property acquisition/ disposition) as well as document management, at just 14%.*

Another class of integrated services firms is quietly growing in today's marketplace. Some major accounting firms, armed with ample industry expertise and still hiring more are swimming in the same waters as design-builders. They employ several hundred architects and engineers. Not surprisingly, they pose a potential competitive threat to design-builders. While these consultants do not do the actual "build" part of the design-build process, they do render many of the same services provided by integrated design-builders and in some cases they also team with design-builders. In this regard, the ITPS research will also explore which non-AEC originated players are emerging in the capital project delivery scene.

> All core competencies are sources of competitive advantage, but not all competitive advantages are core competencies. Given present globalization, technological, information and cultural trends witnessed, the continuous trend toward the

> outsourcing of non-core functions provides ample evidence of the need to rethink the role of infrastructure.“ (Materna and Parker 1998)

The fragmented state of the construction industry and all its downturns are not a new reality. The key to the future rests with how we integrate project delivery. One of the signs of the trend toward greater integration is the blurring of the line between customers, suppliers and the formal organization. Shared-service organizations, cross-functional teams and alliance partners are now an essential part of the fiber of most organizations while more and more owners are developing strategic alliances and reaping the benefits.

Despite the talk among some large providers of “integrated FM” and “one-stop shopping” for outsourcing services, most facility managers continue to be reluctant about putting all their eggs in one supplier’s basket. Nearly 80% say they’re not likely to use a single provider for their outsourcing needs, and more than two-thirds are likely to contract separately for each service (FDM 2001). In this respect an immediate issue that surrounds the capital project delivery is the picking/selection of a service provider: When choosing service providers, those surveyed are clearly wary of generalists and more enamored of specialists. They also appear unfazed by the prospect of juggling separate contracts and providers. Indeed, in a blow to providers marketing themselves as a catch-all solution for FM outsourcing, a meager 2% of those surveyed claim that they are very likely/likely to use a single provider for all outsourcing needs. Furthermore, close to half are not apt to bundle like services into one contract and an overwhelming 96% are at least somewhat likely to contract separately for each service. However these studies reflect trends in limited building sectors and in more general terms, which also can be attributed to some conflicting views identified in RE/FM industries.

1.2 Objectives of the Study

The initial purpose of this study is to define and develop an understanding/ framework for the emerging concept of "Integrated Total Project Services (ITPS)." The study will also focus on gathering information to further communicate to both owners and contractors what ITPS is and how/why it is important for the delivery of capital facilities today and in the future. To achieve this, views of owners of capital facilities projects and top contractors and their emerging trends/approaches to the delivery of capital facilities within the framework of Integrated Total Project Services (ITPS) concept, will be collected through a web-based survey with key management personnel.

To understand the Integrated Total Project Services (ITPS) concept, it is necessary to establish its links to its source, the corporate real estate (CRE) organization as the owner, the capital project delivery process, and the facility management life cycle. Therefore, the study will focus on assessing the current use and status of design-build and the integrated services methods in the capital project delivery process.

ITPS has a dynamic nature and embraces various industries` (AEC-FM and other multi-disciplinary fields) service offerings, which are the full range of comprehensive services—as will be referred to as "total project services." Total project services spans from planning to acquisition, and from operation and maintenance/facility management to disposal phases within the facility life-cycle concept. Identification of new market opportunities requires planning and implementing growth strategies. Hence, construction companies and other services providers need to have the capabilities in place. Under these circumstances, the study will also analyze, and identify the U.S private sector capital facility (project) owners` and contractors` current emerging contractual

approaches to how they are procuring/obtaining and providing all the necessary capital facility services/functions respectively.

Finally, based on initial research and the findings of the survey, future recommendations will be made regarding the integrated total project services (ITPS)" approach, and its practice.

1.3 Scope and Limitations

The respondents to this survey are top general contractors working in United States and the U.S. private sector companies as the owners of capital facilities projects. The scope of the study is limited to the respondents` operations in U.S. only. The scope is further limited by the number of owners, contractors and the accessibility to senior management personnel who can provide answers to the questions in the survey questionnaire. Given these limitations, the results and conclusions of this study are limited to only those owners and contractors participating in the surveys.

1.4 Research Methodology

After a detailed literature review and a study of the underlying principles, concepts, and recent owner/industry trends that led to the emergence of the integrated total project services (ITPS) concept, a web-based survey questionnaire was developed (see appendices B and C). Owners and contractors versions of this survey consisted of 70 and 68 questions, respectively. A list of 199 owners and 142 contractors was made based on the information derived from *Engineering News Record* (ENR) `s 2002 Top U.S Construction ranking and *2002 Top General Contractors Sourcebook*. Figure 1-1 provides a graphic representation of the methodology followed in this research.

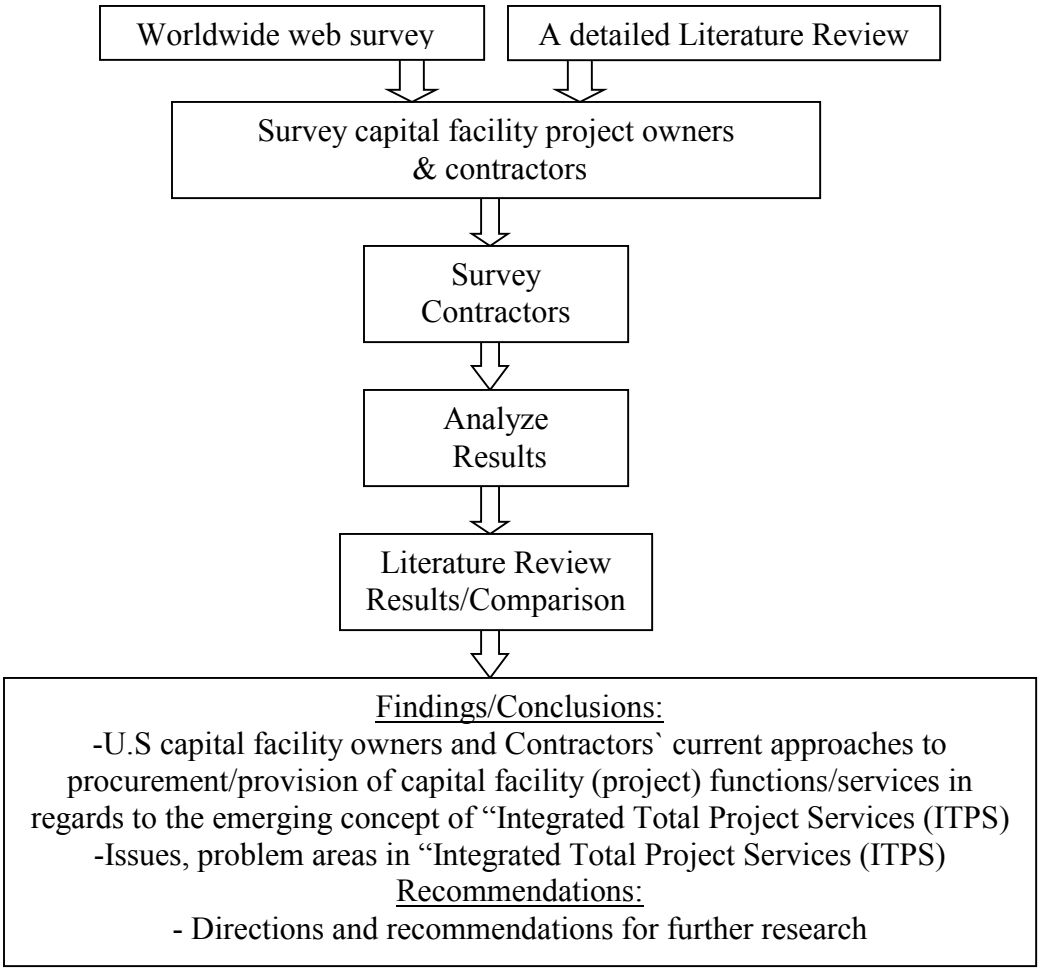


Figure 1-1. Research Methodology Flow Chart

1.5 Overview

This study is intended to determine (1) Owners` current and emerging approaches to how they are procuring/obtaining all the necessary services /functions for their capital facilities projects, (2) Contractors` current and emerging approaches to how they are delivering/providing all the necessary services/functions for the owners` capital facilities projects, and (3) Match, identify and compare the owner approaches to capital facility delivery with contractors` current and emerging capabilities and contracting practices in the U.S. private sector and give recommendations for further research. Findings from this

research will provide a basis for making recommendations that may help capital facility owners, and contractors become more informed about themselves, the industries they operate and others. They may also use this information in their future business development, marketing plans/decisions to increase their competitiveness.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Construction—the art, trade, or work of building,—strongly contibutes to any country`s success. Measures of national economic activity always include overall construction volume and housing starts, and the trends in both categories. In the United States, the annual value of construction put in place in 2002, the combined construction activity in residential, private and public sectors with all related production and services, was $846,057 Billion (U.S. Census Bureau 2003) which was approximately 8.1 percent of the gross domestic product in the same year. Construction is a complex endeavor with a fragmented and resilient nature in which designers, engineers and constructors strive to meet owners` ever-changing, increasing demands to deliver their facility projects.

Today, for owners in most industries, in addition to satisfaction of time-budget-quality concerns, value-added services through the use of innovative, flexible, single-responsibility and integrated project delivery and contracting methods are more important than ever. The subject of "Integrated Total Project Services (ITPS)" concept, became first evident, and caught the attention of the industry during Design Build Institute of America's (DBIA) Eight Annual, 2000 Professional Design-Build Conference. The existing and increasing demand for complexity and sophistication in the industry imposed by the changing business climate of capital facility (project) owners lie at the core of the integrated total project services (ITPS) trend along with constant developments in the

AEC-FM (architecture/engineering/construction- facility management) and real estate markets.

To better study the ITPS concept, it is important to look at the industry, its players and to understand the general picture within which ITPS concept emerges as a new trend. Therefore, a conceptual framework is developed in Section 2.2. This framework, starting with basic definitions, will study corporate real estate (CRE)/facility management (FM) organization(s) as the capital facility owners and the procurers, purchasers of facility project services. The real (property) estate industry, facility management life-cycle concept, capital project delivery and emerging owner trends, and integrated project delivery movement are also studied in this section.

2.2 Framework for Integrated Total Project Services (ITPS)

The Project Management Institute (PMI) defines the term project as a temporary endeavor undertaken to create a unique product or service. A capital facility project, on the other hand, is the type of project in which the design and construction industry provide products and services. It integrates facility concept development, feasibility, design, construction, and operations. The Project delivery system/method (PDS) is the set of procedures and relationships by which a project is delivered to an owner. The project delivery systems define the structural framework for the owners` development and management of a construction project.

2.2.1 Owners (corporate real estate/facilities organization)

Without an owner, there is no construction. The owner starts the process by identifying the need for built space, creating the basic program, securing the financing, and procuring the site. The owner selects (or approves) the project delivery system and enters into contractual agreements with providers of design and construction services.

The PDS includes the design/construct continuum and can be extended to building maintenance (Dorsey 1997).

In this research, the words “owner” and “client” will be used interchangeably to represent the United States private sector business organizations as the owners of capital facilities projects. Whether or not these owners also have legal possession of the properties, where their capital facility projects were constructed, is of no interest in this study. In business world, the words *land, real estate* and *real property* are also used interchangeably along with the terms *corporate real estate (CRE)* and *facilities management (FM)*; thus they need to be defined and distinguished from each other in order to avoid ambiguity and establish common grounds for this study.

Land is defined as the earth’s surface extending downward to the center of the earth and upward to infinity, including things permanently attached by nature, such as trees and water. *Real estate (land plus man-made additions)* is defined as land at, above and below the earth’s surface, including all things permanently attached to it, whether natural or artificial. The term real estate is broader than the term land; it includes not only the natural components of the land but also all man-made improvements such as buildings and other structures. *Real property (real estate plus “bundle of legal rights”)* is defined as the interests, benefits and rights inherent in the ownership of real estate. It is broader than either land or real estate. It includes the physical surface of the land, what lies above and below it, what is permanently attached to it, as well as the bundle of legal rights (legal rights of ownership) that attach to ownership of a parcel of real estate (Galaty et al 1993).

Corporate real estate (CRE) is the real estate –the land plus man-made additions (buildings/facilities) - owned by companies not primarily in the real estate business. The decision to purchase or lease real estate goes to the heart of a company-its culture, investment strategy, and desire for control- and is a product of the real estate acquisition/disposal function of a company. Long-range planning of space, real estate planning, and real estate operations are also part of the real estate function (Silverman 1987).

The common definition of *facility management (FM),* by Cotts (1998), is "the practice of coordinating the physical workplace with the people and work of the organization; integrates the principles of business administration, architecture, and the behavioral and engineering sciences." It is often simplified to mean that facility managers integrate the *people* of an organization with its *purpose* (work) and *place* (facilities).

Facilities management has traditionally been seen as the poor relation of the real estate and construction professions. This is because it is understood in the old-fashioned sense of caretaking, cleaning, repairs and maintenance. In fact, it covers real estate management, financial management, change management, human resources management, health and safety and contract management, in addition to building and engineering services maintenance, domestic services and utilities supplies (Atkin and Brooks 2000).

Today, corporate real estate and facility management are used extensively and interchangeably to name the department/division that houses all the business units and functions responsible for the provision (real estate function) and operation/management

(facility management function) of corporate facilities and infrastructure. Therefore, in this study, they will also be used interchangeably, unless otherwise noted.

History of real estate management from a corporate perspective

The corporate real estate (CRE) has developed in step changes in the economies of the world and, more importantly, business drivers over the last 150 years. As the world's economies have moved from an agrarian base through the industrial age, and into the information age, business has finally reached the globalization that has been predicted for decades. CRE function has evolved in two ways: the way it is organized, and the function it performs. The CRE role has become much more sophisticated, as well as the measurements of success. It has had to do both of these things to keep pace with ever-changing business drivers.

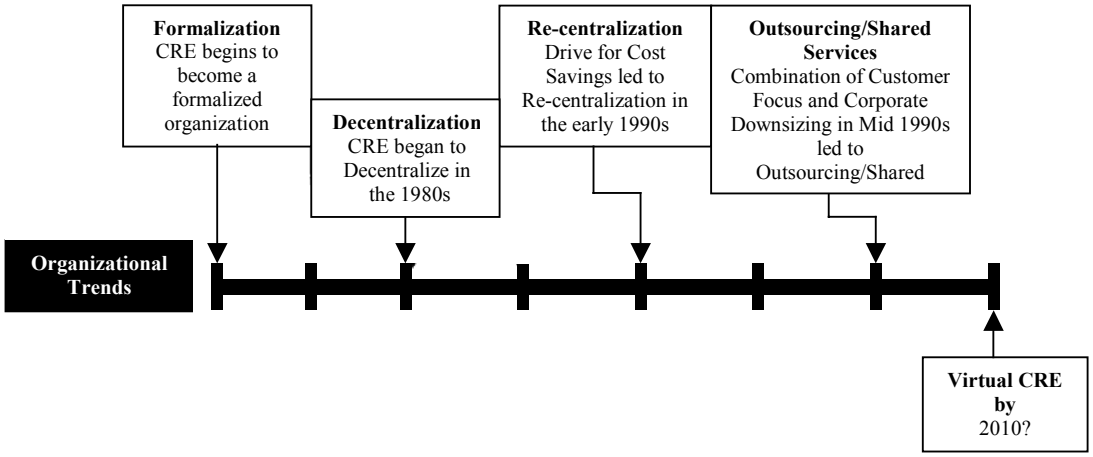


Figure 2-1. Representative CRE Evolution Timeline (Page and Stephen 2001)

There is a significant debate on what exactly the optimal CRE organization should look like and how it should relate to the business. However, this study's scope is only limited to provide an overall understanding of what CRE and FM are and how these departments are organized in general terms in relation to their approaches to delivery of

capital facility projects. Therefore, it is important to review the context of its history briefly. Figure 2-1 shows the representative evolution timeline of CRE.

Prior to "corporate real estate departments", real estate decisions were often ad hoc activities performed by unit managers, facilities people and occasionally by someone in "Personnel". With the formalization of CRE, it was typically organized at headquarters under the umbrella of "Administrative Services". The downside of the headquarters affiliation was the perception of overstaffed bureaucracy. CRE functions were also thought of as too far removed from the main revenue streams of the business, and over time, many organizations began to feel that there was too much power concentrated at headquarters. The role of CRE at this time was basic; it was to manage corporate facilities. The organization's role is straightforward: *to keep existing facilities running smoothly, help bring new facilities online and do it at the lowest possible cost*. This period lasted through the 1970s to the end of the information age, before the development of the PC-based economy (Page and Stephen 2001).

> Embedded business unit support meant duplication of functions. As technology became increasingly pervasive, the autonomy of the business units led to the solutions at the business-unit level and many corporations ended up with disparate IT, software, telephone, purchasing and accounting systems. Within companies, divisions might have systems that did not communicate with each other. The various business units` real estate portfolios also were not coordinated. (Page and Stephen 2001)

The shift to decentralization came about in the early 1980s as major companies became rigid and bureaucratic and moved to decentralize their operations. The corporate mantra was total accountability. Each business unit now controlled administrative costs, and these costs were now "above line" and encouraged efficiency. More importantly, these services, including real estate, were now embedded in the business unit, fostering

greater trust and, motivation to perform. While decentralization did address many shortcomings, new problems arose.

The economic downturn of the early 1990s, together with the new competitors and markets wrought by globalization, forced a rethinking of the decentralization model. With relentless pressure for cost-cutting, new efficiencies, reengineering and restructuring, the pendulum would swing back to re-centralization. However, globalization and new business models, some of which emphasized speed and time to market, would not tolerate the bureaucratic nature of the old centralized models. The challenge became providing service, speed and maintaining appropriate accountability. However, linkage across the enterprise was required to coordinate portfolios, aggregate demand and disseminate best practices. This type of linkage for enterprise-wide service also included real estate. Technology not available earlier could now help integrate systems and facilitate rapid exchange and access to information and communication on a common platform, which also enabled a new form for the CRE organization. Staff and service delivery might be distributed to the business units while the management of CRE function clearly rested at corporate level. Previously, information was considered a key to power and control; it could be created in the business units and operating regions and rolled up to a central location. Business units could have real-time access to information about their portfolios and also those of other business units. The technology also provided a means to identify portfolio opportunities to aggregate demand for space, services and real estate talent (Page and Stephen 2001).

As this push to aggregate demand continues, CRE organizations provide a centralized platform housing the unique skill requirements for managing today's real

estate portfolio, while providing unsurpassed customer service. This hybrid is commonly referred to as "shared services." Shared services combine centralized support functions that have the highest priority to develop common standards and best practices to be shared throughout the enterprise. CRE is one of these functions. Under the shared services model, the CRE functions are removed from the business units and created as a central entity. These entities constitute their own distinct division or subsidiary reporting to a very senior management, and are organized around a market-driven principle frequently charging their internal customers market prices for their services and Benchmarking performance against other companies` shared services or even against third party vendors, outside contractors and service providers.

> Some companies—Regus, Trillium, and others—are making significant investments in this trend (Virtual CRE) and are building a plug-and-play model for corporate real estate occupiers. These companies are developing ever-larger full service facilities that are available in most major cities. These companies believe in the value of providing companies with the opportunity to expand or contract using flexible occupancies without long lead times or contracts. It is possible that many CRE professionals will be migrating to these providers over time. (Page and Stephen 2001)

According to Page and Stephen (2001), when looking forward to the future of the CRE or FM organization, the evolution of CRE to date (see Figure 2-1) may not provide a clear vision of the next. It is safe to predict that employees will continue to migrate to more non-traditional jobs, and many more will be working as temps or outside service providers. It is also conceivable, though; those entire corporate functions may be outsourced in the future. One easy prediction is that CRE organizations are not going to grow in the future, and the pressure on them to become more efficient will continue.

Defining facilities management

> . . . Whatever the terms, until recently facilities management was associated with-to the extent it was consciously considered at all-cleaning, maintenance, and other

> routine building-related functions. You can imagine the real estate advertisement: "Charming three bedroom houses in the mind of top management, especially facilities management resided in the basement, not the boardroom. This is odd, really, when one considers that facilities account for a huge proportion of most large organizations` total assets. They are a hidden resource. (Becker 1990)

Facility management (FM) is a new business and management discipline. Widespread use of the term dates from the creation of Facility Management Institute at Ann Arbor, Michigan, in 1979 and the founding of the National (later International) Facility Management Association in 1980 (Cotts 1998). It has many definitions. The British Institute of Facilities Management (BIFM) defines it as "the practice of coordinating the physical workplace with the people and work of the organization." This simple and well-focused expression of FM does not, however, stress the contribution that well-managed facilities can make to an organization. The one that best fits this work is "an integrated approach to operating, maintaining, improving and adapting the buildings and infrastructure of an organization in order to create an environment that strongly supports the primary objectives of that organization." (Atkin and Brooks 2000)

> Organizations have traditionally managed the buying, building, leasing, selling, planning, maintaining, and equipping of space, so why the emergence of a new field called Facilities Management and the title of Facility Manager? This management field has emerged in response to a need for one entity in an organization to oversee all facilities functions previously controlled by independent departments. (Kaiser 1989)

Government agencies, corporations, and nonprofit institutions realized that managing these functions with traditional organizations structures and without any individual or single group coordinating all facilities decisions, was unsatisfactory. Parallel to the rapid growth and evolution of (multinational) corporations, real estate portfolios expanded. In order to manage these portfolios with accountability and a single source of responsibility as the goal, corporations established special staff and supporting

(Real estate/Facilities) departments in order to overcome the fragmented management of facilities and to take care of these assets (Kaiser 1989).

According to Cotts (1998), every organization has its unique personality, and the facility department is a reflection of that personality. In the private sector, which is the focus of this study, although no two private companies are alike, and corporate cultures vary widely, it is still possible to draw some conclusions regarding facility management:

- They are much more flexible than those in the public sector and can be changed relatively easily. All administrative functions and personnel tend to be tied closely to the product or service they support. Because facilities costs tend to be the second highest administrative cost, there is often pressure on the facilities manager to reduce staff and costs.

- Because companies are driven by the need to provide service or product at a profit, private sector managers are expected to make those changes necessary to manage their department effectively and efficiently. Thus, procurement is less bureaucratic, with more emphasis on long-term relationships, negotiations, and rapid response, and leasing is done quickly.

- Private-sector facility departments place great emphasis on design, perhaps because their managers feel that they can increase productivity through better facility design. Economic justification for design changes has more influence in an environment controlled by profitability than by budget.

- Costs are yet another difference. For example, the private-sector facility manager is less likely to expend funds on end-of-the –year, suboptimal projects. The emphasis on reducing costs rather than staying within budget.

The job formerly known by such titles as *Buildings and Grounds Superintendent* or *Physical Plant* is now just one of the responsibilities of the facilities manager. The term, *facilities*, includes buildings, grounds, utilities, and equipment, and typically represents a majority of an organization's capital assets. The facilities manager must oversee not all the physical FM functions, but also the capital assets of an organization.

All facility managers share some common characteristics in management style; however, the emphasis varies with the type of organization. According to Cotts (1998),

for facilities management to be effective, both the 'hard' issues, such as financial regulation, and the 'soft' issues, such as managing people, have to be considered. FM integrates the principles of business administration, architecture and the behavioral and engineering sciences.

Today corporate real estate (CRE) and facility management (FM) functions—with building construction placed amongst them—play an important strategic role for the future of companies. With the emergence of FM as a new business and management discipline in late 80s and early 90s provided a link between the previously discrete industries of real estate and construction. Perhaps more significantly, it established a focus on the management and delivery of the business ‘outputs’ of both of these entities; namely the productive use of building assets as workplaces (Varcoe 2000).

On the other hand, facilities management concerns, range from expansions or reductions in the size of a physical plant to the manner in which the quality of the workplace affects employee productivity, and define new facilities responsibilities. Demands for greater technical expertise in planning and building space, and efficiency and economy in plant operation and maintenance (O&M), require specialized management skills. New technologies, innovative materials, and complex space demands contribute to the growth of facilities management as a dynamically new professional field (Kaiser 1989).

Key issues in facility organizations

There are many considerations in organizing for the facilities mission, such as the size of the department, whether there are single or multiple locations, and whether the business wants standardized versus user-driven services. The sizes of facility departments vary from one individual to hundreds of people. Size and its corollary, span of control,

certainly are major determinants in how the department is organized. Also, both very large and very small organizations tend to use consultants often. Small organizations use consultants owing to lack of staff; large organizations use them to assist on special projects and to limit the size of their staff. There is a vast difference between managing a corporate headquarters in one location and facilities in 500 or more locations worldwide. Multiple locations, even in the same city, lead to different organizations.

An increasingly important factor in organization is the growing use of contractual services, contracting out. Since the mid-1980s, it has been popular to downgrade organizational structure. First downsizing and then rightsizing hit most companies, particularly administrative departments. Much of this staff reduction has been accomplished by increasingly contracting out functions. According to many, as long control of essential functions are controlled what could be done with staff can also be done with contractors.

One of the most important decisions is whether facility services will be on a centralized or decentralized basis. Often this decision is closely equated to the geographic considerations. For example, an organization with branch offices spread across a state has to give each office some autonomy in facility matters or run the risk of paralysis through centralization, even though the latter generally is the most cost-effective way to organize. Another decision is whether facility services will be highly standardized, or if there will be an effort to meet unique user needs. Generally standardization and cost-effectiveness go hand in hand.

Finally, there are substantial organizational differences when companies choose to own their facilities rather than lease them. The former have staff and managers; the latter

emphasize contracts and lease administration. Most mid-size to large organizations—also the size of private owners surveyed in this study,—both own and lease property, and their staffing must reflect those requirements.

FM organizational models

There has not been a broad-based, comprehensive study of FM organizational structure since 1986. Partly this neglect seems to stem form the fact that facility managers and their companies have confused staffing and organization (Cotts 1998). While there could be many models, one to fit every situation, in this research, owner organizations of the capital facilities projects studied fit one of the following five models. These models can be listed in order of increased staffing as: *(1) Office manager model, (2) One-location, one-site model, (3) One-location, multiple-sites model, (4) Multiple-locations, strong-regional, or divisional-headquarter model, and (5) Fully international model.*

The office manager model is applicable to companies that reside primarily in one leased building. It is heavily dependent on consultants and contractors, primarily because the company does not want to devote human resources for FM; it prefers to buy the service. Only company staff performs the following functions: *Management of the organization; lease administration; budgeting, accounting, and economic justification; and procurement.*

The one-location, on-site model is the simplest setup for a full-service facility department, but is located at one location and one major site in a major building or buildings that are owned. This model is heavily weighted towards the use of in-house human resources, both as a contrast to the office manager model and because research has shown that such is likely to be the case. It displays more organizational units that most companies will fund, but alternative functional placements or contractual

arrangements are noted. Consultants, in particular, could be used to assist in staffing. In this model, contractors or consultants are most frequently used to provide a unique skill or to handle peak loads (Cotts 1998).

The one-location, multiple-sites model typically applies to a headquarters with major operational elements (labs, branches, plants) located in the same county or metropolitan area. One of the concepts employed here is the gathering, consolidation, and evaluation (and possible decentralized execution) of requirements. Complete decentralization under this model is not economically justifiable. This model is between the first two in the number of consultants and contractors used, acknowledging that additional resources are needed to compensate for time-distance factors. The more decentralized the organization is, the more probable it is that consultants and contractors will be used. In all sub-variations, the headquarter organization provides policy, oversight, budget control, and technical assistance. Many combinations of staff, consultants, leases, and contractors can be used to provide services to remote sites, but generally only facility operations and maintenance tasks are passed down for execution.

The fourth model, *multiple-locations, strong-regional, or divisional-headquarter model*, fit the large organizations that operate in widely separated geographic regions, probably nationally. Majority of the owners participated in the ITPS survey were expected to follow this model. Operational issues are de-emphasized except within the headquarter itself. The principal functions are allocating resources, tactical and strategic planning, real estate acquisition and disposal, policy and standards setting, technical assistance, macro-level space planning and management, and oversight. In this and the international model, the headquarters performs primarily policy and oversight functions.

In this model, the facilities department (FD) is almost entirely staff. The fm has no direct responsibility for any of the general administration services. The regions have their direct line to the “boss” through their liaison officer at headquarters. Consultants and contractors, especially those who operate nationwide, are used extensively, particularly for real estate, planning, design and construction.

Staffing and the facilities team

A major challenge for the facility manager is forming a facilities team and getting it to function as a team. Unfortunately many factors in company work counter to a team approach, which why a facility manger must be a leader, not simply a manager. Almost all facility departments are a composite of staff, consultants, and contractors. This allows for both maximization of skills and flexibility to meet peak workloads. Yet all members of the team, regardless of employment status, must feel they are important. This is true even of one-time contractors.

One of the greatest staffing issues is the use of consultants and contractors (sometimes called the in-house versus out-house debate). The great impetus to farm out facilities services came from a desire to eliminate staff positions. In the Federal government it was a major Office of Management and Budget initiative; in the private sector it occurred as organizations tried to eliminate middle management.

Making maximum use of consultants and contractors is important. The ideal organization is flexible, with a mix of in-house staff, consultants, and contractors. Consultants meet short-term, highly specialized needs; contractors provide the same flexibility for a longer term. Ideally, the solution is to use skill-oriented, body-shop contracts where the contractor provides personnel and first-line supervision that the fm organizes, directs and evaluates. In all, the facility manager must retain the ability to set

policy, maintain oversight, and develop requirements, Consultants can even suggest policy and help gather requirements, but in-house staff must approve both a facility manager who abrogates those functions has lost control. Contracting out facility services solely to reduce costs is not the real benefit; rather the real benefits come from having flexibility and, to a lesser degree, being able to hire expertise.

Today many FM organizations combine staff, contractors, and consultants. It is the facility manager's job to minimize the divisions among these elements and meld them into a facilities team. Table 2-1 shows the typical staffing (of all types) across a broad range of FM organizations.

Table 2-1. Typical Staffing Across A Broad Range of FM Organizations (Cotts 1998)

Area in Gross Square Feet (gsf)	**Staff Served/FM Employee** (all sources)
Less than 100,000	27
100,000-200,000	38
200,000-500,000	47
500,000-1,000,000	59
Greater than 1,000,000	87

While geographical dispersal will drive up the staff needed, but not by 220 percent as seen in this table between the smallest and largest organization; thus benchmarking in this area and development of best practices are needed. In this regard, space per corporate real estate management (CREM)/FM employee can serve as a measure of productivity. Departments with higher ratios may be more productive than those with lower ratios. The ratio is industry specific. Departments making effective and innovative uses of new technologies may have higher ratios than departments that do not. This is calculated by dividing the amount of leasable space (regardless of whether it is actually leased) by the number of real estate/facilitydepartment employees. These employees are defined as professional (contractors, consultants) and administrative personnel (staff) engaged in

leasing, financial support, site selection, construction, facility management, design, workplace management and related activities. Line-level staff is excluded (Parker 2002).

According to University of Reading's annual survey of corporate real estate practices conducted during 1993-2001, policy on the use of consultants: increased from 60 % to three-quarters during 1997-2001. Bon and Rachel (2002) interpreted these increases as due to the need for organizations to develop long-term plans in order to asses the extent to which they can outsource at least some of their activities.

Outsource or retain in house?

> Facilities management has been identified as a non-core service for many companies—an important task, but one that can often be outsourced, allowing a company to focus in-house resources on its main objectives—FM functions prove to be a great outsourcing opportunity. (Eisele 2000)

The overwhelming use of outsourcing as a business tool in today's FM climate cannot be understated and the debate about in-house vs. outsourced FM appears to be over as 98% reported by Facility Design Magazine (FDM)`s poll in 2001 that companies outsource at least one FM function (Lyne 2002). Outsourcing essentially is a staffing issue. Whether in-house staff, consultants, or contract staff fills the positions, the ultimate goal is to get the organization meet customer needs.

According to Cotts (1998), every function also requires a slightly different approach when outsourcing. Accordingly, various options are available to organizations and have to be considered thoroughly if value for money is to be maximized. The initial step for an organization is to define its services requirements within an overall facilities management strategy. The next step is to consider the attributes of service that it sees as important. Finally, the organization is able to determine the mechanism through which

service provision should take place. This is a significant decision that has many implications for the quality of service as well as its cost (Atkin and Adrian 2000).

As everybody (or almost everybody) is doing it but what's the motivation behind the decision to outsource? The question of what specific functions are typically left to service providers is in the center of in-house versus out-house debate of real estate/facility organizations. In Section 2.3.2, outsourcing will be studied in further depth as one of the emerging owner trends in capital project delivery that lie at the core of ITPS trend.

2.2.2 Property industry and changing corporate landscape: An overview

According to the results of a survey entitled "CREM practices-University of Reading annual survey of corporate real estate practices" done in 1999, the most popular corporate real estate (CRE) mission themes, in descending order, were: *Provision of services to support business objectives (40%)*, *the provision of cost-effective facilities (17%)*, *adding value to the business (16%)*, *the provision of professional quality service (15% popular in UK)*, and *maximizing the return on assets (12%). The* CRE theme *"provision of cost-effective facilities,* which reflects corporate organizations" emerging way of looking at their facilities, provided the point of entry for the construction industry into the corporate real estate business.

Before any situation can be defined and analyzed, there is usually a need to understand its true extent. As a prelude to looking at the ways in which the changing perspectives have been manifest in the marketplace, it was deemed necessary to identify the scope of the property market and its components towards building a general understanding and a conceptual framework for the integrated total project services (ITPS) trend. For this purpose, a property industry model created by Corporate Real Estate

Alliance Research Program (Varcoe 2000) is used. Following are the major property industry definitions:

- *Service delivery management* is the management and administration of resources engaged in the delivery of specified service(s).
- *Facility management* as defined earlier is the practice of coordinating the physical workplace with the people and work of the organization; integrates the principles of business administration, architecture and the behavioral and eng. sciences.
- *Property management* is the management and administration of individual legal interests in property(s) both from an occupier and landlord perspective.
- *Asset management* is the management of individual building assets to maintain their ongoing operational and financial value.
- *Portfolio management* is defined as the ongoing management of a group of buildings or other properties primarily held by an organization or individual as productive work environment assets, to achieve benefit and value for their various "stakeholders" over and above that which routinely derived from their management as individual or cluster of assets.

A property industry model

Figure 2-2 illustrates the professional span, the distinction between the management of the workplace and its delivery (facility operations, business support services and construction). In between the management and the delivery is the indistinct area of service delivery management (shown in dotted lines in the model), which is often integrated with and provided as part of the operational delivery.

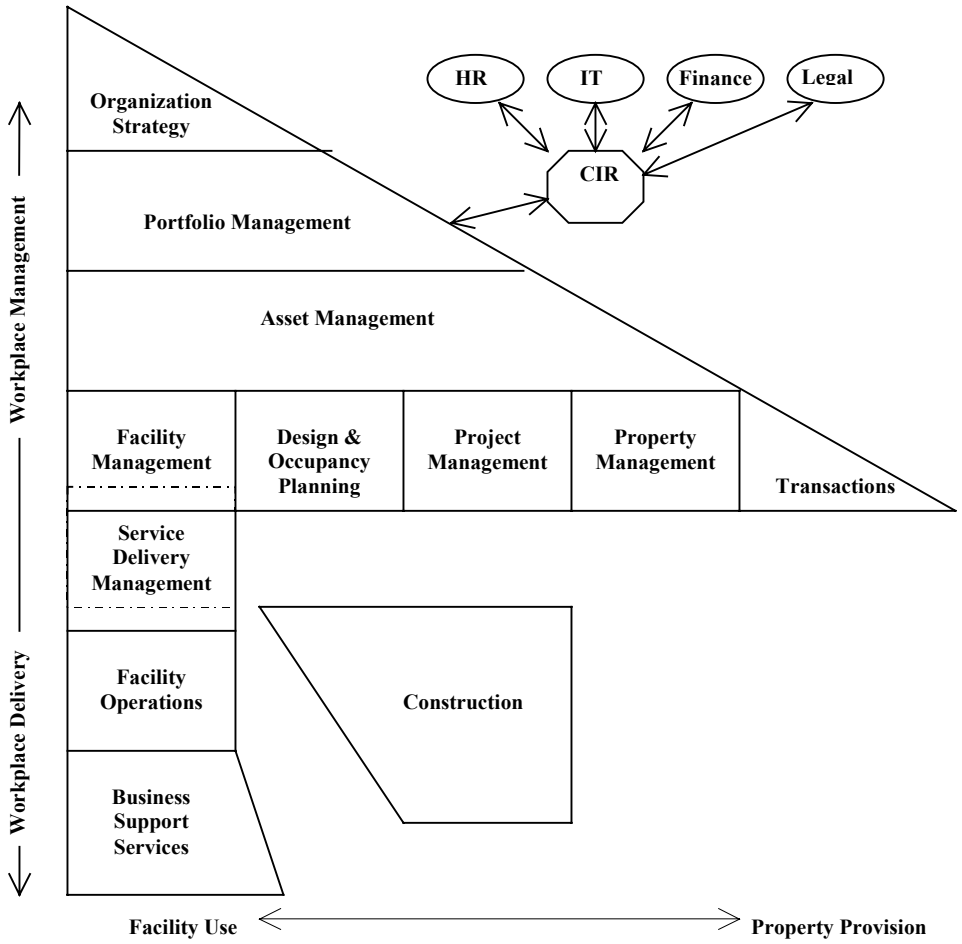


Figure 2-2. A Property Industry Model by Corporate Real Estate Alliance Research Program (Varcoe 2000)

The management function at its lowest level has a number of disciplines closely aligned to professional skills, such as FM and project management. Over these are the two layers of consolidation, first on an asset-by-asset basis, and the second at a portfolio level. It is primarily at this level that the property resource interfaces with the "business" of the organization that is using it, particularly from the perspective of strategic planning and decision-making. This level also provides the natural interface to other corporate resources, such as IT, finance and people/HR, to provide a total Corporate Infrastructure

Resource (CIR) perspective. With this model, the current position of the construction can easily be visualized in relation to the property industry.

> The corporate real estate function must do three things well on the road ahead that were only marginally important in the past. First, it must evolve philosophically with the rest of the organization, meaning its vision must match or enhance the core business's vision of the future. Second, it must provide insightful solutions to senior management's strategic issues - not just supply extra floor space when a department expands. And third, it must learn to walk the fine line between providing tangible, meaningful shareholder value, which means having a broad financial skill set, and providing innovative work space, human resources and even systems-based solutions to issues that could hinder the company's ability to meet its strategic objectives. (Arend 1999)

Except for the emergence of FM, the overall property industry has for many years appeared to be impervious to the radical changes being experienced by other industries. Recent evidence suggests that a momentum for change is now building, and new products and services are beginning to appear (Bon 2002). Emergence of FM in late 80s and early 90s as a new business and management discipline provided a link between the previously discrete industries of real estate and construction. This significantly established a focus on the management and delivery of the business “outputs” of both of these entities; namely the productive use of building assets as workplaces.

The proliferation of design-build and other alternative, single-source, flexible project delivery systems, that started to grow and expand in the past two decades, coincides with this significant property industry development, emergence of FM; this research concluded this to have possibly contributed to emergence of current owner and AEC industry trends in capital project delivery which eventually led to the emergence of “Integrated Total Project Services (ITPS)” concept. Figures 2-3, 2-4 and 2-5 show some major trends in the property industry:

Integrated service delivery variation of the property industry model

Integrated service delivery is an offering that has been available for many years but is now reaching a new level of maturity in the property industry. It relates to the provision of service for more than one of the functional components of service delivery

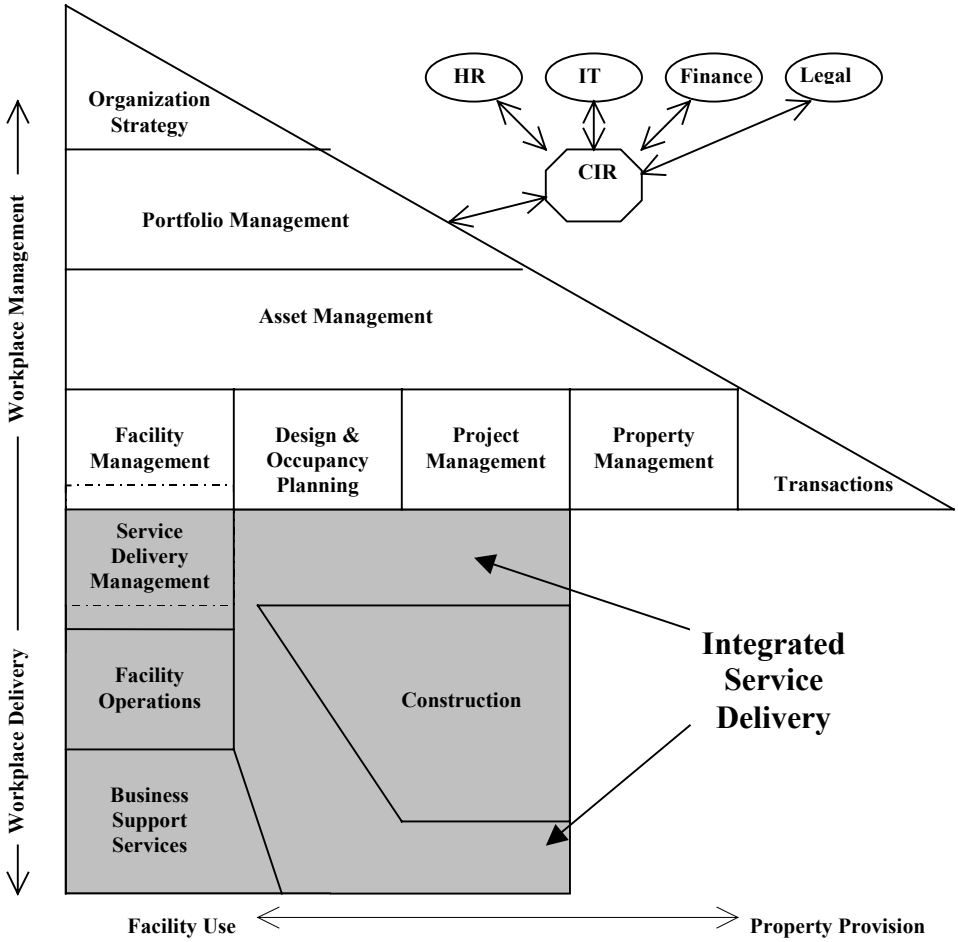


Figure 2-3. Integrated Service Delivery Variation of the Property Industry Model (Varcoe 2000)

needed in a facility, such as maintenance, cleaning and construction. In the changing landscape of corporate world, there is a clear trend for organizations that provide these services to consolidate, through acquisition or strategic alliances, thereby

expanding their service delivery scope and achieving economies of scale at the service delivery management level (Varcoe 2000).

The integrated service delivery trend also finds its counterpart in the AEC industries, namely, provision of more than one project service for owners` capital facility projects through single-source (or one-stop) contracting methods. Integrated design and construct principles rooted in the ancient Master-builder concept, and expansion of specialty(s)/core service(s) lie at core of this trend and ITPS.

Total workplace management variation of the property industry model

For many years the related disciplines associated with the provision and use of working environments (real estate and FM respectively) have been discrete activities. There is now a clear move by some service providers to provide "total workplace" management, in particular providing a single source of expertise and resource for all aspects of providing, changing, and using buildings.

Though comprehensive project management and design capabilities are integrated, it is not to the extent that the provider is interested in buildings and taking an equity stake and risk in the property. Financial dimension is also not integrated as offered by service providers (Varcoe 2000). With this approach (see Figure 2-4), organizations integrate the facility management, design/occupancy planning, project management, property management and real estate transactions functions.

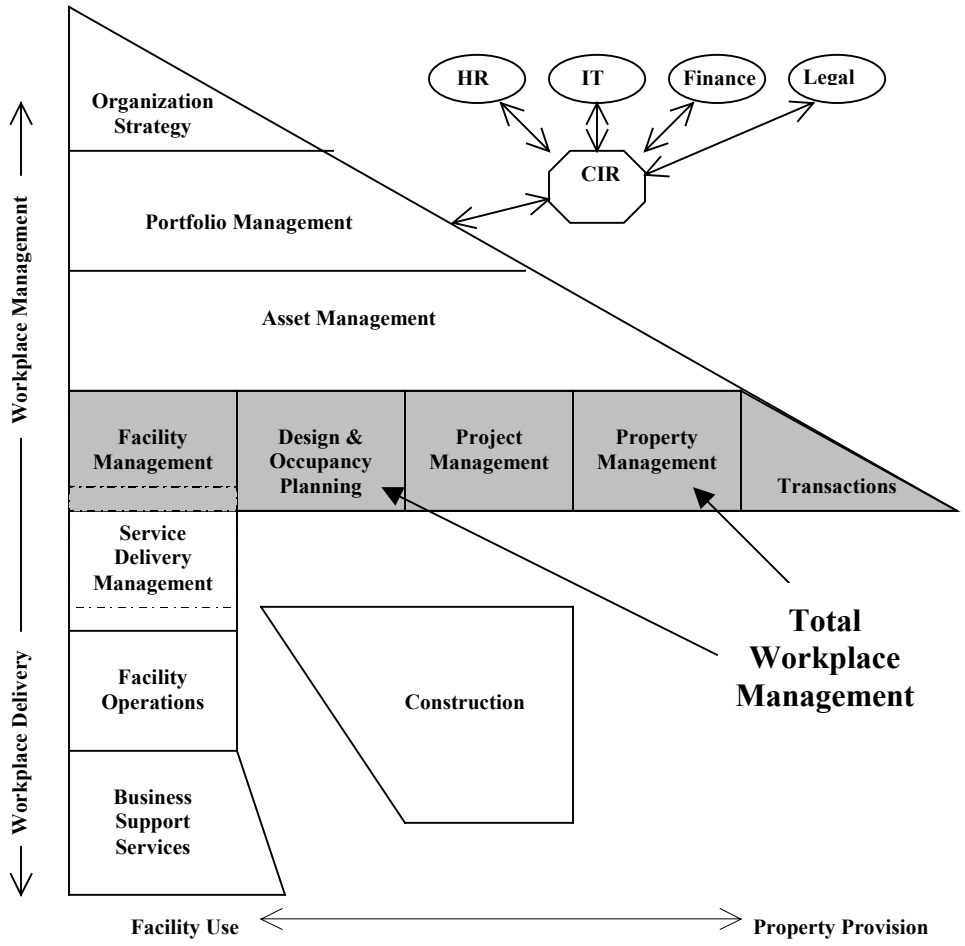


Figure 2-4. Total Workplace Management Variation of the Property Industry Model (Varcoe 2000)

Total infrastructure provision variation of the property industry model

Total infrastructure provision, as of the most comprehensive and complex of the property trends discussed in this section, is a logical extension of the trend established by total workplace management and corporate private finance initiative for organizations that seek to provide a complete infrastructure for businesses. It embraces workplace with other "working environment" components such as IT, finance, and human resources. It creates better and more productive integration of people, technology and their physical workplace. In addition, more explicit and informed investment decisions are rendered

regarding the trade-offs and balances in investment between real estate, technology and people for projects.

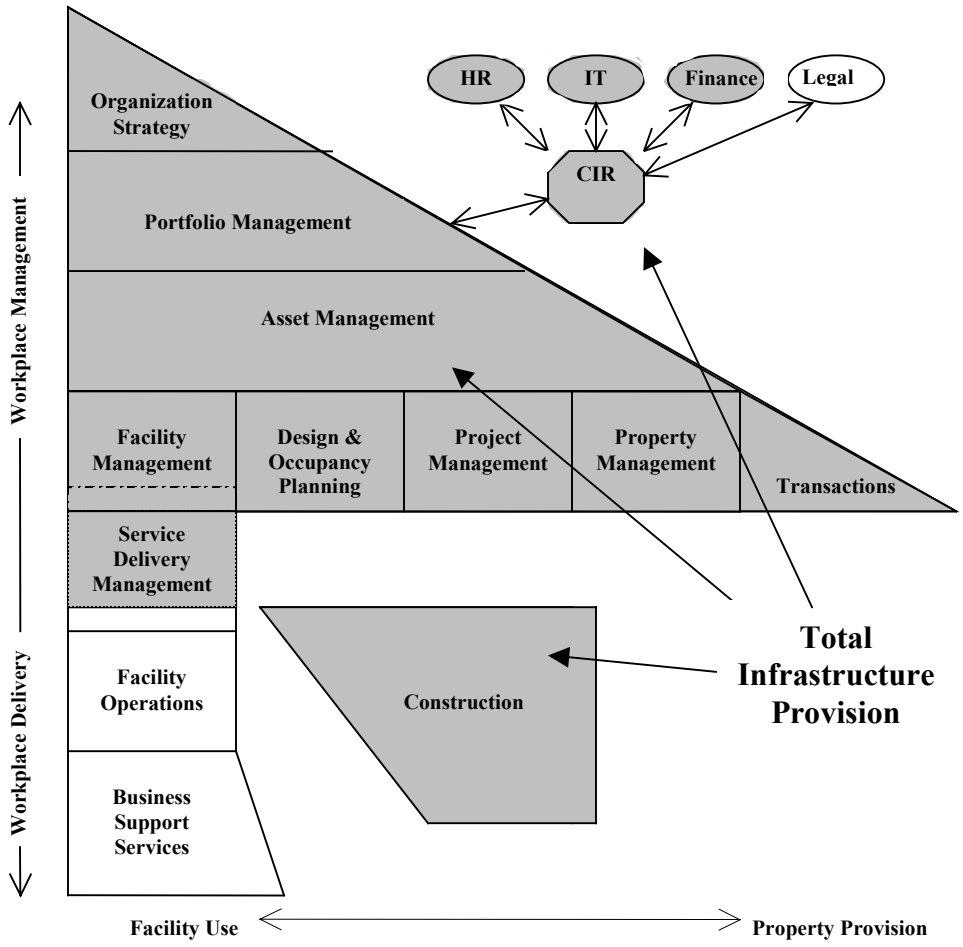


Figure 2-5. Total Infrastructure Provision Variation of the Property Industry model (Varcoe 2000)

Considering the ITPS concept, the total infrastructure provision approach, represents the highest level of comprehensiveness, integration, and business opportunities for providers of capital facility services. As seen in Figure 2-5, the shaded area encompasses a breadth of services spanning from the very basic core service, construction, to project management, design and occupancy planning, from other total

workplace management components to asset, portfolio management and even to organization strategy.

2.3 Basis of Integrated Total Project Services (ITPS) Concept

Given present new economy, globalization, technological advancements and increasing business competition, corporate real estate (CRE) and facility management (FM) functions—with Building Construction placed amongst them—today play an important strategic role for the future of companies. The new way of thinking about how corporate real estate can create value and the increasingly important and challenging role of service providers became important with "corporate infrastructure management and "infrastructure integration" concepts—started in 1996 by the IDRC Foundation. Today, owners want to create value in their capital-spending and facilities-maintenance plans. They want the freedom and flexibility to establish an efficient, effective means of purchasing capital projects that is consistent with their ever-changing corporate values and goals. Added value is the key, not only value in terms of dollars, but also in terms of people and relationships.

The Construction Industry Institute (CII) in their Vision 2020 foresee: *Reshaping of business entities, reduction in cycle-time becoming increasingly important to business, life-cycle cost as major considerations for projects and the constructed facility in 2020 will include sustainable development concepts for construction, operation, maintenance, renovation, and removal.*

This section will discuss the emerging owner trends such as outsourcing, teamwork, collaboration and strategic alliances in this section which will be followed by the integrated services movement to the capital project delivery. These lie at the core of the ITPS concept. The following sub-sections, 2.3.1 and 2.3.2 will discuss the ITPS

concept, its emergence and the model by which capital facilities are delivered by owners, contractors and other service providers today and in the future. Prior to them, however, it is important to look at the facility life-cycle model, which provides and understanding of the total life cycle for facility projects. Total project services of the ITPS will evolve on this concept.

2.3.1 Facility management life-cycle

A hallmark of FM is comprehensiveness. Included in the definition of comprehensive FM are the planning, designing, constructing, and managing of facilities for every type of structure, ranging from office buildings to housing to infrastructure. It involves developing: *Corporate facilities policies, Long-range space forecasts, Real estate management plans, Space inventories; Projects (from design through construction); Building O&M plans, Furniture and equipment inventories, Facilities support services (telecommunications, security, etc.). (Kraiser 1989)*

Figure 2-6 shows the life cycle of any facility requirement. The only variables are scale and complexity. Facility management life-cycle involves four major activities that every organization has to render during the life-time of their capital facility projects: *(1) Planning; (2) Acquisition; (3) Operations and Maintenance; and (4) Disposition.*

The type of planning done in the planning phase is a strategic one where organization-wide, macro-level capital planning, budgeting for companies` real estate and facilities. The next phase acquisition starts with the build-or-lease decision and if it is a "build" decision, it goes through conceptual development, programming, planning (micro-level facility), design and construction stages and the related services/functions.

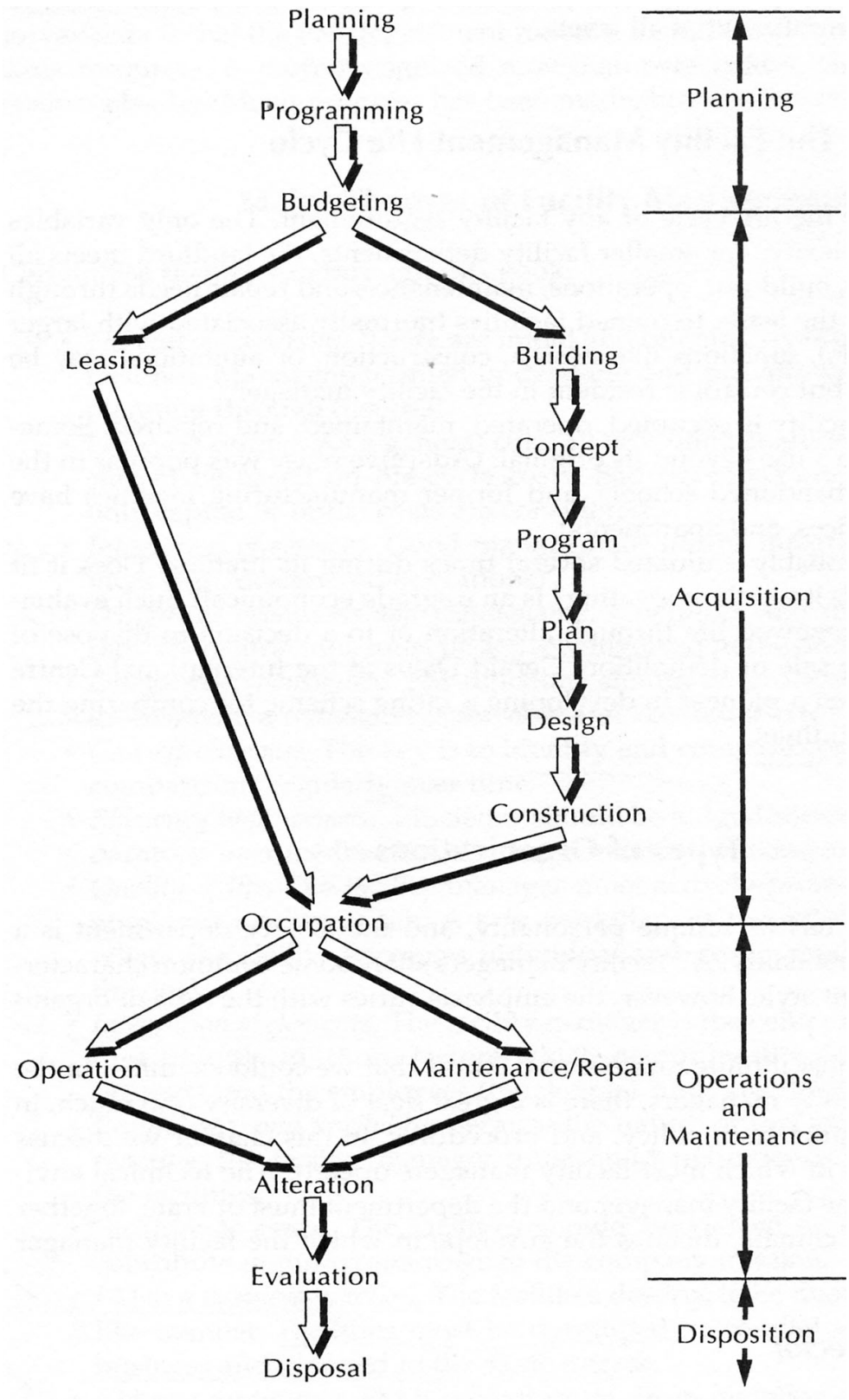


Figure 2-6. Facility Management Life-Cycle (Cotts 1999)

The operations and maintenance phase starts with occupancy after the facility is constructed. Occupancy stage includes move-in, start-up, commissioning and even in some cases staff training services followed by facility operation and maintenance (O&M) done on a regular-basis until it is either altered or disposed.

Alteration of facilities may also take place during the O&M phase. Sometimes a facility is altered to use even beyond its original purpose. This is called adaptive reuse and it was popular in the 1980s when churches, abandoned schools, and former manufacturing facilities became houses, offices, and apartments. And eventually in the disposition phase of the facility management life-cycle model, ever facility that reaches end of its operational and economic life is either disposed or decommissioned. In Chapter 3, this model will be used as the basis for the "Total Project Services" concept of the ITPS trend (Cotts 1998).

2.3.2 Emerging owner trends in capital project delivery

According to Sheridan (2000), real estate for most corporations is not a core competency and it does not make sense for users of real estate to spend a large amount of time managing their real estate. Over the last ten years, awareness of how critical it is for real estate services to not only meet the daily operational needs of the occupant base, but to contribute significantly toward meeting the corporate objectives has been elevated.

With the increasing shift to use of outside providers to deliver these services has come an equally elevated awareness. Outsourcing became not just a tactical measure, but a very powerful strategic opportunity to enhance a real estate organization's ability to provide that contribution (Flynn 2002). Other developments that contributed to this are: *Owner organizational changes; changing owner/contractor roles; Proliferation of*

project delivery systems (PDS); Collaborative process; Project financing; and Strategic alliances

Owner organizational changes

> Mandates to cut occupancy costs while expanding globally, Web-enabled internal processes and protect employees and clients while in their facilities—all with few or no additional resources. These are just a few of the challenging issues facing corporate and institutional real estate professionals worldwide. (Ernst & Young LLP 2002)

According to Bon (2002), the ability to understand current and future organizational needs, and acquire and manage a real estate portfolio to meet those needs, is the essence of effective corporate real estate management (CREM). Integration of both, general business and CRE issues is fundamental to the success of CRE strategy. CREM is a management discipline albeit with an emphasis on a particular resource-property. Technology, process re-engineering, strategy, operations and workplace management, coupled with the traditional real estate and facilities services, enable corporate real estate organizations to realize greater efficiencies and provide larger saves to the organization's bottom line, and fueling the organizational changes which also change they approach to delivering their capital facilities.

> Faced with the pressures of financing and operating their facilities, owners are looking for value in engineering goods and services. It is no longer important to simply acquire projects at the lowest construction costs, but rather at the lowest total costs. (McComb and Reester 2002)

Today's real estate and facilities executives are facing the increasingly difficult task of balancing internal and external resources to meet the business world's dynamic and uncertain needs. With the market's renewed focus on efficiency and shareholder value, a focus on integrated, value-added services is required and expected from any service provider. In this respect, the construction of a facility is no longer viewed as a single

event limited to the "physical" building, but instead as a dynamic process encompassing the entire project life cycle from financing and permitting to construction and operation. The emphasis in construction delivery is clearly moving toward creating long-term "value" for the owner.

The University of Reading's annual surveys of corporate real estate practices conducted during 1993-2001 also show that Property strategic plans and use of consultants have been among the top tree highest rank policies. Property strategic plans, which are intended to bring into line the business or activity of an organization and its property concerns, were being the most embedded policy in 2001 with over ninety percent claiming to have developed property strategic plans.

Changing owner/contractor roles

The major users of construction services continue to become more informed and experienced regarding the overall process of purchasing a capital project. In the past, owners were obligated to purchase construction services and materials from a fragmented, combative delivery system. In this scenario, designers were the owners' representatives and all other firms involved in the construction process were merely service providers—contractors and subcontractors, suppliers, and other vendors—each concerned only with selling their products and services. The majority of the project team did not have the best interests of the owner in mind. Major owners and users now understand this fact, and they do not like it. The information age and owners with more savvy and experience have markedly changed this traditional scenario (McComb 2002).

Globalization also has created an extremely competitive environment in which companies must learn to produce high-quality products and services for the lowest possible cost. Consequently, business owners must squeeze every ounce of capacity out

of their existing facilities, redesign their facilities to improve efficiency and productivity, or expand their facilities to help them become a low-cost, high-quality producer. They also have undergone years of process/organizational reengineering, benchmarking, and business enhancements to improve their business practices. Figure 2-7 shows the facilities development with alliances and sequential steps in product development and construction overlap to accommodate the goal of speed to market.

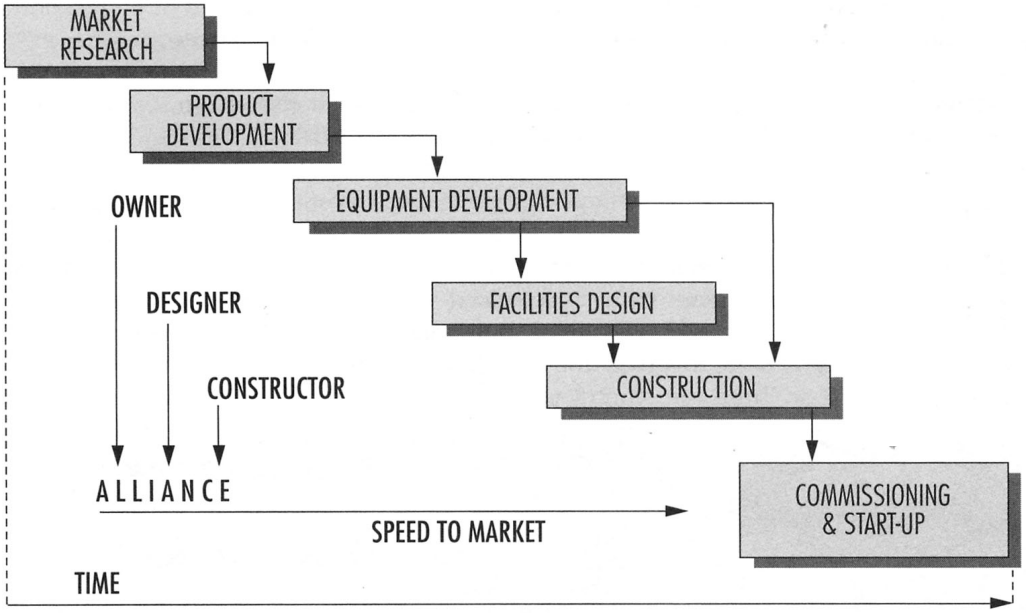


Figure 2-7. Facilities Development with Alliances and Sequential Steps in Product Development (Dorsey 1997)

Now owners expect the construction industry to show an equal willingness to improve and innovate. Owners are discovering that progressive construction service providers are able to minimize the strain and interruptions that often result from a fragmented, litigious design and construction process. They constantly pressure their project-delivery and facilities-management departments to meet the growing and changing construction needs of their companies with fewer resources.

Outsourcing

> . . . Outsourcing of specialized work to external service providers has been a reality for some time. Companies that own and operate property no longer do everything themselves. It is routine these days to contract out such work as janitorial services, building engineering, maintenance of mechanical and security systems, and construction. (Corsini 2001)

Today, outsourcing seems to be one of the key issues being explored by corporate real estate executives (CREO) as new and innovative solutions become available in the property market. Outsourcing means buying services from outside the company that once were provided internally, in other words, the replacement of salaried labor and management with contractors and outside expertise—an underlying concept that is here to stay (Sullivan 1996). The business rationale for outsourcing usually includes being able to deliver products and services faster, better, and cheaper than it can be done in-house (Materna 1998).

Today, owners are contracting with outside firms to build and operate facilities, freeing up capital for new product development and allowing for some degree of risk shifting, which is crucial in today's competitive business environment (McComb 2002). With the downsizing of corporate America, outsourcing quickly became the strategy of the 1990s. Projections for its continued growth are made by real estate professionals who emphasize the need for companies to focus on their core services. Moreover, nine out of 10 chief financial officers (CFOs) based in the U.S. believe that using outside resources to perform non-core functions increases shareholder value (Eisele 2000).

In 1996, outsourcing was viewed as a viable means to achieve cost control or economies of scale, and some companies were beginning to incorporate outsourcing as a strategy in their business planning. Today outsourcing is a given, with growing popularity as an essential management lever for business innovation, global expansion and

competitive advantage. This research clearly demonstrates that companies shapes and sizes in a wide of industries value outsourcing as a means to develop more efficient business initiatives, products, technologies, operational processes and customer services of contents.

A 1998 study on project delivery conducted by a strategic-initiative research group at the Construction Industry Institute (CII) revealed that many owners believe maintaining full-sized, in-house engineering capability is not necessary. Therefore, these owners rely on skeleton internal engineering staffs to communicate business processes and direction to external engineering resources. As outlined in a study conducted by the Construction Business Roundtable in September 1997, the out-sourcing of detailed engineering and construction work began a process of downsizing in-house engineering staffs that continues in many companies. Today, almost half of all projects have substantial contractor involvement in project definition (McComb 2002).

> There are also different levels of outsourcing relationships ranging from arms-length transactions to strategic alliances. But when a company asks an outsource provider to become a strategic partner, the company is, in effect, asking the service provider to share their vision, goals, and resources at multiple levels—often requiring an extensive level of integration. (Materna 1998)

Similarly, firms often create internal shared service organizations (SSOs) to deliver the same levels of service, quality, and cost that could be purchased externally. Companies then bring market pressures to bear on their SSOs by offering business units the choice of buying from the SSOs or from outside providers. As a result, companies often use shared service organizations to achieve a higher level of cost-effective integration and service. The growing use of cross-functional teams, like the use of outsourcing and shared service organizations, is further evidence of the not-quite-fulfilled need for greater integration (Materna 1998).

Companies outsource for many reasons. Some choose to do so to tap into talent or expertise that is deeper with an outside firm than what they can attract internally. Many turn to the outside so they can focus their energies on their core business with limited distractions. And others do so simply to reduce headcount and related expenses (Flynn 2002). According to the survey conducted in 2001 by Bethesda, Md.-based FMLink (www.fmlink.com), an online publication for facilities and building managers, the two most important reasons stated for outsourcing were 'cost savings' and 'the need for special skills, services or tools/equipment'," the survey report noted. The survey also found that the average percentage of the annual FM operating budget spent on outsourcing is 38 percent that marked a 6 percent increase from the level recorded in 1999.

The Outsourcing Institute (OI) and Dun & Bradstreet (D&B) (2000) have revealed that more companies are planning to outsource for strategic —rather than tactical— reasons than ever before. Strategic outsourcing while reducing and controlling operational costs remains a top priority, the second and third most popular reasons why companies outsource are strategic, to improve company focus, and to gain access to world-class capabilities. The top ten reasons for outsourcing in U.S according to The Outsourcing Institute (2000) are as follows:

1. Reduce and control operating costs
2. Improve company focus
3. Access to world-class capabilities
4. Free resources for other purposes
5. Resources not available internally
6. Accelerate reengineering benefits
7. Function difficult to manage or out of control
8. Share risks
9. Make capital funds available
10. Cash Infusion

The bottom line regarding an outsourcing initiative is of course, the end-users' overall satisfaction with the work performed and the effective management of the contract. In this regard, more than 80% of the survey's respondents, according to Facilities` survey, have not taken any outsourced functions back in-house over the past three years, nearly 70% are somewhat satisfied with their current outsourcing program, and a mere 2% are actually dissatisfied (FDM 2001). Moreover, according to a recent survey of 303 IDRC members, respondents` preferences for outsourcing facilities management remained also largely unaffected by the events of September 11 (IDRC-DEGW 2002).

While the extent of outsourcing may vary between companies and industries, most would agree that it's a ubiquitous presence on today's corporate real estate scene. According to National Association of Corporate Real Estate Professionals (NACORE)/Deloitte & Touche`s 1999 Occupancy Cost and Outsourcing Initiatives study, outsourcing is central to a new business model which consists of a small group of in-house corporate real estate executives performing key, In-house staff offering higher value-added services such as strategic planning and real estate analysis, providing decision support to senior management and serving an increased customer-service role as liaison with internal business units. More routine day-to-day facility and operations processes are outsourced to service providers. The following will further elaborate this model through analysis of current state of organizations` outsourcing initiatives/trends as identified in current literature:

- CRE/FM departments are not growing; but there is more work due to the expansion of corporate facilities even at a lowest speed; opening the gates for a variety of outsourcing without giving up financial or strategic controls. Accordingly, strategic

functions such as long-range planning, site selection and market decisions are not delegated to third parties.

- FM functions receiving the least support for outsourcing is real estate-based (lease management, property acquisition/disposition) as well as document management, at just 14% (Eisele 2000).

- More outsourcing emphasis on program, project and facilities management: A buildings survey in 2000 revealed, 40 percent of the respondents outsource construction project management (Eisele 2000).

- Outsourcing products are becoming more specialized to include portfolio strategy, recapitalization and finance consulting as well as e-business strategy. In addition, property management accounting and lease administration continue to be in high demand. All should be wrapped in a consultative package

- Increased outsourcing was found in three service areas: space alternation, lease administration and mailroom (NACORE/Deloitte & Touche 1999).

- Eight FM functions—custodial and housekeeping, design and architecture, landscape maintenance, major moves, security, preventive maintenance, engineering, and utilities maintenance, are being outsourced by at least 45 percent of respondents, FDM (2001) found. Custodial and housekeeping, design and architecture functions are the predominantly outsourced FM functions with 72% and 65% respectively. The survey further suggests that FM outsourcing hasn't yet crested. Within two years, 36 percent of respondents said "that they likely would be outsourcing at least one additional function that they are not outsourcing at present," said the survey report. The most likely candidate to join the outsourcing ranks over the next two years: preventive maintenance, picked by 40 percent of the group of respondents who anticipated increased outsourcing. (Lyne 2002)

As seen, FM turned into one of the fastest growing areas of real estate services as corporate America's desire to let others handle its real estate needs increased. Corporations are looking at getting all services: *Acquisition, distribution, project management, property management, etc.,* and they are looking at not just cost reduction but improved services, better asset management and greater value out of outsourcing (Bergman 1997).

In this era when time is a precious commodity, facilities management is just one service that customers are looking to outsource. Companies that are looking to expand want one-stop shopping—one entity to find the land, design the building,

> build it, and even furnishes it entirely. I foresee more companies preferring to work with one entity. (Eisele 2000)

Many companies entered the FM field during the 1990s. With intensifying competition, fees were driven way down, and specialist FM and strategic management firms through mergers create companies with the ability to meet the expanded needs of corporate clients. According to a buildings survey, after 1995-1997 period, 54 percent of respondents began to offer total facilities management; 36 percent began to offer design/construction outsourcing services. Other services that were recently introduced include real estate brokerage, environmental services, office relocation, data management, space and planning design, and energy management (Eisele 2000).

Despite the talk among some large providers of "integrated FM" and "one-stop shopping" for outsourcing services, when choosing service providers, CRE/FM executives surveyed, are clearly wary of generalists and more enamored of specialists. They also appear unfazed by the prospect of juggling separate contracts and providers. Indeed, in a blow to providers marketing themselves as a catch-all solution for FM outsourcing, a meager 2% of those surveyed claim that they are very likely/likely to use a single provider for all outsourcing needs. Furthermore, close to half are not apt to bundle like services into one contract and an overwhelming 96% are at least somewhat likely to contract separately for each service (FDM 2000).

> While outsourcing contracts are ideal for partnering arrangements, the facility manager wants to ensure that the outsourcer is successful; thus using large contractors that bundle all services, from food service through custodial to reprographics is opposed to. There are two reasons. First, these tend to be too large; and the organization's contract is just one more account for the outside contractor. Second, as in so many other things, companies that do everything tend not to do anything well. (Cotts 1998)

NACORE/Deloitte & Touche`s 1999 Occupancy Cost and Outsourcing Initiatives study survey also found that, 66% of the respondents outsource on a highly selective basis by type of service. One-fourth of the companies indicated they do broad outsourcing using multiple service providers, down from 39% in 1997. Only 13% of the firms that outsource services said they do broad outsourcing to one service provider. The study's remark to service providers, as a lesson, was to focus on their core competencies and perform them deeply and well.

Proliferation of project delivery systems

> Integrated delivery systems, preferred vendor relationships, and compressed time packages are replacing the "a la carte" service approaches previously purchased by corporate real estate managers. With anachronistic traditional design/bid/build delivery and standard packages of services, project times are extended and since design and construction functions are conducted separately, additional money and time are wasted when disputes develop between these separate parties, and the owner is often placed in the position of becoming an arbitrator of disputes and claims. These problems have led owners to seek alternative construction delivery systems. The need to save time has become a more important factor than low-tech bricks and mortar in project delivery. (Westlake and McKee 2001)

Owners, particularly in industrial sector, today are leading the innovation by requiring an increased focus on quality, greater use of the design-build method, and increased emphasis on project-team training. Speed of delivery was the most common factor cited by a panel of construction industry leaders when asked what affected the course of their current construction projects (Lowe 2002). Thus, owners need for accelerated facility to satisfy their speed-to-market concerns is also one of the most aggressive drivers of change in construction project delivery systems (Dorsey 1997).

Project delivery systems respond to changing circumstances. The U.S. design and construction industries, in the last few years, have witnessed a remarkable surge in the utilization of alternative project delivery systems such as design-build. Their flexible,

single-source authority (responsibility) and quick, effective response to emerging trends along with changing public and private procurement norms increased their receptivity and popularity (Belle 2002). Figure 2-8 shows the three major forms of construction delivery systems used in the United States: *Design-build, design-bid-build, and construction management at risk*. Each approach has its inherent advantages and disadvantages, and should not be considered the sole way to construct a commercial building.

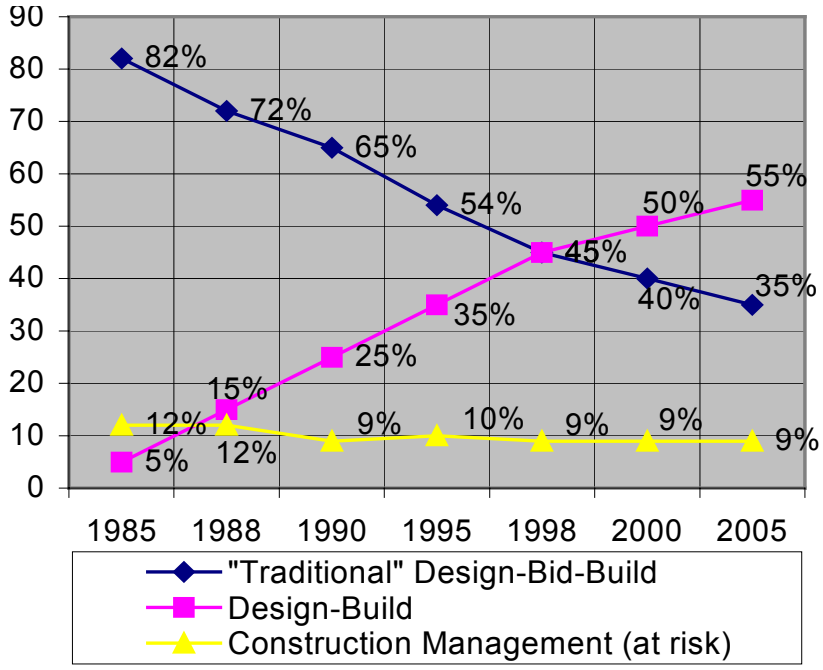


Figure 2-8. Project Delivery Systems in U.S. (Design-Build Institute of America 1999)

Clearly, the traditional design-bid-build approach that places a premium on initial cost and effectively discourages the introduction of innovative and thus unproven practices is not a solution. It is the problem. Such an approach cannot react to such rapidly changing forces, let alone guide their development. In contrast, design-build is a method of project delivery, which at its core posits a new relationship between owner and builder. It places an enhanced premium on facilitating innovative approaches. Because there is a single point of responsibility, the ability to manage risk is improved. It will

permit us to take far greater advantage of new materials and new technologies than ever before, because the emphasis is ultimately on project performance, and not project process per se. It will encourage the development of innovative practices that facilitate operations globally and support energy efficiency and sustainability as practical and necessary goals. In short, an integrated approach combining both design and construction in a single entity will allow making maximize use of the quickly changing opportunities before the contractors (Belle 2002).

Design-bid-build, or the traditional approach to construction delivery, is established when an owner commissions a design professional, an architect or engineer, to prepare drawings and specifications for a construction project. A contractor is then hired through competitive bidding or a negotiation process to complete the work. According to figures released from the Design-Build Institute of America (DBIA), Washington, D.C., from 1985 to present, design-bid-build dropped its hold on the market from 82 percent to 55 percent.

Construction management (CM) is a project delivery system based on an owner's agreement with a construction firm, separate from the design-firm contract, to provide construction leadership, as well as perform administration and management, according to contracted services. The construction manager supervises and mediates the important players throughout the different phases of the construction process, design, construction, and change orders, with the interests of the owner in mind. Depending on the situation, a construction manager can assume the financial and legal risks of construction or not. In 1985, construction management commanded 12 percent of the market; today, the system holds steady at roughly 10 percent.

Projects that begin with outstanding creativity, collaboration and commitment to performance have an excellent platform to deliver exceptional results. Design-build is a method of project delivery, which at its core posits a new relationship between owner and builder. It places an enhanced premium on facilitating innovative approaches.

> The new condition in the capital project delivery became the reduced project-cycle and the need for speed in project delivery. This, along with other owner trends mentioned earlier, urged the owners to redefining the roles of design and construction companies, demanding that they spend more time and money on design, construction feasibility reviews, and planning prior to and during construction. Owners are finding innovative ways to involve contractors prior to bidding, to keep designers involved for on-site assistance during construction, and to approach the design-build process so the whole is greater than the sum of the parts. (McComb 2002)

Because there is a single point of responsibility, the ability to manage risk is improved. It will permit us to take far greater advantage of new materials and new technologies than ever before, because the emphasis is ultimately on project performance, and not project process per se. It will encourage the development of innovative practices that facilitate operations globally and support energy efficiency and sustainability as practical and necessary goals. According to Belle, an integrated approach combining both design and construction in a single entity will allow us to make maximize use of the quickly changing opportunities before us (Rieks 1999).

Collaborative process: High-performance team model

> Corporate real estate and facility planning managers are initiating alliances with service providers to improve cost and time efficiencies and to continually upgrade process and products. (Moyer and Kennedy 1993)

Collaboration and sharing of information are now more common than the previously accepted litigation solutions. Teamwork and participation in the infancy stages of a project planning process, sometimes even prior to initial and preliminary design have become the preferred delivery process for many public and private owners.

Construction is also more a service industry than a manufacturing or product-based industry. Even though large products often are constructed, a project's success is more dependent on the people involved than a particular piece of equipment, a process, or a patent. A project that can muster well-organized, skilled and motivated people, with an effective communication system in place, stands a good chance of succeeding. For this reason many owners, private/public, are focusing on team building and partnering sessions to establish strong leadership and communication systems (Gould 2002). Moreover, owners, designers, and contractors have successfully utilized project teams on construction projects for many years and it is no more doubted that management of projects with a project team will yield a higher success rate than traditional styles (McComb 2002).

> On construction projects it is common practice to accuse, dispute, and litigate rather than to solve issues. The existence of these relationships is widespread and usually has an adverse impact on project results. Transforming these negative attitudes into positive commitments can be beneficial to all parties involved. Budget overruns and schedule extensions are two common problems on construction projects that could be greatly influenced by team building. (Williams 1998)

The Construction Industry Institute (CII) Project Team Building Task Force (1991) has defined the process as follows: "It is a process that brings together a diverse group of individuals and seeks to resolve differences, remove roadblocks and proactively build and develop the group into an aligned, focused and motivated work team that strives for a common mission and for shared goals, objectives and priorities." The core contribution of the team building process is that it facilitates building and developing a "group" into an aligned, focused and motivated work "team" striving for a common project mission and for shared goals, objectives and priorities (CII 1986).

The Collaborative Process (TCP) is a new method of managing and delivering building projects. Owners, Designers and Builders, to provide an alternative to traditional methods of managing procurement, design, construction and risks associated with the building process, developed the TCP process. It was developed by systematically integrating proven principles from quality management, high performance team building and construction industry best practices into the building process. The cornerstone of TCP is the high performance team. Specific tools and systems are used to build collaborative teams and processes that result in accountability, trust and financial alignment of business practices to ensure success for each team member.

Team building ceases to exist at the completion of a project but may be an integral component of a partnering process. It is not uncommon for the terms to be used interchangeably in practice. According to the Project Team Building Task Force, established in 1990 by CII, the most notable difference is that partnering encompasses long-term commitments to attain business objectives while team building is project specific (Carr 1999).

> As business managers saw the benefits of the quality movement, they sought to expand this thinking to other relationships in the business world, outside the walls of their organizations. One of the first that was put to test was the relationship with construction contractors. Could two separate organizations work together in the same way to benefit from their individual quality improvement-lessons? Could team building be used to bridge the gap between organizations? How could this be accomplished? (Carr 1999)

Furthermore, presently in construction, partnering principles are applied most commonly on a project-specific basis; that is the team-building process is applied to a construction project at its inception and the relationship continues until the project is completed. The term “partnering” however has also been applied to long-term relations between independent business organizations, where the cooperative and collaborative

relationships are employed over a long-term or multi-project arrangement. Such a long-term relationship is called “strategic alliance partnering”, while the more familiar project-centered process is called “project partnering”. The essential difference between the two varieties of partnering is the time that can be devoted to develop the partnership. Strategic alliance partnering requires more time and a continuing business relationship, with its promise of the greater benefits from continued improvement. Project partnering applies the concepts and techniques of strategic alliance partnering to the short-term, project-based relationship of the typical construction project (Carr 1999).

Extent and cause of adversarial relationships are common but not universal among owners, designers, and contractors. For construction industry, today, major universities are preparing students for successful design-built project delivery, and owners are seeing the advantages as well. Design and construction integration programs prepare students for multidisciplinary collaborative teamwork in an integrated design and construction process.

Strategic alliances (strategic alliance partnering)

In an economic environment that constantly exerts pressure to downsize corporate staffing and maximize profit, there is a growing trend in the use of business-to-business "alliances". More and more owners are developing strategic alliances and reaping the benefits. These alliances are special relationships between companies, where one company wishes to outsource particular functions by hiring another company which specializes in those functions.

> Industry-wide there is an ongoing realization that contractors can and should provide a much wider range of services than they traditionally have. Public and private owners have demonstrated the desire to build relationships with their construction service providers that extend to both front and back-end services. Contractors are learning that extended involvement in a capital project often entails

> lower risk and a higher margin. Owners, having been stripped of internal resources, must rely more heavily on their design and construction allies for extended services. (McComb 2002)

For example, by buying a large amount of construction services from one source, the owner obtains better pricing. In the long run, a strategic alliance keeps costs down, allows the contractor to dedicate specific staff to the client, eliminates the learning curve required by new contractors, and increases the ability to turn projects around quickly.

> Owners around the globe, like the contractors who work for them, are seeking to enhance their bottom line. They are seeking to reduce the links in the supply chain and reduce total costs. The significance of continuous growth to all organizations cannot be overstated, and many companies' fortunes are made or lost based on how investors view the company's ability to grow. As companies have sought to tighten their belts and streamline operations, owners have sought to enhance and capitalize on supply-chain management. In doing so, owners have opened the door to building better long-term relationships with contractors and suppliers. (Andrews and Reester 2002)

It is also seen that outsourcing and strategic alliances are going hand to hand as some owners have turned to strategic alliances with designers and engineers as a solution to the loss of in-house forces. Industrial firms realize that they can no longer afford to maintain intellectual equity in all areas of facility development and management and be world-class competitors. They are turning to the construction industry for expertise in designing, building, and operating facilities so they can maintain focus on their core business functions. This is also causing industrial contractors to lead developments in project delivery.

In a 1997 study, the McKinsey consulting firm found that 68% of U.S. and Canadian oil companies' managers believed that strategic alliances will be a key element in reshaping the oil industry over the next five years. In addition, 70% believed that strategic alliances are among the top five items on their companies' agendas. In addition to the move toward more alliances, owners are seeking to minimize the number of

suppliers and contractors with which they do business. In a 1998 Purchasing magazine survey, 81% of respondents identified reduction of suppliers as a current trend, with the major benefits being reduction of purchasing costs, greater understanding of supplier/contractor competencies, development of value-added relationships, and improvement of the quality of products and services. The owners' goal is to get better quality and service, plus reduced total cost of ownership, through more alliances and fewer suppliers.

Contractors, on the other hand, constantly focus on how to improve our margins, while enhancing customer service and attaining our corporate goals. To help achieve that objective in today's volatile business environment, contractors and suppliers are seeking to develop enhanced relationships with owners. The most involved method of strengthening these relationships is the formation of strategic alliances—an increasingly popular option.

> Contractors seeking to stay competitive in the marketplace must be prepared to capitalize on strategic alliance initiatives. The goal of a strategic alliance is to create a win-win relationship for all the companies in the alliance. (Andrews and Reester 2002)

Industry-wide, there is an ongoing realization that contractors can provide a much wider range of services than they have traditionally. Historically, general contractors and construction managers have provided the front end of the construction/maintenance loop, while service organizations have provided the back end. In recent years, companies have made a greater effort to maximize their operations and provide both front-end and back-end services. This market migration is an important reason why owners are embracing strategic alliances. General contractors' evolution into full-service providers gives owners

the opportunity of one-stop shopping. Owners now can select a service provider who can help them design, build, fit up, and maintain a facility throughout the project's life span.

These relationships are built on trust, honesty, and a spirit of innovation and competition. The analysis of suppliers and their products has switched from a focus on lowest price to a focus on total cost of ownership (TCO). Purchasers are seeking to maximize long-term investments, while finding a competitive price now. Developing strategic alliances can be a key strategy in achieving that goal. Strategic alliances allow companies to enhance quality, maintain price, and drive innovation. Top reasons for alliances are: *Lower price and reduced total cost, reliability, direct influence on the suppliers' quality, improved scheduling, influence on suppliers' or contractors' use of technology* (McComb and Reester 2002).

Figure 2-9 shows the benefits of alliances to both owners and contractors. Owners' two key benefits derived from strategic alliances are lowered delivered cost and positive impacts on the core business. At first glance, one might think that owners have all the benefits in strategic alliances: lower cost, more control, less headaches. But there are significant benefits for contractors, or there wouldn't be any alliances. When looking at strategic alliances that benefit owners, we need to keep one thing in mind; construction is not an owner's core business. Owners view construction as a tool to increase the profitability of their core business. Fully functional strategic alliances allow owners to use less time, money, and intellectual equity in procuring and managing construction services. As a result, those resources can be focused on an owner's core business, helping the owner realize even greater savings elsewhere in the organization.

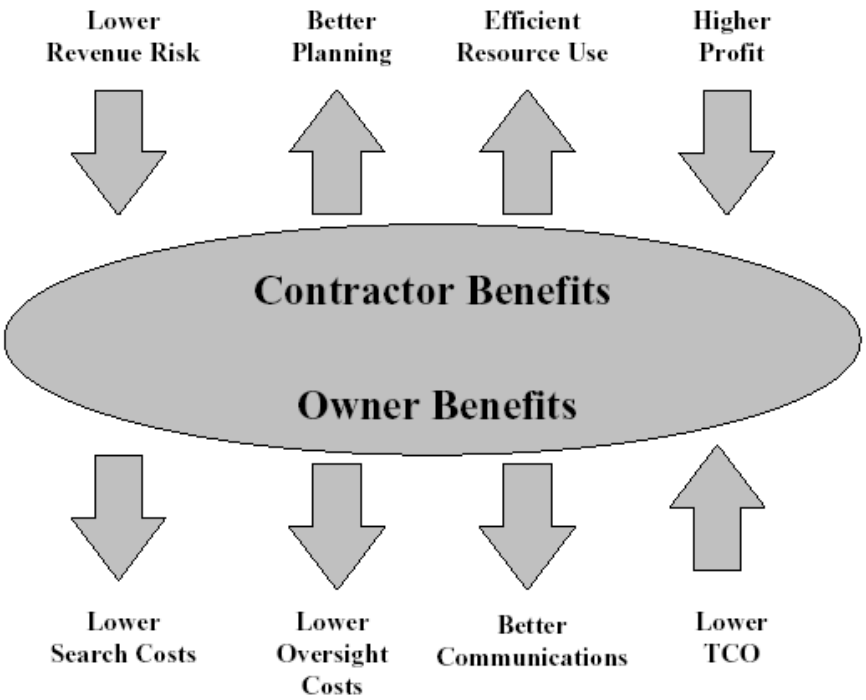


Figure 2-9. Strategic Alliance Benefits (Andrews and Reester 2002)

According to Andrews and Reester (2002) for a contractor, the completion and turnover of a new manufacturing facility is the goal of a project; the owner's goal is to get the building built and start making widgets to sell. Contractors seek both a predictable revenue stream and better margins, and strategic alliances provide those opportunities. Contractors' benefits can be broken down into four categories: (1) Predictable contractor revenue, (2) Improved job margins, (3) Enhanced marketing, (4) Greater Marketing and Operational efficiency.

No matter what an owner can gain from a strategic alliance, there are some potential disadvantages to owners. The first is a loss of power. When owners forgo the competitive-bid environment to focus on building a mutually beneficial alliance, they give up power. That power is two-fold. First, the competitive nature of the bid process assures that someone will always be competing for owners' work, putting downward pressure on prices. Second, the ability to "walk softly and carry a big stick" is greatly

reduced. In a competitive-bid environment, the threat to drop a contractor and change to another is always present. Owners who engage in alliances also experience increased vulnerability on two fronts. First, owners share vital information that creates their competitive advantage. Second, in the event that an owner's alliance partner fails, the cost of picking up the pieces is significantly increased because there are higher costs of switching to another supplier or contractor (Andrews and Reester 2002).

Project financing

> Mitigating project and ownership risks through creative financing is another way we've seen owners construct their new facilities. More participation by local-country investors, construction companies, and institutions is helping to diversify foreign investment risk for owners' offshore facilities. (McComb 2002)

Owners are financing capital projects through investment bankers and entering long-term relationships with the formation of sale/lease-back scenarios. Sale/lease-back, and dedicated capital and operating lease arrangements, are becoming more common for domestic projects. This arrangement enables owners to leverage their financial structure and position themselves as more than simply a tenant. In addition, this arrangement enables an owner to funnel its financial resources into its core business and away from real estate ownership.

The use of capital markets to finance construction projects is one of the most innovative techniques owners are using to control the inherent risk in construction as markets become more global. The ability to access capital markets brings efficiency to the process that can lower costs and offer a risk-allocation structure. The use of limited-partnership financing through real estate investment trusts (REITs) in the public market has returned as a viable way to reduce ownership risk for the users of facilities while providing good returns to REIT investors.

2.3.3 "Integrated project delivery" approach to capital project delivery

As mentioned earlier, in the core of the new trend of ITPS, were the integrated services movement/approach—another trend which accompanies ITPS—that emerged with the surge of design-build and other altenative, integrated project delivery methods. These new methods gained popularity as they were responding to ever-changing and complex owner demands through their flexible and single-responsibility nature. With emerging trends in CRE/FM organizations discussed in 2.3.2—mainly the increased outsourcing, proliferation of project delivery systems and collaborative process—, companies in U.S construction industry had the opportunity to expand their core specialty(s)/core service(s). In this section, by studying the integrated decision-making process and design/build, the two constituents of the integrated project delivery approach, a better understanding of the ITPS concept will be obtained.

Integrated decision-making

The concept of integrated decision making, as contrasted with linear decision making, is to bring the key parties together early to combine their expertise and to accelerate the overall design/construct process. Such integration is routinely done in private sector unlike public sector. All project delivery systems except the competitively bid lump sum system allow contractors to be involved to some degree in the integration of experts, and it is now broadly understood that the earlier the construction and specialty experts are brought into consultation with the owner and designers, the better the project will be controlled in regard to time, quality and cost (Dorsey 1997).

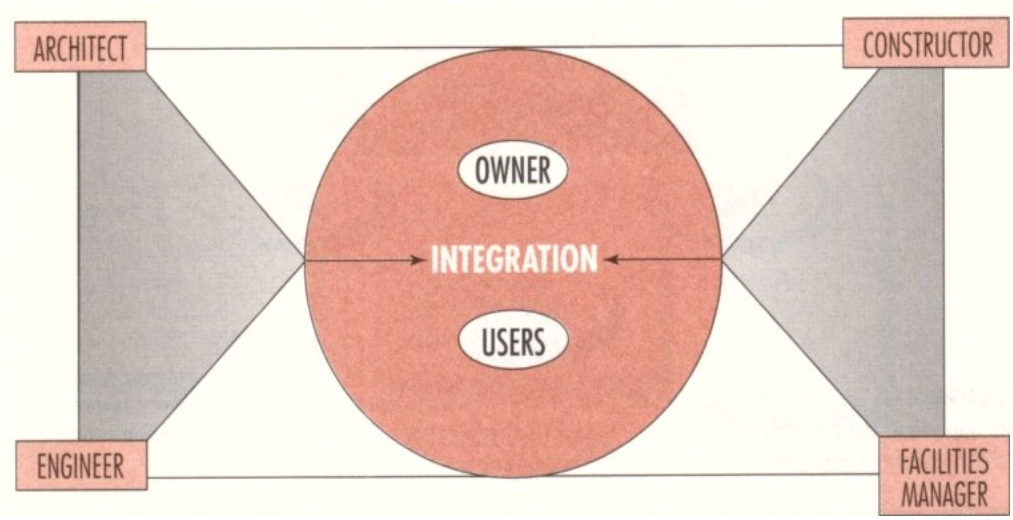


Figure 2-10. Integrated Decision Making Dynamics (Dorsey 1997)

As shown in Figure 2-10, integrated decision making dynamics allow all parties to bring their ideas together early in the process. According to Dorsey (1997), the degree of integration is one of the identifying characteristics of each project delivery system. While, the traditional roles of the parties to construction tend to hamper full integration of ideas, services, and functions, project delivery methods such as design-build and construction management allow high levels of integration; however some checks and balances remain and should be identified early: Owners have the final authority in all matters; Designers are responsible for design integrity, particularly aesthetics, and for the overall building function and impact on the owner, community, and infrastructure; Constructors are responsible for guiding the construction process, beginning with constructability advice, cost projections, and preconstruction planning, and continuing through actual construction to project completion.

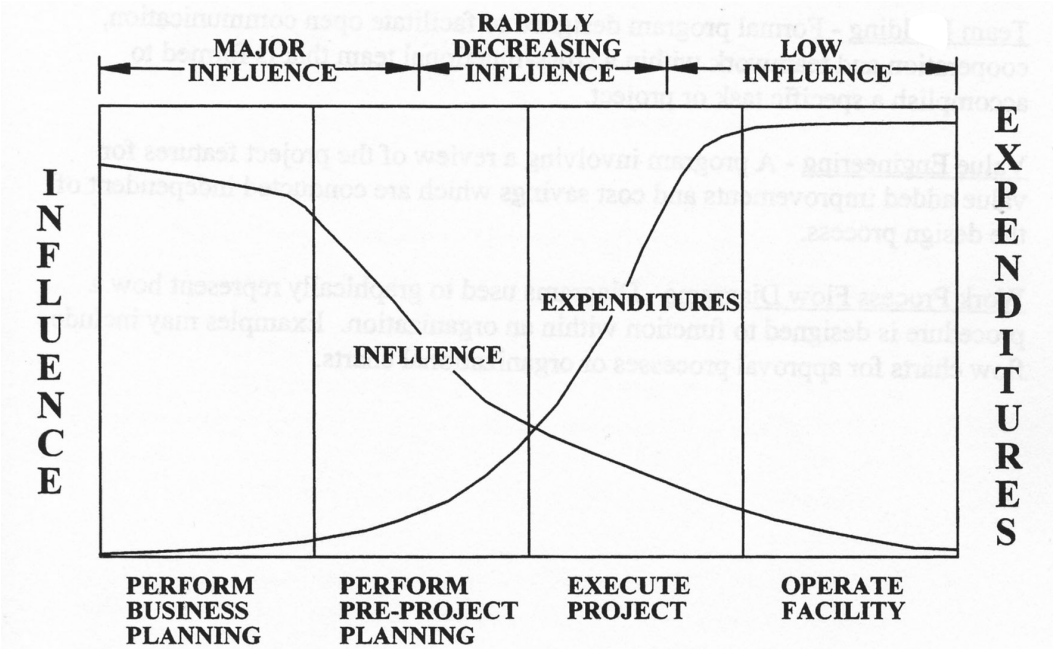


Figure 2-11. Level of Influence on Project Cost within the Project Life Cycle (Bon 1989)

Figure 2-11 illustrates the level of influence on project cost. As a building project unfolds form planning and design, through procurement and construction, to utilization and operation, and as the cumulative cost of the project rises, the opportunities for influencing the cumulative project cost diminishes (Bon 1989). Thus, the benefits of, integrated decision-making brought to early decisions during planning and design phases of a facility project also influence the total cost.

Design-build (D/B): The return of master-builder

> The separation of design and construction does violence to what is naturally an integrated process. It is an accident of history that they are separated. Indeed, integrated design-builders trace many project problems to that divorce, not to mention the distrust that so often undercuts efforts at teaming. (Halverson 2001)

The traditional method of design-bid-build construction involves a separation of roles between the designer and the builder, with each being retained separately by the owner. This approach results in extended project duration, since design and construction functions are conducted separately. In addition, money and time are wasted when

disputes develop between these separate parties, and the owner is often placed in the position of becoming an arbitrator of disputes and claims. These problems have led owners to seek alternative construction delivery systems.

> Design-Build has been traced to ancient Mesopotamia, where the Code of Hammurabi (1800 B.C) fixed absolute accountability upon master builders for both design and construction. In classical Greece, great temples, public buildings, and civil works were both designed and built by master builders. Enduring structures such as the Parthenon and Theater of Dionysis are testimony to this master builder process. (Twomey 1989)

Design-build is not a new concept. In centuries past, it was the only procurement method available. Its roots originate in the ancient "Master Builder" concept where responsibility for both design and construction resided with one person. During the Renaissance, architecture and construction evolved as distinct professions and the presence of master-builders diminished. Project complexity increased during this era and functional need for specialization in both design and construction was required. (Twomey 1989)

Throughout the 19th century, integration of services was the rule rather than the exception. Design and construction evolved into separate processes early in this century as the two fields grew increasingly complex—partly due to more sophisticated technologies. Later, legal concerns and risk-shifting drove them further apart. Design-bid-build remained the procurement method of choice until the inflationary 1970s and the litigious 1980s encouraged owner organizations to reevaluate this standard method of project procurement. Subsequently, the use of project delivery methods such as design-build, turnkey, and construction management emerged as viable alternatives to traditional design-bid-build (Songer and Molenaar 1997).

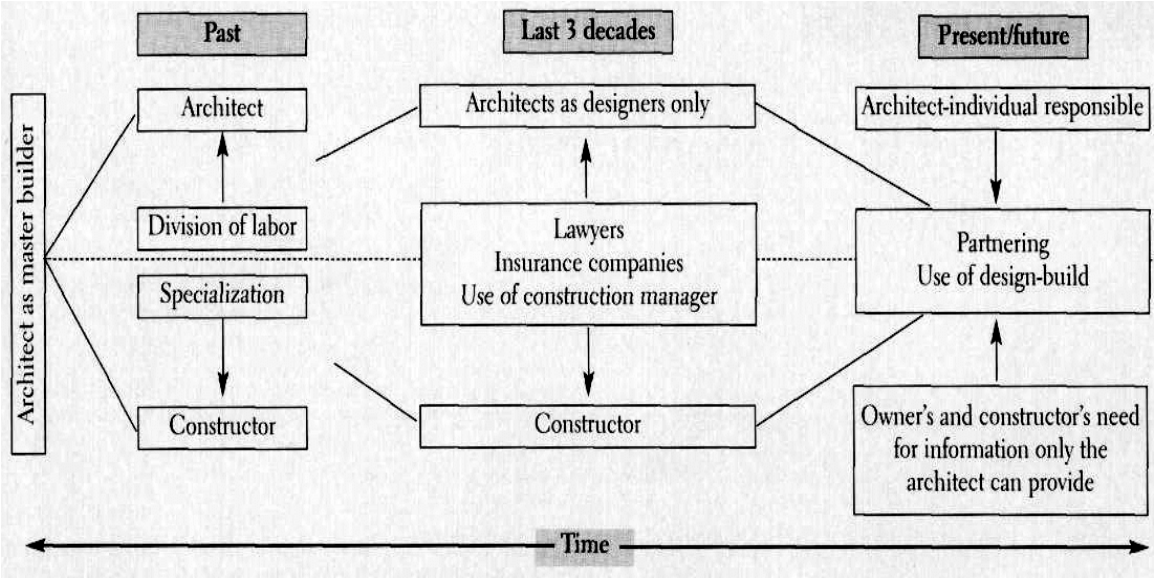


Figure 2-12. The History of Project Design and Construction (Tenah 2000)

Figure 2-12 illustrates the historical separation of design and construction. At left is the arrangement in earlier centuries. In the center is shown the situation in recent decades; a split between designers and contractors. This split was furthered also as tighter competition between designers resulted in a consequential market-driven lowering of design fees. In order to increase volume, design fees were contracted out at unreasonably low prices. Although the architectural community succeeded in reducing its liability, it also had to accept reduced fees, which further isolated it from any construction-related activity. The present and future situations are shown to the right-a reuniting of designers and contractors in partnering and design-build (Tenah 2000).

Design-build (D/B) emerged in an attempt to accelerate design and construction, reduce costs, and minimize an owner's efforts in managing the construction process. D/B refers to a project delivery system which combines the fragmented responsibilities associated with traditional design-bid-build into a single entity or a consortium that is contractually responsible for providing the owner with all services necessary to design and construct the project . Many observers of the construction industry believe that the

design-build method brings together an optimal selection of the best features of traditional project delivery methods while adding its own unique benefits.

According to a study by Penn State University`s Project Delivery Institute, design-build, was 23% faster in delivery speed than CM-at risk work and 33% faster than design-bid-build contracts. Design-build was also at least 4.5% lower in unit cost and when compared to other project delivery methods, D/B projects were superior in product quality, and generated less than half the claims and litigation. The potentials of this project delivery method include also the following:

- Better quality control
- Opportunity for innovation
- Cost saving
- Time saving
- Reduced administrative burden for owner
- Early knowledge of costs
- Improved risk management

There are many different variations of contractual arrangements in the D/B process. The four frequently used partnership arrangements are: *Designer-led design-build; builder-led design-build; joint venture; and in-house design-build.* These design-build arrangements are characterized according to the primary sponsor, the party who is in a direct contractual relationship with the owner.

Builder-Led Design-Build arrangement, today is the most frequently used contractual arrangement. The popularity of this arrangement is influenced by the financial strength of the builder. In this arrangement, the owner contracts directly with the builder for all design and construction services rendered. The builder then contracts with the design professional, who supplies all of the required design documentation for the project. The design professional is accountable to the builder to conform to any

applicable codes and to provide professional design services for the structure. The builder is responsible to the owner for both design and construction services in the builder-led design-build arrangement. This includes responsibility for failure of the project's design or for any of the professional services stated in the agreement between the builder and the owner.

In the *In-House Design-Build* arrangement the design-build organization, as a single entity, agrees to provide all design and construction-related services required for the project. In the industry, this arrangement is also called as "*Integrated D/B"* or "*Integrated Services."* The design-build organization may employ staff made up of sufficiently knowledgeable and capable design professionals, construction managers, and administrators, and an adequate skilled labor force, to perform all services required for project completion. Teamwork and communication are usually optimal under this arrangement because of the proximity and familiarity of the team members.

Since the design-build firm is generally not capable of performing all of the required services, it may subcontract portions of the work to design professionals and specialty contractors. In-house design-build differs from the joint-venture arrangement in that it is generally a corporation established on a long-term basis. (Tenah 2000)

2.4 Summary of Literature Review

Given the present new economy, globalization, technological advancements and increasing business competition, the way buildings and other structures are designed, built and managed -capital project delivery- is undergoing constant and dynamic changes. Corporate real estate (CRE) and facility management (FM) functions within owner organizations, are starting to today play an important strategic role for the future of companies, and contractors are becoming a much more integral part of their facilities

decision-making process and overall business strategies as they become more sophisticated and diversify their services portfolio to meet their clients` increasing demands.

The subject of this study, “Integrated Total Project Services (ITPS)”, under these circumstances, is a new trend that rises on the foundations of Design/Build (D/B) and the integrated services approaches to the delivery of capital facility projects. Emerging owner trends such as outsourcing, teamwork, collaboration and strategic alliances lie at the core of the ITPS concept. ITPS was brought to the attention of the U.S. construction industry during the 2000 Professional Design-Build Conference; however an immediate problem surrounding it is that it is relatively a new trend and despite its rapid growth it lacks basic research and an industry-wide familiarity when compared to other terms, concepts and trends in the industry such as design/build, construction management and etc. For this reason, literature review aimed to provide an initial understanding and a conceptual framework to better study ITPS in respect to the other objectives set for the study.

This framework, started with basic definitions, and studied corporate real estate (CRE)/facility management (FM) organization(s) as the capital facility owners and the procurers, purchasers of facility project services: *the evolution of CRE/FM organization*, *its functions*; *FM organizational models and related issues.* Growing use of contractual services, consultants and other outside service providers as part of the “outsource or retain in-house” debate was discussed in this section.

A property industry model and facility management life-cycle concept by Cotts (1998) were also discussed in literature review to provide basis for the ITPS research. This model was used to illustrate the professional span, the distinction between the

management of the workplace and its delivery (facility operations, business support services and construction). With this model and its variations, *integrated service delivery, total workplace management and total infrastructure provision,* the changing landscape of corporate world, and building construction's connections to the overall property industry and its major components were revealed.

The literature review further investigated the emerging owner trends in capital project delivery that are lying at the core of the ITPS trend. These trends as identified by FMI (2002), CII (1999) and other industry organizations were: *Owner requirements resulting in expanded or modified contractor roles; iimprovement of effective communication, teamwork and especially alignment between the business leader, owner capital project professional, contractor, and supplier; Reduced project cycle time caused by competitive pressures on time-to-market and globalization of the industry; Owner organizational changes; Outsourcing of engineering, construction, facility maintenance and other capital facility services expertise; Proliferation of (alternative) project delivery systems; Collaborative Process: The High-Performing Team Model; Strategic alliances; Project financing.*

Literature review, in the last section, studied the integrated project delivery approach to the capital project delivery, integrated decision making process and the design-build project delivery which provided the owners with a single-source, flexible, adaptive and innovative approach to delivering their capital facilities projects (modernization/new construction). These were the trends in U.S. construction industry and its players, which led to the emergence of ITPS concept; thus they were considered as the basis of ITPS. Chapter 3 will further study this trend.

CHAPTER 3
INTEGRATED TOTAL PROJECT SERVICES (ITPS) RESEARCH

3.1 Introduction

Chapter 2 laid the foundations of the integrated total project services (ITPS) trend and provided a conceptual framework as the initial purpose of this study. Furthermore, this study is intended to determine (1) Owners` current and emerging approaches to how they are procuring/obtaining all the necessary services/functions for their capital facilities projects, (2) Contractors` current and emerging approaches to how they are delivering/providing all the necessary services/functions for the owners` capital facilities projects, and (3) Match, identify and compare the owner approaches to capital facility delivery with contractors` current and emerging capabilities and contracting practices in the U.S. private sector.

This chapter will introduce the "Integrated Total Project Services (ITPS)" concept and "Integrated Services" movement and discuss the future of design-build as based on the literature review (ITPS framework). The chapter contents will also be used to provide the basis for the web-based survey questionnaire designed to serve the objectives for this study (and to collect the data necessary).

3.2 ITPS Concept: Being All Things, Tackling All Tasks?

Project delivery systems seek to tailor the process and the relationships among the parties to the best advantage of the owner (Dorsey 1997). Figure 3-1 shows the steps in the project delivery process and the traditional responsibilities that change under different project delivery systems. As seen, most of the steps involve more than one party. These

joint responsibilities are usually described in contract documents. Dashed lines in the figure also indicate optional duties, which might be rendered by the parties. For example, the design team may help prepare the program and even be involved in construction. The constructor may perform maintenance under a separate contract.

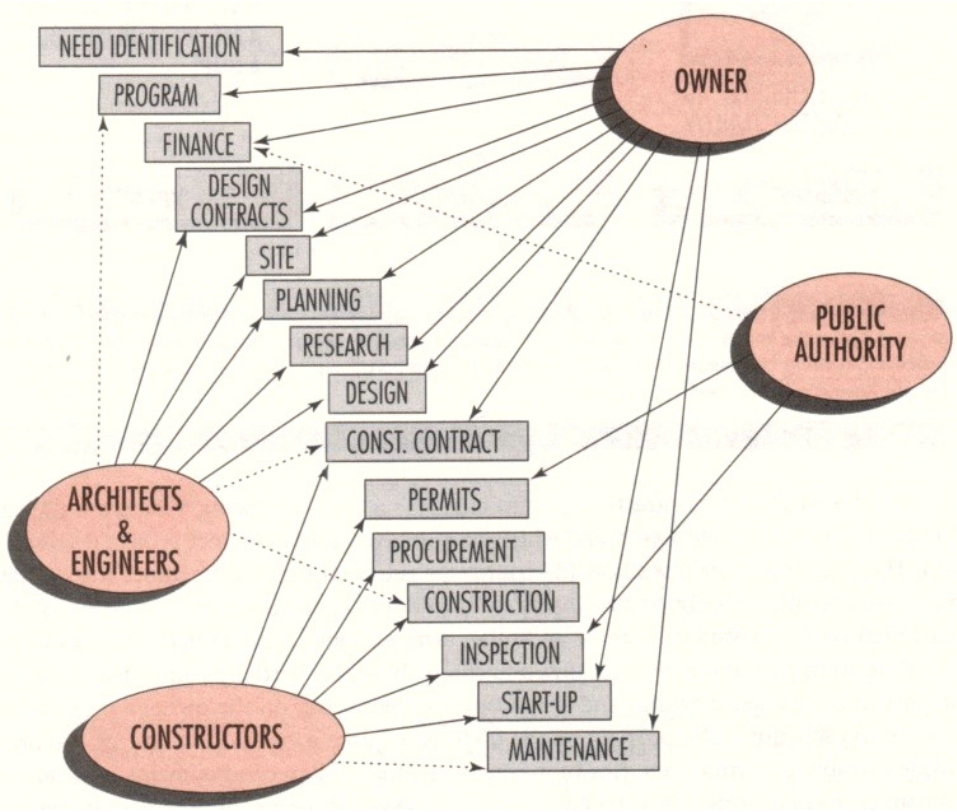


Figure 3-1. Steps in the (Capital) Project Delivery Process (Dorsey 1997)

With the introduction of Integrated Total Project Services (ITPS) to the U.S. design and construction industries, during 2000 Professional Design-Build Conference, these traditional roles and responsibilities entered a new wave of change that were flourishing in times of new economic conditions, corporate changes, increasing business competition, industry innovations, outsourcing, “integration”, etc. At this conference, design-build was identified as the beginning of an entirely new process for producing facilities (DBIA 2000).

> . . . as design-build project delivery grows, the idea of full-service or integrated design is also growing. A trend observed is that more and more firms are expanding their integrated services including maintaining and operating facilities after construction. (Design-Build Conference, San Diego, CA, October 12, 2000)

The ITPS concept rises on the foundations of design/build (D/B) and the integrated services approaches to the delivery of capital facility projects, which advanced integrated design/construct and full-service ideas, and has led to the fact that today construction companies—mostly design-builders,—started to expand their integrated services to further include services on the upstream and downstream sides of construction; thus becoming more involved in the decision-making process of the capital facilities owners (see Figure 3.2) (DBIA 2000).

> The buildings themselves are now a much more integral part of overall business strategy. So, it is natural that owners are turning increasingly to design-builders to help them fit their facilities into the larger piece of the business puzzle. This is a big change in the paradigm, with traditional design-build at the heart and the common denominator is that the owner is the driving force behind the trend. (Silver 1999)

In other words, these companies provide/offer not only their core/specialty AEC (architecture/engineering/construction) services; but also, based on their capabilities, they may provide planning, development, financing, programming and in some cases even real-estate, facility management, along with operation and maintenance (O&M) services for their clients, capital facility project owners. This is the evidence of the tremendous shift that is now under way in how owners perceive their facilities (Silver 1999). Figure 3-2 represents the "Integrated Total Project Services (ITPS)" concept as developed based on literature review.

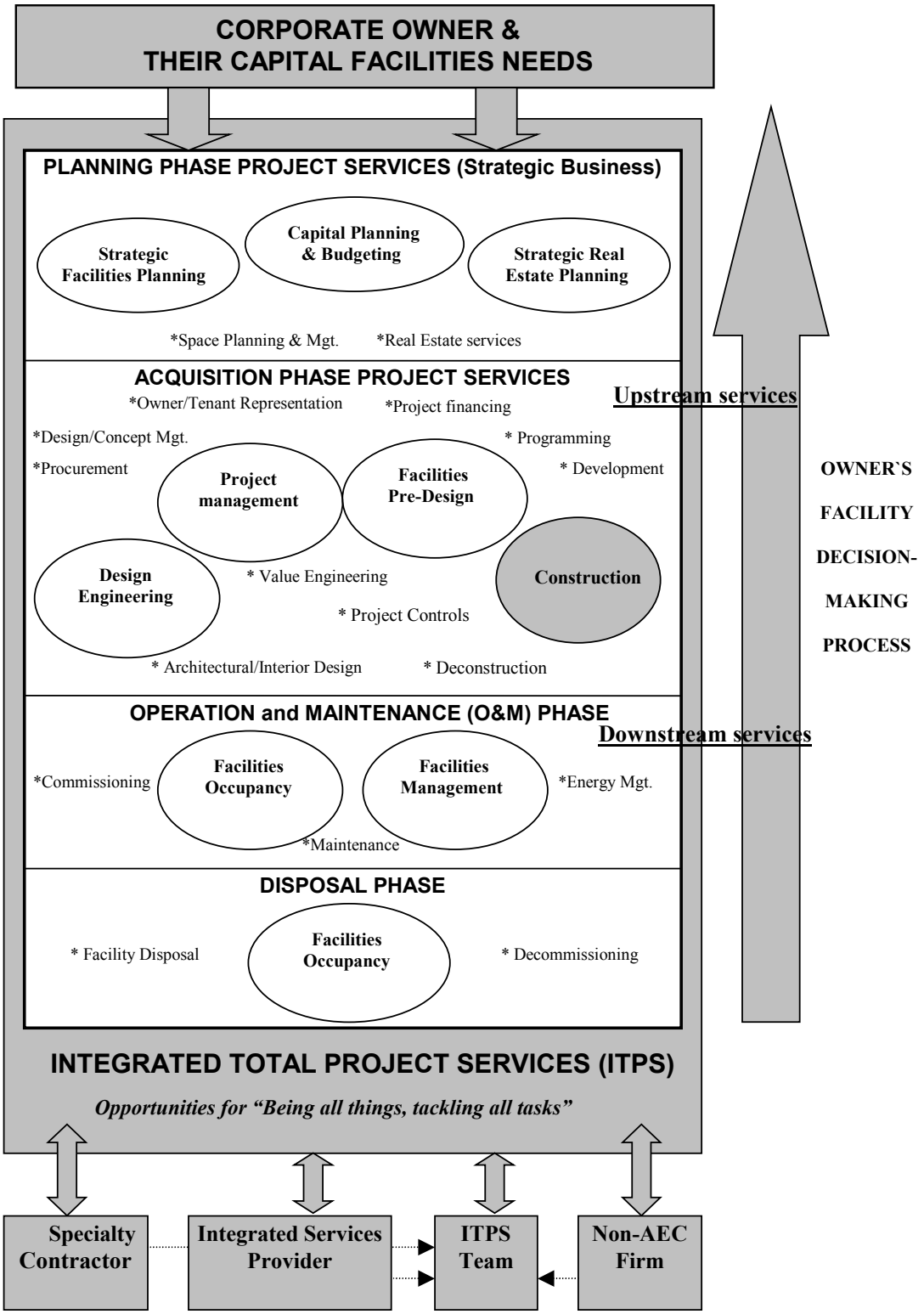


Figure 3.2 Integrated Total Project Services (ITPS) and Service Providers

Apparently every owner has different approach to the delivery of their capital projects (modernization or new construction) based on their unique needs dictated by

their own business environment, business culture and organizational structures. Considering the numerous and complexity of the decisions to be made and functions/services that go into the planning, provision (acquisition), operation and maintenance, and even disposal of the facilities (see Figures 2.6, 3.2 and 3.3).

> DBIA doesn't take the evolution of design-build for granted. To retain and enhance the position of integrated services delivery, this year's Conference and Expo will focus on Integrated Project Solutions-Uniting the Stakeholders. We will be exploring design-build mega trends and the changing needs and demands of owners. (Beard 2001)

The 2001 DBIA Conference in Boston began focusing more on the capital facility owners` existing and increasing demand for complexity and sophistication in the industry which was imposed by changing business climate. Discussions also started to focus on various issues and challenges around design-build mindset, integrated project delivery; teamwork, collaboration and various other topics that surround the future of capital project delivery. These issues along with other developments in the A/E/C-FM (architecture/engineering/construction-facility management) markets, lying at the core of the ITPS trend, were discussed in Chapter 1.

ITPS concept opened the gates of opportunities for “being all things, tackling all tasks“, for U.S. contractors. Following sections 3.2.1 and 3.2.2 will further analyze it and identify its key issues.

3.2.1 “Integrated services” movement and service providers

Contractors continue to integrate all aspects of the capital, real estate, design, and construction professions (DBIA 2000). As noted earlier in the trend toward upstream consulting, single-source firms are being asked to do much more than traditional design and construction. They must respond to requests from owners to help navigate through the turbulent waters of new technologies, changing ideas about the workplace, and

business ideas both current and as yet not even conceived. For example, where an owner used to say something like, "I want a building with a lot of windows," today, the design-builder is more likely to hear, "How do I make my employees happy?"

An immediate observation is that, today, the biggest element affecting speed of delivery, besides the proven speed of design-build, however, is the entry point of the integrated firm into the owner's thought process. In addition to pre-construction stage contractor involvement, with the trend toward upstream consulting, single-source firms are getting even involved in the strategic business planning phase of the owners` capital facility projects. While identifying emerging owner and contractor approaches to how they procure (owners) and deliver/provide (contractors) capital facilities projects, this study seeks to identify the level of contractor involvement in the owner's decision-making process.

Within the integrated services firm there is a part of the discovery process for the clients' intent, both near and long term. These firms, being different from the traditional design-bid-build approach that is fragmented, mostly use integrated project delivery approach to deliver owners` capital facilities projects, from idea into reality, because this approach is a more collaborative, flexible and adaptable process. The goal of the designer and constructor is not owner satisfaction with the results only, but results that meet and often exceed owner expectations—so much so that many owners have greatly reduced and/or eliminated traditional approaches from their procurement alternatives.

Service providers

In this document, as seen also in Figure 3-2, all necessary capital facility services, functions and related responsibilities (see also Figure 3-3), are provided thru four service

provider entities: *Specialty contractor, integrated services firm, ITPS team and non-AEC firms.* These groups will be further discussed in following sections.

In industry, by "real" design-builders, it is often referred to the type of company that is a single-source provider of fully integrated design and construction services. Important differences do exist between integrated services firms, which house architects, engineers and constructors all under one roof, and their design-build competitors that lack one or more of those elements. Such companies are very different from the contractor or architect that occasionally teams up to perform design-build work. In fact, firms that form joint ventures for such purposes don't meet the pure definition of an integrated services provider (Silver 1999).

> I'm a proponent of a base of services, not just design and construction, but more of an integrated services approach to a project delivery that runs from site acquisition analysis, site studies, and zoning studies—the pre-construction services—to programming, budgeting, and design-building. This process can evolve into operation and long-term maintenance. If you manage the entire process for the owner, the service allows the owner to do what he does best: run his business. (Silver 1999)

Design-build firms, whether management is design-oriented or build-oriented, think of themselves as integrated businesses that offer their clients a full range of opportunities with design-build at the front of their choices. True design-build firms, organizations that are used to working in the efficient atmosphere of trust, respect, and cooperation, would rather construct a commercial building using the non-traditional approach. Sometimes a client may specifically ask a design-build firm to operate under a design-bid-build approach, and often the company will agree to do the work unbundled. Conversely, the opposite scenario also occurs where a traditional, design-bid-build firm is asked by a client or owner to construct a building in the design-build vein, and again, because the owner dictates market, the firm agrees. The project is completed in a bundled

fashion. Fully integrated firms, like the Haskell Co. and Sverdrup Facilities Co., have both construction professionals and the design professionals on staff, which allows great flexibility in cooperation in their operating mode; thus delivering a better value thru their in-house, totally integrated delivery system.

The difference(s) between the design-build (consultancy design/engineering services) and integrated services firms (in-house design and/or engineering), is one of the focus areas of the ITPS research. The fact that, integrated services firms, though still not the norm, are bundling more and more skills to provide one-stop shopping for demanding clients, also provided an early motive for the ITPS research.

New players in capital project delivery

Today, led by the Big Five accounting firms—Arthur Andersen, Pricewaterhouse Coopers (PWC), Ernst & Young (E&Y), Deloitte Touche Tohmatsu and KPMG, — another class of integrated services firms is quietly growing in today's marketplace. These multidisciplinary industry experts don't work for construction firms. Instead, they inhabit their own divisions at the Big Five accounting firms. These companies have sizeable real estate consulting sections—Andersen's employs 2,000—and the top three even have strategic facilities planning groups specifically focused on capital decisions. While these consultants do not do the actual "build" part of the design-build process, they do render many of the same services provided by integrated design-builders; thus swimming in the same waters as design-builders and posing a potential competitive threat to design-builders.

> There is yet another class of integrated services firms quietly growing in today's marketplace. These firms employ several hundred architects and engineers and not surprisingly, they pose a potential competitive threat to design-builders. (Silver 1999)

One of the objectives of this study is to identify the emerging status of new players, firms (non-AEC-origin) in the capital project delivery with which contractors have business relations to provide integrated total project services. These present and/or new business relations are also deemed important for collaboration, team building, and partnering/alliance concepts within ITPS. This study is not focused on these firms in particular; however, their emerging presence in the capital project delivery scene as new players should still be underlined.

The same forces that have stretched the design-build industry into new corners of client services now are pulling accounting and management consultants into the same territory. Just as integrated services firms are arranging project financing for their clients, accounting and management consultants are managing construction projects for theirs. These new players in capital project delivery help their clients in making major real estate decisions by evaluating operational technology, human resources and real estate issues. To account for the changing landscape of owner businesses, through workplace transformation groups, they concentrate on the upstream portion of the process. They develop the plan, help clients choose a project delivery method and then closely monitor the ensuing work from both an accounting and engineering standpoint, to ensure cost-effective and logical application, sometimes even helping clients hire the design-builder.

These companies, especially for high tech and health care clients who lack the expertise to build fast track, serve as their eyes and ears, helping oversee and monitor management, procurement and construction. With the demands for talented design professionals with expertise in strategic facilities consulting, the multi-disciplinary, non-AEC-origin firms—Big Five and others (consultants)—are now wooing away top talent

from established design firms with salaries that the design firms' billing rates could no longer justify, which also point out to the emerging role of these new provides for the future delivery of capital facilities (Silver 1999).

3.2.2 Future of design-build and its implications for ITPS

Design-build project delivery lends itself to adaptability, flexibility, and a full range of possibilities. More owners are seeing advantages of single contractual responsibility, multidisciplinary-team, and more integrated services solutions, which include financing, operation, maintenance, and/or ownership. Consequently, D/B projects are also becoming more complex. Use of D/B has moved from being used for repetitive buildings (e.g. warehouses) in 1970s and early 1980s to a whole range of private and public projects since 1990s as the industry has moved to recognizing that the issue of single responsibility on complex projects is probably more important and doable than even the simple structures. Today, more industry sectors are using D/B such as transportation, public utilities, and the industrial sector (Rieks 1999).

> The definition of design-build has not changed. However, the uses for design-build are constantly evolving, witnessed by DBIA's struggle to update its Design-Build Manual of Practice with future topics of consideration for design-build. Design-builders find themselves confined only by the parameters or limits of their vision because this efficient construction process fosters cooperation, respect, and a large range of possibilities. The design-build portfolio is building every day. (Rieks 1999)

In the United States, the private sector's use of design-build has been increasing during the past thirty years (see Figure 2-8), and is found in a wide array of commercial, institutional and industrial applications. Considering the future of design-build and the integrated (services) project delivery in relation to the ITPS, not every project, evidently, needs all the services the single-source firm offers. And often existing relationships

between owners and architects and constructors take precedence over other concerns. But most importantly, integrated services firms cannot be all things to all people.

In practice, having a stable of designers and constructors in-house actually may mean that a firm's proficiency is limited to those people. However, integrated services and others can leverage their inefficiencies through recent industry practices such as collaboration, strategic alliances, integrated project teams between owners and service providers, etc., taking place in the industry (DBIA 2001). ITPS concept continues to offer service providers the opportunity to offer a "full" range of services and "being all things, and tackling all tasks" for their clients` ever-changing capital facility project needs. In this regard, ITPS's only limitations will come from the dictates of different owner industries, and their project delivery approaches. Identification of these limitations will be provided through this research.

As discussed in Chapter 1, the changing corporate business environment has turned FM into one of the fastest growing areas of real estate services not just for cost reduction but also for purposes of improved services, better asset management and greater value out of outsourcing. Consequently, corporations started getting all services: acquisition, distribution, project management, property management, etc., from outside providers (Bergman 1997). While corporate user roles have undergone dramatic changes, no less is occurring on the service-provider side, too. Service providers are becoming consultants and partners with their corporate clients as they move to broader levels of activity. Services from service providers are not only broader and deeper but also they're becoming more customer-service-focused in order to retain clients. They're starting to get a better sense of how to provide a full array of multi-disciplined services to clients, not

just deals but true guidance," says Schwagerl, who also is president of the New York chapter of National Association of Corporate Real Estate Executives (NACORE) (Bell 2000).

According to the Buildings Survey (Eisele 2000), after 1995-1997 periods, 54% of respondents (facility management (FM) contractors) began to offer total facilities management under multiple-services (bundled) contract; 36% began to offer design/construction outsourcing services. Other services that were recently introduced include real estate brokerage, environmental services, office relocation, data management, space and planning design, and energy management (FDM 2000). On the other hand, differing, conflicting views exist regarding companies` facility management (FM)/real estate outsourcing initiatives. Corporate real estate (CRE) professionals generally agree that the trend is toward one-stop shopping because it is a lot easier for companies to deal with one source vs. multiple sources due to quantifiable work, and measurable performance. On the other hand, NACORE observes there are still a lot of boutiques (specialty contractors) around and says there is room for both in the marketplace (Bell 2000).

The Facilities Design and Management outsourcing survey (FDM 2001), on the other hand, reported that, despite the talk among some large providers of “integrated FM” and “one-stop shopping” for outsourcing services, most facilities managers continue to be reluctant about putting all their eggs in one supplier’s basket. Nearly 80% said they’re not likely to use a single provider for their outsourcing needs, and more than two-thirds are likely to contract separately for each service. Furthermore, FM executives surveyed, were clearly wary of generalists and more enamored of specialists. They also appeared unfazed

by the prospect of juggling separate contracts and providers. Indeed, in a blow to providers marketing themselves as a catchall solution for FM outsourcing, a meager 2% of those surveyed claim that they are very likely/likely to use a single provider for all outsourcing needs. Furthermore, close to half are not apt to bundle like services into one contract and an overwhelming 96% are at least somewhat likely to contract separately for each service (FDM 2001).

ITPS research findings, regarding owner organizations` procurement approaches to their capital real estate/facility needs, will also provide an update on the present differing views of RE/FM outsourcing.

3.3 "Total Project Services" for the Delivery of Capital Facilities

Figure 3-3 is a comprehensive list of all services/functions required in the delivery of any and every capital facility project (modernization or new construction). This comprehensive list represents the full range opportunities that can be offered to the capital facility project owners by contractors in their business ventures.

Called as "Total Project Services", this list was developed based on Cotts`s (1998) Facility Management life-cycle concept (see Figure 2-6). The list consists of four major phases:

1. Planning (strategic level business planning) phase
2. Acquisition phase
3. Operation and maintenance (occupancy) phase
4. Disposal phase

Each phase is divided further into ten secondary phases and a total of fifty-two individual project service/function items.

FACILITY MANAGEMENT LIFE-CYCLE / "TOTAL PROJECT SERVICES"	
PLANNING	**CAPITAL PLANNING & BUDGETING**
	Real Estate & Facility Asset Capitalization Planning Services *(Capital Program Development , Budgeting for New Capital Facilities Projects)*
	Financial Forecasting & Macro-level Estimating *(Organization-wide)*
	Delivery System & Project Management Planning Services
	STRATEGIC FACILITIES PLANNING (Macro-level/Comprehensive)
	(Macro-level) Space Planning & Management Services *(including Space Forecasting & Programming Services)*
	Facilities Business Planning Services *(Short /Long Term and/or Master Planning Services)*
	Facilities Condition Assessment *(Building Audits, Serviceability Evaluation Services)*
	STRATEGIC REAL ESTATE PLANNING (Macro-level/Comprehensive)
	Real Estate Portfolio Management & Optimization Services *(Cost-reduction, Outsourcing Initiatives)*
	Process and (Real Estate) Organizational Planning / Design
	Facility Utilization and Workplace Transformation
	Facility Decision Support/Information System Planning
	Real Estate Acquisition & Disposal Services
	Location and/or Finance Strategy Development
	Site Selection/Engineering and/or Acquisition
ACQUISTION	**PROJECT MANAGEMENT**
	Owner/Tenant Representation Services *(Strategic planning, Marketing and property positioning, Leasing Property management /Accounting, Fee development, Final building choices selection, Best Deal Negotiating, Construction supervision, Optional transition services*
	Design/Concept Management *(Complete Design Analysis of Systems, Materials, Site Constraints, Code Compliance and Building Usage; Design Option Evaluations, Design Document Coordination)*
	Procurement Management
	Construction Management (CM)
	FACILITIES PRE-DESIGN (Micro-level/Project-based Planning)
	(Micro-level) Space Planning & Management *(including Space Allocation and Inventory Services)*
	Workplace Planning, Design & Specifications Services *(and/or Furniture / Equipment / Specification)*
	Estimating / "As-built" Maintenance and Code Compliance
	Facility Programming & Development Services
	Needs Analysis and Project Programming *(Micro-level space forecasting, one location)*
	Feasibility Studies & Risk Management *(Project Budgeting, Life-Cycle Costing Services)*
	Site Selection and Master Planning
	Land Development/Acquisition *(may include site selection)*
	Project Financing
	Consultant Selection *(and/or Development Partnerships; Build-to-suit; Other Partnership/Alliances; In-sourcing, Outsourcing initiatives, Contract Mgt.. Services)*
	FACILITIES DESIGN / ENGINEERING (PRE-CONSTRUCTION)
	Architectural Planning & Design Services *(Schematics, Design Development, Const. Documents)*
	Architectural Design
	Interior Design/Decoration
	Landscape Design
	"Green Design" & "Sustainable Construction" Services *(including Deconstruction)*
	Value Engineering (V.E) *(and/or Environmental Value Engineering, Constructability Reviews)*
	Engineering Services
	Civil/Structural Engineering
	Mechanical and/or Electrical Engineering
	Telecommunications, Data Communications, Network Design Services
	Bidding Process Services
	FACILITIES CONSTRUCTION
	Construction Services
	Interior Construction/Build-out
	Renovation/Retrofit *(Alteration)*
	Restoration / Rehabilitation *(Modernization)*
	Construction Coordination & Supervision Services
	Project Controls *(Project scheduling, Cost Reporting, Budgeting, Change Order Management)*
	Safety Programming and/or Management *(Site Safety)*
	Quality Control and/or Testing /Inspection Services
	Waste Management
	Dispute resolution/Claims Management/Rehabilitation Services
	Deconstruction (Environmental remediation)
	Demolition
OPERATION & MAINTENANCE (OCCUPANCY)	**FACILITIES OCCUPANCY**
	Move-in and/or Start-up Services *(close-out, turnover services)*
	Commissioning and/or Training Services
	FACILITIES MANAGEMENT (FM) (Micro-level/Organization-wide)
	Facility Operation & Maintenance (O& M) Services
	Energy Management
	Food Services
	Landscaping /Grounds-Keeping
	Custodial and housekeeping
	Corporate Facilities Management Services
	Property/Asset Management *(Property Appraisal, Acquisition, and Disposition)*
	Real Estate Contract Management
	Lease Administration and/or Real Estate Disposition Services *(Out-leasing as owner; lease administration as owner or lessee; property mgt. as lessee)*
	Work Reception and Coordination Services
DISPOSAL	**FACILITIES DISPOSITION**
	Facility Disposal
	Facility Decommissioning

Figure 3-3. “Total Project Services” of the Capital Project Delivery Process

3.3.1 Planning (strategic level business) phase

The role of planning in facility management is significant. It is the facility management's entrée into the business of the company as it directly interfaces with the business aspects of the company; thus this study also will refer to services/functions in this phase as strategic level business planning project services. Planning phase precedes the acquisition phase in which project management, facility pre-design, and AEC services are executed. Planning phase of the "total project services" concept is divided into three sub-phases (see Figure 3-3):

1. Capital planning & budgeting
2. Strategic facilities planning
3. Strategic real estate planning.

Capital planning and budgeting level of the planning phase

Following are the related capital project services/functions of the capital planning and budgeting sub-phase:

1. Real estate & facility asset capitalization planning services (capital program development, budgeting for new capital facilities projects)

2. Financial forecasting and macro-level estimating (organization-wide)

3. Delivery system and project management planning services

Strategic facilities planning level of the planning phase (macro-level/comprehensive)

The capital project services/functions in this level are:

1. (Macro-level) space planning and management services (including space forecasting and programming services)

2. Facilities business planning services (short/long term and/or master planning services)

3. Facilities condition assessment (building audits, serviceability evaluation services)

Strategic real estate planning level (macro-level/comprehensive)

1. Real estate portfolio management and optimization services (cost-reduction, outsourcing initiatives)

    a. Process and (real estate) organizational planning/design
    b. Facility utilization and workplace transformation
    c. Facility decision support/information system planning

2. Real estate acquisition and disposal services

    a. Location and/or finance strategy development
    b. Site selection/engineering and/or acquisition

3.3.2 Acquisition phase

Acquisition phase follows the planning (strategic level business) and precedes the operation and maintenance phases within the "total project services" concept. The U.S. AEC (architecture/engineering/construction) industry players all operate and offer mainly services and products in the acquisition Phase. This phase of the "total project services" concept is divided into four sub-phases (see Figure 3-3):

1. Project management
2. Facilities pre-design (micro-level/project-based planning)
3. Facilities design/engineering (pre-construction)
4. Facilities construction

Project management/facilities pre-design level of the acquisition phase (micro-level/project-based planning)

Following are the project management and facilities pre-design sub-phases that precede the facility design/engineering. Following are the related capital project services/functions:

1. Project management

    a. Owner/tenant representation services (strategic planning, marketing and property positioning, leasing property management/accounting, fee development, final building choices selection, best deal negotiating, construction supervision, optional transition services

b. Design/concept management (complete design analysis of systems, materials, site constraints, code compliance and building usage; design option evaluations, design document coordination)

c. Procurement management

d. Construction management (CM)

2. Facilities pre-design (micro-level/project-based planning)

a. (Micro-level) space planning and management (including space allocation and inventory services)

b. Workplace planning, design and specifications services (and/or furniture/equipment/specification)

c. Estimating/"as-built" maintenance and code compliance

3. Facility programming and development services

a. Needs analysis and project programming (micro-level space forecasting, one location)

b. Feasibility studies and risk management (project budgeting, life-cycle costing services)

c. Site selection and master planning

d. Land development/acquisition (may include site selection)

e. Project financing

4. Consultant selection (and/or development partnerships; build-to-suit; other partnership/alliances; in-sourcing, outsourcing initiatives, contract management services

Facilities design/engineering level of the acquisition phase (pre-construction)

Facility design/engineering sub-phase within acquisition phase follows the pre-design and precedes the construction phases of the acquisition main phase. Following are the related the capital project services/functions:

1. Architectural planning and design services (schematics, design development, and construction documents)

a. Architectural design

b. Interior design/decoration

c. Landscape design

d. "Green design" and "sustainable construction" services (including deconstruction)

2. Engineering services

a. Civil/structural engineering

b. Mechanical and/or electrical engineering

c. Telecommunications, data communications, and network design

3. Bidding process services

Construction level of the acquisition phase

Facility construction provides the final group of capital project services within the acquisition main phase of “total project services” concept (see Figure 3-3). Operation and maintenance will follow this level. Following are the related capital project services/functions in the construction sub-phase:

1. Construction services

a. Interior construction/build-out
b. Renovation/retrofit (alteration)
c. Restoration/rehabilitation (modernization)

2. Construction coordination and supervision services

a. Project controls (project scheduling, cost reporting, budgeting, change order management)

b. Safety programming and/or management (site safety)

c. Quality control and/or testing /inspection services

d. Waste management

3. Dispute resolution/claims management/rehabilitation services

4. Deconstruction (environmental remediation)

5. Demolition

3.3.3 Operation and maintenance (O&M) (occupancy) phase

Acquisition Phase is followed by the O&M Phase, which then followed by the disposal phase of the "total project services" concept. Following are the services and functions that take place in the facility occupancy and facility management (micro and macro-level/organization-wide) level of the O&M:

Facility occupancy level of the O&M phase

The following are the related capital project services/functions within the facility occupancy: (1) Move-in and/or start-up services (closeout-out, turnover services) and (2) commissioning and/or training services delivery system & project management planning services

Facility management (FM) (micro-level/organization-wide)

The following are the related capital project services/functions within the facility management level of the O&M main phase. Services and functions on this level span from micro-level/facility-based operations to corporate level (organization-wide) applications:

1. Facility operation and maintenance (O&M) services

   Energy management
   Food services
   Landscaping/grounds-keeping
   Custodial and housekeeping

2. Corporate facilities management services

   a. Property/asset management (property appraisal, acquisition, and disposition)

   b. Real estate contract management

c. Lease administration and/or real estate disposition services (out-leasing as owner; lease administration as owner or lessee; property management as lessee)

3. Work reception and coordination services

3.3.4 Disposal phase

With the disposal phase of the facility management life-cycle model (see Figure 2.6) and the "total project services" concept (see Figure 3.3), facilities that reach the end of their operational and economic life, is either disposed or decommissioned. In this study, disposition of real estate, on the other hand, was considered within the strategic real estate and planning (macro-level) services of the planning phase of the capital project delivery. The only capital services/functions in the disposal phase are *(1) Facility disposal and (2) facility decommissioning.*

3.4 How Owners Procure "Total Project Services" for Their Capital Facilities

Owners thru their CRE/FM departments, referred as capital facilities owners, need to create environments (project management services) for the organizations, to manage the company`s real estate resources both leased and owned (asset management services) and to provide on-going infrastructure support (facilities management services). And as discussed earlier CRE/FM organization should have well-balanced mix of in-house staff, consultants, and contractors.

This study is intended to determine owners` current and emerging approaches to how they are procuring/obtaining all the necessary services/functions -the above three fundamental needs presented comprehensively as "total project services" —for their capital facilities projects. Accordingly, this section will discuss the owner version of the web-survey questionnaire titled "Introduction to Integrated Total Project Services (ITPS): U.S. Private Sector Capital Facility Project Owners` Approach", which was designed to

serve this purpose of the ITPS research. The survey was based on literature review (Chapter 2) and designed to address further the issues introduced earlier in Chapter 3, the ITPS research. The three sections of the survey questionnaire are *(1) Demographics, (2) "How do you procure total project services for your capital facilities" and (3) Questions pertaining to the concept of ITPS and the future delivery of capital facilities.*

The first part of the questionnaire had 15 questions and was designed to acquire demographic information on the individuals and their companies that participated in the research. The information collected through Questions 1-10 (see Appendix B) included the name, the title of the respondents; the name of the company and the department represented; type of capital facility projects predominantly delivered, the organizational model and the staff size of the RE/Facilities department; the 2002 U.S. —only capital facilities program and projects budget of the RE/Facilities department, the 2002 purchases of "total project services" for the company's U.S. modernization and new construction projects.

Questions 11-15 (see Figure 3-4 and Appendix B), on the other hand, are aimed at collecting more specific demographic data which would be correlated to the data collected in following sections: *Major delivery/contracting methods predominantly used by the company to deliver new construction projects, its familiarity with the ITPS concept, and its primary reasons for FM outsourcing; whether or not RE/Facilities department experienced downsizing and the respondents expectation regarding downsizing.*

11- Which one of the following major project delivery / contracting methods does your Company predominantly use to deliver your clients` new facility construction projects? (please check only one)

- ○ *Traditional Design-Bid-Build*
- ○ *Construction Management (CM)*
- ○ *Design-Build*
- ○ *Integrated Services*
- ○ Other

12- Have you known of or heard about the concept of "Integrated Total Project Services (ITPS)" prior to this survey? (if your answer is "yes" please check one of the following)

Yes ○ *thru Clients* ○ *thru Colleagues* ○ *thru Design Build Institute of America (DBIA)* ○ *thru other industry organizations (Please specify)*	○ **No**

13- Which of the following is the primary reason for Facility Management (FM) outsourcing in your company? (please check only one)

○ *Resources not available internally* ○ *Cost savings/control operating costs* ○ *In-house staff reduction (downsizing)* ○ *Allow Company to focus on core business competency*	○ *To leverage the best-in class provider* ○ *To free capital for other investment* ○ *Other* ○ *No opinion*

14- Has your Real Estate / Facilities Department (FD) experienced downsizing in the last 12 months? (if your answer is "yes"- Please check one of the following)

Yes ○ *Due to company wide job cuts due to national economic downturn* ○ *Due to cost cuts/decrease in facilities budget* ○ *Due to in-house staff reduction* ○ *Due to availability of new project delivery trend* ○ *Due to availability/advantages of Outsourcing* ○ Other ○ No opinion	○ **No**

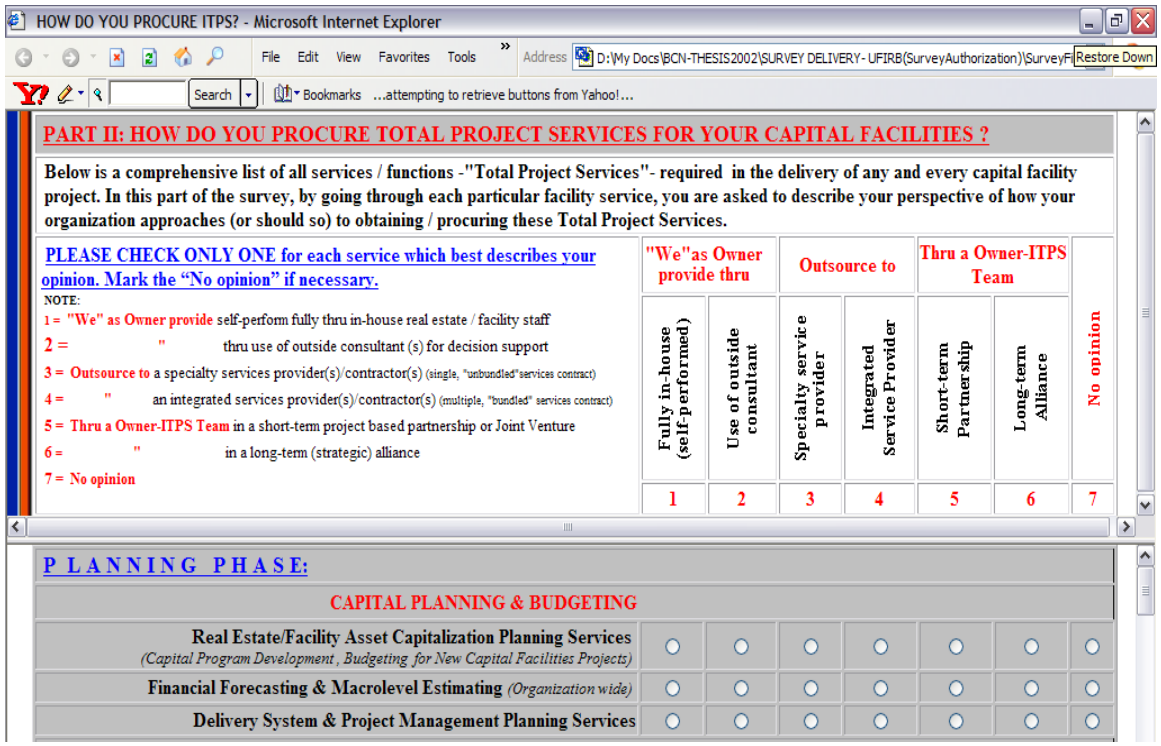
15- Do you expect downsizing in your Real Estate / Facility Department in the future? (If your answer is "yes", Please check only one)

Yes ○ *in 0-6 months* ○ *in 6-12 months* ○ *in 12-24 months*	○ **No**

Figure 3-4. Part I, Questions 11-15 of the Web-Survey Questionnaire Titled "Introduction to Integrated Total Project Services (ITPS): U.S. Private Sector Capital Facility Project Owners` Approach"

The second part of the web-survey (owner version) was the main section by which the respondents, the owners of capital facilities projects, were asked how they were procuring total project services for their capital facilities (see Appendix B). The respondents were provided with the "total project services" comprehensive list of all main phases and their related project services/functions. Respondents, by scrolling up and

down this list, were required to check in one of the seven buttons which represented the respondents` best view of how their organizations were procuring those total project services. Figure 3-5, shows a small portion of Part II:



HOW DO YOU PROCURE ITPS? - Microsoft Internet Explorer

PART II: HOW DO YOU PROCURE TOTAL PROJECT SERVICES FOR YOUR CAPITAL FACILITIES ?

Below is a comprehensive list of all services / functions -"Total Project Services"- required in the delivery of any and every capital facility project. In this part of the survey, by going through each particular facility service, you are asked to describe your perspective of how your organization approaches (or should so) to obtaining / procuring these Total Project Services.

PLEASE CHECK ONLY ONE for each service which best describes your opinion. Mark the "No opinion" if necessary.

NOTE:
1 = "We" as Owner provide self-perform fully thru in-house real estate / facility staff
2 = " thru use of outside consultant (s) for decision support
3 = Outsource to a specialty services provider(s)/contractor(s) (single, "unbundled"services contract)
4 = " an integrated services provider(s)/contractor(s) (multiple, "bundled" services contract)
5 = Thru a Owner-ITPS Team in a short-term project based partnership or Joint Venture
6 = " in a long-term (strategic) alliance
7 = No opinion

	"We"as Owner provide thru		Outsource to		Thru a Owner-ITPS Team		
	Fully in-house (self-performed)	Use of outside consultant	Specialty service provider	Integrated Service Provider	Short-term Partnership	Long-term Alliance	No opinion
	1	2	3	4	5	6	7
PLANNING PHASE:							
CAPITAL PLANNING & BUDGETING							
Real Estate/Facility Asset Capitalization Planning Services (Capital Program Development, Budgeting for New Capital Facilities Projects)	○	○	○	○	○	○	○
Financial Forecasting & Macrolevel Estimating (Organization wide)	○	○	○	○	○	○	○
Delivery System & Project Management Planning Services	○	○	○	○	○	○	○

Figure 3-5. Part II of the Web-Survey Questionnaire Titled "Introduction to Integrated Total Project Services (ITPS): U.S. Private Sector Capital Facility Project Owners" Approach"

As seen in Figure 3-5, in the top box, were the seven options that were given to the respondents. These seven options, each (except the last one is, "no opinion") represented a different approach as to how respondents were likely to use. With these approaches, respondents were procuring their total project services/functions for their capital facility projects through following manners:

1. Owner provides thru fully in-house (self-performed): Self-performing fully thru in-house real estate/facility staff

2. Owner provides thru use of outside consultant(s) for decision support

3. Outsource to specialty service provider(s)/contractor(s) thru single, “unbundled” services contract

4. Outsource to an integrated services provider(s)/contractor(s) thru multiple, “bundled” services contract

5. Owner-ITPS team provides thru short term, project-based partnership or joint venture

6. Owner-ITPS team provides thru long-term strategic (partnering) alliance

3.5 How Contractors Provide "Total Project Services" for Clients` Capital Facilities

One of the main objectives of this study is to determine contractors` current and emerging approaches to how they are delivering all the necessary services/functions (total project services) for their clients` (capital facility owners) capital facilities projects. Accordingly, this section will discuss the contractor version of the web-survey questionnaire titled “Introduction to Integrated Total Project Services (ITPS): U.S. Contractors` Approach”, which was designed to serve this objective of the ITPS research. The survey was based on literature review (Chapter 2) and designed to address further the issues introduced earlier in Chapter 3, the ITPS research. The three sections of the survey questionnaire are *(1) Demographics, (2) “How do you deliver total project services for your clients` capital facilities” and (3) Questions pertaining to the concept of ITPS and the future delivery of capital facilities.*

The first part of the contractor questionnaire had 13 questions and was designed to acquire demographic information on the individuals and their companies that participated in the survey. The information collected through Questions 1-10 (see Appendix C) included the name, the title of the respondents; the name of the company and the department represented; company’s business category/ownership type and major sector(s) of operation; the staff size of the company’s business planning/development (work

acquisition) department, core service(s)/specialty area(s) of the company and its 2002 U.S. revenues from core services and construction operations.

11- Which one of the following major project delivery / contracting methods does your Company use predominantly to deliver your clients` new facility construction projects? (Please check only one)

- ○ *Traditional Design-Bid-Build*
- ○ *Construction Management (CM)*
- ○ *Design-Build*
- ○ *Integrated Services*
- ○ *Other* _____

12- Have you known of or heard about the concept of "Integrated Total Project Services (ITPS)" prior to this survey? (If your answer is "yes", how did you hear about ITPS ? Please check only one)

Yes	No
○ *thru Clients* ○ *thru Colleagues* ○ *thru Design Build Institute of America (DBIA)* ○ *thru other industry organizations (Please specify)* _____	○ **No**

13- Do you expect staff growth / increase in your Company's business planning & development (work acquisition) division /department in the future? (If your answer is "yes", Please check only one)

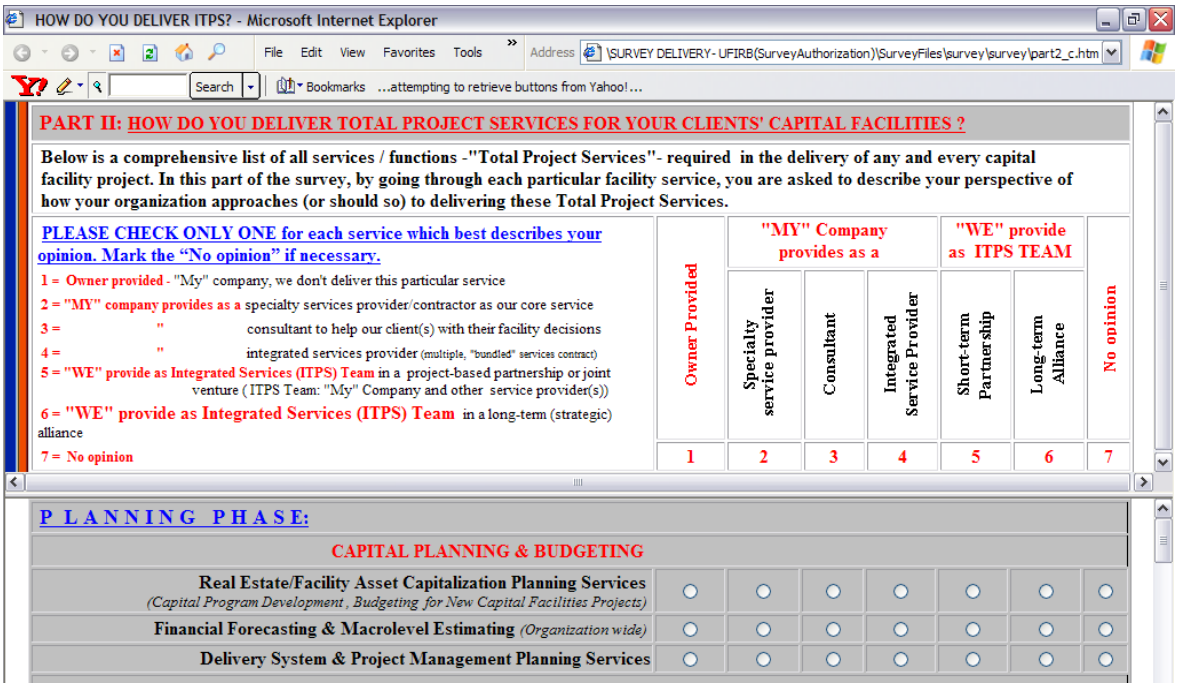
Yes	No
○ *in 0-6 months* ○ *in 6-12 months* ○ *in 12-24 months*	○ **No**

Figure 3-6. Part I, Questions 11-13 of the Web-Survey Questionnaire Titled "Introduction to Integrated Total Project Services (ITPS): U.S. Contractors` Approach"

Questions 11-13 (see Figure 3-6 and Appendix C), on the other hand, are aimed at collecting more specific demographic data, which would be correlated, to the data collected in following sections. These questions collected data such as major delivery/contracting methods predominantly used by the company to deliver clients` new construction projects, its familiarity with the ITPS concept, whether or not company's business planning/development (work acquisition) department expected downsizing.

Figure 3-7 shows a portion of the second part of the web-survey (contractor version), which was the main section by which the respondents, U.S. contractors were asked how they were delivering total project services for the clients` capital facilities (see Appendix C). The respondents were provided with the "Total Project Services"

comprehensive list of all main phases and their related project services/functions. By scrolling up and down this list, they were required to check in one of the seven buttons that represented the respondents` best view of how their organizations were delivering those total project services.



HOW DO YOU DELIVER ITPS? - Microsoft Internet Explorer

PART II: HOW DO YOU DELIVER TOTAL PROJECT SERVICES FOR YOUR CLIENTS' CAPITAL FACILITIES ?

Below is a comprehensive list of all services / functions -"Total Project Services"- required in the delivery of any and every capital facility project. In this part of the survey, by going through each particular facility service, you are asked to describe your perspective of how your organization approaches (or should so) to delivering these Total Project Services.

PLEASE CHECK ONLY ONE for each service which best describes your opinion. Mark the "No opinion" if necessary.

1 = Owner provided - "My" company, we don't deliver this particular service
2 = "MY" company provides as a specialty services provider/contractor as our core service
3 = " consultant to help our client(s) with their facility decisions
4 = " integrated services provider (multiple, "bundled" services contract)
5 = "WE" provide as Integrated Services (ITPS) Team in a project-based partnership or joint venture (ITPS Team: "My" Company and other service provider(s))
6 = "WE" provide as Integrated Services (ITPS) Team in a long-term (strategic) alliance
7 = No opinion

	Owner Provided	"MY" Company provides as a			"WE" provide as ITPS TEAM		No opinion
		Specialty service provider	Consultant	Integrated Service Provider	Short-term Partnership	Long-term Alliance	
	1	2	3	4	5	6	7

PLANNING PHASE:

CAPITAL PLANNING & BUDGETING

Real Estate/Facility Asset Capitalization Planning Services (Capital Program Development, Budgeting for New Capital Facilities Projects)	○	○	○	○	○	○	○
Financial Forecasting & Macrolevel Estimating (Organization wide)	○	○	○	○	○	○	○
Delivery System & Project Management Planning Services	○	○	○	○	○	○	○

Figure 3-7. Part II of the Web-Survey Questionnaire Titled "Introduction to Integrated Total Project Services (ITPS): U.S. Contractors` Approach"

As seen in Figure 3-7, in the top box, were the seven options that were given to the respondents. These 7 options, each (except the last one is, "no opinion") represented a different approach as to how respondents were likely to use. With these approaches, respondents were delivering the total project services/functions for their clients` capital facility projects through following manners:

1. Contractor does not provide the particular service/function, owner provides.
2. Contractor provides as a specialty service(s) provider/contractor as a core service
3. Contractor provides as consultant to help its client(s) with their facility decisions.

4. Contractor provides as an integrated services provider thru multiple, “bundled” services contract.

5. ITPS team (contractor and other service provider(s)) provides thru project-based partnership or joint venture.

6. ITPS team (contractor and other service provider(s)) provides thru long-term strategic (partnering) alliance

3.6 Issues Pertaining to the ITPS Concept and Future Delivery of Capital Facilities

Like in all other project delivery systems and contracting methods of the capital project delivery process, in integrated total project services (ITPS) approach, too, several issues need to be addressed. These issues and critical areas are as follows:

1. Deciding which facility services to provide
2. How to provide/deliver facility service(s)
3. ITPS contracting/contract management Issues
4. Teamwork, collaboration issues
5. Client-service provider relationship
6. Alliance strategies
7. Selection of ITPS team member (contract/project risk leader issues)

Part III of the web-survey (both versions) dealt with these above listed issues. Respondents from owner and contractor organizations were asked to provide their opinions of most critical area(s) in respect to ITPS research (see Appendices B and C). While study of these critical areas were not within the main scope of this research, data collected from this part will only be used to identify those these critical areas, the least and the most critical ones, their general distribution across different industries, business categories and more importantly provide basis for more concentrated research.

Part III also asked from the both group of respondents` to provide in a comment box their additional comments regarding their vision of the future development(s), trend(s), and practice(s) in the capital project delivery.

3.7 Summary

Chapter 3, ITPS research, expanded the ITPS framework developed in the literature review by studying the integrated services movement and its service providers. These service providers (see Figure 3-2) were: *Specialty service providers, integrated service providers, ITPS Team, and Non-AEC Firm.*

A comprehensive list of all services/functions required in the delivery of any and every capital facility project (modernization or new construction), called as "total project services" was also developed in this chapter based on the Cotts` (1998) facility management life-cycle concept introduced in literature review. This comprehensive list represents the full range opportunities that can be offered to the capital facility project owners by contractors in their business ventures. This concept divided the capital project delivery process into four major phases. Each phase is divided further into ten secondary phases and a total of fifty-two individual project service/function items (see Figure 3-3):

1. Planning (strategic level business planning) phase
2. Acquisition phase
3. Operation and maintenance (O&M)(occupancy) phase
4. Disposal phase

In addition to providing a general understanding/framework for the emergence trend of ITPS—literature review,—this study also intended to determine owners` and contractors` current and emerging approaches to how they are procuring/obtaining and delivering all the necessary capital facility services/functions (Figure 3-3.), respectively. Accordingly, this chapter discussed the web-survey questionnaire designed to serve these objectives. The titles of the owner and contractor versions of this web-survey were *(1) Introduction to Integrated Total Project Services (ITPS): U.S. Private Sector Capital*

Facility Project Owners` Approach" and (2) Introduction to Integrated Total Project Services (ITPS): U.S. Contractors` Approach".

These surveys were based on literature review (Chapter 2) and designed to address further the issues introduced earlier in Chapter 3, the ITPS research. The three sections of the survey questionnaire are *(1) Demographics, (2) "How do you procure total project services for your capital facilities" (Owners version)/ "How do you deliver total project services for your clients` capital facilities" (contractor version) and (3) Questions pertaining to the concept of ITPS and the future delivery of capital facilities.*

Chapter 4 will discuss the methodology more in depth and Chapter 5 will analyze the results of the survey.

CHAPTER 4
METHODOLOGY

4.1 Introduction

This study was primarily intended to develop an understanding/framework for the emerging concept of "integrated total project services (ITPS)" by introducing the reader to the subject and provide theoretical basis for this and future research. In today's competitive business and economic environment, identification of new market opportunities requires planning and implementing growth strategies. Within the facility life-cycle/total project services, from planning to acquisition, and from operation and maintenance/facility management, opportunities are vast for outside service providers, as owners are also demanding more from them. This research is also intended to analyze, identify, and then compare the U.S private sector owner and contractor approaches to capital facility delivery with their current and emerging capabilities and contracting practices. These findings may be used in future business development, marketing plans/decisions to increase their competitiveness. The methodology used to complete this research includes the following phases:

- The data necessary for the study and its sources were identified.
- A world-wide-web survey and a detailed literature review were performed to gain a deeper insight and background regarding the ITPS framework and identification of data necessary for the research.
- A quantitative web-based survey questionnaire was developed in order to collect the data necessary for the completion of the study. The survey was subsequently reviewed and approved by the UF Institutional Review Board. However, due to low levels of responses to the web-survey, it was modified and a final version was distributed among only U.S contractors.

- Descriptive statistics were used to analyze the data gathered through the survey.

4.2 Survey Questionnaire Design

Since there was a lack of comprehensive and focused research regarding the new trend of "integrated total project services (ITPS)" in U.S construction industry, a survey questionnaire was developed in order to collect the quantitative data necessary to complete the study. The survey was web-based and consisted of two versions entitled:

- "Introduction to Integrated Total Project Services (ITPS): The U.S Capital Facility Owners` Approach" (see Appendix B)
- "Introduction to Integrated Total Project Services (ITPS): The U.S Contractors` Approach" (see Appendix C).

Both versions of the web-survey were divided into three sections. Section I incorporated 15 and 13 questions respectively about: business type by operation sector(s), organizational structure/size, information regarding capital, facility budgets and construction revenue, project delivery/contracting methods used, type(s) of capital facilities delivered, reasons for their FM outsourcing, their experience and expectations with staff growth/increase in their organizations, and their familiarity with the ITPS concept.

Section II in both the owner and contractor versions was comprised of a set of 52 questions and was designed to gather information about how capital facility owners are procuring or purchasing total project services for their capital facilities. The questions in the contractor` version gathered information about how they deliver total project services for their clients` capital facilities.

Section III also, in both surveys, included 3 questions designed to gather respondents` opinions pertatining to the concept of ITPS and the future delivery of capital facilities such as the critical/problem areas in ITPS approach, business relations

with others organizations from outside the AEC (architecture/engineering/construction) industries. The background and literature review found in Chapters 2 and 3 were used in developing the questions that were incorporated into the survey. Then the survey was submitted to the University of Florida Institutional Review Board together with an IRB Form and an Informed Consent Statement.

The survey questionnaire was converted from Word and Excel formats into world-wide-web format by using Front-page and other software. The potential respondents were invited thru fax, e-mail and telephone, to go to the designated web site where the survey questionnaire was available between December 2nd, 2002 and January 31st, 2003. The total number of invited respondents in the survey was 341; 199 owners—corporate real estate/facilities managers—and 142 contractors—business development managers or project managers—randomly selected from *Engineering News Record (ENR)* `s 2002 Top U.S Construction ranking and *2002 Top General Contractors Sourcebooks*. Reminders were sent also to increase the low rate of response.

4.3 Description of Statistical Models Used

The survey data was electronically recorded on an MS Excel spreadsheet as one big spreadsheet so that data could have been easily reached when considering different categories to be examined in relation with the questions chosen to be analyzed.

The total number of responses that were collected was only 5 from the contractor version. No owners responded to the survey (capital facility owner version). This prevented the study from doing a statistical analysis and deriving proper interpretations. There are a few factors that may have influenced the outcome of this survey at this point and the low rate of responses, which are as follows:

- Lack of interest in academic research in U.S private sector organizations, particularly among corporate level staff respondents; however, this may have several other reasons which may be another research area on its own.

- The format and contents of the survey were designed, checked and tested to make sure it was precise, flowing and user-friendly. However, coupled with the respondents' lack of time and interest, length of the survey—particularly section II—could also have contributed to the low response rate.

Therefore, the web-survey, in the highlight of above, was modified, and a final version was created. Capital facilities owner version was mainly eliminated except for few questions that were considered to be also answered by contractors. This final survey questionnaire (see Appendix A) was handed out to the representatives of 63 contractors out of 78 total construction firms that attended the M.E. Rinker, Sr. School of Building Construction's Career Fair on February 11th, 2003. 15 contractors operating in residential (home-building) sector were not included in the survey because the research scope was limited to only general building, industrial, telecommunication, and transportations sectors. 21 surveys were completed and returned by the respondents that constituted 33% response rate; hence no statistical analysis could be done.

Chapter 5 will use this methodology to analyze the results of the study.

CHAPTER 5
DATA ANALYSIS AND RESULTS

5.1 Introduction

As described in detail in Chapter 4, the methodology used for the research was based in part on the quantitative data collected from the answers to a survey, entitled "Introduction to Integrated Total Project Services (ITPS): The U.S Capital Facility Project Owners` & Contractors` Approach". The major portion of the survey population targeted by the web-survey initially was the 300 contractors in *Engineering News Record (ENR) `s 2002 Top 400 Contractors Sourcebook*. The other portion of the survey population was 63 non-residential contractors out of 78 total firms at the M.E. Rinker, Sr. School of Building Construction's Career Fair on February 11th, 2003. These two sources resulted in a total survey population of 363.

A total of 21 surveys were completed and returned by the respondents (33% response rate). Only 20 questionnaires were considered for analysis. Five of these were obtained from the initial survey conducted on the internet and fifteen of them were obtained from the second survey, which was conducted at the M.E. Rinker, Sr. School of Building Construction's Career Fair due to the low response rate of the web survey. One questionnaire from a contractor, in the web-based survey, was not recorded due to a technical problem with the server that hosted the survey.

The survey was organized in three parts and was designed based on the literature review. The first part of the questionnaire had 11 questions and acquired demographic

information on the individuals and their companies that participated in the research. The information collected included the name, the title of the respondents; the name, the type (business category/ownership), and the annual business volume of the companies. Questions 7 and 9 also provided further statistical data about the respondents. Part II consisted of 6 questions. The last one, Part III, had 5 questions one of which acquired additional comments of the participants. The data collected through these surveys was not analyzed statistically due to the lower response rate; therefore, in regards to the ITPS objectives, only a basic generalization and comparisons were made.

5.2 General Breakdown of the Population Surveyed Based on Part I, Questions 1-9

Since ITPS, is a relatively new and still an emerging concept in the construction industry, one of the objectives of this study is to identify and outline its boundaries. The contractors` current service capabilities, business relations with other organizations, familiarity with new trends, and possible problem areas and their impression of owners` expectations regarding the future delivery of capital facilities were considered.

The 20 surveys collected from the potential 363 respondents constituted about 6% response rate and were not considered an adequate sample size for this study. Thus, use of only a descriptive statistics/analysis, but statistical methods was possible. Stratification was deemed important to identify the main areas that could be the focus of the current and future studies. Accordingly, total responses were first broken-down by company type, major sector of operation, core service, annual business volume, along with respondent's department, and familiarity with the research subject, ITPS, and business relation with companies outside the AEC (architecture/engineering/construction) industries, which was meant to give a better and broader perspective of what the working material was for the study.

5.2.1 Company type (business category and ownership)

Table 5-1, Figures 5-1 and 5-2 show the distribution of the contractors surveyed based on their company type (business category and ownership). Listed in Table 5-1 and Figure 5-1, 40% of the respondents were general contactors (GC), 15% were GC/Design-builders (D/B) while the rest of the respondents were almost evenly distributed between the integrated services firms and GC/DB/Integrated services firms (10%), and construction manager (CM), real estate services firm and GC/DB/CM–GC/ manufacturing (MFG) (5%). These data also show that (see Figure 5-1) 75% of the respondents had general contractor, 40% design-builder, and 25% integrated services firm written on their business cards either alone or in combination with other categories.

Table 5-1. Company Type (Business Category) Distribution

General Contractor (GC)	8 (40%)
GC and Design Builder (D/B-Consultative Design/Engineering)	3 (15%)
GC/DB/Integrated Services Firm	3 (15%)
Integrated Services Firm (In-house Design/Engineering)	2 (10%)
GC/DB/Construction Manager (CM)	1 (5%)
D/B	1 (5%)
CM	1 (5%)
Real Estate Firm	1 (5%)

In addition, Figure 5-2 shows that, 70% of the respondents were private corporations (privately-owned) while 15% of the respondents were public-owned (public corporation). One company was the subsidiary of a European company which was also privately-held; thus in fact, 75% of the respondents that participated in the survey were private corporations.

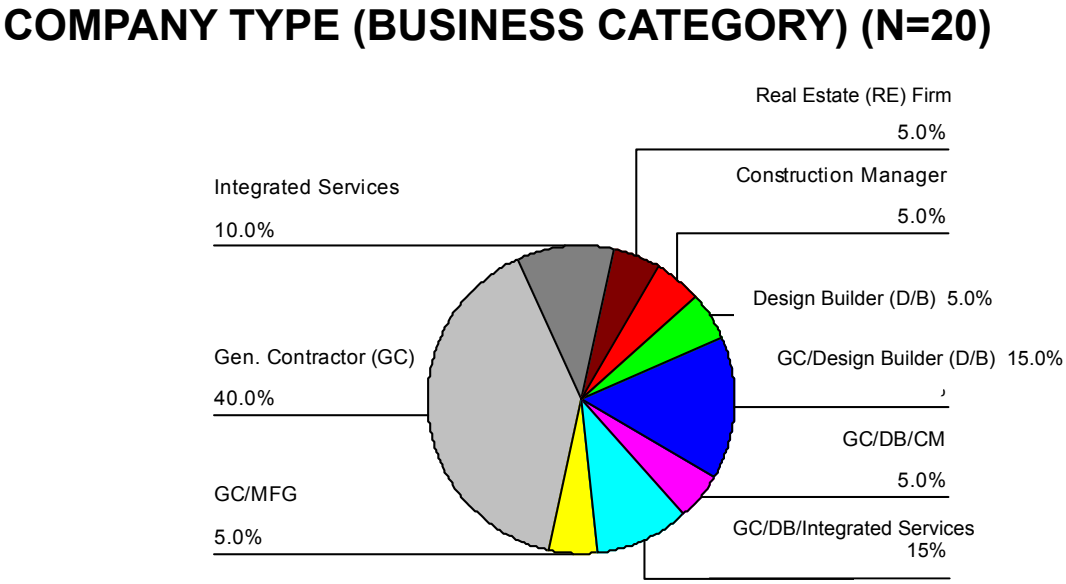


Figure 5-1. Distribution of the Contractors Surveyed Based on Business Category

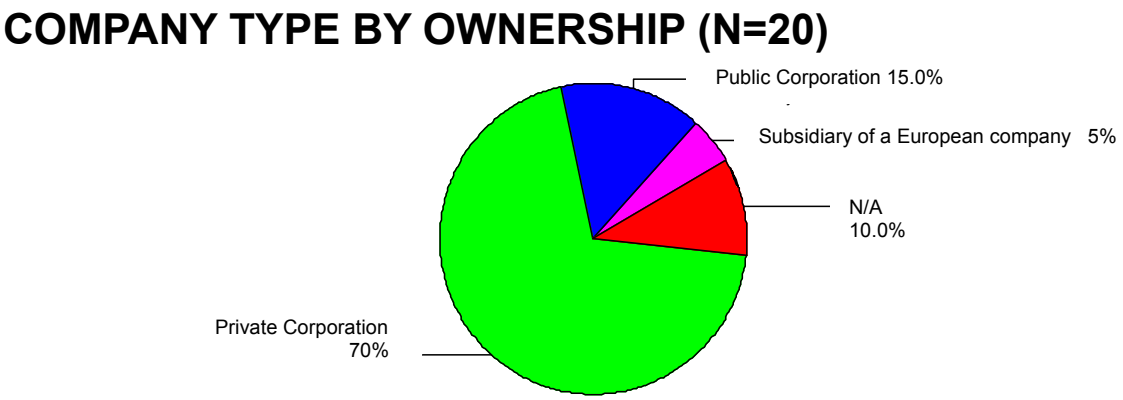


Figure 5-2. Distribution of the Contractors Surveyed Based on Company Type (Ownership)

5.2.2 Major sector of operation

Table 5-2 and Figure 5-3 show the distribution of the contractors surveyed based on their major sector of operation. It should be noted that since respondents could mark more than one sector, the totals in this section are greater than 20. As shown in Figure 5-3, 40% of the respondents operated in general building (commercial/institutional) sector while the rest of the respondents were distributed between general building/industrial

(20%), general building/industrial/transportation (10%), general building/transportation/ telecommunication (10%), general building/transportation and industrial (5%) sectors.

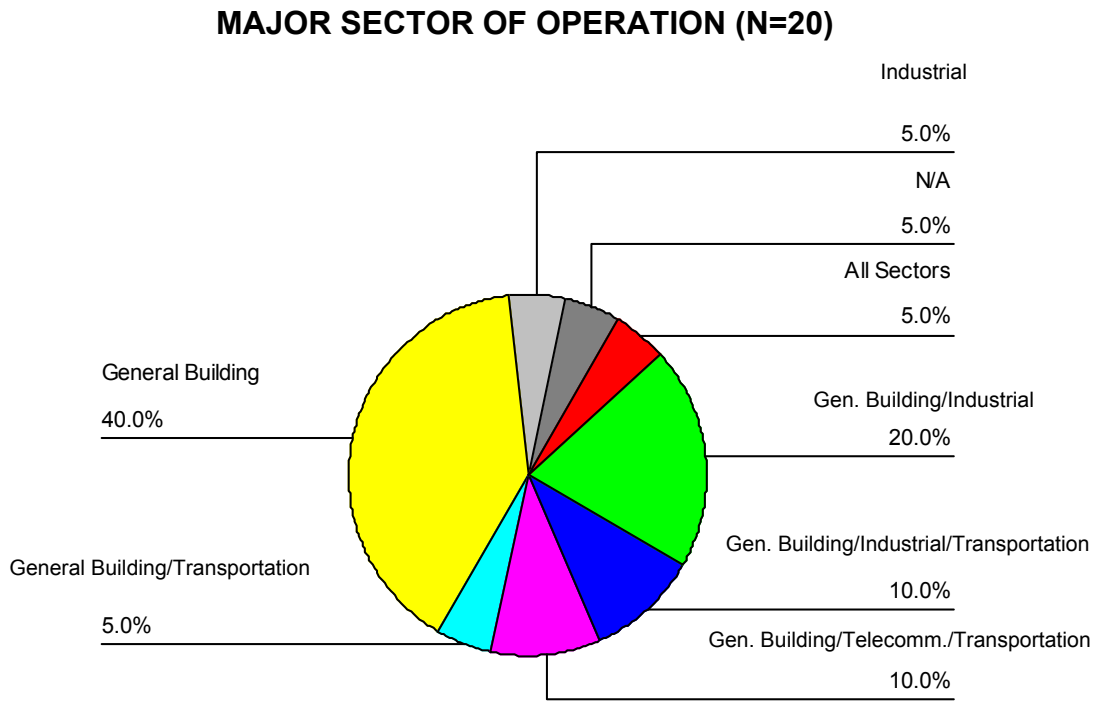


Figure 5-3 Distribution of the Contractors Surveyed Based on Major Sector of Operation

As shown in Table 5-2, 85% of the respondents operated in general building, 40% in industrial, 25% in transportation, and only 15% in telecommunication sectors alone or in combination with other categories. Only one participant operated in all sectors.

Table 5-2. Distribution of Major Sectors of Operation

Sector	Respondents n=20
General Building (Commercial/ Institutional)	17 (85%)
Industrial	8 (40%)
Transportation	5 (25%)
Telecommunication	3 (15%)

5.2.3 Core service (specialty)

Table 5-3 shows the distribution of the contractors surveyed based on their core service/specialty in regards to the "total project services" concept introduced in Chapter 2. Data for this analysis were collected through Question #7 of the survey. Sixty responses were recorded in this question as respondents could mark more than one core service (specialty). Eighty-five percent of the respondents specialized in and provided construction services as their core service for their clients, followed by project management services (65%), project planning/programming/development (pre-design) services (45%), design services (35%), and engineering services (25%). Only 25% of the respondents specialized in and provided strategic real estate/facility business planning and advisory services as their core services while 20% of the respondents specialized in facility management (FM)/operation and maintenance (O&M) services.

Furthermore, the data showed that 75% of the respondents specialized in providing core services on acquisition level for the delivery of owners` capital facility projects while only 15% specialized in providing core services on both levels of acquisition and strategic planning. Only one respondent indicated service specialties on all levels of capital project delivery.

Table 5-3. Distribution of Core Service/Specialty

Core Service (Specialty)	Respondents n=20
Construction Services	17 (85%)
Project Management Services	13 (65%)
Project Planning/Programming/Development (Pre-Design) Services	9 (45%)
Design Services	7 (35%)
Engineering Services	5 (25%)
Strategic Real Estate/Facility Business Planning and Advisory Services	5 (25%)
Facility Management/Operation & Maintenance Services	4 (20%)

5.2.4 Annual business volume (from core service and construction operations)

Survey questions #8-9, as shown in Tables 5-4 and 5-5, present further information about the contractors that participated in the study. Figure 5-4 shows their distribution based on their 2002 annual business volume from their specialty(s)/core service(s). Thirty-five percent of the respondents had annual volume of $100 million or less while the rest of the respondents were distributed between $500 million-$1 billion (20%), $100 million-$500 million (15%), and >$1 billion (5%). There were 15 and 16 responses recorded in these questions, respectively.

Table 5-4. Distribution of Annual Business Volume (from Core Service Operations)

Annual Business Volume	Respondent n=20
< $100 M	7 (35%)
$100 M-$500 M	3 (15%)
$500 M-$1000 M (1Billion)	4 (20%)
> $1000 M (1Billion)	1 (5%)

As shown in Table 5-5 there was a more uniform distribution between the participants based on their 2002 annual business volume from their construction operations. Twenty-five percent of the respondents had annual construction volume in the <$100 million and $100 million-$500 million ranges while 20% were in $500 million-$1 billion and 10% in >$1 billion.

Table 5-5. Distribution of Annual Business Volume (from Construction Operations)

Annual Business Volume	**Respondents n=20**
< $100 M	5 (25%)
$100 M-$500 M	5 (25%)
$500 M-$1000 M (1Billion)	4 (20%)
> $1000 M (1Billion)	2 (10%)

5.2.5 Respondents` department

Table 5-6 shows the distribution of the respondents surveyed based on the department they represented. This information provides further demographic information about the participants. Forty percent of participants were represented by respondents from operations/construction departments followed by estimating/marketing/business development department (25%), and human resources (HR) department (15%). One respondent was the organization's president.

Table 5-6. Respondents` Department

Department	**Respondents n=20**
Operations/Construction	8 (40%)
Estimating/Marketing/Business Development	5 (25%)
Human Resources (HR)	3 (15%)
Executive-President	1 (5%)
No Response	3 (15%)

5.3 Further Breakdown of the Survey Population Based on Part I, Questions 10-11

Questions #10 and #11 of the survey questionnaire aimed at gathering data about the respondents` familiarity with the ITPS concept and their business relations with other multi-disciplinary companies outside the AEC industries towards delivery of owners` capital facility projects.

5.3.1 Familiarity with the research subject (integrated total project services)

Question #10 asked the participants to describe whether they had known or heard about the concept of "integrated total project services (ITPS)" prior to the survey. As shown in Table 5-7, 50% of the respondents answered "Yes" meaning that they were familiar with ITPS (had knowledge of it prior to the survey). On the other hand, 40% stated that they had not heard of or known about ITPS before. Regarding the source of acquaintance with ITPS, the participants indicated that, they had heard/known about ITPS thru a variety of sources: clients, colleagues, magazines, and other industry organizations.

Table 5-7. Distribution of Familiarity with the Research Subject (ITPS)

Heard or Known about the Research Subject Before?	**Respondents n=20**
Yes	10 (50%)
No	8 (40%)
No Response	2 (10%)

One of the participants also stated that ITPS had been the company's business plan for fifteen years. This participant represents one of today's leading companies in the integrated total project services area. The data further revealed that none of the participants that indicated that they were familiar with ITPS had heard about it thru

Design Build Institute of America (DBIA). This finding was deemed important for further review as it appeared contradictory in part to the fact that DBIA has been a main promoter of the ITPS concept since 2000.

5.3.2 Business relation with companies outside the AEC (architecture/engineering/ construction) industries

Question #11 asked the participants to describe whether they had ever done business with and/or worked for companies outside the AEC (architecture/engineering/ construction) industries for the delivery of "total project services" for their clients` capital facilities projects. As shown in Table 5-8, there was an even distribution between the respondents. Forty-five percent of the respondents answered "Yes", and 45% answered "No" while 10% did not respond.

Table 5-8. Distribution of Business Relation with Companies Outside the AEC Industries

Had Business Relation with Companies Outside AEC Industries?	Respondents n=20
Yes	9 (45%)
No	9 (45%)
No Answer	2 (10%)

Figure 5-4 shows that, while all contractors essentially have business relations with owners directly or indirectly, only 20% of the respondents specifically acknowledged having business relation with owners. This data was interpreted as four contractors possibly had closer, longer-term relations with owners in either of these contracting methods: *direct (single-source), partnerships or alliance.* In regard to the emergence of new, non-AEC-origin players in the capital project delivery process discussed earlier, 15% of the respondents had business relations with consultants, 10% of them with real

estate, facility management firms, and financial institutions alone or in combination with other categories as shown in further detail in Figure 5-4.

BUSINESS RELATION WITH COMPANIES OUTSIDE THE AEC (ARCHITECTURE/ENGINEERING/CONSTRUCTION) INDUSTRIES (N=20)

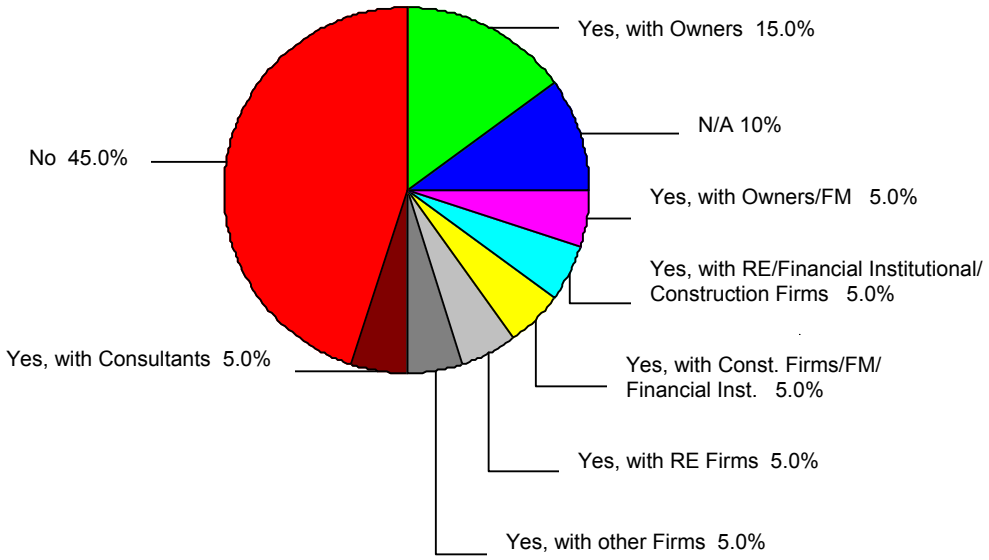


Figure 5-4. Distribution of the Contractors Surveyed Based on Business Relation with Companies outside the AEC Industries

5.3.3 Summary of Part I general breakdown

At a first glance, it seems that the respondents distribution is divided into the following categories: company type, with 75% of the respondents essentially general contractors; 75% of them private corporations; 85% of the contractors surveyed operating in general building sector; 85% of the respondents surveyed specializing in construction services, 65% in project management services; and with 25% of them falling in the <$100 million and $100 million-$500 million category of annual construction revenues in 2002. Forty percent of the contractors surveyed were also represented by respondents from operations/construction divisions/departments. This initial analysis of the respondents also showed that only half of the respondents were familiar with the ITPS concept prior to this survey and almost half of them (45%) had stated having a business

relation with companies outside the AEC (architecture/engineering/construction) industries.

Furthermore it was considered of interest to investigate the interrelations between the company type (business category), major operation sector, core service (specialty); and the respondents` familiarity with ITPS, and their business relation with non-AEC company(s).

5.4 Further Analysis of Part I Survey Responses

5.4.1 Familiarity with ITPS vs. company type relationship

To better understand the characteristics of the companies participating in this survey, a frequency table was generated displaying the relationship between familiarity with the research subject (ITPS) and company type (business category) (see Table 5-9). Two contractors did not respond to this question. It should also be noted that due to the low number of responses it was not possible to statistically test the influence of one variable on the other. As shown in Table 5-9, most of the participants who were familiar with ITPS were general contractors (33%) followed by integrated services firms (27%) and design-builders (22%).

Table 5-9. Familiarity with ITPS vs. Company (Business) Type Distribution (n=18)

Familiarity with the Research Subject (ITPS)	General Contractor (GC)	Design Build Firm (D/B-Consultative Design/ Engineering)	Integrated Services Firm (In-house Design/ Engineering)	Construction Manager (CM)	Architecture Firm
Yes (17)	6 (33.33%)	4 (22.22%)	5 (27.77%)	1 (5.55%)	1 (5.55%)
No (12)	7 (38.9%)	4 (22.22%)	0	1 (5.55%)	0

While 100% of the respondents from integrated services firms category were familiar with the integrated total project services (ITPS) concept, this familiarity level with ITPS dropped to 50% and 46% with design-build and general contractor categories, respectively. These were cumulative percentages as the companies belonged to either one business category or a combination of more.

5.4.2 Familiarity with ITPS vs. major sectors of operation relationship

Respondents participating in this survey operated in four major building sectors within the construction industry predominantly: *General building, industrial, transportation and telecommunication.* To better understand the characteristics of these companies in relation to ITPS, a frequency table was generated displaying a relationship between the participants` familiarity with the research subject, ITPS, and their major sectors of operation (see Table 5-10).

Table 5-10. Familiarity with ITPS vs. Major Sectors of Operation Distribution (n=18)

Familiarity with the Research Subject (ITPS)	General Building	Industrial	Transportation	Telecommunication
Yes (14)	5 (27.77%)	3 (16.66%)	4 (22.22%)	2 (11.10%)
No (13)	8 (44.44%)	4 (22.22%)	1 (5.55%)	0

As listed in above Table 5-10, of all the participants (18), the ones that were operating predominantly in the general building sector had the highest familiarity with ITPS (27.77%) followed by the transportation sector (22.22%), the industrial sector (16.66%) and the telecommunication sector (11.10%). However, when looked into individual operation sectors, 100% of the respondents operating in telecommunication sector were familiar with ITPS followed by transportation sector (80%).

It should be noted that, these were cumulative percentages as companies belonged to either one operation sector category or a combination of more. Despite the lack of adequate data and absence of statistical analysis, data suggested further interpretation. While 100% of the respondents from telecommunication sector and 80% from transportation sector were familiar with the ITPS concept, this familiarity level with ITPS dropped to 42% and 38% with industrial and general building sectors of operation respectively.

5.4.3 Familiarity with ITPS vs. core service (specialty) relationship

Earlier findings in this study showed that (See Table 5-4), participants offered predominantly construction services (85%), project management services (65%), and project planning/programming/development (pre-design) services (45%) as their core service(s)/specialty area(s). To further understand the characteristics of the survey participants, a frequency table was generated displaying the relationship between companies` familiarity with the research subject (ITPS) and their core services/ capabilities/specialty areas (see Table 5-11).

As mentioned earlier, due to a low survey response rate it was not possible to statistically test the influence of one variable on the other. However, data even at this level will provide the reader and the future researcher(s) with useful and hopefully inspiring ideas based on initial findings in specific areas and points of interest. In this regard, as listed in Table 5-11, familiarity with ITPS distributed between the construction services, project management, and project planning/programming/development (pre-design) services categories with 50%, 39%, and 33% respectively. Familiarity with ITPS was further distributed evenly between design, engineering, and FM/O&M Services with 22%. Since respondents could check more than one core service/specialty, the totals in

"Yes" and "No" answer categories are more than the number of respondents that answered to this question (18).

Table 5-11. Familiarity with ITPS vs. Core Service (Specialty) Distribution (n=18)

Familiarity with the Research Subject (ITPS)	Strategic Real Estate/ Facility Business Planning	Project Mgt.	Project Planning/ Programming/ Development (Pre-Design)	Design	Engineer-ing	Construct-ion	Facility Mgt. /Operation & Maintenance
Yes (37)	3 (16.66%)	7 (38.88%)	6 (33.33%)	4 (22.22%)	4 (22.22%)	9 (50.00%)	4 (22.22%)
No (22)	1 (5.55%)	6 (33.33%)	3 (16.66%)	3 (16.66%)	1 (5.55%)	6 (33.33%)	2 (11.11%)

Data further showed ITPS familiarity levels within individual core service/ specialty categories. Eighty percent of the respondents in engineering category, 75% of the respondents in strategic real estate/facility business planning category, 66% of the respondents in project planning/programming/development (pre-design) and FM/O&M categories stated that they were familiar with ITPS. Moreover, familiarity level with ITPS was lowest among respondents in construction, design, and project management categories with 60%, 57% and 53%, respectively.

5.4.4 Relationship of familiarity with ITPS vs. business relation with companies outside the AEC industries

Changing roles of owners, and contractors thru increasing trends in collaboration, team-building, partnering and strategic alliances, lie in the core of ITPS concept, as discussed earlier in literature review. Therefore, contractors` business relations with other companies—particularly the ones outside the AEC (architecture/engineering/ construction) industries—were considered important for analysis in terms of the main objectives of this study. These multi-disciplinary, non-AEC originated companies are *(Management) consultants, financial institutions, facility management/real estate*

services firms. Owners were also considered in this category because AEC services are not within their core services any longer.

Table 5-12. Familiarity with ITPS vs. Business Relation with Companies Outside the AEC Industries Distribution (N=18)

Familiarity with the Research Subject (ITPS)	"Yes, Done business with and/or worked for companies outside AEC industries"	"No, done no business and/or worked for companies outside AEC industries"	No Answer
Yes (10)	6 (33.33%)	4 (22.22%)	0
No (8)	3 (16.66%)	4 (22.22%)	1 (5.55%)

Table 5-12 shows the frequency distribution that was generated to display the relationship between familiarity with the research subject (ITPS) and business relation with companies outside the AEC industries. According to this table, 33% of the respondents in this survey that stated "we have done business with and/or worked for companies outside AEC industries" were also familiar with the ITPS concept stating "they have known or heard about the concept of integrated total project services (ITPS) prior to the survey." These data were also interpreted to indicate that 66% of the companies that had business relation(s) with companies outside AEC industries were also familiar with ITPS.

5.4.5 Business relation with companies outside the AEC industries vs. major sectors of operation relationship

Following the analysis of respondents` major sectors of operation with their level of familiarity of the ITPS, a frequency table was also generated to display the relationship between the respondents` operation sectors and their business relation with companies outside the AEC industries. In this regard, according to the following Table 5-13, 50% of the respondents in this survey that stated "we have done business with and/or worked for companies outside AEC industries" operated in general building sector followed by

Industrial (28%), and the remaining companies distributed evenly, with 22%, between transportation and telecommunication sectors. twenty-two respondents answered "Yes" and twelve "No" to this question with total of 34; thus, the percentages were cumulative as the responding companies belonged to either one operation sector category or a combination of more.

Table 5-13. Business Relation with Companies Outside the AEC Industries vs. Major Sectors of Operation Distribution (N=18)

Business Relation with Companies Outside the AEC Industries	General Building	Industrial	Transportation	Telecommunication
Yes (22)	9 (50.00%)	5 (27.77%)	4 (22.22%)	4 (22.22%)
No (12)	8 (44.44%)	2 (11.11%)	1 (5.55%)	1 (5.55%)

Data further showed that, despite limited response, teamwork and collaboration, discussed in literature review as in the core of ITPS, appears to be a reality. In this regard, within all the major operation sectors, the respondents, which stated that they had business relations with companies in non-AEC industries, outnumbered the others that stated they had not. Furthermore, 80% of the respondents in the transportation and telecommunication sectors had business relations with non-AEC originated companies followed by the industrial sector (71%). In the general building sector, however, the trend towards contractors` business relations with non-AEC originated firms was weaker with 53%.

5.4.6 Business relation with companies outside the AEC industries vs. company type relationship

According to the Table 5-14, the responding contractors that stated "we have done business with and/or worked for companies outside AEC industries were general

contractors (39%) followed by design-builders (28%), and integrated services firms (17%). There were total of 29 responses recorded in this question, therefore percentages below were cumulative as some of the companies belonged to more than one operation sector category.

Table 5-14. Business Relation with Companies Outside the AEC Industries vs. Company (Business) Type Distribution (N=18)

Business Relation with Companies Outside the AEC Industries	General Contractor (GC)	Design Build Firm (D/B-Consultative Design/ Engineering)	Integrated Services Firm (In-house Design/ Engineering)	Construction Manager (CM)	Architecture Firm
Yes (17)	7 (38.88%)	5 (27.77%)	3 (16.66%)	2 (11.11%)	0
No (12)	8 (44.44%)	2 (11.11%)	2 (11.11%)	0	0

Within all the individual business categories except for GC, data further showed that, the respondents, which stated that they had business relations with companies in non-AEC industries, outnumbered the others that stated they did not. In this regard, 100% of the respondents in the construction manager (CM), 71% in the design-builder and 60% in the integrated services firm categories had business relations with non-AEC originated companies. In addition, about 47% of the respondents that were GCs had business relation with non-AEC companies.

5.4.7 Business Relation with companies outside the AEC industries vs. annual business volume (construction operations) relationship

The results previously indicated that about 85% of the respondents had 2002 annual business volume of less than $1 billion from their construction operations while 10% of the survey population had construction revenues of >$1 billion in 2002. Following this analysis, a frequency table was generated to investigate, if existed, the relationship

between contractors` business relation with companies outside the AEC industries versus their revenues from construction operations (see Table 5-15).

Table 5-15. Business Relation with Companies Outside the AEC Industries vs. Annual Business Volume (Construction Operations) Distribution (N=18)

Business Relation with Companies Outside the AEC Industries	< $100 M	$100 M-$500 M	$500 M-$1000 M (1 Billion)	> $1000 M (1Billion)	No Answer
Yes (9)	2 (11.11%)	2 (11.11%)	2 (11.11%)	3 (16.66%)	0
No (9)	3 (16.66%)	1 (5.55%)	3 (16.66%)	1 (5.55%)	1 (5.55%)

Table 5-15 shows that only 33% of all the respondents in this survey who stated "we have done business with and/or worked for companies outside AEC industries" had revenues of up to $1 billion from their construction operations while 39% (55% of the <$1 billion category) of the respondents in the same category, stated no business relations with non-AEC companies. On the other hand, 75% of the respondents who had construction revenues of >$1 Billion (16% of the survey population), stated also business relations with non-AEC originated companies.

5.4.8 Company (Business) type vs. core service (specialty) relationship

Based on the earlier findings presented, cumulatively, construction services, project management, and project planning/programming/development (pre-design) services were the top three core services (specialties) that were offered by the respondents. Familiarity with ITPS was also most common in these categories. In the light of these initial data, this section will further analyze the relationship between company (business) types vs. core service (specialty) through frequency distribution diagrams. There were 16 respondents that provided 44 recordings to this question. Since companies could offer

more than one core service/specialty, 8 respondents that were general contractor only (GC-only) recorded 13 responses while the other 8 did 31; thus the percentages below are also cumulative and will add up more than 100%.

Table 5-16. Frequency Distribution of General Contractor Company (Business) Type Based on Core Service (Specialty) (N=16)

Company (Business) Type	Strategic Real Estate /Facility Business Planning	Project Mgt.	Project Planning/ Programming/ Development (Pre-Design)	Design	Engineer-ing	Construct-ion	Facility Management Operation & Maintenance
General Contractor (GC) Only (8)	1 (6.25%)	2 (12.50%)	3 (18.75%)	1 (6.25%)	0	7 (43.75%)	0
GC Hybrid (8)	2 (12.50%)	7 (43.75%)	5 (31.25%)	4 (25.00%)	3 (18.75%)	7 (43.75%)	3 (18.75%)

Table 5-16 shows the distribution of core services based on the general contractor (GC) category either alone or in combination with other categories (GC hybrid). Other categories in hybrid forms of company type were design-builder (D/B) and integrated services firm. These hybrid forms were further analyzed in relation to core service (see Table 5-17). Following is the results based on the data in Table 5-16:

- None of the respondents that were general contractors only, had engineering and facility management (FM)/operation and management (O&M) as core services unless they were of GC hybrid type—general contractor plus design-builder and/or integrated services firm.

- Following construction services with 43%, GC-only respondents offered mostly project planning/programming/development (pre-design) and project management core services representing 19% (3) and 12% (2) of the population respectively.

- GC hybrid type companies offered mostly project management (44%) (7), pre-design (31%) (5) and design services (25%) (4) as core services/specialties. These data also implied that offering of design and project management core services increased as general contractors (GC) turned into GC hybrid type companies.

- Strategic real estate/facility business planning services were also offered the least by both GC-only and GC-hybrid companies (3) after FM/O&M, engineering and design.

Table 5-17. Frequency Distribution of Hybrid Company (Business) Types Based on Core Service (Specialty) (N=9)

Company (Business) Type	Strategic Real Estate/ Facility Business Planning	Project Mgt.	Project Planning/ Programming Development (Pre-Design)	Design	Engineer-ing	Construct-ion	Facility Management /Operation & Maintenance
GC-D/B Hybrid (3)	0	3 (33.33%)	2 (22.22%)	1 (11.11%)	1 (11.11%)	2 (22.22%)	1 (11.11%)
GC-D/B-Integrated Services Firm Hybrid (3)	2 (22.22%)	3 (33.33%)	3 (33.33%)	3 (33.33%)	2 (22.22%)	3 (33.33%)	1 (11.11%)
Integrated Services Firm Only (2)	1 (11.11%)	1 (11.11%)	1 (8.33%)	1 (11.11%)	2 (22.22%)	2 (22.22%)	1 (11.11%)
Design-Builder (D/B) Only (1)	0	1 (11.11%)	0	1 (11.11%)	0	0	0

Table 5-17 further analyzes the distribution of core services based on the hybrid type; with the GC as the glue, hybrid type companies additionally belonged to either the design-builder and/or the integrated services firm business categories. Thus, the study also intended to investigate the distribution of core service within different hybrid type organizations in comparison to GC-only companies. However, the results should be viewed cautiously as they were cumulative and based on descriptive statistics. Nine (9) respondents recorded 38 responses in this question. The following are the results based on the data in Table 5-17:

- None of the respondents that were GC-D/B hybrid type companies, had strategic real estate/facility business planning as core services unless the integrated services firm title was also added to their business category.

- GC-D/B hybrid type companies offered mostly project management (33%) (3), followed by project planning/programming/development (pre-design) (22%) (2) and construction services (22%) (2).

- GC-D/B-Integrated services firm type companies (3) offered, on the other hand, more comprehensive services: *Project management, project planning/programming/ development (pre-design) and design services (33%) (3) in addition to their construction core services (33%).*

- With 22% of the respondents, strategic real estate/facility business planning and engineering services were the least offered core services (specialties) by the GC-D/B-Integrated services firm type companies, only two offered.

5.4.9 Summary of Part I results

In Part I, interrelations between the company types (business category), major operation sector, core service (specialty); and the respondents` familiarity with ITPS, and their business relation with non-AEC company(s), were investigated. Below is the summary of these findings:

- There was a total, (100%) (5) familiarity with ITPS among integrated services firms and respondents that operated in telecommunication, and 80% (4) in transportation sectors. Familiarity with ITPS among design-builders, on the other hand, was 50% (4) and about 43% (3) in industrial sector.

- Familiarity with ITPS was more than fifty percent within individual core service/ specialty areas surveyed: With 80% (4) highest in engineering, 75% (3) in strategic real estate/facility business planning categories, and lowest, with 57% (4) and 53% (7) in design and PM categories.

- Level of familiarity with ITPS was also observed to be rising as firms had done more business with and/or worked for companies outside AEC industries- 67% (6) were familiar with ITPS. However, this group represented only 33% of the survey population. It should also be remembered that, only about half of the survey population were either familiar with ITPS concept (10) or had business relation with companies outside AEC (9).

- General contractors (39%) (7) followed by design-builders (28%) (5) and integrated services firms (17%) (3) were the company types that had business relation with companies outside AEC industries. Within individual categories, 71% of design-builders and 60% of integrated services firms had business relations with non-AEC originated companies. These results suggested that design-builders are more dependent to outside providers compared to integrated services firms, which have more in-house capabilities, by definition.

- In all the major operation sectors, the respondents which stated that they had business relations with companies in non-AEC industries outnumbered the others which stated they had not; 80% of the respondents (4) in transportation and telecommunication sectors, followed by industrial sector (71%) (5). This supported the presence of increasing teamwork and collaboration as discussed in literature review as in the core of ITPS.

- Seventy-five percent of the respondents (3) that had construction revenues >$1 billion, and 55% of the <$1 billion category had business relations with non-AEC companies. On the other hand, within <$100 million and $500 million-$1000 million categories, less respondents (2 in each category) had business relations with non-AEC companies.

- Engineering and FM/O&M core services were not offered by the general contractor (GC-only) category in the survey population unless they were also design/builders and/or integrated services firms. No design-builder (D/B-only) offered these services. However, this finding should be approached cautiously given the fact that the response rate of the overall survey was very low and this could have left out statistically significant number of companies that are ready to offer these services.

- Provision of design and project management core services followed by pre-design increased also as general contractors (GC) turned into GC hybrid type companies.

- Strategic real estate/facility business planning core services were being provided by only integrated services firms, either alone or in other hybrid form-, even though along with engineering services, it was the least offered core services (specialties) by the same respondents.

- Finally, integrated services firms followed by companies that belonged to GC-D/B hybrid business category offered most comprehensive services or the "total project services". Respondents in the latter group did not provide only the strategic real estate/facility business planning core services.

5.5 Analysis of Part II Survey Responses

In this main part of the survey questionnaire, entitled "How Do You Provide "Total Project Services" for Your Clients` Capital Facilities?", the participants were asked for their opinion regarding whether or not their companies were providing/offering (or should do so) capital facility service(s) for their clients (see Appendix A). To assist in their response, a comprehensive list of all capital facility services/functions within Facility Management Life-cycle concept (called as "total project services") was provided

to the participants (see Figure 3-3). These services were grouped, and the six questions in this part were designed based on four main levels (phases): *Planning, Acquisition, Operation & Maintenance (Occupancy), and Disposal*. Acquisition phase was further divided into three subgroups: *Project Management and/or Facility Pre-design, Design/Engineering, and Construction.*

This study initially attempted to identify, through the web version of this survey, contractors` detailed approaches to the delivery of total project services for their clients` capital facilities (see Figure 3-3). The scope of the study, however, as explained in Chapter 4, was narrowed down to increase the response rate of the survey. Thus, only, whether or not contractors were providing these services was investigated.

A "Yes" answer in this part, meant that, the contractor provided the related services internally, through in-house capabilities as a specialty-services contractor, or an integrated-services provider or as a consultant. A "No, owner provides" answer to the questions, however meant that the services were not provided by the respondent internally or in any other way, but owners provided them for their capital facility projects. Furthermore the answer of "No, We outsource/sub-out" meant that the respondent did not provide the services internally, but outsourced/subcontracted them to a third party, in other words providing them externally.

5.5.1 "Does your company provide strategic level business planning project services for the delivery of your clients` capital facilities?" (Question 1)

As shown in Figure 5-5, 60% (12) of the respondents provided strategic level business planning services for their owners` capital facility projects while 30% (6) did not, stating that owners provided these services.

Table 5-18. Distribution of Respondents by Strategic Level Business Planning Services

Provide Strategic Level Business Planning Project Services?	Respondents n=20
Yes	12
No	6
N/A	2

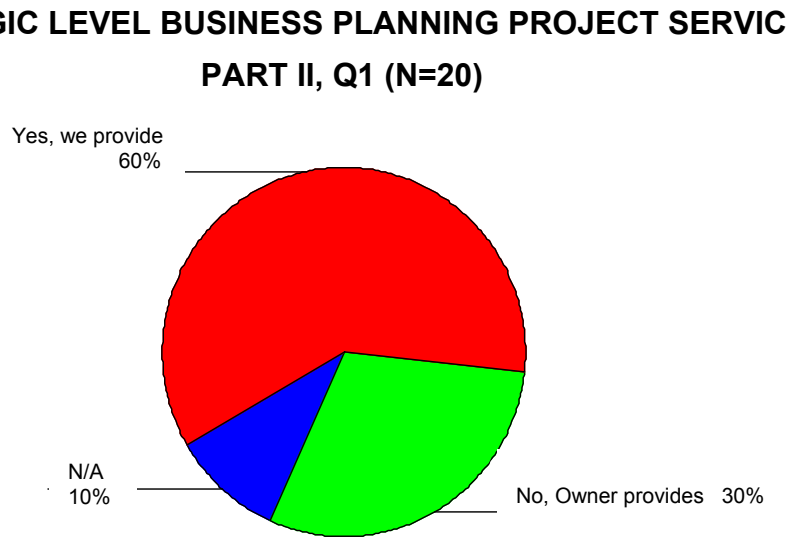


Figure 5-5. Distribution of the Respondents Surveyed based on Strategic Level Business Planning Project Services

Two respondents representing 10% of the survey population did not provide answer to this question. When examined individually, one of these companies was a real estate-only firm and did not respond to other questions, either. The other respondent was the only D/B firm in the survey population and offered PM and design specialties. This respondent only responded to the first part of the survey.

5.5.2 "Does your company provide acquisition level project management and/or facility pre-design services for the delivery of your clients` capital facilities projects?" (Question 2)

As shown in Table 5-19 and Figure 5-6, 55% of the respondents (11) provided acquisition level project management (PM) and/or facility pre-design services for their

owners` capital facility projects while 25% (5) did not. This result indicated that owners provided these services.

Table 5-19. Distribution of Respondents by Acquisition Level Project Management and/or Facility Pre-Design Services

Provide Acquisition Level Project Management and/or Facility Pre-Design Project Services?	Respondents n=20
Yes	11
No	5
N/A	4

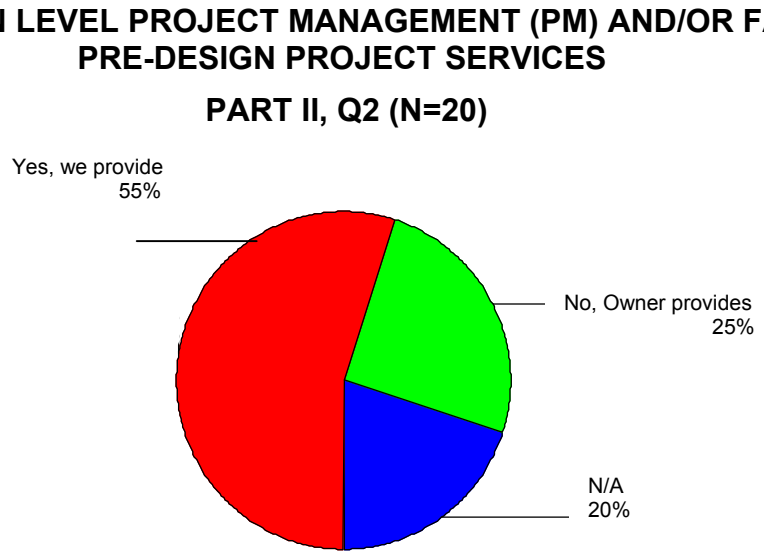


Figure 5-6. Distribution of the Respondents Surveyed Based on Acquisition Level Project Management/Facility Pre-Design Project Services

Four respondents representing twenty percent of the survey population did not provide answer to this question. Additional two companies, when examined, were both integrated services firms and they did not respond to Parts II and III at all.

5.5.3 "Does your company provide acquisition level design/engineering project services for the delivery of your clients` capital facilities?" (Question 3)

As shown in Table 5-20 and Figure 5-7, 45% of the respondents (9) provided acquisition level design/engineering services for their owners` capital facility projects

while 35% (7) did not. Twenty percent of the respondents (4) stated that owners provided these services. Furthermore, 15% of the contractors stated that they outsourced/sub-out these services.

Table 5-20. Distribution of Provision of Acquisition Level Design/Engineering Project Services

Provide Acquisition Level Design/Engineering Project Services?	**Respondents n=20**
Yes	9 (45%)
No	7 (35%)
N/A	4 (20%)

While these data were also interpreted as 60% of the respondents (12) provided design/engineering services thru in-house and outsourcing combined, four respondents – two were discussed earlier not providing response to Part II and III- representing twenty percent of the survey population did not provide answer to this question. Another respondent, however, was also offering design/engineering services as core service, too. The new company, which omitted this question, did not offer the design/engineering services, as well.

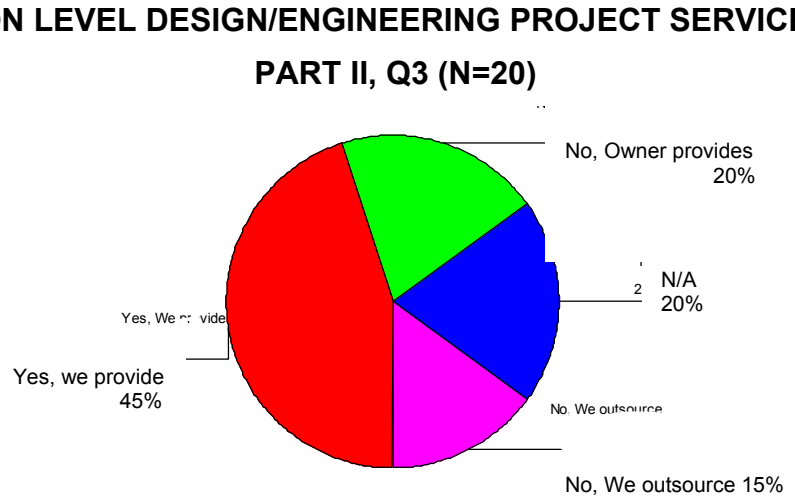


Figure 5-7. Distribution of the Respondents Surveyed Based on Acquisition Level Design/Engineering Project Services

5.5.4 "Does your company provide acquisition level construction services for the delivery of your clients` capital facilities?" (Question 4)

As shown in Table 5-21 and Figure 5-8, 70% of the respondents (14) provided acquisition level construction services for their owners` capital facility projects while 15% (3) did not. Ten percent of the respondents (2) did not provide in-house construction services, but outsourced them while one respondent did neither. Furthermore, the data were also interpreted as 80% of the respondents (16) provided construction services thru in-house and outsourcing combined; thus making it the most provided project services by the contractors surveyed.

Three respondents representing fifteen percent of the survey population did not answer to this question. These companies were discussed earlier as they did not respond to majority of the survey questions. The third one, which was an integrated services firm had design, and construction core services.

Table 5-21. Distribution of Respondents by Acquisition Level Construction Project Services

Provide Acquisition Level Construction Project Services?	Respondents n=20
Yes	14 (70%)
No	3 (15%)
N/A	3 (15%)

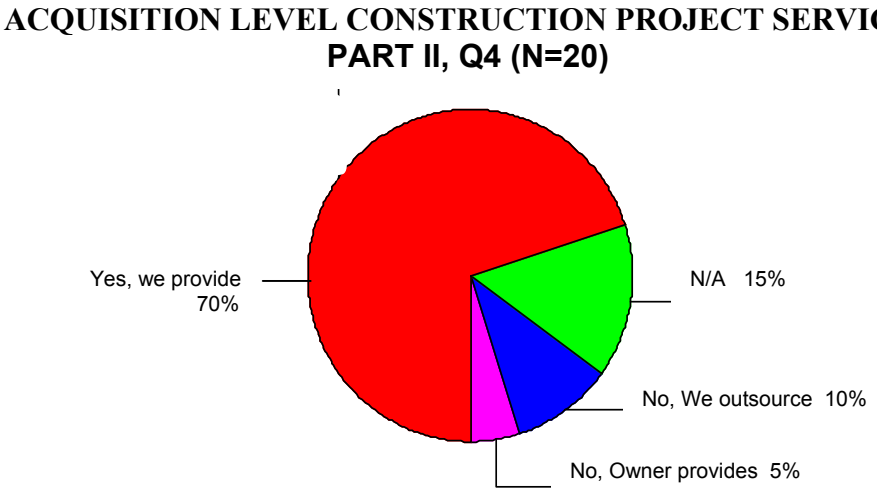


Figure 5-8. Distribution of the Respondents Surveyed Based on Acquisition Level Construction Project Services

5.5.5 "Does you Company Provide Operation & Maintenance (O&M) Level Services for the delivery of your Clients` Capital Facilities?" (Question 5)

As shown in Table 5-22 and Figure 5-9, 50% of the respondents (10) provided operation and maintenance (O&M) level services in-house while 40% (8) did not. Fifteen percent of the respondents (3) did not provide in-house O&M services, but outsourced them. Twenty percent of the respondents (4) provided neither in-house nor outsourced these services. Owners provided them. These data were also interpreted as 65% of the respondents (13) provided operation and maintenance (O&M) Services thru in-house and outsourcing combined.

Table 5-22. Distribution of Respondents by Operation and Maintenance (O&M) Level Project Services

Provide Operation & Maintenance (O&M) Level Project Services?	Respondents n=20
Yes	10 (50%)
No	8 (40%)
N/A	2 (10%)

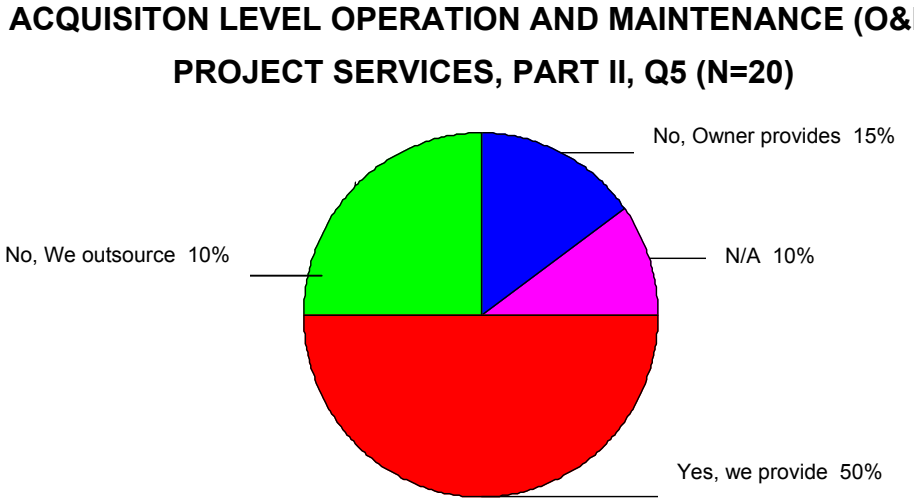


Figure 5-9. Distribution of the Respondents Surveyed based on Operation and Maintenance (O&M) Project Services

Two respondents representing ten percent of the survey population did not provide answer to this question. These were the same companies that were the only real estate and D/B firms in the survey population and provided no response to second and third parts of the survey.

5.5.6. "Does your company provide disposal level services for the delivery of your clients` capital facilities?" (Question 6)

As shown in Table 5-23 and Figure 5-10, only 30% of the contractors (6) indicated that they provided disposal level project services internally and/or externally; twenty percent of the respondents (4) provided disposal level services for owners` capital facilities projects in-house, and 10% (2) outsourced them thru third-party service provider(s). Furthermore, 50% of the respondents (10) stated that owners provided disposal services, in their business.

Table 5-23. Distribution of Respondents by Disposal Level Project Services

Provide Disposal Level Project Services?	Respondents n=20
Yes	4 (20%)
No	13 (65%)
N/A	3 (15%)

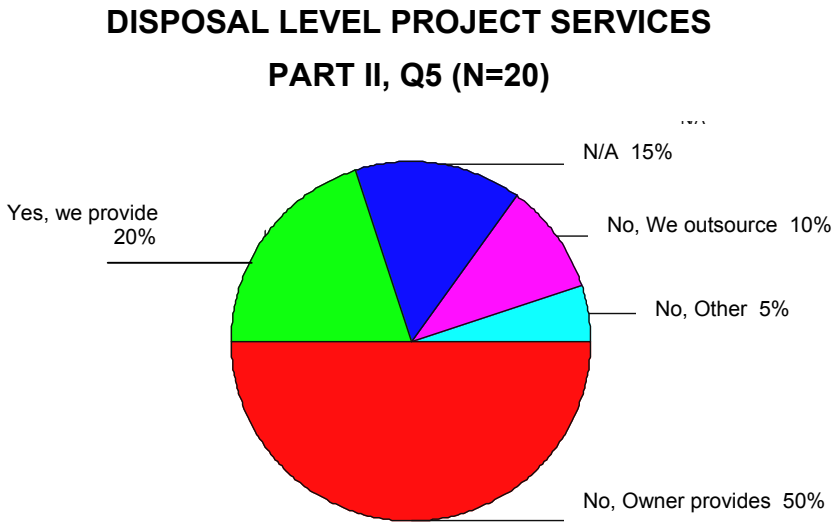


Figure 5-10. Distribution of the Respondents Surveyed Based on Disposal Project Services

Three respondents representing fifteen percent of the survey population did not answer to this question. These companies did also not respond to other questions in Part II and none of them offered disposal services as their specialties, either.

5.6 Summary of Part I Results

According to the data analyzed in the second part of the survey, it was found that (see Table 5-24) besides construction with (70%), strategic level business planning services (60%) followed by acquisition level PM and/or facility pre-design services (55%) were the most predominantly provided services by the U.S contractors that

participated in the survey. Operation and maintenance (O&M) level services were also provided by 50% (10) of the contractors. Contractors provided these services thru their in-house capabilities, internally, as specialty service provider(s) and/or as integrated service provider(s).

The least offered services were disposal level project services (20%) followed by acquisition level design/engineering services (45%), 4 and 9 contractors respectively provided them in-house. Table 5-24 further shows that, with the additional use of outsourcing and subcontracting methods, provision of acquisition level design/engineering and O&M level services rise fifteen percent, so 60% of the respondents (12) in these two individual service categories provide these project services for the owners` capital facilities projects.

Table 5-24 further revealed that, contractors' core services are expanding as it was foreseen and discussed in literature review in regards to ITPS trend and its underlying principles. In this regard, major expansion is observed in strategic real estate/facility business planning services and O&M level project services of contractor core service areas (see also Table 5-25). While four respondents had FM/O&M services as their specialties/core services, 12 respondents started to provide them thru internal and external sources. Similarly 5 respondents had strategic real estate/facility business planning specialties initially, and as data revealed, 12 respondents started to provide thru their internal and/or external sources as well. As it was not come across in the literature, disposal services were not included in the contractors` core service/specialty (see Table 5-25), however the survey data showed that (see Table 5-24), six respondents were providing disposal level project services internally and/or externally.

Table 5-24. Summary of How "Total Project Services" Are Provided by Contractors

TOTAL PROJECT SERVICES PROVIDED						
	Planning Level	**Acquisition Level**			**O&M Level**	**Disposa Level**
	(Strategic) Real Estate/ Facility Business Planning Services	Project Management (PM) and/or Pre-Design Services (Project Planning/ Programming/ Development)	Design and Engineering Services	Construction Services	O&M Services (FM included)	Disposal Services
Yes (internally)	60% (12)	55% (11)	45% (9)	70% (14)	50% (10)	20% (4)
No, (externally) (Outsourced /Sub-out)	0% (0)	0% (0)	15% (3)	10% (2)	10% (2)	10% (2)
No, (owners provided)	30% (6)	25% (5)	20% (4)	5% (1)	15% (3)	10% (2)

Table 5-25. Summary of Contractors` Specialties/Core Services

SPECIALTIES/CORE SERVICES OF CONTRACTORS								
	Planning Level	**Acquisition Level**					**O&M Level**	**Disposa Level**
	Strategic Real Estate /Facility Business Planning & Advisory Services	PM Services	Pre-Design Services	Design Services	Eng. Services	Construction Services	FM and O&M Services	N/A
	25% (5)	65% (13)	45% (9)	35% (7)	25% (5)	85% (17)	20% (4)	0

5.7 Further Analysis of Part II Survey Responses

5.7.1 "Total project services" provided vs. familiarity with ITPS relationship

To better understand the characteristics of the companies participating in this survey, frequency tables were generated displaying the relationship between the "total project services" provided by the respondents and their familiarity with the research subject, ITPS. It should be noted that due to a low survey response rate (5.8 %) it was not possible to test statistically the influence of one variable on the other. There were 18

respondents that provided 61 recordings to this question since companies could provide project services in more than one level; thus the percentages below are cumulative and will add up more than 100%.

As listed in Table 5-26, familiarity with ITPS distributed between acquisition level construction services, design/engineering and O&M level project services categories with 44% (8), 39% (7), respectively. Familiarity with ITPS was further distributed between strategic level business planning and acquisition level PM and facility pre-design services with 33% (6) and 28% (5).

Table 5.26 Distribution of Familiarity with ITPS vs. "Total Project Services" Provided by Participants (N=18)

	Planning Level	**Acquisition Level**			**O&M Level**	**Disposal Level**
Familiarity with the Research Subject (ITPS)	(Strategic) Business Planning Project Services	Project Management (PM) and/or Facility Pre-design t Services	Design/ Engineering Project Services	Construction Project Services	O&M Project Services (FM included)	Disposal Level Project Services
Yes (36)	6 (33.33%)	5 (27.77%)	8 (44.44%)	8 (44.44%)	7 (38.88%)	2 (11.11%)
No (25)	5 (27.77%)	5 (27.77%)	3 (16.66%)	6 (33.33%)	4 (22.22%)	2 (11.11%)

Data further showed that, ITPS familiarity levels within individual categories of total project services are highest in acquisition level design/engineering and O&M Level project services groups with 73% (8) and 64% (7) respectively. Furthermore, 58% of the respondents (8) in acquisition level construction services, 54% (6) in strategic level business planning project services, and 50% (5) of acquisition level PM/facility pre-design and disposal level project services, stated that they were familiar with ITPS.

5.7.2 "Total Project Services" provided vs. company (business) type relationship

To better understand the characteristics of the companies participating in this survey, frequency diagrams were generated displaying the relationship between the "total project services" provided by the respondents and their company (business) type.

Table 5-27 first analyzed the distribution of "total project services" based on the general contractor (GC) category either alone or with its combination with other categories (GC hybrid). Other categories in hybrid forms of company type were design-builder (D/B) and integrated services firm. These hybrid forms were further analyzed in Table 5-28 in order to further understand analyze how these "total project services" are distributed in relation to distinct company types.

Sixteen (16) respondents (GC-only and GC-hybrid firms) recorded 87 responses to how "total project services" were being provided by them. As contractors could mark and provide more than one level of facility project services, the results were cumulative and exceeded 100%. Following is the results based on the data in Table 5-27:

- Besides acquisition level construction services with 31%, GC-only respondents provided mostly acquisition level project management and/or pre-design (project planning/programming/development) with 25% of the population (4), followed by 19% (3) in strategic level business planning and O&M level project services.

- Disposal level project services—the final phase of the "total project services" concept—were provided the least by respondents (1) of all business types. The owners as reported by 6 respondents pre-dominantly executed these services.

- GC hybrid type companies provided mostly strategic level business planning and acquisition level construction project services (38%) (6), followed by acquisition level design/engineering (31%) (5) and O&M project services (31%) (5). Data in table 5-27 also indicated that, provision of project services in all phases of "total project services" concept, except for PM/pre-design and disposal level services, increased considerably as general contractors (GC) turned into GC hybrid type companies.

Table 5.27 Distribution of General Contractor (GC) Company (Business) Type Based on "Total Project Services" Provided by Participants (N=16)

		Planning Level	Acquisition Level			O&M Level	Disposal Level
Company (Business) Type	**"Total Project Services" Provided By**	(Strategic Business Planning Project Services	Project Management (PM) and/or Facility Pre-design Services	Design/ Engineer-ing Project Services	Construc-tion Project Services	O&M Project Services (FM include d)	Disposa l Level Project Services
General Contractor (GC) Only (8)	Contractor (19)	3 (18.75%)	4 (25.00%)	3 (18.75%)	5 (31.25%)	3 (18.75%)	1 (6.25%)
	Owner (21)	4 (25.00%)	3 (18.75%)	3 (18.75%)	2 (12.50%)	3 (18.75%)	6 (37.50%)
	Outsource /Sub-out (1)	0	0	0	0	1 (6.25%)	0
GC Hybrid (8)	Contractor (26)	6 (37.50%)	3 (18.75%)	5 (31.25%)	6 (37.50%)	5 (31.25%)	1 (6.25%)
	Owner (10)	2 (12.50%)	2 (12.50%)	0	0	2 (12.50%)	4 (25.00%)
	Outsource /Sub-out (10)	0	2 (12.50%)	3 (18.75%)	1 (6.25%)	2 (12.50%)	2 (12.50%)

Table 5-28 further analyzed the distribution of "total project services" provided based on the hybrid type; with GC as the glue, hybrid type companies were additionally either design-builder and/or integrated services firms. These constituted 8 respondents that recorded 43 responses to how "total project services" were being provided by them. As contractors could mark and provide more than one level of facility project services, the results were cumulative and exceeded 100%. That there were only two respondents from the "integrated services firms only", none from the "design/builder only" categories, prevented further investigation of the distribution of these total project services within different hybrid type organizations in comparison to GC-only category.

Table 5-28 Distribution of Hybrid Company (Business) Types based on "Total Project Services" Provided by Participants (N=8)

		Planning Level	Acquisition Level			O&M Level	Disposal Level
Company (Business) Type	**"Total Project Services" Provided By**	(Strategic Business Planning Project Services	Project Management (PM) and/or Facility Pre-design Services	Design/ Engineer-ing Project Services	Construc-tion Project Services	O&M Project Services (FM included)	Disposal Level Project Services
GC-D/B Hybrid (3)	Contractor (10)	2 (25%)	2 (25%)	1 (12.5%)	3 (37%)	1 (12.5%)	1 (12.5%)
	Owner (4)	1 (12.5%)	1 (12.5%)	0	0	1 (12.5%)	1 (12.5%)
	Outsource /Sub-out (5)	0	0	2 (25%)	1 (12.5%)	1 (12.5%)	1 (12.5%)
GC-D/B-Integrated Services Firm Hybrid (3)	Contractor (13)	3 (37%)	2 (25%)	3 (37%)	3 (37%)	2 (12.50%)	0
	Owner (3)	0	0	0	0	1 (12.5%)	2 (25%)
	Outsource /Sub-out (0)	0	0	0	0	0	0 (Other)
Integrated Services Firm Only (2)	Contractor (2)	1 (12.5%)	0	0	0	1 (12.5%)	0
	Owner (0)	0	0	0	0	0	0
	Outsource /Sub-out (6)	1 (12.5%)	1 (12.5%)	1 (12.5%)	1 (12.5%)	1 (12.5%)	1 (12.5%)

Following are the results based on the data listed in Table 5-28:

- Acquisition level design/engineering project services followed by services in strategic business planning and O&M phases of capital project delivery are provided increasingly by respondents in GC-D/B-Integrated services business category. This result suggests a diversification trend in respondents` service portfolios through their anticipated part in the integrated services movement.

- Companies that belong to the GC-D/B-Integrated services firm hybrid business category provide mostly strategic level business planning and acquisition level design/engineering and construction project services with 37% (3). Acquisition level PM/facility pre-design and O&M level project services are provided the least by this group, two respondents in each category.

- Outsourcing/subcontracting-out of all phases of total project services, other than strategic level business planning phase, is most common in GC-D/B hybrid and

integrated services firm only business categories. Design/engineering services followed by O&M and PM/facility pre-design, and even disposal services are provided in this way.

5.7.3 "Total project services" provided vs. major sector of operation relationship

Companies participating in this survey operate in four major building sector(s) within construction industry—General Building, Industrial, Transportation and Telecommunication. To better understand the characteristics of these companies in relation to ITPS, a frequency diagram was generated displaying the relationship between the "total project services" provided by the respondents and their major sectors of operation. Table 5-29 first analyzed the distribution of general building operation sector (either alone or with its hybrids with other sectors) based on the "total project services" provided by the respondents. These hybrid forms were further analyzed in Table 5-30 in order to further understand how these "total project services" are distributed within distinct operation sectors. Eighteen (18) respondents that operated in general building and/or general building hybrid sectors recorded 98 responses regarding how they were providing "total project services". As contractors could mark and provide more than one level of facility project services, the results were cumulative and exceeded 100%. Following is the results based on the data in Table 5-29:

- Besides acquisition level construction services with 33%, respondents (8) that operate in only general building sector, provided mostly acquisition level project management and/or pre-design (project planning/programming/development) with 22% (4) of the population, followed by 16% (3) in strategic level business planning and acquisition level design/engineering project services.

- Disposal level project services were provided the least by respondents not only in general building sector, but all sectors. The owners themselves predominantly executed these services.

Table 5-29. Distribution of General Building Sector based on "Total Project Services" Provided by Participants (N=18)

		Planning Level	Acquisition Level			O&M Level	Disposal Level
Major Operation Sectors	**"Total Project Services" Provided By**	(Strategic Business Planning Project Services	Project Management (PM) and/or Facility Pre-design Services	Design/ Engineer-ing Project Services	Construc-tion Project Services	O&M Project Services (FM included)	Disposal Level Project Services
General Building (8)	Contractor (19)	3 (16.66%)	4 (22.22%)	3 (16.66%)	6 (33.33%)	2 (11.11%)	1 (5.55%)
	Owner (22)	5 (27.77%)	4 (22.22%)	2 (11.11%)	1 (5.55%)	4 (22.22%)	6 (33.33%)
	Outsource /Sub-out (6)	0	0	2 (11.11%)	1 (5.55%)	2 (11.11%)	1 (5.55%)
General Building Hybrid (10)	Contractor (29)	6 (33.33%)	5 (27.77%)	6 (33.33%)	7 (38.88%)	3 (16.66%)	2 (11.11%)
	Owner (11)	1 (5.55%)	1 (5.55%)	1 (5.55%)	1 (5.55%)	3 (16.66%)	4 (22.22%)
	Outsource /Sub-out (11)	2 (11.11%)	2 (11.11%)	2 (11.11%)	1 (5.55%)	2 (11.11%)	2 (11.11%)

Provision of all phases within the "total project services" concept, increased as respondents in general building operation sector started also moving into industrial, transportation and telecommunication sectors. Accordingly, contractors that are in the general building hybrid category provide the following project services: *Acquisition level construction project services (39%) (7) followed by strategic level business planning and acquisition level design/engineering services (33%) (6), PM/pre-design services (25%) (5) and O&M project services (17%) (3).*

Table 5-30 further analyzed the distribution of "total project services" based on different variations of general building hybrid operation type; however the very low number of respondents prevented a thorough analysis, but a descriptive one.

Table 5-30 Distribution of Hybrid Building (Operation) Sectors Based on "Total Project Services" Provided by Participants (N=10)

		Planning Level	Acquisition Level			O&M Level	Disposal Level
Major Operation Sectors	**"Total Project Services" Provided By**	(Strategic Business Planning Project Services	Project Management (PM) and/or Facility Pre-design Services	Design/ Engineer-ing Project Services	Construc-tion Project Services	O&M Project Services (FM included)	Disposal Level Project Services
General Building / Industrial (4)	Contractor (11)	2 (20%)	2 (20%)	2 (20%)	2 (20%)	2 (20%)	2 (20%)
	Owner (7)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)
	Outsource/ Sub-out (0)	0	0	0	0	0	0
General Building / Industrial/ Transpor-tation (2)	Contractor (5)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	0 (Other)
	Owner (0)	0	0	0	0	0	0
	Outsource/ Sub-out (6)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)
General Building / Telecomm/ Transpor-tation (2)	Contractor (9)	2 (20%)	0	2 (20%)	2 (20%)	2 (20%)	1 (10%)
	Owner (1)	0	0	0	0	0	1 (10%)
	Outsource/ Sub-out (0)	0	0	0	0	0	0
General Building/ Transpor-tation (1)	Contractor (6)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)
	Owner (0)	0	0	0	0	0	0
	Outsource/ Sub-out (0)	0	0	0	0	0	0
All Sectors (1)	Contractor (5)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	1 (10%)	0
	Owner (1)	0	0	0	0	0	1 (10%)
	Outsource/ Sub-out (0)	0	0	0	0	0	0

Despite the lack of a sufficient sample size, it was observed that, as companies moved into other building sectors and were involved with more diverse projects, the companies started to provide comprehensive project services for their clients. Ten (10)

respondents that operated in hybrid sectors recorded 51 responses regarding how they were providing "total project services". As contractors could mark and provide more than one level of facility project services, the results were cumulative. Below are the results based on the data in Table 5-30:

- Construction project services were provided by the majority (75%) of the respondents (6) in the general building (only) operation sector and 50% of the contractors (4) in this category provided acquisition level PM/facility pre-design, followed by (38%) (3) providing business planning and design/engineering level project services (3).

- Fifty percent of all the respondents that operated in general building and industrial sectors provided all the phases within the "total project services" concept. All phases within the "total project services" concept—except disposal phase—were also provided by 50% of the respondents that operated in general building, industrial and transportation sectors. These respondents (2 respondents in each related project level) represented 10% of the survey population.

- All the contractors operating in general building, telecommunication and transportation sectors (100%) provided project services in all phases except for the acquisition level PM/facility pre-design. These respondents represented 20% of the survey population in this question.

- In general building/industrial and general building/telecommunication/transportation sectors, despite the low sample size, it was observed that no project services were outsourced or subcontracted.

5.8 Summary of Part II Results

Part II of the survey further investigated the interrelations between the "total project services" provided by the respondents and their familiarity with ITPS, company type (business category), and major operation sector. Following is the summary of these findings:

- More than at least half of all respondents, within all individual phases of the "total project services" concept, were familiar with ITPS; highest in acquisition level design/engineering services (73%) and O&M level project services (64%). These contractors also represented 44% and 39% of the survey population respectively.

- Respondents that were general contractors only (GC-only), besides construction, provided pre-dominantly acquisition level project management and/or pre-design

(project planning/programming/development), strategic level business planning and O&M level project services. The former two and the latter groups represented 25% and 19% of the survey population respectively.

- Provision of project services in all phases of "total project services" concept except from PM/pre-design and disposal level services, increased as general contractors (GC) turned into GC hybrid type companies. In this regard, GC hybrid type companies provided mostly strategic level business planning and acquisition level construction project services (38%) followed by acquisition level design/engineering and O&M project services (25%).

- Acquisition level design/engineering project services followed by services in strategic business planning and O&M phases of capital project delivery were observed being provided increasingly by respondents in GC-D/B-Integrated services business category. Thus, in the presence of integrated services movement, this result may be signaling the diversification trend in respondents` service portfolios as discussed in the literature review.

- The general building hybrid category provides the following project services: *Acquisition level construction project services (39%) followed by strategic level business planning and acquisition level design/engineering services (33%), PM/pre-design services (25%) and O&M project services (17%).*

- Outsourcing/subcontracting-out of all phases of total project services, other than strategic level business planning phase, is most common in GC-D/B hybrid and integrated services firm only business categories.

- Disposal level project services are provided the least by respondents in not only in general building sector, but all sectors.

- Provision of all phases within the "total project services" concept, increased as respondents in general building operation sector started also moving into industrial, transportation and telecommunication sectors. In this regard, general building hybrid category provides the following project services: *Acquisition level construction project services (39%) followed by strategic level business planning and acquisition level design/engineering services (33%), PM/pre-design services (25%) and O&M project services (17%).*

- Finally, 50% of the respondents within individual general building/industrial and general building/industrial/transportation sectors, provided project services in all phases. Moreover, moving into other building sectors and being involved with more diverse projects—more complex, technical projects and demanding owners—, more companies started to provide comprehensive project services for their clients`. The research showed that, 100% of the contractors operating in general building/ telecommunication/transportation sectors provided project services in all phases except for the acquisition level PM/facility pre-design. These respondents however, represented 13% of the survey population.

5.9 Analysis of Part III Survey Responses

In this last part of the survey questionnaire, entitled "Question Pertaining to the Concept of "Integrated Total Project Services (ITPS) & The Future Delivery of Capital Facilities", the participants were asked to describe, in their opinion, which project services clients` (owners of capital facility projects) were demanding from them due to their emerging needs; and what project delivery/contracting methods the clients were requiring from the contractors to deliver their construction projects.

Participants were also asked to express, in their opinion, why clients were outsourcing facility management and other capital facility services. They were also asked to address problem areas and critical issues regarding the ITPS approach. Finally, comments about their vision regarding the future developments, trends, and practices in the capital project delivery were asked.

5.9.1 Major project delivery/contracting method clients assign to contractors to deliver their construction projects (Question 1)

As shown in Table 5-31, 55% of the respondents (11) used construction management (CM) project delivery method to deliver owners` facility construction projects as required by them while the rest of the respondents distributed between design-build (20%) (4), traditional design-bid-build (10%) (2) and integrated services (5%) (1) categories. In addition, two respondents (representing ten percent of the survey population) did not provide an answer to this question. These respondents did also not respond to other questions in Part II and III.

Table 5-31. Distribution of the Major Construction Project Delivery/Contracting Methods Assigned to Contractors by Clients Part III, Q1 (N=20)

Major Construction Project Delivery/Contracting Method	Respondents
Construction Management (CM)	11 (55%)
Design-Build (D/B)	4 (20%)
Traditional Design-Bid-Build (DBB)	2 (10%)
Integrated Services	1 (5%)
N/A	2 (10%)

5.9.2 Primary reason for clients` facility management (FM) outsourcing initiatives (Question 2)

As shown in Table 5-32, leveraging the best-in-class service provider and allowing company to focus on core business were ranked the highest by 15% of the respondents (3), as the primary reason for their clients` FM outsourcing initiatives, followed by cost savings/control of operating costs (10%) (2) and resources not available internally (5%) (1). Additionally, no respondent viewed in-house staff reduction (downsizing) and freeing capital for other investment, as reasons for Owners` FM outsourcing initiatives.

Table 5.32 Distribution of the Primary Reasons for Clients` Facility Management (FM) Outsourcing Initiatives Part III, Q2 (N=20)

Primary Reason for Clients` FM Outsourcing Initiatives	Respondents
Leverage the best-in class service provider	3 (15%)
Allow Company to focus on core business	3 (15%)
Cost savings/control operating costs	2 (10%)
Resources not available internally	1 (5%)
In-house staff reduction (downsizing)	0 (0%)
To free capital for other investment	0 (0%)
No Opinion	6 (30%)
N/A	5 (25%)

Six respondents representing 30% of the survey population had no opinion regarding why their clients` were doing FM outsourcing and five respondents

representing twenty-five percent of the survey population did not provide answer to this question (see Table 5.32). Further analysis of these respondents showed that, 83% percent of the respondents (5) who had no opinion about the reason(s) for owners` FM outsourcing, were GC-only and 67% of them (4) were operating in general building sector only. Furthermore, only 17% of this group (1) was familiar with the ITPS concept.

5.9.3 Main phase(s) of total project services clients require contractors to provide (Question 3)

While this question draws parallelism to the one in the second part of the survey, "How do you provide total project services for your clients` capital facilities projects", it aims to provide a more prospective look related to contractors` emerging roles for the delivery of owners` capital facilities. Hence, this question will collect respondents` (contractors`) opinions regarding which phase(s) of capital facility delivery, owners are requiring more of their involvement. The answers to this question were initially aimed to be collected capital facility owners themselves but then with the cancellation of the owner version of the web-survey, it was modified and put into the final survey which investigated the contractors only.

Table 5-33. Distribution of the Main Phase(s) of Total Project Services Clients Require Contractors to Provide Part III, Q3 (N=20)

Main Phase(s) of Total Project Services	Respondents
Acquisition Phase	13 (65%)
Planning Phase (Strategic Business Planning)	8 (40%)
Operation & Maintenance (Q&M) Phase (Occupancy/Q&M/Facility Management)	4 (20%)
Disposal Phase	3 (15%)

Table 5-33 shows the distribution of the contractors surveyed based on main phases of Total Project Services. Sixty-five percent of the respondents (13) stated that owners

were requiring them to provide services in the acquisition phase, followed by planning phase (strategic business planning) (40%) (8), Q&M (20%) (4) and the disposal phase (15%) (3). It should be noted that, these percentages were cumulative; 20 respondents recorded 28 responses since they could mark more than one main phase of total project services.

Data also indicated that (see Figure 5-11) according to 30% of the respondents (6), owners were requiring them to provide services only in the acquisition phase. Fifteen percent of the survey population (3) was also required by owners to provide services only in planning/acquisition phase. Moreover, two respondents (10% of survey population) reported that they were providing services in all phases within the "total project services" concept as required by the owners.

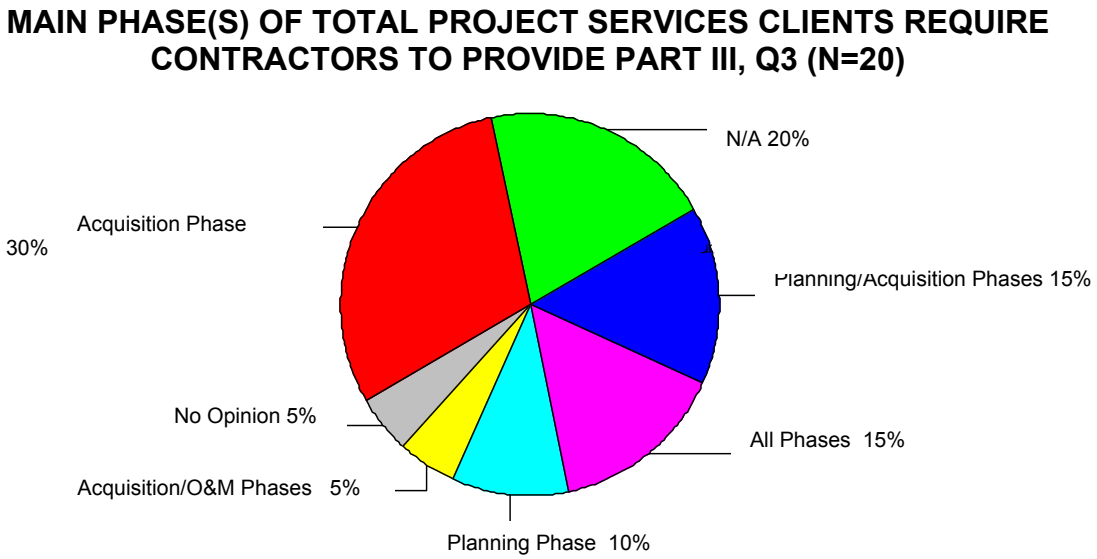


Figure 5-11. Frequency Distribution for Part III, Question 3

5.9.4 Areas considered most critical regarding ITPS approach for delivery of clients` capital facilities projects (Question 4)

According to Table 5-34, alliance strategies were considered as the most critical area regarding ITPS approach by 35% of the respondents (7) that participated in the

survey, followed by ITPS contracting/contract management issues (25%) (5). Additional critical areas identified were: *Decision of which facility services to provide (15%) (3), how to provide/deliver facility service(s) (15%) (3) and selection of ITPS team member(s) (10%).* In addition, two respondents (representing ten percent of the survey population) stated no opinion and three respondents (representing fifteen percent of the survey population) did not provide answer to this question.

Table 5-34. Distribution of the Area(s) Considered Most Critical Regarding ITPS Approach Part III Q4 (N=20)

Critical Area(s) Regarding ITPS Approach	Respondents
Alliance strategies (Client-Service provider relationship; Teamwork, Collaboration issues)	7 (35%)
ITPS Contracting/Contract Management Issues	5 (25%)
Deciding which facility services to provide	3 (15%)
How to provide/deliver facility service(s)	3 (15%)
Selection of ITPS Team Member	2 (10%)
N/A	3 (15%)
Other	2 (10%)
No opinion	2 (10%)

5.9.5 Participants comments/vision regarding the future development(s), trend(s), and practice(s) in the delivery of capital facilities projects (Question 5)

Twenty percent (4) of the respondents provided comments regarding the future development(s), trend(s), and practice(s) in the delivery of capital facilities projects (see Table 5-35). This was a low response rate and no statistical analysis was possible, the four distinct comments, however reflected the trends that were discussed in literature review. These trends also were mentioned in the Introduction to be the underlying forces of ITPS concept. These trends expressed through the four respondents` opinions are (1) *Integrated services movement: Expanded contractor service portfolios as one respondent*

calls it "total facility solutions", (2) Increased/enhanced role of contractors in the capital project delivery: Teamwork, (3) In-sourcing vs. outsourcing decision of owners, and (4) Owners` increasing facility project needs and value-added services.

Table 5-35. Distribution of the Participants Comments/Vision Regarding the Future Development(s), Trend(s), and Practice(s) in the Delivery of Capital Facilities Projects Part III Q5 (N=20)

Comments/Vision Regarding the Future	**Respondents**
No Comments	16 (80%)
Comments provided - Big move to integration of services - Owners are between buying these services as a commodity and needing them carefree without the need to spend much time managing them. This is a conflict. They will continue to breakout services to compartmentalize those that can be acquired less costly. - Be aware of the clients needs. Try to solve as many problems for them as possible this makes you a valuable asset to the team. Know at any given time what resources you need and bring them onto the team. - 1) Continue to be a nationwide leader of "Total Facility Solutions". 2) Identify and develop "niche" markets where our integrated total project services approach enable us to be more desirable to clients	4 (20%)

As commented by one respondent, identification and development of "niche" markets are vital in today's competitive economic environment, where the integrated total project services approach will enable companies to be more desirable to clients. In this regard, trends identified and discussed in this research will serve as a valuable resource and help both contractors and owners to better prepare themselves for the competition.

5.10 Further Analysis of Part III Survey Responses

5.10.1 Predominantly used project delivery/contracting methods vs. major sector of operation relationship

Table 5.36 is the frequency table was also generated to display the relationship between the respondents` operation sectors and the project delivery/contracting methods they predominantly use. 33 responses from 18 respondents were recorded since the respondent could use these project delivery methods in more than one operation sector. Therefore, the percentages were cumulative.

Table 5-36. Distribution of Predominantly Used Project Delivery/Contracting Methods with Major Sector of Operation Type (N=18)

Project Delivery/ Contracting Methods Used	General Building	Industrial	Transportation	Telecommunication
Construction Management (CM) (19)	11 (61.11%)	3 (16.66%)	3 (16.66%)	2 (11.11%)
Design-Build (D/B) (9)	3 (16.66%)	3 (16.66%)	2 (11.11%)	1 (5.55%)
Integrated Services (3)	1 (5.55%)	1 (5.55%)	1 (5.55%)	0
Traditional Design-Bid-Build (2)	2 (11.11%)	0	0	0

Construction management (CM) was the project delivery of choice in all the operation sectors except industrial; 67% of the respondents (2) in telecommunication sector, 65% (11) in general building, and 50% (3) in transportation sector used CM predominantly.

Design-build (D/B), on the other hand, was used as the second choice of project delivery. 47% of the respondents (3) (17% of the survey population) in the industrial

sector used D/B predominantly, followed by 33% (1) in telecommunication, transportation and 17% (3) in the general building sectors.

Integrated services, was used as the third project delivery method by the respondents. This was also due to the low number of representation. According to the data, no respondent (0) in the telecommunication sector used integrated services project delivery while 18% of the survey population (3) used it as distributed evenly between transportation, industrial, and general building sectors. Within members of individual operation sectors, use of integrated services was highest in the transportation sector (17%) (1), followed by industrial (10%) (1) and general building (0.5%) (1).

Traditional design-bid-build was only reported being used by 2 respondents (representing 11% of the survey population). These companies operated in general building sector only.

5.11 Summary of Part III Results

In Part III, the participants were asked to describe, in their opinion, which project services clients` (owners of capital facility projects) were demanding from them due to their clients` emerging needs; project delivery/contracting methods the clients were requiring them to use. Participants were also asked to express, in their opinion, why clients were outsourcing facility management and other capital facility services, and the problem areas and critical issues regarding the ITPS approach. Finally, comments about their vision regarding the future developments, trends, and practices in the capital project delivery were asked. Following is the summary of results obtained from these questions:

- Fifty-five percent of the respondents (11) used construction management (CM) project delivery method while 4 respondents (representing 20% of the survey population) used D/B. Only 1 respondent used integrated services project delivery method to as required by owners in delivery of their capital facilities projects.

- Sixty-seven percent of the respondents (2) in telecommunication sector, 65% (11) in general building, and 50% (3) in transportation sector used CM predominantly. *(The percentages were cumulative as respondents could mark more than one answer)*

- Design-build (D/B), on the other hand, was used as the second choice of project delivery. 47% of the respondents (3) (17% of the survey population) in the industrial sector used D/B predominantly, followed by 33% (1) in telecommunication, transportation and 17% (3) in the general building sectors. *(The percentages were cumulative as respondents could mark more than one answer)*

- The respondents used integrated services project delivery, as the third project delivery method. This was also due to the low number of representation. According to the data, no respondent (0) in the telecommunication sector used integrated services project delivery while 18% of the survey population (3) used it as distributed evenly between transportation, industrial, and general building sectors. Within members of individual operation sectors, use of integrated services was highest in the transportation sector (17%) (1), followed by industrial (10%) (1) and general building (0.5%) (1). *(The percentages were cumulative as respondents could mark more than one answer)*

- Traditional design-bid-build was only reported being used by 2 respondents (representing 11% of the survey population). These companies operated in general building sector only.

- "Leveraging the best-in-class service provider" and "allowing company to focus on core business" were ranked the highest by 15% of the respondents (3), as the primary reason for owners` FM outsourcing initiatives. On the other hand, 30%, 6 respondents had no opinion. These companies were mostly GC-only and operated in general building sector. Furthermore, only one of these respondents without any opinion, were familiar with ITPS.

- Sixty-five percent of the respondents (13) stated that owners were requiring them to provide services in the acquisition phase, followed by planning phase (strategic business planning) (40%) (8), Q&M (20%) (4) and the disposal phase (15%) (3). It should be noted that, these percentages were cumulative; 20 respondents recorded 28 responses since they could mark more than one main phase of total project services.

- "Alliance strategies" were considered as the most critical area regarding ITPS approach by 35% of the respondents (7) participated in the survey, followed by "ITPS contracting/contract management issues" (25%) (5). Additional critical areas as identified were: *Decision of which facility services to provide (15%) (3), how to provide/deliver facility service(s) (15%) (3) and selection of ITPS team member(s) (10%).*

- Twenty percent of the respondents (4) provided comments regarding the future development(s), trend(s), and practice(s) in the delivery of capital facilities projects (see Table 5-35). This was a low response rate and no statistical analysis was possible, the four distinct comments, however reflected the trends that were discussed in literature review:

- Integrated Services Movement: Expanded contractor service portfolios as one respondent calls it "total facility solutions"

- Increased/enhanced role of contractors in the capital project delivery: Teamwork

- In-sourcing vs. outsourcing decision of owners

- Owners` increasing facility project needs and value-added services.

5.12 Summary of Survey Results

Despite lack of sufficient samples and data; the survey results, through a descriptive statistics method used, confirm that integrated total project services (ITPS) trend is a reality and as suggested by the literature review, contractors` service portfolios are also expanding. Following are the general breakdown of the respondents participated in the study. However, it should be noted that, these results are only limited to those only responded:

- Half (50%) of the respondents (10) were familiar with the ITPS concept prior to the survey.

- Forty-five percent (9) had stated having a business relation with companies outside the AEC (architecture/engineering/construction) industries.

- Eighty-five percent of the respondents (17) surveyed specialized in construction services as core service, followed by project management services (65%) (13).

- After construction with (70%) (14), strategic level business planning services (60%) (12) followed by acquisition level PM and/or facility pre-design services (55%) (11) were the pre-dominantly provided services by the U.S contractors that participated in the survey.

- Fifty-five percent of the respondents (11) used construction management (CM) project delivery method while 4 respondents (representing 20% of the survey population) used D/B. Only 1 respondent used integrated services project delivery method to as required by owners in delivery of their capital facilities projects.

- “Leveraging the best-in-class service provider” and “allowing company to focus on core business” were ranked the highest by 15% of the respondents (3), as the primary reason for owners` FM outsourcing initiatives.

Sixty-five percent of the respondents (13) stated that owners were requiring them to provide services in the acquisition phase, followed by planning phase (strategic

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

This study initially was limited to the top general contractors in United States and the top purchasers of construction services—capital facilities project owners—in U.S. private sector. Owners and Contractors not listed in the ENR 2002 Top General Contractors and Owners Source-books, were not contacted. The study was further limited to the respondents` operations in U.S. only and the professional management personnel at the real estate/facilities, business development (work acquisition) departments of owners and general contractors, respectively.

6.1 Introduction

The analysis performed in Chapter 5 helped in drawing a few conclusions about the current state of the capital project delivery in U.S and the emerging concept of integrated total project services (ITPS) in the construction industry. Furthermore, the statistically insufficient data also impaired the outcomes of the study objectives: *Owners` current and emerging approaches to how they are procuring/obtaining all the necessary services /functions for their capital facilities projects; Contractors` current and emerging approaches to how they are delivering/providing all the necessary services/functions for the owners` capital facilities projects, and comparison of the emerging owner and contractor approaches trends in capital facility delivery, in light of ITPS framework developed.*The initial research involved an extensive literature review of related publications, journals. A worldwide web-survey questionnaire was developed in order to collect the appropriate information from both the U.S private sector capital project

owners and contractors. However, due to the total lack of owner participation, this research was able to collect data and deliver results based only on the survey data collected and analyzed from contractors. This caused the narrowing of the research scope and deliverables. The number of surveys collected and analyzed from the contractors was, only 20 surveys, which influenced the results of the analysis and further contributed towards drawing of few and limited conclusions on the ITPS trend in U.S. capital project delivery and its future.

6.2 Conclusions

An overall look at the characteristics of the samples studied, through descriptive statistics, shows that 75% (15)of the contractors surveyed are privately-owned general contractors; 85% (17) the operate in general building sector and specialized in construction services. The companies surveyed also had a wide range of size and construction revenues from their 2002 U.S operations. Forty percent (8) of the contractors surveyed were represented by individuals from construction (operations) divisions/departments. Furthermore, half of the contractors surveyed indicated that they were familiar with the ITPS concept prior to the study, thru various sources such as colleagues, clients, but none thru the organization of Design Build Institute of America (DBIA). About half of the companies (45%) (9) indicated that they had business relations with company(s) outside the AEC (architecture/engineering/construction) industries.

Familiarity with ITPS, when further analyzed, appeared to be: 100% among the integrated service providers (5), 50% among design-builders (4); 80% (4) in transportation and telecommunication and 43% (3) in industrial sector. Furthermore, familiarity with ITPS is highest, with 80% (3), in engineering and 75% (3) in strategic

real estate/facility business planning core services categories; lowest, with 57% (4) and 53% (7) in design and PM categories.

- Level of familiarity with ITPS was also observed to be rising as firms had done more business with and/or worked for companies outside AEC industries- 67% (6) were familiar with ITPS. However, this group represented only 33% of the survey population. It should also be remembered that, only about half of the survey population were either familiar with ITPS concept (10) or had business relation with companies outside AEC (9).

Level of familiarity with ITPS is also related to whether or not firms have business relations with and/or work for companies outside AEC industries. Sixty-seven percent of the contractors (6) that have business relations with non-AEC firms are familiar with ITPS.

The research further revealed that, contractors' core services are expanding as it was foreseen and discussed in literature review (see Table 5-24) according to the ITPS trend and its underlying principles. In this regard, expansion is observed in strategic real estate/facility business planning services and O&M level project services of contractor core service areas (see also Table 5-25). While four respondents had FM/O&M services as their specialties/core services, 12 respondents started to provide them thru internal and external sources. Similarly 5 respondents had strategic real estate/facility business planning specialties initially, and as data revealed, 12 respondents started to provide thru their internal and/or external sources as well. As it was not come across in the literature, disposal services were not included in the contractors` core service/specialty (see Table 5-25), however survey data showed that (see Table 5-24), six respondent were providing disposal level project services internally and/or externally.

Table 6-1. Summary of How "Total Project Services" Are Provided by Contractors

TOTAL PROJECT SERVICES PROVIDED						
	Planning Level	**Acquisition Level**			**O&M Level**	**Disposal Level**
	(Strategic) Real Estate/ Facility Business Planning Services	Project Management (PM) and/or Pre-Design Services (Project Planning/ Programming/ Development)	Design and Engineering Services	Construction Services	O&M Services (FM included)	Disposal Services
Yes (internally)	60% (12)	55% (11)	45% (9)	70% (14)	50% (10)	20% (4)
No, (externally) (Outsourced /Sub-out)	0% (0)	0% (0)	15% (3)	10% (2)	10% (2)	10% (2)
No, (owners provided)	30% (6)	25% (5)	20% (4)	5% (1)	15% (3)	10% (2)

Table 6-2. Summary of Contractors` Specialties/Core Services

SPECIALTIES/CORE SERVICES OF CONTRACTORS								
	Planning Level	**Acquisition Level**					**O&M Level**	**Disposal Level**
	Strategic Real Estate /Facility Business Planning & Advisory Services	PM Services	Pre-Design Services	Design Services	Eng. Services	Construction Services	FM and O&M Services	N/A
	25% (5)	65% (13)	45% (9)	35% (7)	25% (5)	85% (17)	20% (4)	0

The relations between the "total project services" provided by the respondents and their familiarity with ITPS, company type (business category), and major operation sector. Following are some of the significant trends that are indicated by the survey; however it should be noted that, these conclusions are based on limited data:

- More than half of all respondents within all individual phases of the "total project services" concept were familiar with ITPS; highest in acquisition level design/engineering services (73%) and O&M Level project services (64%). These contractors also represented 44% and 39% of the survey population respectively.

- Respondents that were general contractors only (GC-only), besides construction, provided pre-dominantly acquisition level project management and/or pre-design (project planning/programming/development), strategic level business planning and O&M Level project services. The former two and the latter groups represented 25% and 19% of the survey population respectively.

- Provision of project services in all phases of "total project services" concept except from PM/pre-design and disposal level services, increased considerably as general contractors (GC) turned into GC hybrid type companies. In this regard, GC hybrid type companies provided mostly strategic level business planning and acquisition level construction project services (38%) followed by acquisition level design/engineering and O&M project services (25%).

- Acquisition level design/engineering project services followed by services in strategic business planning and O&M phases of capital project delivery, were observed being provided increasingly by respondents in GC-D/B-Integrated services business category; thus, —in the presence of integrated services movement—signaling the diversification trend in respondents` service portfolios as discussed in the literature review.

- The general building hybrid category provides the following project services: acquisition level construction project services (39%) followed by strategic level business planning and acquisition level design/engineering services (33%), PM/pre-design services (25%) and O&M project services (17%).

- Outsourcing/subcontracting-out of all phases of total project services, other than strategic level business planning phase, is most common in GC-D/B hybrid and integrated services firm only business categories.

- Disposal level project services are provided the least by respondents in not only in general building sector, but all sectors.

- Provision of all phases within the "total project services" concept, increased considerably as respondents in general building operation sector started also moving into industrial, transportation and telecommunication sectors. In this regard, general building hybrid category provides the following project services: *Acquisition level construction project services (39%) followed by strategic level business planning and acquisition level design/engineering services (33%), PM/pre-design services (25%) and O&M project services (17%).*

- Finally, 50% of the respondents within individual general building/industrial and general building/industrial/transportation sectors, provided project services in all phases. Moreover, moving into other building sectors and being involved with more diverse projects—more complex, technical projects and demanding owners—, more companies started to provide comprehensive project services for their clients`. The research showed that, 100% of the contractors operating in general building/ telecommunication/transportation sectors provided project services in all

phases except for the acquisition level PM/facility pre-design. These respondents however, represented only 13.33% of the survey population.

In Part III, the participants were asked to describe, in their opinion, which project services clients` (owners of capital facility projects) were demanding from them due to their clients` emerging needs; project delivery/contracting methods the clients were requiring them to use. Participants were also asked to express, in their opinion, why clients were outsourcing facility management and other capital facility services, and the problem areas and critical issues regarding the ITPS approach. Finally, comments about their vision regarding the future developments, trends, and practices in the capital project delivery were asked. Following is the summary of results obtained from these questions:

- Fifty-five percent of the respondents (11) used the construction management (CM) project delivery method while 4 respondents (representing 20% of the survey population) used D/B. Only 1 respondent used integrated services project delivery method to as required by owners in delivery of their capital facilities projects.

- Sixty-five percent of the respondents (13) stated that owners were requiring them to provide services in the acquisition phase, followed by planning phase (strategic business planning) (40%) (8), Q&M (20%) (4) and the disposal phase (15%) (3). It should be noted that, these percentages were cumulative; 20 respondents recorded 28 responses since they could mark more than one main phase of total project services.

- "Leveraging the best-in-class service provider" and "allowing company to focus on core business" were ranked the highest by 15% of the respondents (3), as the primary reason for owners` FM outsourcing initiatives. On the other hand, 30%, 6 respondents had no opinion. These companies were mostly GC-only and operated in general building sector. Furthermore, only one of these respondents without any opinion, were familiar with ITPS.

- "Alliance strategies" were considered as the most critical area regarding ITPS approach by 35% of the respondents (7) participated in the survey, followed by "ITPS contracting/contract management issues" (25%) (5). Other critical areas as identified were, decision of which facility services to provide (15%) (3), how to provide/deliver facility service(s) (15%) (3) and selection of ITPS team member(s) (10%).

Data further suggested that (based on descriptive statistics only), 67% of the respondents (2) in telecommunication sector, 65% (11) in general Building, and 50% (3) in transportation sector used CM predominantly. These percentages were cumulative as respondents could mark more than one answer. Design-build (D/B), on the other hand, was used as the second choice of project delivery. 47% of the respondents (3) (17% of the survey population) in the industrial sector used D/B predominantly, followed by 33% (1) in telecommunication, transportation and 17% (3) in the general building sectors. integrated services project delivery, was used as the third project delivery method by the respondents. According to the data, no respondent (0) in the telecommunication sector used integrated services project delivery while 18% of the survey population (3) used it as distributed evenly between transportation, industrial, and general building sectors. Within members of individual operation sectors, use of integrated services was highest in the transportation sector (17%) (1), followed by industrial (10%) (1) and general building (0.5%) (1). Low number of respondents in design-build and integrated services business categories, further contributed to drawing of less conclusions regarding these sectors and their participants.

Finally, when asked for their opinions/vision pertaining to the ITPS concept and future delivery of capital facilities projects, 20% of the respondents (4) provided comments (see Table 5-35). While this was a low response rate and no statistical analysis was possible, the four distinct comments however reflected the trends that were discussed in literature review:

- Integrated services movement: Expanded contractor service portfolios as one respondent calls it “total facility solutions”,
- Increased/enhanced role of contractors in the capital project delivery: Teamwork,
- In-sourcing vs. outsourcing decision of owners

- Owners` increasing facility project needs and value-added services.

6.3 Recommendations for Future Research

This study was designed to research the U.S capital facility project owners` and contractors` approach to the relatively new, emerging concept/trend of "integrated total project services (ITPS)" on a national basis. This study intended to reach large group of owner and contractor groups to be able to grasp the current capital project delivery needs and approaches as suggested by the emerging trend of ITPS in U.S. construction industry. However, this intention was not fulfilled because capital facility owners, the major driving force behind the ITPS trend, showed no interest to the study. The contractors, on the other hand, though more interested, still did not provide sufficient data to enable the researcher to make valid statistical analysis and project more concrete conclusions. With this said, the following recommendations are made:

- The ITPS trend is still at its infancy both in the industry and in academia, due to its very broad nature. Thus, future research should study it in phases.
- Concentration in smaller topic areas identified within this ITPS research is also recommended for future research. Focusing on either more specific building/operation sectors or company types such as telecommunication/ transportation sectors and design-builders, construction management firms can be considered to do this concentration.
- The reasons behind the private sector real estate/facility firms` low interest in academic research and survey should be analyzed.

Higher response rates can be achieved by delivering the survey questionnaire to the potential respondents thru industry-wide known organizations in the AEC-FM industries and/or thru delivering them in regional or national meetings, conferences. Furthermore, selective interviews with industry leaders in the ITPS area can also lead to higher participation and data collection.

APPENDIX A
SURVEY FORM (CONTRACTOR VERSION)

UNIVERSITY OF FLORIDA — M.E. Rinker, Sr. School of Building Construction

INFORMED CONSENT

INTRODUCTION TO INTEGRATED TOTAL PROJECT SERVICES (ITPS):
The U.S Capital Facility Project Owners` & Contractors` Approach

conducted by Uluc Bayar (Graduate Student) ; supervised by Dr. R. Raymond Issa (Faculty supervisor / Thesis Committee Chair)

Survey Questionnaire

Dear Participant,

The M.E Rinker, Sr. School of Building Construction at the University of Florida, is conducting a nationwide study on the emerging concept of "Integrated Total Project Services (ITPS)" pertaining to facility owners and the service providers of their capital facility (modernization and/or new construction) projects in U.S. This concept is relatively a new trend in construction industry brought up to Construction Industry`s attention on a national level by Design Build Institute of America (DBIA).

ITPS rises on the foundations of Design/Build (D/B) project delivery which grew on the idea of integrated design or full-service and led to fact that today, in construction indsutry, companies- mostly design-builders as based on their capabilities- started expanding their integrated services (mainly core design/construction services) to further include planning, development, financing, programming and in some case even real-estate, facility management and operation & maintenance (O&M) services for their clients` capital facilities. This expansion with these services within the "Facility Life-cycle / Total Project Services (see next page)" pave the road of "Integrated Total Project Services" concept. Existing and increasing demand for complexity and sophistication in the industry imposed by changing business climate of capital facility (project) owners lie in the core of this trend of "Integrated Total Project Services (ITPS)" along with constant developments in the Real estate` Facility management and AEC (Architecture/Engineering/Construction) markets.

We are asking you to participate in this survey due to your important role in the delivery of your company's capital facilities projects, your close connection to the facility issues and the intents of this study. The purpose is to analyze your and other contractors` (Top U.S Contractors) present and emerging approaches to how you are providing all the necessary services/functions to your clients, for their capital facility projects. Owners version of this survey, on the other hand, will analyze facility project owners` (Top U.S. private sector companies) emerging contractual approaches to how they are procuring/obtaining all the required Total Project Services for their capital facilities.

Combined results from both surveys will help us match, identify and discuss new owner capital facility delivery approaches with contractors` current capabilities and your contracting practices for Total Project Services. Hence, both facility owners and contractors will be better informed about each other's changing business approaches/trends for procurement and delivery of Total Project Services. This in return will help them better position their businesses in their respective industries/market segments along with increased competitiveness.

The survey will take you approximately 15 minutes to complete it. There are no anticipated risks, compensation or other direct benefits to you as a participant in this survey. However; upon your participation you will be provided with a summary report of the study following its completion. At all times, your identity will be kept confidential to the extent provided by law. You are also free to withdraw your consent to participate and may discontinue your participation in the survey at any time without consequence. If you have any questions about this research protocol, please contact me at (352) 273-1175 or my faculty supervisor, Dr. R. Raymond Issa, at (352) 273-1150. Questions or concerns about your rights as a participant may be directed to the UFIRB office, University of Florida, Box 11225, Gainesville, FL 32611; Ph: (352) 846-1494. **By filling out the provided survey, you give me the permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.**

Sincerely,

Uluc Bayar
University of Florida

I accept the consent terms described above _____ Signature _____ Date

No, I do not wish to participate in this survey _____ Signature _____ Date

YOUR INTEREST & GIVING YOUR VALUABLE TIME IN OUR SURVEY ARE HIGHLY APPRECIATED!

GO TO NEXT PAGE

UNIVERSITY OF FLORIDA — M.E. Rinker, Sr. School of Building Construction

INTRODUCTION TO INTEGRATED TOTAL PROJECT SERVICES (ITPS):
TheU.S Capital Facility Project Owners` & Contractors` Approach

FACILITY MANAGEMENT LIFE-CYCLE / "TOTAL PROJECT SERVICES"

Below is the comprehensive list of all services / functions within the concept of "Total Project Services/ Facility Life-cycle" required in the provision / delivery of every capital facility project. **In PART II of the following survey**, you are asked to describe whether or not your Company already provides/ offers (or should so) service(s) in reference to the below main levels (phases). **Finally in PART III of the survey,** you are asked to describe your opinion(s) regarding the ITPS concept and the future delivery of capital facilities.

PLANNING	**CAPITAL PLANNING & BUDGETING**
	Real Estate & Facility Asset Capitalization Planning Services *(Capital Program Development , Budgeting for New Capital Facilities Projects)*
	Financial Forecasting & Macrolevel Estimating *(Organizationwide)*
	Delivery System & Project Management Planning Services
	STRATEGIC FACILITIES PLANNING (Macrolevel / Comprehensive)
	(Macrolevel) Space Planning & Management Services *(including Space Forecasting & Programming Services)*
	Facilities Business Planning Services *(Short /Long Term and/or Master Planning Services)*
	Facilities Condition Assesment *(Building Audits, Serviceability Evaluation Services)*
	STRATEGIC REAL ESTATE PLANNING (Macrolevel / Comprehensive)
	Real Estate Portfolio Management & Optimization Services *(Cost-reduction, Outsourcing Initiatives)*
	Process and (Real Estate) Organizational Planning / Design
	Facility Utilization and Workplace Transformation
	Facility Decision Support/Information System Planning
	Real Estate Acquistion & Disposal Services
	Location and/or Finance Strategy Development
	Site Selection/Engineering and/or Acquisition
ACQUISTION	**PROJECT MANAGEMENT**
	Owner/Tenant Representation Services *(Strategic planning, Marketing and property positioning, Leasing Property management /Accounting, Fee development, Final building choices selection, Best Deal Negotiating, Construction supervision, Optional transition services*
	Design/Concept Management *(Complete Design Analysis of Systems, Materials, Site Constraints, Code Compliance and Building Usage; Design Option Evaluations, Design Document Coordination)*
	Procurement Management
	Construction Management (CM)
	FACILITIES PRE-DESIGN (Microlevel / Project-based Planning)
	(Microlevel) Space Planning & Management *(including Space Allocation and Inventory Services)*
	Workplace Planning, Design & Specifications Services *(and/or Furniture / Equipment / Specification)*
	Estimating / "As-built" Maintenance and Code Compliance
	Facility Programming & Development Services
	Needs Analysis and Project Programming *(Microlevel space forecasting, one location)*
	Feasibility Studies & Risk Management *(Project Budgeting, Life-Cycle Costing Services)*
	Site Selection and Master Planning
	Land Development/Acquisition *(may include site selection)*
	Project Financing
	Consultant Selection *(and/or Development Partnerships; Build-to-suit; Other Partnership/Alliances; In-sourcing, Outsourcing initiatives, Contract Management Services)*
	FACILITIES DESIGN / ENGINEERING (PRE-CONSTRUCTION)
	Architectural Planning & Design Services *(Schematics, Design Development, Const. Documents)*
	Architectural Design
	Interior Design/Decoration
	Landscape Design
	"Green Design" & "Sustainable Construction" Services *(including Deconsruction)*
	Value Engineering (V.E) *(and/or Environmental Value Engineering, Constructability Reviews)*
	Engineering Services
	Civil/Structural Engineering
	Mechanical and/or Electrical Engineering
	Telecommunications, Data Communications, Network Design Services
	Bidding Process Services
	FACILITIES CONSTRUCTION
	Construction Services
	Interior Construction/Build-out
	Renovation/Retrofit *(Alteration)*
	Restoration / Rehabilitation *(Modernization)*
	Construction Coordination & Supervision Services
	Project Controls *(Project scheduling, Cost Reporting, Budgeting, Change Order Management)*
	Safety Programming and/or Management *(Site Safety)*
	Quality Control and/or Testing /Inspection Services
	Waste Management
	Dispute resolution / Claims Management / Rehabilitation Services
	Deconstruction (Environmental remediation)
	Demolition
OPERATION & MAINTENANCE (OCCUPANCY)	**FACILITIES OCCUPANCY**
	Move-in and/or Start-up Services *(close-out, turnover services)*
	Commissioning and/or Training Services
	FACILITIES MANAGEMENT (FM) (Micro-level/Organization-wide)
	Facility Operation & Maintenance (O& M) Services
	Energy Management
	Food Services
	Landscaping /Grounds-Keeping
	Custodial and housekeeping
	Corporate Facilities Management Services
	Property/Asset Management *(Property Appraisal, Acquisition, and Disposition)*
	Real Estate Contract Management
	Lease Administration and/or Real Estate Disposition Services *(Outleasing as owner; lease administration as owner or lessee; property management as lessee)*
	Work Reception and Coordination Services
DISPOSAL	**FACILITIES DISPOSITION**
	Facility Disposal
	Facility Decommissioning

GO TO NEXT PAGE FOR THE SURVEY

UNIVERSITY OF FLORIDA — M.E. Rinker, Sr. School of Building Construction

INTRODUCTION TO INTEGRATED TOTAL PROJECT SERVICES (ITPS):
The U.S Capital Facility Project Owners` & Contractors` Approach

SURVEY QUESTIONNAIRE

PART I: DEMOGRAPHICS *(Please provide answers to following questions)*

1) Your name: *(Optional)* _____ 2) Your title/position: _____
3) Company: *(Optional)* _____ 4) Your Department: _____

5) Which of the following best describes your Company? *(Please check all that apply)*

Business Category	☐ *General Contractor (GC)* ☐ *Design-Build Firm (Consultative Design/Engineering)* ☐ *Integrated Services Firm (In-house Design/Engineering)* ☐ *Other*_____
Ownership	☐ *Private Corporation* ☐ *Public Corporation* ☐ *Partnership* ☐ *Sole-proprietorship* ☐ *Other* _____

6) What are your Company's major sector(s) of operation & type(s) of facility (construction) projects involved in US?
(Please check all that apply)

General Building (Commercial/ Institutional)	☐ *Correctional Facility* ☐ *Cultural (Entertainment-Leisure)* ☐ *Distribution/Warehouse* ☐ *Educational/ School* ☐ *Government Building (Office,etc.)* ☐ *Farm/Agriculture* ☐ *Hospitality (Hotel)* ☐ *Multi-Unit (Family) Residential* ☐ *Health Care (Hospital)* ☐ *Retail* ☐ *Religious (Church, Worship)* ☐ *Sports Facility*
Industrial	☐ *Process (Chemical, Food Process,etc.)* ☐ *Manufacturing (Light/Heavy)* ☐ *Petroleum (Refineries, Pipelines, Petrochemical plants.)* ☐ *Power (Cogeneration, Hydropower, Nuclear Plants, Transmission-distribution)*
Telecommunications	☐ *Broadcast facilities & Web Hotels* ☐ *Towers & Antenna* ☐ *Transmission lines /cables*
Transportation	☐ *Airports* ☐ Highways ☐ *Marine & Port Facilities* ☐ *Mass Transit (Light rail)*

8) What are your Company's core services(s) / specialty area(s)? *(Please check all that apply)*

- ☐ **Strategic Real Estate / Facility Business Planning & Advisory Services** *(Space Planning & Management, Facilities Condition Assessment; Asset Capitalization Planning,Capital Planning / Budgeting; and Real Estate Portfolio Management Services)*
- ☐ **Project Management Services** *(Owner/Tenant Representation; Design/Concept Management, Procurement, Construction Management)*
- ☐ **Project Planning/Programming/Development (Pre-Design) Services** *(Programming, Feasibility Studies & Risk Management Site Selection & Master Planning ;and/or Workplace Planning / Design, Consultant Selection)*
- ☐ **Design Services** *(Architectural, Interior, Landscape Design, and/or Value Engineering Services)*
- ☐ **Engineering Services** *(Civil, Structural, Mechanical, Electrical Engineering etc. Services)*
- ☐ **Construction Services** *(General Building, Interior Construction; Renovation/Modernization; Coordination/Supervision/Safety Services)*
- ☐ **Facility Management / Operation & Maintenance Services** *(Start-up/Commissioning; Operation & Management ; and/or Disposal)*

7) What is your best estimate of your Company's 2002 U.S construction revenues? ($M) _____

9) What is your best estimate of your Company's 2002 U.S revenues from its core-services?
(Please also include revenues from any construction / demolition services) ($M) _____

10) Have you known of or heard about the concept of "Integrated Total Project Services (ITPS)" prior to this survey?
(If your answer is "yes", how did you hear about ITPS ? Please check only one)

Yes ☐ *Thru Clients* ☐ *Thru Colleaques* ☐ *Thru Design Build Institute of America (DBIA)* ☐ *Thru other industry organizations.(Please specify)* _____
No ☐

11) Has your Company ever done business with and/or worked for companies outside the Architecture / Engineering / Construction (AEC) Industries for the delivery of "Total Project Services" for your clients` capital facilities projects?
(if your answer is "yes" please check all that apply)

Yes ☐ *Owner organizations* ☐ *Accounting Firms* ☐ *Consulting Firms* ☐ *Real Estate Firms* ☐ *Facility Management Firms* ☐ *Financial Institutions* ☐ *No opinion* ☐ *Other*_____
No ☐

FLIP PAGE TO CONTINUE

PART II: HOW DO YOU PROVIDE "TOTAL PROJECT SERVICES" FOR YOUR CLIENTS` CAPITAL FACILITIES?

1) Does your Company provide **STRATEGIC LEVEL BUSINESS PLANNING** project services for the delivery of you clients` capital facilities? *(If your answer is "NO", please provide additional information and check all that apply)*

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

2) Does your Company provide **ACQUISITION LEVEL PROJECT MANAGEMENT and/or FACILITY PRE-DESIGN** project services for the delivery of you clients` capital facilities?
(If your answer is "NO", please provide additional information and check all that apply)

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

3) Does your Company provide **ACQUISITION LEVEL DESIGN / ENGINEERING** project services for the delivery of you clients` capital facilities? *(If your answer is "NO", please provide additional information and check all that apply)*

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

4) Does your Company provide **ACQUISITION LEVEL CONSTRUCTION** project services for the delivery of you clients` capital facilities? *(If your answer is "NO", please provide additional information and check all that apply)*

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

5) Does your Company provide **OPERATION & MAINTENANCE (O&M) LEVEL** project services for the delivery of you clients` capital facilities? *(If your answer is "NO", please provide additional information and check all that apply)*

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

6) Does your Company provide **DISPOSAL LEVEL (PHASE)** project services for the delivery of you clients` capital facilities?
(If your answer is "NO", please provide additional information and check all that apply)

☐ Yes | No, ☐ *Owner provides* ☐ *We outsource/sub-out* ☐ *Other* _____

PART III: QUESTIONS PERTAINING TO THE CONCEPT OF "INTEGRATED TOTAL PROJECT SERVICES (ITPS)" & THE FUTURE DELIVERY OF CAPITAL FACILITIES ***(Please provide answers to following questions)***

1) In your opinion which one of the following major project delivery/contracting methods do your Clients predominantly assign you to use to deliver their Construction Projects? *(please check only one)*

☐ *Construction Management (CM)* ☐ *Design-Build (D/B)* ☐ *Integrated Services* ☐ *Traditional Design-Bid-Build*
☐ *Other* _____

2) In your opinion which of the following is the primary reason for your Clients` Facility Management (FM) outsourcing initiatives? (please check only one) *(please check only one)*

☐ *Resources not available internally* ☐ *Cost savings/control operating costs* ☐ *In-house staff reduction (downsizing)*
☐ *Allow Company to focus on core business* ☐ *To leverage the best-in class service provider* ☐ *To free capital for other investment*
☐ *Other* _____ ☐ *No opinion*

3) In your opinion, in which of the following main phase(s) within the concept of "Total Project Services/Facility Life-cycle" are your Clients requiring your Company to provide services for their capital facilities? *(please check all applies)*

PLANNING PHASE	☐ *Strategic Business Planning*
ACQUISITION PHASE	☐ *Project Management and/or Facility Pre-design* ☐ *Design / Engineering* ☐ *Construction*
O&M PHASE	☐ *Operation & Maintenance (O&M) / Occupancy*
DISPOSAL PHASE	☐ *Facilities Disposition and/or Decommissioning*

4) Which following area(s), in your opinion, are most critical regarding "Integrated Total Project Services (ITPS)" approach to delivery of your clients` capital facilities projects? *(please check only one)*

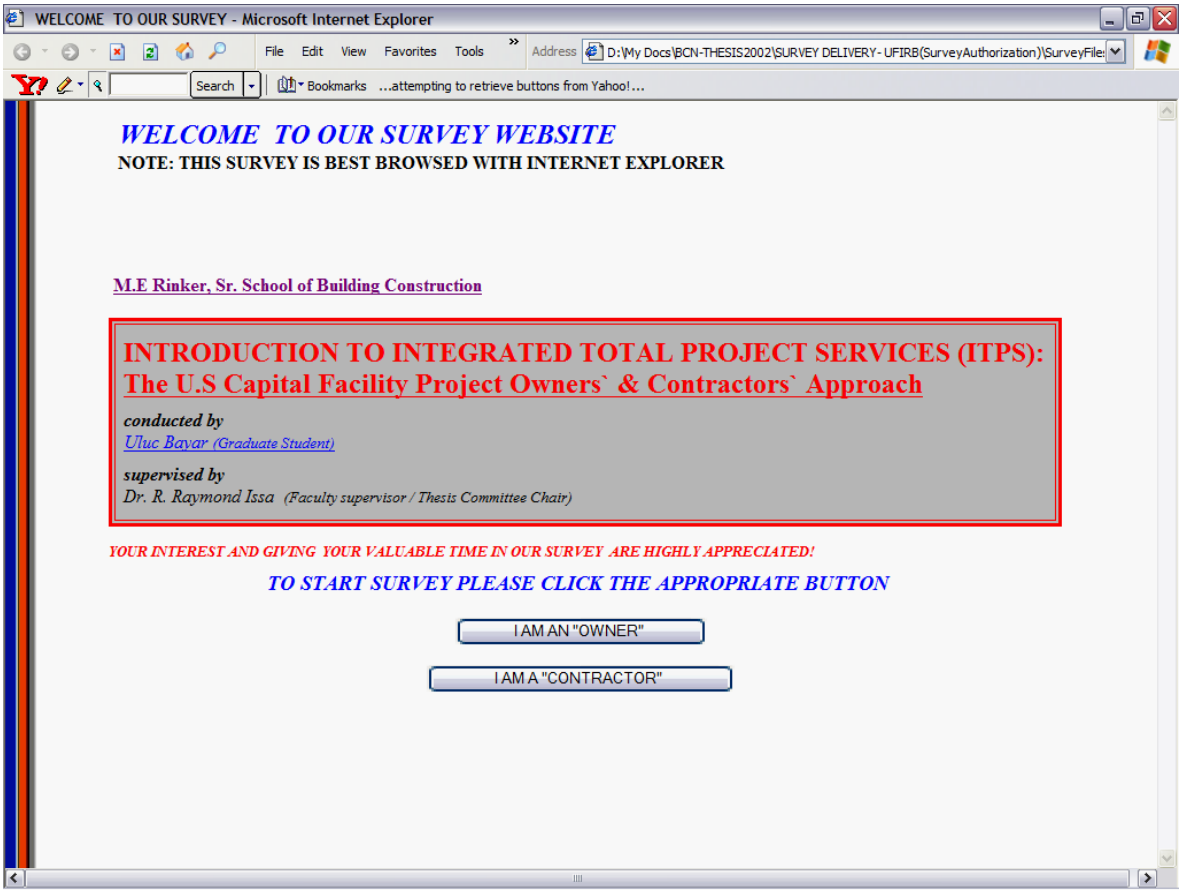
☐ *Deciding which facility services to provide* ☐ *How to provide/deliver facility service(s)* ☐ *ITPS Contracting/Contract Management Issues*
☐ *Selection of ITPS Team Member* ☐ *Alliance strategies (Client-Service provider relationship; Teamwork, Collaboration issues)*
☐ *Other* _____ ☐ *No opinion*

5) **COMMENTS:** What is your vision regarding the future development(s), trend(s), and practice(s) in the delivery of Capital Facilities Projects?

THANK YOU FOR YOUR INTEREST IN OUR SURVEY
FOR FURTHER COMMENTS & A SUMMARY REPORT FOR FURTHER COMMENTS
PLEASE E-MAIL ME AT ulucbay@ufl.edu

APPENDIX B
WEB-BASED SURVEY (OWNER VERSION)

(U.S. PRIVATE SECTOR CAPITAL FACILITY PROJECT OWNERS)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WELCOME TO OUR SURVEY WEBSITE
NOTE: THIS SURVEY IS BEST BROWSED WITH INTERNET EXPLORER
M.E Rinker, Sr. School of Building Construction
INTRODUCTION TO INTEGRATED TOTAL PROJECT SERVICES (ITPS):
The U.S Capital Facility Project Owners` & Contractors` Approach
conducted by
Uluc Bayar (Graduate Student)
supervised by
Dr. R. Raymond Issa (Faculty supervisor / Thesis Committee Chair)
YOUR INTEREST AND GIVING YOUR VALUABLE TIME IN OUR SURVEY ARE HIGHLY APPRECIATED!
TO START SURVEY PLEASE CLICK THE APPROPRIATE BUTTON
I AM AN "OWNER"
I AM A "CONTRACTOR"

INFORMED CONSENT Introduction to Integrated Total Project Services - Microsoft Internet Explorer

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UNIVERSITY OF FLORIDA — M.E. Rinker, Sr. School of Building Construction

INFORMED CONSENT

Introduction to Integrated Total Project Services (ITPS):
The U.S Capital Facility Project Owners` Approach

Survey Questionnaire

Dear Participant,

The M.E Rinker, Sr. School of Building Construction at the University of Florida, is conducting a nationwide study on the emerging concept of "Integrated Total Project Services (ITPS)" pertaining to facility owners and the service providers of their capital facility (modernization and/or new construction) projects in U.S.

Due to your important role in the delivery of your company's capital facilities projects, your close connection to the facility issues and the intents of this study, we are asking you to participate in this survey. The purpose is to analyze facility project owners` (U.S private sector companies) emerging contractual approaches to how you are procuring/obtaining all the necessary capital facility services/functions. The range of these all-inclusive services -we will call them "Total Project Services"- spans from planning to acquisition, and from operation & maintenance/facility management to disposal phases within the facility life-cycle concept. Contractors version of this survey, on the other hand, will analyze top U.S construction companies` current contractual approaches as to how they are delivering/providing required Total Project Services for their clients` (facility project owners).

Combined results from both surveys will help us match, identify and discuss new owner capital facility delivery approaches with contractors` current capabilities and their contracting practices for Total Project Services. Hence, both facility owners and contractors will be better informed about each other's changing business approaches/trends for procurement and delivery of Total Project Services. This in return will help them better position their businesses within their respective industries/market segments along with increased competitiveness.

The survey will take you approximately 20 minutes to complete it. There are no anticipated risks, compensation or other direct benefits to you as a participant in this survey. However; upon your participation you will be provided with a summary report of the study following its completion. At all times, your identity will be kept confidential to the extent provided by law. You are also free to withdraw your consent to participate and may discontinue your participation in the survey at any time without consequence. If you have any questions about this research protocol, please contact me at (352) 392-7852 or my faculty supervisor, Dr. R. Raymond Issa, at (352) 392-7438. Questions or concerns about your rights as a participant may be directed to the UFIRB office, University of Florida, Box 11225, Gainesville, FL 32611; Ph: (352) 846-1494.

By filling out the provided survey, you give me the permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.

Sincerely,

Uluc Bayar
University of Florida

Yes, I accept the consent terms described above

No, I do not wish to participate in this survey

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer

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INTRODUCTION TO

INTEGRATED TOTAL PROJECT SERVICES (ITPS):

U.S. PRIVATE SECTOR CAPITAL FACILITY PROJECT OWNERS` APPROACH

(Please provide answers to the following questions)

PART I: DEMOGRAPHICS

1- **Your name:** (Optional)

2- **Your title/position:**

3- **Your Company's (Client) name:** (Optional)

4- **Department you represent in your Company:**

5- **Type of capital facility project(s) your Real Estate / Facilities Department (FD) predominantly delivers?** (Please check all that apply)

General Building (Commercial/Institutional)

- ☐ *Correctional Facility*
- ☐ *Cultural (Entertainment-Leisure)* ***(Theater, Museum, etc.)***
- ☐ *Distribution/Warehouse*
- ☐ *Educational/School*
- ☐ *Farm/Agriculture*
- ☐ *Government Building* ***(Office, other)***
- ☐ *Hospitality* ***(Hotel)***
- ☐ *Multi-Unit (Family) Residential*
- ☐ *Health Care* ***(Hospital)***
- ☐ *Religious* ***(Church, Worship)***
- ☐ *Retail*
- ☐ *Sports Facility*

Industrial

- ☐ *Industrial Process* ***(Chemical, Food Process, etc.)***
- ☐ *Manufacturing* ***(Light/Heavy)***
- ***Petrochemical plants, etc.)***
- ☐ *Power* ***(Cogeneration, Hydropower, Nuclear Plants, Transmission-distribution)***

Telecommunications

- ☐ *Broadcast facilities & Web Hotels*
- ☐ *Towers & Antenna*
- ☐ *Transmission lines /cables*

Transportation

- ☐ *Airports*
- ☐ *Highways*
- ☐ *Marine & Port Facilities*
- ☐ *Mass Transit (Light rail)*

6- **Which of the following organizational models best describes the structure of your Company's Real Estate / Facilities Department (FD)?** (please check only one)

- ○ *On-location, One-Site Model* ***(FD fully centralized. Simplest set-up for a full-service FD)***
- ○ *One-location, Multiple-Sites Model* ***(FD is partially decentralized- certain operational elements dispersed within set limits-. Headquarters has major operational elements and oversight)***
- ○ *Multiple Locations, Strong Regional, or Divisional-Headquarters Model* ***(FD is highly decentralized with regional facility operations. Headquarters makes policies and has oversights)***
- ○ *Fully International Model* ***(FD is same as previous model. National units can function individually under individual business units. Headquarters makes policies, gives technical direction and has oversight)***

7- **Total number of people in your Company's Real Estate / Facility Organization?** (US staff only, in headquarters and in branch / regional offices if any)

8- **What is your best estimate of your Company's 2001 total U.S capital facilities program & projects budget including U.S operational budget of the involved Real Estate / Facilities Department(s) ?**

($M)

9- **What is your best estimate of your Company's 2001 purchases of "Total Project Services" for its U.S facilities modernization / renovation projects?** (**"Total Project Services"** comprise of: **1-PLANNING**: Strategic Real Estate / Facility Business Planning & Advisory Services. **2-ACQUISITION:** Project Management Services, Project Development, AEC Services **3- OCCUPANCY:** O&M, Facility Management Services and **4-DISPOSAL**)

($M)

10- **What is your best estimate of your organization's 2001 purchases of "Total Project Services" for its U.S new facilities construction projects? ($M)**

11- **Which one of the following major project delivery / contracting methods does your Company predominantly use to deliver your clients` new facility construction projects?** (please check only one)

- ○ *Traditional Design-Bid-Build*
- ○ *Construction Management (CM)*
- ○ *Design-Build*
- ○ *Integrated Services*
- ○ Other

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer

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12- Have you known of or heard about the concept of "Integrated Total Project Services (ITPS)" prior to this survey? (if your answer is "yes" please check one of the following)

Yes ○ *thru Clients* ○ *thru Colleagues* ○ *thru Design Build Institute of America (DBIA)* ○ *thru other industry organizations (Please specify)*	○ **No**

13- Which of the following is the primary reason for Facility Management (FM) outsourcing in your company? (please check only one)

○ *Resources not available internally* ○ *Cost savings/control operating costs* ○ *In-house staff reduction (downsizing)* ○ *Allow Company to focus on core business competency*	○ *To leverage the best-in class provider* ○ *To free capital for other investment* ○ *Other* ○ *No opinion*

14- Has your Real Estate / Facilities Department (FD) experienced downsizing in the last 12 months? (if your answer is "yes"- Please check one of the following)

Yes ○ *Due to company wide job cuts due to national economic downturn* ○ *Due to cost cuts/decrease in facilities budget* ○ *Due to in-house staff reduction* ○ *Due to availability of new project delivery trend* ○ *Due to availability/advantages of Outsourcing* ○ Other ○ No opinion	○ **No**

15- Do you expect downsizing in your Real Estate / Facility Department in the future? (If your answer is "yes", Please check only one)

Yes ○ *in 0-6 months* ○ *in 6-12 months* ○ *in 12-24 months*	○ **No**

PROCEED TO PART II

HOW DO YOU PROCURE ITPS? - Microsoft Internet Explorer

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PART II: HOW DO YOU PROCURE TOTAL PROJECT SERVICES FOR YOUR CAPITAL FACILITIES ?

Below is a comprehensive list of all services / functions -"Total Project Services"- required in the delivery of any and every capital facility project. In this part of the survey, by going through each particular facility service, you are asked to describe your perspective of how your organization approaches (or should so) to obtaining / procuring these Total Project Services.

PLEASE CHECK ONLY ONE for each service which best describes your opinion. Mark the "No opinion" if necessary.

NOTE:
1 = "We" as Owner provide self-perform fully thru in-house real estate / facility staff
2 = " thru use of outside consultant (s) for decision support
3 = Outsource to a specialty services provider(s)/contractor(s) (single, "unbundled"services contract)
4 = " an integrated services provider(s)/contractor(s) (multiple, "bundled" services contract)
5 = Thru a Owner-ITPS Team in a short-term project based partnership or Joint Venture
6 = " in a long-term (strategic) alliance
7 = No opinion

	"We"as Owner provide thru		Outsource to		Thru a Owner-ITPS Team		
	Fully in-house (self-performed)	Use of outside consultant	Specialty service provider	Integrated Service Provider	Short-term Partnership	Long-term Alliance	No opinion
	1	2	3	4	5	6	7
P L A N N I N G P H A S E:							
CAPITAL PLANNING & BUDGETING							
Real Estate/Facility Asset Capitalization Planning Services *(Capital Program Development, Budgeting for New Capital Facilities Projects)*	○	○	○	○	○	○	○
Financial Forecasting & Macrolevel Estimating *(Organization wide)*	○	○	○	○	○	○	○
Delivery System & Project Management Planning Services	○	○	○	○	○	○	○
STRATEGIC FACILITIES PLANNING (Macrolevel/Comprehensive)							
(Macrolevel) Space Planning & Management Services *(including Space Forecasting & Programming Services)*	○	○	○	○	○	○	○
Facilities Business Planning Services *(Short /Long Term and/or Master Planning)*	○	○	○	○	○	○	○
Facilities Condition Assessment *(Building Audits, Serviceability Evaluation)*	○	○	○	○	○	○	○
STRATEGIC REAL ESTATE PLANNING (Macrolevel/Comprehensive)							
Real Estate Portfolio Management & Optimization Services *(Cost-reduction, Outsourcing Initiatives)*							
Process and (Real Estate) Organizational Planning / Design	○	○	○	○	○	○	○
Facility Utilization and Workplace Transformation	○	○	○	○	○	○	○
Facility Decision Support/Information System Planning	○	○	○	○	○	○	○
Real Estate Acquisition & Disposal Services							
Location and/or Finance Strategy Development	○	○	○	○	○	○	○
Site Selection/Engineering and/or Acquisition	○	○	○	○	○	○	○
A C Q U I S I T I O N P H A S E:							
PROJECT MANAGEMENT							
Owner/Tenant Representation Services *(Strategic Planning, Marketing/Property positioning, Leasing Property Mgt /Accounting, Fee Development, Final building choices selection, Best Deal Negotiating, Construction supervision, Optional transition)*	○	○	○	○	○	○	○
Design/Concept Management Services *(Complete Design Analysis of Systems, Materials, Site Constraints, Code Compliance and Building Usage; Design Option Evaluations, Design Document Coordination)*	○	○	○	○	○	○	○
Procurement Management Services	○	○	○	○	○	○	○
Construction Management (CM)	○	○	○	○	○	○	○
FACILITIES PRE-DESIGN (Microlevel / Project-based Planning)							
(Microlevel) Space Planning & Management *(including Space Allocation and Inventory Services)*	○	○	○	○	○	○	○
Workplace Planning, Design & Specifications Services *(Estimating, As-built Maintenance and Code Compliance; Furniture/Equipment/Specification)*	○	○	○	○	○	○	○
Facility Project Programming & Development Services							
Needs Analysis and Project Programming *(Microlevel space forecasting, one location)*	○	○	○	○	○	○	○
Feasibility Studies & Risk Management *(Project Budgeting, Life-Cycle Costing Services)*	○	○	○	○	○	○	○
Site Selection and Master Planning	○	○	○	○	○	○	○
Land Development/Acquisition *(may include Site Selection)*	○	○	○	○	○	○	○
Project Financing	○	○	○	○	○	○	○
Consultant Selection *(Development Partnerships/Alliances; In-sourcing, Outsourcing initiatives, Contract Management Services)*	○	○	○	○	○	○	○

PROCEED TO LAST PART III

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer

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PART III: QUESTIONS PERTAINING TO THE CONCEPT OF "INTEGRATED TOTAL PROJECT SERVICES (ITPS)" AND THE FUTURE DELIVERY OF CAPITAL FACILITIES

(Please provide answers to the following questions)

1- Which following area(s), in your opinion, are most critical regarding "Integrated Total Project Services (ITPS)" approach to delivery of your capital facilities projects ? (Please check all that apply)

- ☐ *Deciding which facility services to provide*
- ☐ *How to provide/deliver facility service(s)*
- ☐ *ITPS Contracting /Contract Management Issues*
- ☐ *Alliance strategies (Client-Service provider relationship; Teamwork, Collaboration issues)*
- ☐ *Selection of ITPS Team Member(s)*
- ☐ *Other* _____
- ☐ *No opinion*

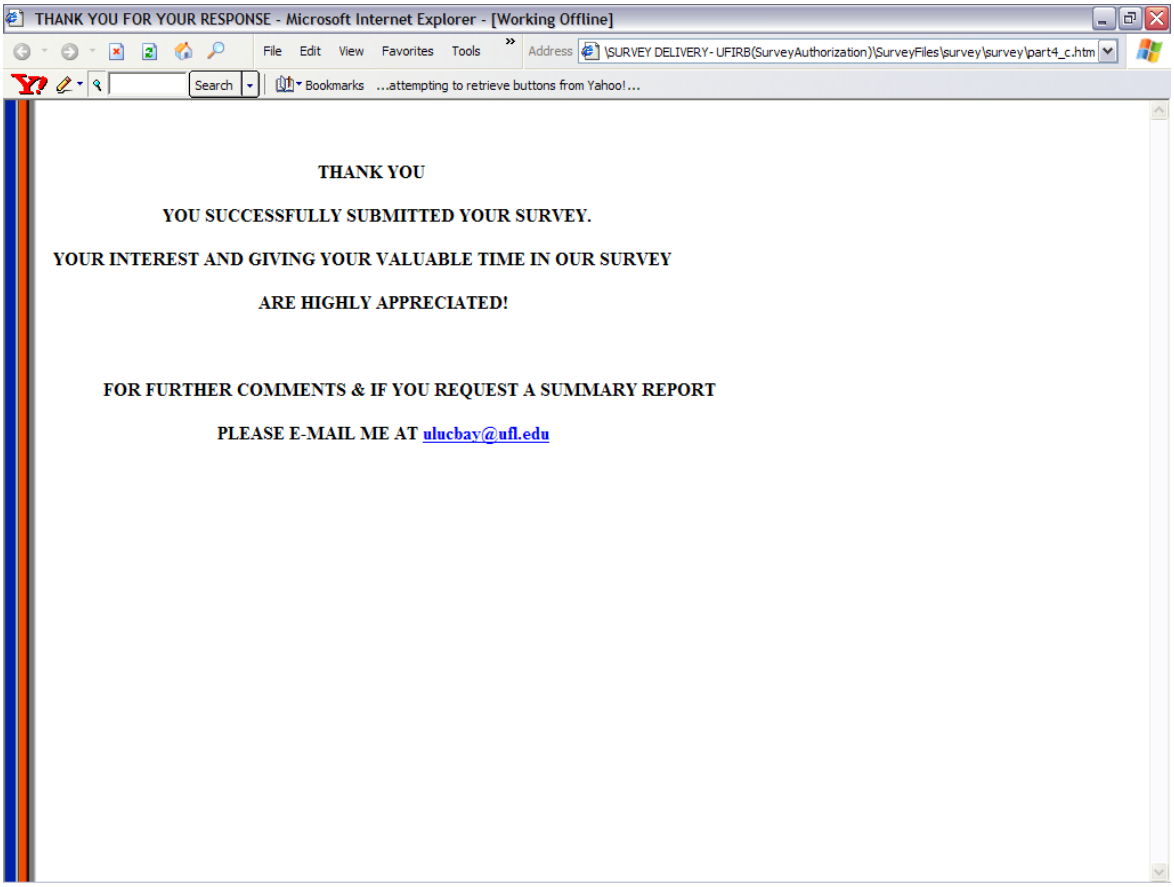
2- Which of the following service provider(s), in your opinion, should contractually lead/assume the project risk of Integrated Total Project Services (ITPS) Team? (Please check all that apply)

Architecture/Engineering/ Construction (AEC) Industry	Real Estate, Facility Management and other Industries
☐ *Design Firms*	☐ *Accounting firms*
☐ *Engineering Firms*	☐ *Consulting firms*
☐ *General Contractors (GCs)*	☐ *Real Estate firms*
☐ *Construction Management Firms*	☐ *Facility/Building Management firms*
☐ *Design-Builders*	☐ *Property management firms*
☐ *Other* _____	☐ *Other* _____

3- COMMENTS:

What is your vision regarding the future development(s), trend(s), and practice(s) in the delivery of capital facilities projects?

SUBMIT SURVEY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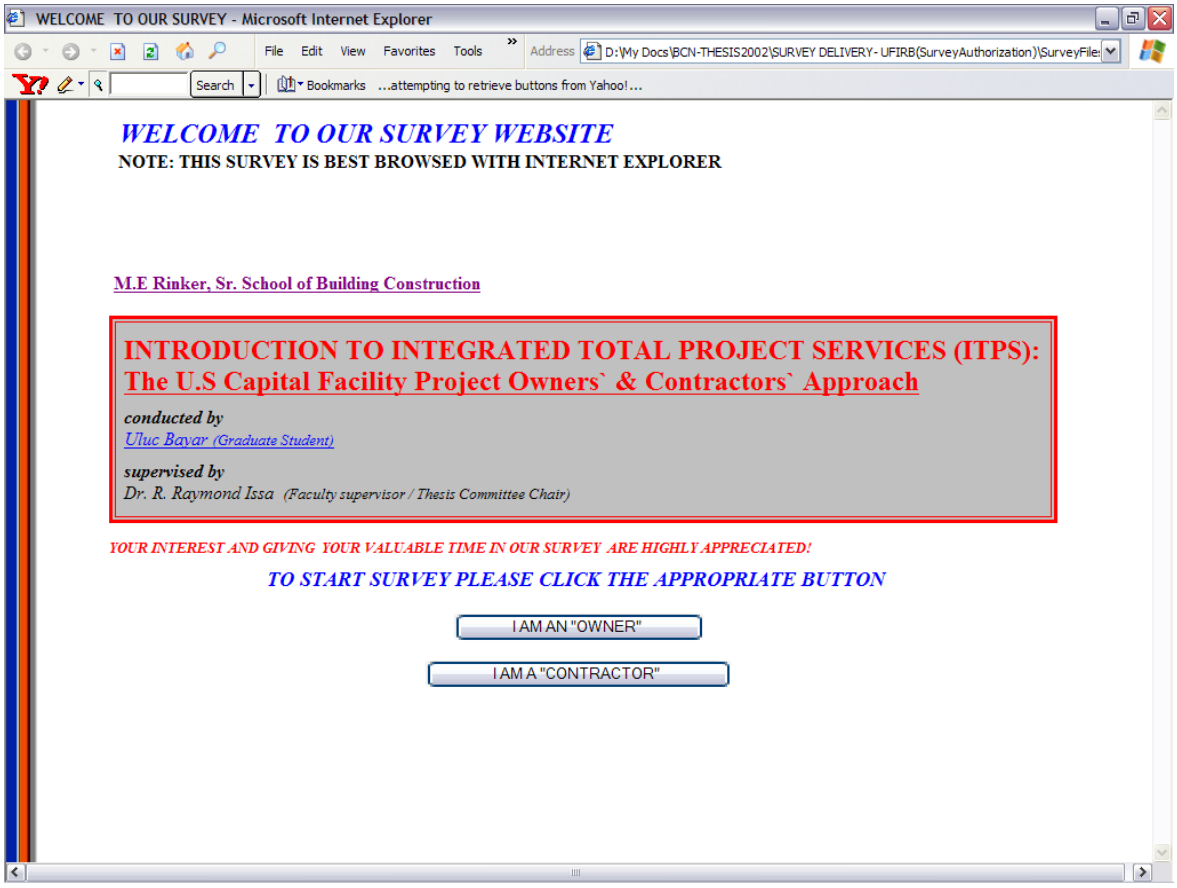
THANK YOU
YOU SUCCESSFULLY SUBMITTED YOUR SURVEY.
YOUR INTEREST AND GIVING YOUR VALUABLE TIME IN OUR SURVEY
ARE HIGHLY APPRECIATED!
FOR FURTHER COMMENTS & IF YOU REQUEST A SUMMARY REPORT
PLEASE E-MAIL ME AT ulucbay@ufl.edu

APPENDIX C
WEB-BASED SURVEY (CONTRACTOR VERSION) (U.S. CONTRACTORS)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WELCOME TO OUR SURVEY WEBSITE
NOTE: THIS SURVEY IS BEST BROWSED WITH INTERNET EXPLORER
M.E Rinker, Sr. School of Building Construction
INTRODUCTION TO INTEGRATED TOTAL PROJECT SERVICES (ITPS):
The U.S Capital Facility Project Owners` & Contractors` Approach
conducted by
Uluc Bayar (Graduate Student)
supervised by
Dr. R. Raymond Issa (Faculty supervisor / Thesis Committee Chair)
YOUR INTEREST AND GIVING YOUR VALUABLE TIME IN OUR SURVEY ARE HIGHLY APPRECIATED!
TO START SURVEY PLEASE CLICK THE APPROPRIATE BUTTON
I AM AN "OWNER"
I AM A "CONTRACTOR"

INFORMED CONSENT Introduction to Integrated Total Project Services - Microsoft Internet Explorer

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UNIVERSITY OF FLORIDA — M.E. Rinker, Sr. School of Building Construction

INFORMED CONSENT

Introduction to Integrated Total Project Services (ITPS):
The U.S Contractors` Approach

Survey Questionnaire

Dear Participant,

The M.E Rinker, Sr. School of Building Construction at the University of Florida, is conducting a nationwide study on the emerging concept of "Integrated Total Project Services (ITPS)" pertaining to facility owners and the service providers of their capital facility (modernization and/or new construction) projects in U.S.

Due to your important role in the delivery of your company's capital facilities projects, your close connection to the facility issues and the intents of this study, we are asking you to participate in this survey. The purpose is to analyze your and other contractors` (Top U.S Contractors) emerging contractual approaches to how you are delivering/providing all the necessary services/functions to your clients, for their capital facility projects. The range of these all-inclusive services- we will call them "Total Project Services"- spans from planning to acquisition, and from operation & maintenance/facility management to disposal phases within the facility life-cycle concept. Owners version of this survey, on the other hand, will analyze facility project owners` (Top U.S. private sector companies) emerging contractual approaches to how they are procuring/obtaining all the required Total Project Services for their capital facilities.

Combined results from both surveys will help us match, identify and discuss new owner capital facility delivery approaches with contractors` current capabilities and your contracting practices for Total Project Services. Hence, both facility owners and contractors will be better informed about each other's changing business approaches/trends for procurement and delivery of Total Project Services. This in return will help them better position their businesses in their respective industries/market segments along with increased competitiveness.

The survey will take you approximately 20 minutes to complete it. There are no anticipated risks, compensation or other direct benefits to you as a participant in this survey. However; upon your participation you will be provided with a summary report of the study following its completion. At all times, your identity will be kept confidential to the extent provided by law. You are also free to withdraw your consent to participate and may discontinue your participation in the survey at any time without consequence. If you have any questions about this research protocol, please contact me at (352) 392-7852 or my faculty supervisor, Dr. R. Raymond Issa, at (352) 392-7438. Questions or concerns about your rights as a participant may be directed to the UFIRB office. University of Florida. Box 11225. Gainesville. FL 32611; Ph: (352) 846-1494.

By filling out the provided survey, you give me the permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.

Sincerely,

Uluc Bayar
University of Florida

Yes, I accept the consent terms described above

No, I do not wish to participate in this survey

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer

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INTRODUCTION TO

INTEGRATED TOTAL PROJECT SERVICES (ITPS):

U.S. CONTRACTORS` APPROACH

(Please provide answers to the following questions)

PART I: DEMOGRAPHICS

1- **Your name:**

2- **Your title/position:**

3- **Your Company's name:**

4- **Department you represent in your Company:**

5- **Which of the following best describes your Company?** (Please check all that apply)

Business Category	Ownership
☐ *General /Building Contractor (GC)* ☐ *Design-Build Firm (Consultative Design/Engineering)* ☐ *Integrated Services Firm (In-house A/E)* ☐ *Other*	☐ *Private Corporation* ☐ *Public Corporation* ☐ *Partnership* ☐ *Sole-proprietorship* ☐ *Other*

6- **What are your Company's major sector(s) of operation & type(s) of facility (construction) projects involved in U.S?** (Please check all that apply)

General Building (Commercial/Institutional)

- ☐ *Correctional Facility*
- ☐ *Cultural (Entertainment-Leisure)* ***(Theater, Museum, etc.)***
- ☐ *Distribution/Warehouse*
- ☐ *Educational/ School*
- ☐ *Farm/Agriculture*
- ☐ *Government Building* ***(Office, other)***
- ☐ *Hospitality* ***(Hotel)***
- ☐ *Multi-Unit (Family) Residential*
- ☐ *Health Care* ***(Hospital)***
- ☐ *Religious* ***(Church, Worship)***
- ☐ *Retail*
- ☐ *Sports Facility*

Industrial

- ☐ *Industrial Process* ***(Chemical, Food Process, etc.)***
- ☐ *Manufacturing* ***(Light/Heavy)***
- ☐ *Petroleum* ***(Refineries, Pipelines, Petrochemical plants, etc.)***
- ☐ *Power* ***(Cogeneration, Hydropower, Nuclear Plants, Transmission-distribution)***

Telecommunications

- ☐ *Broadcast facilities & Web Hotels*
- ☐ *Towers & Antenna*
- ☐ *Transmission lines /cables*

Transportation

- ☐ *Airports*
- ☐ *Highways*
- ☐ *Marine & Port Facilities*
- ☐ *Mass Transit (Light rail)*

7- **How many people work in your Company's Business Planning & Development (Work acquisition) division/department for your U.S Operations?**

8- **What are your Company's core services(s)/specialty area(s)?** (Please check all that apply)

- ☐ *Strategic Real Estate / Facility Business Planning & Advisory Services* ***(Space Planning & Management, Facilities Condition Assessment; Asset Capitalization Planning, Capital Planning/Budgeting; and Real Estate Portfolio Management Services)***
- ☐ *Project Management Services* ***(Owner/Tenant Representation, Design/Concept Management, Procurement Management, Construction Management)***
- ☐ *Project Planning/Programming/Development (Pre-Design) Services* ***(Programming, Feasibility Studies & Risk Management; Site Selection and Master Planning; and/or Workplace Planning/Design and Consultant Selection)***
- ☐ *Design Services* ***(Architectural, Interior, Landscape Design, and/or Value Engineering Services)***
- ☐ *Engineering Services* ***(Civil, Structural, Mechanical, Electrical Engineering etc. Services)***
- ☐ *Construction Services* ***(General Building, Interior Construction; Renovation/Modernization; and/or Coordination & Supervision, and Safety Services)***
- ☐ *Facility Management (Occupancy) Services* ***(Start-up/Commissioning; Operation & Management; and/or Disposal Services)***

9- **What is your best estimate of your Company's 2001 U.S revenues from its Core-services?** (Please also include any construction/demolition services) **($M)**

10- **What is your best estimate of your Company's 2001 U.S Construction revenues? ($M)**

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer

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11- Which one of the following major project delivery / contracting methods does your Company use predominantly to deliver your clients` new facility construction projects? (Please check only one)

- ○ *Traditional Design-Bid-Build*
- ○ *Construction Management (CM)*
- ○ *Design-Build*
- ○ *Integrated Services*
- ○ *Other* _____

12- Have you known of or heard about the concept of "Integrated Total Project Services (ITPS)" prior to this survey? (If your answer is "yes", how did you hear about ITPS ? Please check only one)

Yes	No
○ *thru Clients* ○ *thru Colleagues* ○ *thru Design Build Institute of America (DBIA)* ○ *thru other industry organizations (Please specify)* _____	○ **No**

13- Do you expect staff growth / increase in your Company's business planning & development (work acquisition) division /department in the future? (If your answer is "yes", Please check only one)

Yes	No
○ *in 0-6 months* ○ *in 6-12 months* ○ *in 12-24 months*	○ **No**

PROCEED TO PART II

HOW DO YOU DELIVER ITPS? - Microsoft Internet Explorer

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PART II: HOW DO YOU DELIVER TOTAL PROJECT SERVICES FOR YOUR CLIENTS' CAPITAL FACILITIES ?

Below is a comprehensive list of all services / functions -"Total Project Services"- required in the delivery of any and every capital facility project. In this part of the survey, by going through each particular facility service, you are asked to describe your perspective of how your organization approaches (or should so) to delivering these Total Project Services.

PLEASE CHECK ONLY ONE for each service which best describes your opinion. Mark the "No opinion" if necessary.

1 = Owner provided - "My" company, we don't deliver this particular service
2 = "MY" company provides as a specialty services provider/contractor as our core service
3 = " consultant to help our client(s) with their facility decisions
4 = " integrated services provider (multiple, "bundled" services contract)
5 = "WE" provide as Integrated Services (ITPS) Team in a project-based partnership or joint venture (ITPS Team: "My" Company and other service provider(s))
6 = "WE" provide as Integrated Services (ITPS) Team in a long-term (strategic) alliance
7 = No opinion

	Owner Provided	"MY" Company provides as a			"WE" provide as ITPS TEAM		No opinion
		Specialty service provider	Consultant	Integrated Service Provider	Short-term Partnership	Long-term Alliance	
	1	2	3	4	5	6	7
PLANNING PHASE:							
CAPITAL PLANNING & BUDGETING							
Real Estate/Facility Asset Capitalization Planning Services *(Capital Program Development , Budgeting for New Capital Facilities Projects)*	○	○	○	○	○	○	○
Financial Forecasting & Macrolevel Estimating *(Organization wide)*	○	○	○	○	○	○	○
Delivery System & Project Management Planning Services	○	○	○	○	○	○	○
STRATEGIC FACILITIES PLANNING (Macrolevel/Comprehensive)							
(Macrolevel) Space Planning & Management Services *(including Space Forecasting & Programming Services)*	○	○	○	○	○	○	○
Facilities Business Planning Services *(Short /Long Term and/or Master Planning)*	○	○	○	○	○	○	○
Facilities Condition Assessment *(Building Audits, Serviceability Evaluation)*	○	○	○	○	○	○	○
STRATEGIC REAL ESTATE PLANNING (Macrolevel/Comprehensive)							
Real Estate Portfolio Management & Optimization Services *(Cost-reduction, Outsourcing Initiatives)*							
Process and (Real Estate) Organizational Planning / Design	○	○	○	○	○	○	○
Facility Utilization and Workplace Transformation	○	○	○	○	○	○	○
Facility Decision Support/Information System Planning	○	○	○	○	○	○	○
Real Estate Acquisition & Disposal Services							
Location and/or Finance Strategy Development	○	○	○	○	○	○	○
Site Selection/Engineering and/or Acquisition	○	○	○	○	○	○	○
ACQUISITION PHASE:							
PROJECT MANAGEMENT							
Owner/Tenant Representation Services *(Strategic Planning, Marketing/Property positioning, Leasing Property Mgt /Accounting, Fee Development, Final building choices selection, Best Deal Negotiating, Construction supervision, Optional transition)*	○	○	○	○	○	○	○
Design/Concept Management Services *(Complete Design Analysis of Systems, Materials, Site Constraints, Code Compliance and Building Usage; Design Option Evaluations, Design Document Coordination)*	○	○	○	○	○	○	○
Procurement Management Services	○	○	○	○	○	○	○
Construction Management (CM)	○	○	○	○	○	○	○
FACILITIES PRE-DESIGN (Microlevel / Project-based Planning)							
(Microlevel) Space Planning & Management *(including Space Allocation and Inventory Services)*	○	○	○	○	○	○	○
Workplace Planning, Design & Specifications Services *(Estimating, As-built Maintenance and Code Compliance; Furniture/Equipment/Specification)*	○	○	○	○	○	○	○
Facility Project Programming & Development Services							
Needs Analysis and Project Programming *(Microlevel space forecasting, one location)*	○	○	○	○	○	○	○
Feasibility Studies & Risk Management *(Project Budgeting, Life-Cycle Costing Services)*	○	○	○	○	○	○	○
Site Selection and Master Planning	○	○	○	○	○	○	○
Land Development/Acquisition *(may include Site Selection)*	○	○	○	○	○	○	○
Project Financing	○	○	○	○	○	○	○
Consultant Selection *(Development Partnerships/Alliances; In-sourcing, Outsourcing initiatives, Contract Management Services)*	○	○	○	○	○	○	○

PART II: HOW DO YOU DELIVER TOTAL PROJECT SERVICES FOR YOUR CLIENTS' CAPITAL FACILITIES ?

Below is a comprehensive list of all services / functions -"Total Project Services"- required in the delivery of any and every capital facility project. In this part of the survey, by going through each particular facility service, you are asked to describe your perspective of how your organization approaches (or should so) to delivering these Total Project Services.

PLEASE CHECK ONLY ONE for each service which best describes your opinion. Mark the "No opinion" if necessary.

1 = Owner provided - "My" company, we don't deliver this particular service
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5 = "WE" provide as Integrated Services (ITPS) Team in a project-based partnership or joint venture (ITPS Team: "My" Company and other service provider(s))
6 = "WE" provide as Integrated Services (ITPS) Team in a long-term (strategic) alliance
7 = No opinion

	Owner Provided	"MY" Company provides as a			"WE" provide as ITPS TEAM		No opinion
		Specialty service provider	Consultant	Integrated Service Provider	Short-term Partnership	Long-term Alliance	
	1	2	3	4	5	6	7
FACILITIES DESIGN / ENGINEERING (PRE-CONSTRUCTION)							
Architectural Planning & Design Services *(Schematics, Design Development, Const. Documents)*							
Architectural Design	○	○	○	○	○	○	○
Interior Design / Decoration	○	○	○	○	○	○	○
Landscape Design	○	○	○	○	○	○	○
"Green Design" & "Sustainable Construction" Services *(including Deconstruction)*	○	○	○	○	○	○	○
Value Engineering (VE) *(Constructability Reviews and/or Environmental Value Engineering)*	○	○	○	○	○	○	○
Engineering Services							
Electrical engineering	○	○	○	○	○	○	○
Mechanical and/or Electrical Engineering	○	○	○	○	○	○	○
Telecommunications/Data Communications, Network Design Services	○	○	○	○	○	○	○
Bidding Process Services	○	○	○	○	○	○	○
FACILITY CONSTRUCTION							
Construction Services							
Interior Construction / Build-out	○	○	○	○	○	○	○
Renovation / Retrofit *(Alteration)*	○	○	○	○	○	○	○
Restoration / Rehabilitation *(Modernization)*	○	○	○	○	○	○	○
Construction Coordination & Supervision Services							
Project Controls *(Project scheduling, Cost Reporting, Budgeting, Change Order Management)*	○	○	○	○	○	○	○
Safety Programming and/or Management *(Site Safety)*	○	○	○	○	○	○	○
Quality Control and/or Testing/Inspection Services	○	○	○	○	○	○	○
Waste Management	○	○	○	○	○	○	○
Dispute resolution / Claims Management / Rehabilitation Services	○	○	○	○	○	○	○
Demolition and/or Deconstruction (Environmental Remediation) Services	○	○	○	○	○	○	○
OCCUPANCY (OPERATION & MAINTENANCE) PHASE:							
FACILITIES OCCUPANCY							
Move-in and/or Start-up Services *(Close-out, Turnover)*	○	○	○	○	○	○	○
Commissioning and/or Training Services	○	○	○	○	○	○	○
FACILITIES MANAGEMENT (FM) (Micro-level/Organization-wide)							
Facility Operation & Maintenance (O& M) Services							
Energy Management	○	○	○	○	○	○	○
Food Services	○	○	○	○	○	○	○
Landscaping /Grounds-Keeping	○	○	○	○	○	○	○
Custodial and Housekeeping	○	○	○	○	○	○	○
Corporate Facilities Management Services							
Property/Asset Management *(Property Appraisal, Acquisition, and Disposition)*	○	○	○	○	○	○	○
Real Estate Contract Management and/or Lease Administration *(Out leasing as owner; Lease Administration as owner or lessee; Property Management as lessee)*	○	○	○	○	○	○	○
Work Reception and Coordination Services	○	○	○	○	○	○	○
DISPOSAL PHASE							
FACILITIES DISPOSITION							
Real Estate and/or Facility Disposal	○	○	○	○	○	○	○

PROCEED TO LAST PART III

INTEGRATED TOTAL PROJECT SERVICES (ITPS) - Microsoft Internet Explorer - [Working Offline]

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PART III: QUESTIONS PERTAINING TO THE CONCEPT OF "INTEGRATED TOTAL PROJECT SERVICES (ITPS)" AND THE FUTURE DELIVERY OF CAPITAL FACILITIES

(Please provide answers to the following questions)

1- Which following area(s), in your opinion, are most critical regarding "Integrated Total Project Services (ITPS)" approach to delivery of your clients` capital facilities projects ? (Please check all that apply)

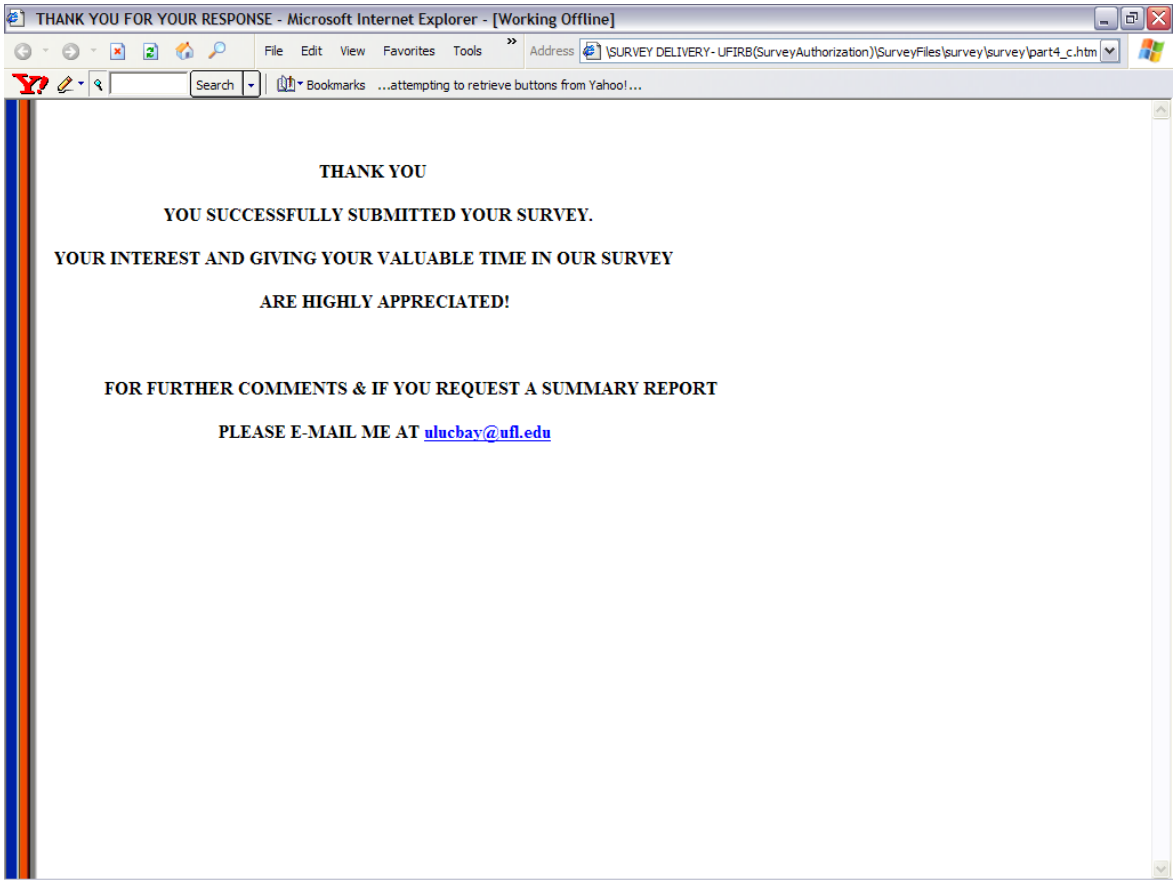
- ☐ *Deciding which facility services to provide*
- ☐ *How to provide/deliver facility service(s)*
- ☐ *ITPS Contracting/Contract Management Issues*
- ☐ *Alliance strategies (Client-Service provider relationship; Teamwork, Collaboration issues)*
- ☐ *Selection of ITPS Team Member(s)*
- ☐ *Other* _____
- ☐ *No opinion*

2- Has your company ever done business with and/or worked for companies outside the Architecture/Engineering/ Construction (AEC) Industries for the delivery of "Total Project Services" for your clients` capital facilities project? (if your answer is "yes" please check all that apply)

Yes
- ☐ *Owner Organizations*
- ☐ *Accounting Firms*
- ☐ *Consulting firms*
- ☐ *Facility Management firms*
- ☐ *Financial Institutions*
- ☐ *Real Estate Firms*
- ☐ Other _____
- ☐ No opinion

☐ **No**

SUBMIT SURVEY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THANK YOU
YOU SUCCESSFULLY SUBMITTED YOUR SURVEY.
YOUR INTEREST AND GIVING YOUR VALUABLE TIME IN OUR SURVEY
ARE HIGHLY APPRECIATED!
FOR FURTHER COMMENTS & IF YOU REQUEST A SUMMARY REPORT
PLEASE E-MAIL ME AT ulucbay@ufl.edu

LIST OF REFERENCES

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BIOGRAPHICAL SKETCH

Uluç Bayar was born into this world on December 8, 1973, in İzmir, Turkey. He grew up and lived the first chapter of his life by the murky waters of İzmir Bay in Karşiyaka (the province of İzmir meaning "the other side") until he first came to the United States in 1991. He spent a year exploring "the other side" of the world while perfecting his English and mixing with other nationals at the Maharishi International University (MIU) in Fairfield, Iowa.

He received his Bachelor of Arts degree from the Department of Architecture at the Middle East Technical University (METU), Ankara, Turkey, in 1997. Prior to his graduate studies at the University of Florida, he worked in Turkey (1997-2000) as an architect and interior/furniture designer in the commercial and residential construction sectors. In the summer of 2001, he interned with Duke/Fluor Daniel in Arizona, to get exposure to the U.S. construction industry and its management practices.

In California, Uluç plans to work in the project management field of the construction industry.