CCIS

Economic, Financial, and Dispute Resolution Thrust: Research Workshop

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CENTER FOR CONSTRUCTION INDUSTRY STUDIES

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ECONOMIC, FINANCIAL, AND DISPUTE RESOLUTION THRUST: RESEARCH WORKSHOP

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EXECUTIVE SUMMARY

This document presents the results from a workshop held on September 5, 2003 at the University of Texas at Austin concerning the Economic, Financial, and Dispute Resolution Thrust research area for the Center for Construction Industry Studies. (The thrust area was renamed from Economic, Financial, and Legal subsequent to input from this workshop.) Workshop attendees from industry and academia met to brainstorm, discuss, and prioritize research topics for the Thrust Area. As a result of this workshop, several critical areas of research were identified along with potential collaborators for future work.

The format for the workshop consisted of a cross-sectional dividing of the attendees into three focus areas. These areas were company/corporate level issues facing the construction industry, project level issues facing the construction industry, and legal/dispute resolution aspects of the construction industry. Individual group findings were presented to all attendees and a multi-voting analysis was performed to identify the topics of highest payoff and highest doability.

From the multi-voting analysis, the top three areas of research opportunity, in rank order, for the workshop attendees were as follows:

- Investigate and document the transactional costs of dispute resolution through the progression of the dispute
- Identify up-front programming, planning, and design phase process improvements for minimizing/managing disputes
- Quantify benefits of using techniques designed to reduce and eliminate the costs of disputes

Chapter 1 of this report provides the background to the Economics, Financial, and Dispute Resolution Thrust Area and the purpose of the research workshop. It also discusses the participants and the methodology used during the research workshop. Chapter 2 presents the discussions and findings from each of the three individual breakout group discussions and the pre-workshop questionnaire. Chapter 3 presents the discussions and results from the multi-voting analysis along with path forward activities for the research.

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CHAPTER 1

BACKGROUND OF RESEARCH WORKSHOP

1.1 Overview

Entering into its third phase of research, the Center for Construction Industry Studies (CCIS) has identified many potential research topics within the Economic, Financial, and Dispute Resolution (EFDR) area of construction for meaningful investigations. (The thrust area was renamed from Economic, Financial, and Legal subsequent to input from this workshop.) These potential subjects for study include industry economic drivers, innovative project financing, project accounting, sureties and bonding, project insurance, claims avoidance, and alternative dispute resolution. These potential topics may have significant impact on project and company financing, business sector health and viability, and overall company performance.

As this is a new research thrust area for CCIS, developing a prioritized research agenda is essential to building a strong and relevant research focus. As such, the EFDR research team members set out to hold a research workshop where select industry professionals and related academics could offer valuable insight into the unique needs and concerns of the sector.

On Friday, September 5, 2003, a workshop was held at the University of Texas at Austin campus to identify relevant research topics, develop a prioritized research agenda, and discuss potential partners and sources of data for the research. This report is a summary of that workshop and its findings.

1.2 Workshop Background and Participants

The Center for Construction Industry Studies (CCIS) is a research center studying the construction industry and was initiated in 1996 with grants from the Alfred P. Sloan Foundation and the Construction Industry Institute (CII). It was created to perform multi-disciplinary, long-range studies addressing construction industry challenges in order to complement the traditionally short-term research process employed by CII and others. It has subsequently been sustained by two additional grants from the Alfred P. Sloan Foundation.

CII is a research organization whose mission is to improve the competitiveness of the construction industry. CII is a consortium of approximately 90 leading owners and contractors who have joined together to find better ways of planning and executing capital construction programs.

Participants in the CCIS research workshop described herein include participants from industry and academia; CII member companies and non-CII member companies; from owners, contractors, engineering firms, and law firms; and from commercial, industrial, and institutional sectors. Appendix A lists the workshop attendees. Table 1 shows graphically how the participants break out according to their main business perspective, although it should be noted that several of the participants have worked in diverse organizations and gained perspectives from several directions.

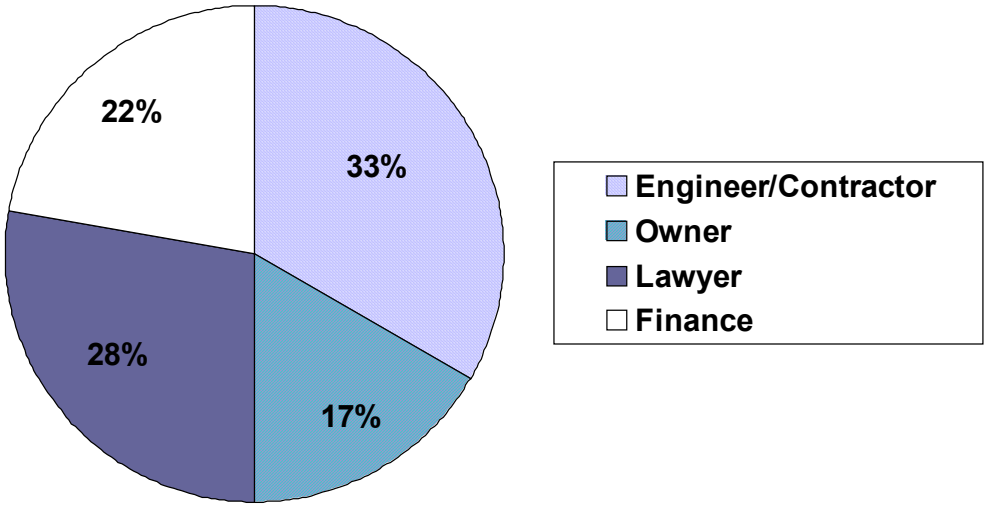

Figure 1: Breakdown of Workshop Participants

1.3 Workshop Objectives

Many observations by the research team indicated a need for research in the EFDR Thrust area. Key signals included an industry downturn (particularly in project-based financing), the effects of 9/11 on insurance, surety, and international ventures, an "up-tick" in litigation (perception or reality), interest from industry, and high potential for significant research with little substantive previous research. As such, the EFDR Research Workshop was held to accomplish five main objectives. These included:

- Defining the scope of the Economic, Financial, and Dispute Resolution Thrust Area
- Identifying relevant research topics
- Developing a prioritized research agenda
- Assessing potential impact and "doability" of chosen topics
- Discussing potential partners and sources of data for the research

1.4 Research Workshop Methodology

Planning for the workshop consisted of three main components. First, participants were asked to complete a pre-workshop questionnaire identifying their opinions on topics of importance. The questionnaire was broken into three broad areas of research – corporate/company-level business environment, project-level issues facing the construction industry, and legal environment of the engineering and construction industry. Answers were to be in the form of a rank-ordered, free-form list. These responses were then used to poll all attendees at the workshop and to help initiate the conversation of the breakout sessions. The pre-workshop questionnaire is listed in Appendix B and will be covered in more detail in chapter two.

The second component of the workshop consisted of small group breakout sessions. In these breakout groups, participants were asked to give feedback on the EFDR Thrust, brainstorm topics of interest in their designated area, and develop three to five topics of research for the group to vote on. The breakout groups were formed by taking a cross-sectional representation of the participants and placing them in the three topical areas identified in the pre-workshop questionnaire – corporate/company-level business environment, project-level issues facing the construction industry, and legal environment of the engineering and construction industry. These breakout group sessions will also be covered in chapter two of this report.

The last component of the workshop was a multi-voting analysis. In this exercise, group representatives from each of the three areas presented their three to five research topic suggestions. When completed, all participants were given five votes (designated by small orange dots) to identify which areas were of highest interest for the group. Each individual could place up to two votes for any one topic and all votes had to be used. The findings from this multi-voting session will be discussed further in chapter three.

CHAPTER 2

WORKSHOP NOTES AND DISCUSSION

2.1 Overview

This chapter of the report will look at two distinctive aspects of the research workshop. First, the pre-workshop questionnaire will be discussed. Secondly, the notes taken during the workshop breakouts will be presented. These items are presented together because of their interrelated roles within the workshop. As will be discussed below, the pre-workshop questionnaire served as the starting point for discussion in the representative breakout sessions held at the workshop.

2.2 Pre-workshop Questionnaire Design

Prior to the September 5 workshop, a questionnaire was sent out to all invitees to elicit their ideas as to what topics of study in the EFDR research thrust were most important. Respondents were asked to rank-order their top three topics for research within three broad areas. These areas include:

- Area #1 – Corporate/Company-level Business Environment,
- Area #2 – Project-level Issues Facing the Construction Industry, and
- Area #3 – Legal Environment of the Engineering and Construction Industry

The sample questionnaire can be found in Appendix B. Nine responses were received from the industry participants, and using these responses, the authors were able to consolidate and group the research topics for a follow-up query in the workshop. The next section discusses the actual responses from the pre-workshop questionnaire in more detail.

2.3 Pre-workshop Questionnaire Responses

Below are the pre-workshop questionnaire topics that are of greatest concern to the engineering and construction industry according to the respondents. These topics are the raw data responses from the questionnaire although they have been grouped into sub-topics within each area by the authors.

Questionnaire Results for Area 1 – Corporate/Company-Level Business Environment

- Market Consolidation and Fragmentation
    - Fragmentation of participants in the construction process separates the "people" from the "project"
    - Industry consolidation forces change in market power/influence from traditional "power-holders"

    - Unrealistic expectations of owners, and their general lack of knowledge about the construction process is becoming more prevalent
    - Ability to build international mega-projects has deteriorated
- U.S. Economy
    - U.S. Economy; declining construction opportunities have lead to increased competition
    - Many engineering and construction companies have been significantly weakened financially causing work to be shifted to engineering and construction companies and fabricators who are less qualified
- Declining Profitability
    - Declining profitability has forced many engineering and construction companies to consolidate or go out of business
    - Thin profit margins due to international competition in products and services severely limits cash and profit for owners and contractors
    - Failure of projects to meet cost, operability, and schedule objectives inhibits future investment
    - Risk management processes are inadequate
    - Cost control systems do not meet business needs
    - Finding new business opportunities is difficult
- Workforce Issues
    - Availability and quality of trade workforce
    - Downsizing in current engineering and construction industry will create a lack of capacity when demand increases, allowing engineering and construction companies to dictate contract terms and conditions
    - Consolidations of owners and contractors and the attendant cost cutting and "purchase accounting" has destroyed much capital facility capability, and maybe most importantly, the confidence in what capability that is left
- Income Recognition
    - Percent of completion profit recognition is inadequate for proper statement of contractor financial position, due to projects stretching over several accounting years

Questionnaire Results for Area 2 – Project-level Issues Facing the Construction Industry

- Bonding, Surety and Insurance Issues
    - Insurers and sureties are much less willing to participate in larger or more complicated projects because they represent too much risk
    - Insurance: increasing costs, declining coverage, dealing with innovative delivery schemes will kill project economics and force projects overseas
- Workforce Issues
    - Fewer experienced people to staff owner, engineering and construction, and fabricator project teams
    - (Lack of/Level of) Owner funding for worker training, including safety and health training
    - Availability of skilled workers
    - Cultural challenges associated with multi-national workforces
    - Owners are using "subsidized" international contractors who are offering lower cost and taking higher risks

- Project Management Control
  - Inadequate attention to up-front programming, planning, design, and instituting processes for management and control of disputes
  - Relating losses to problems recorded is difficult because project personnel do not document an impacted project well
  - Cost Control Systems fail to capture costs of problems encountered
- Other
  - Engineering delays and shrinking design budgets are affecting overall project performance including the quality of project documents and quality of construction
  - Financing is less available because of the lack of engineering and construction companies willing to bid Lump Sum Turnkey – often a requirement for lending institutions
  - Increased regulation and its affects on project planning and execution

Questionnaire Results for Area 3 – Legal Environment of the Construction Industry

- Cost of Dispute Resolution
  - Cost of dispute resolution (both legal services and alternative dispute resolution costs) is severe
  - Disputes take too long to resolve and often require significant cost even if mediation is successful
  - Companies are not following bid scopes and then do not pay the attendant claims
  - Determining damages after establishing cause and effect in legal disputes is very difficult because data is often questioned concerning applicability and reliability
- Lack of Awareness of Alternative Dispute Resolution
  - Lack of awareness and encouragement to utilize techniques for reducing and/or eliminating the costs of disputes before they become claims
- Risk Allocation
  - Need for realistic evaluation and allocation of risks among project participants
  - Onerous, high-risk, owner imposed contract language
  - Risk shifting affecting general contractors, subs, and bonding companies
- Dispute Control
  - Owners and contractors disregard contractual requirements when a project suffers delays, disruptions, and cost overruns
- Other
  - The extent to which the doctrine of sovereign immunity impacts project costs [i.e., what additional transaction costs (in this case enforcement costs) are included in Contractor's bids (if any) to compensate for the risk of having to collect contract damages from an entity subject to sovereign immunity]
  - Construction litigation and arbitration is a growth industry for the next few years just from completed projects. It may not be an issue in the future, as few projects will go ahead.

2.4 Condensed In-workshop Questionnaire Results

Using the pre-workshop questionnaire responses (shown in report section 2.3), the authors then consolidated and reorganized the topics into distinct potential research investigations. The condensed lists were then used as an early voting and discussion tool in the workshop. Participants were asked to rank order the top three topics within each area early in the workshop. Results were combined and tallied from all participants according to the following scoring scheme.

1 = Highest Importance; 5 points
2 = High Importance; 3 points
3 = Important; 1 point

Figures 2, 3, and 4 show the Pareto charts from the condensed in-workshop questionnaire. In addition, the top three topics from each area are listed below. These results were then utilized in the breakout group sessions as a starting point of discussion for each area.

- Area #1 – Corporate/Company-level Business Environment
  - Economic and market factors affecting the profitability of engineering and construction companies and in general the industry
  - Extent and economic impact of trade workforce shortages
  - Overall engineering and construction sector health: comparisons between similar and dissimilar industries
- Area #2 – Project-level Issues facing the Construction Industry
  - Up-front programming, planning, and design phase process improvements for minimizing/managing disputes
  - U.S. insurance industry and its effects on the overall engineering and construction industry and individual projects
  - Better methods for surety and insurance companies to understand risks and risk portfolios
- Area #3 – Legal Environment of the Engineering and Construction Industry
  - Determine the real costs of dispute resolution (including litigation and various forms of alternative dispute resolution)
  - Develop strategies for increasing awareness and utilization of techniques designed to reduce/eliminate the costs of disputes
  - Identify the impacts of onerous, high-risk, owner-imposed contractual language on projects and organizations

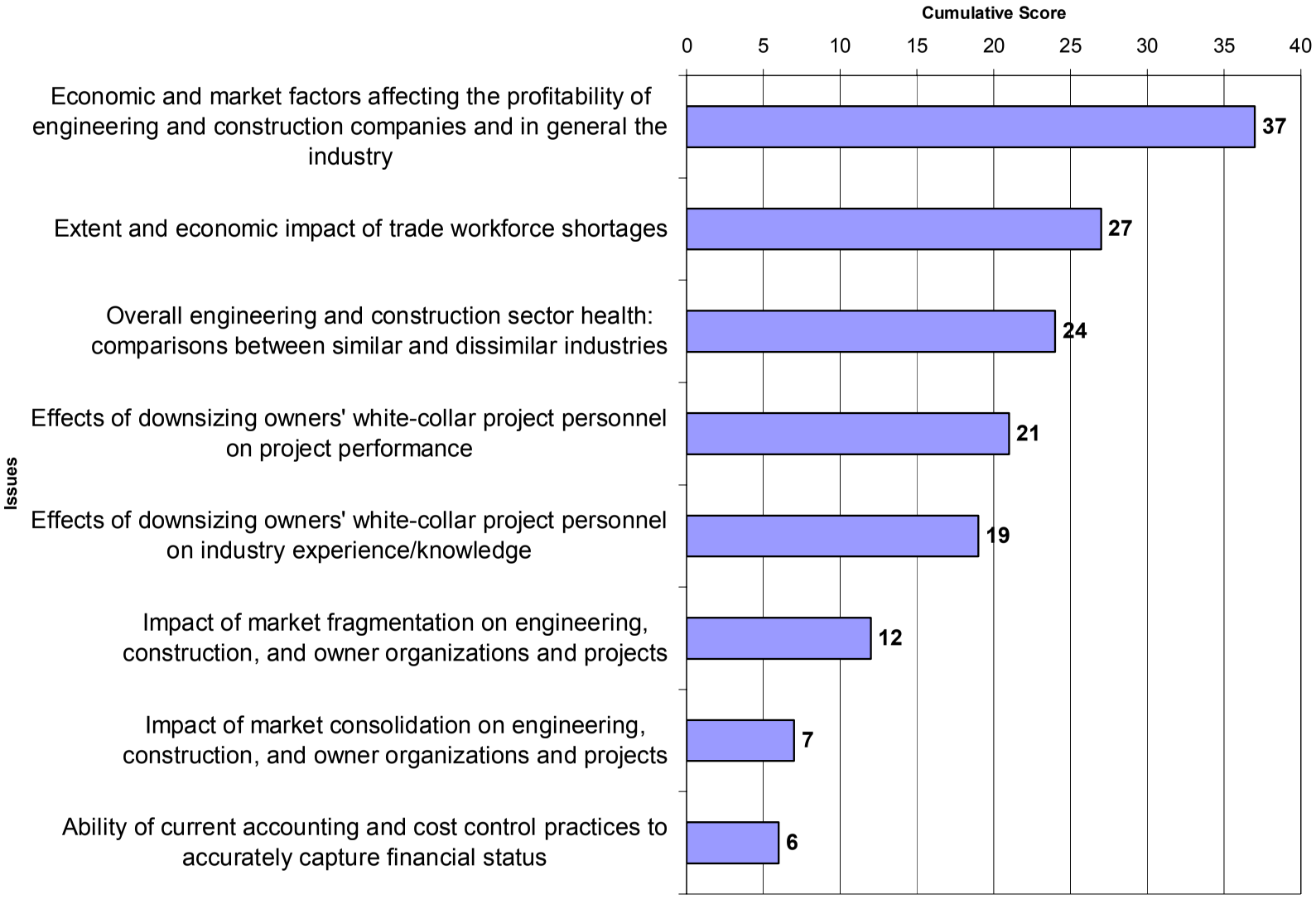

Figure 2: Area 1 Questionnaire Results – Corporate/Company-Level Business Environment

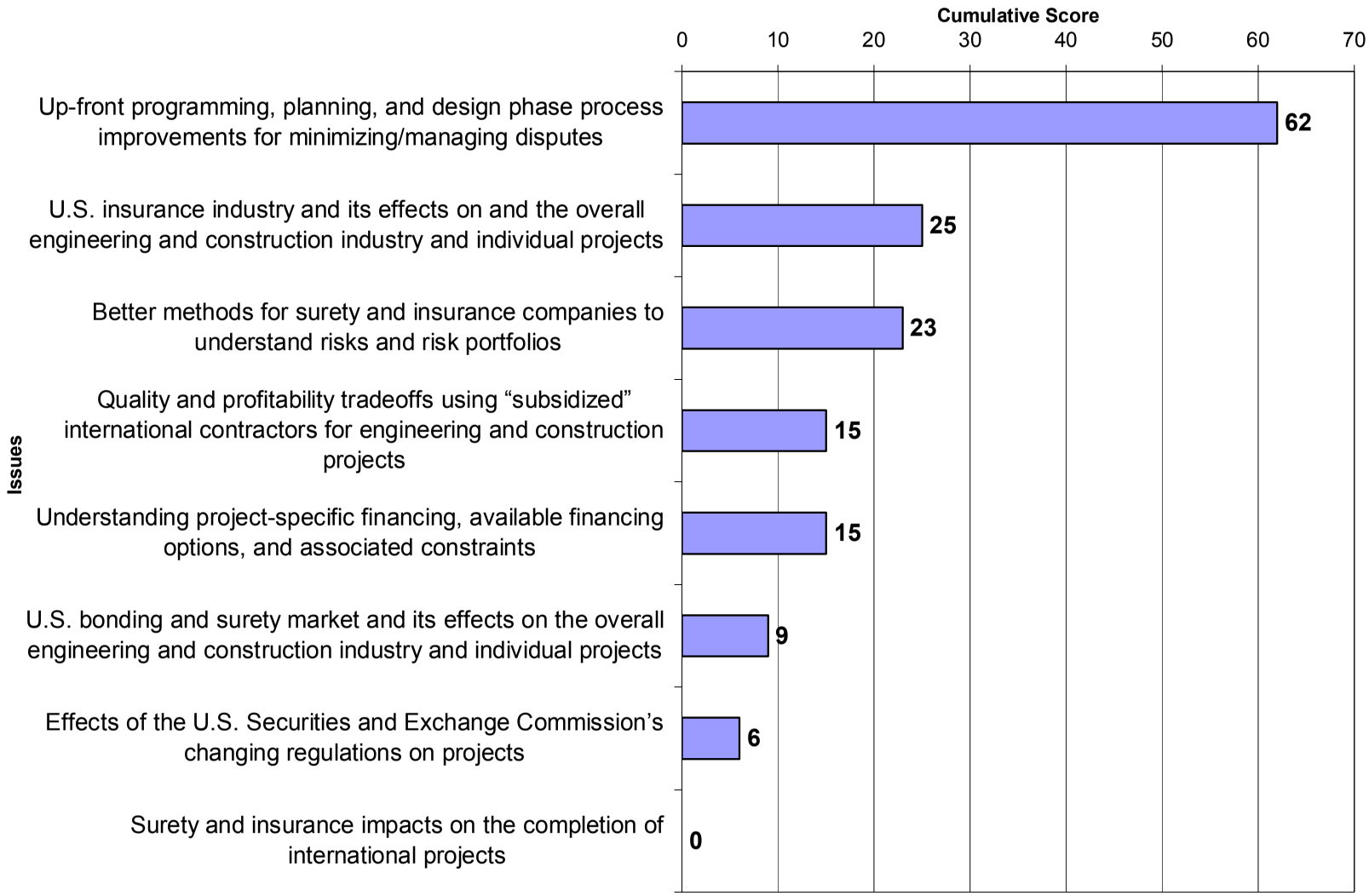

Figure 3: Area 2 Questionnaire Results – Project-Level Issues Facing the Construction Industry

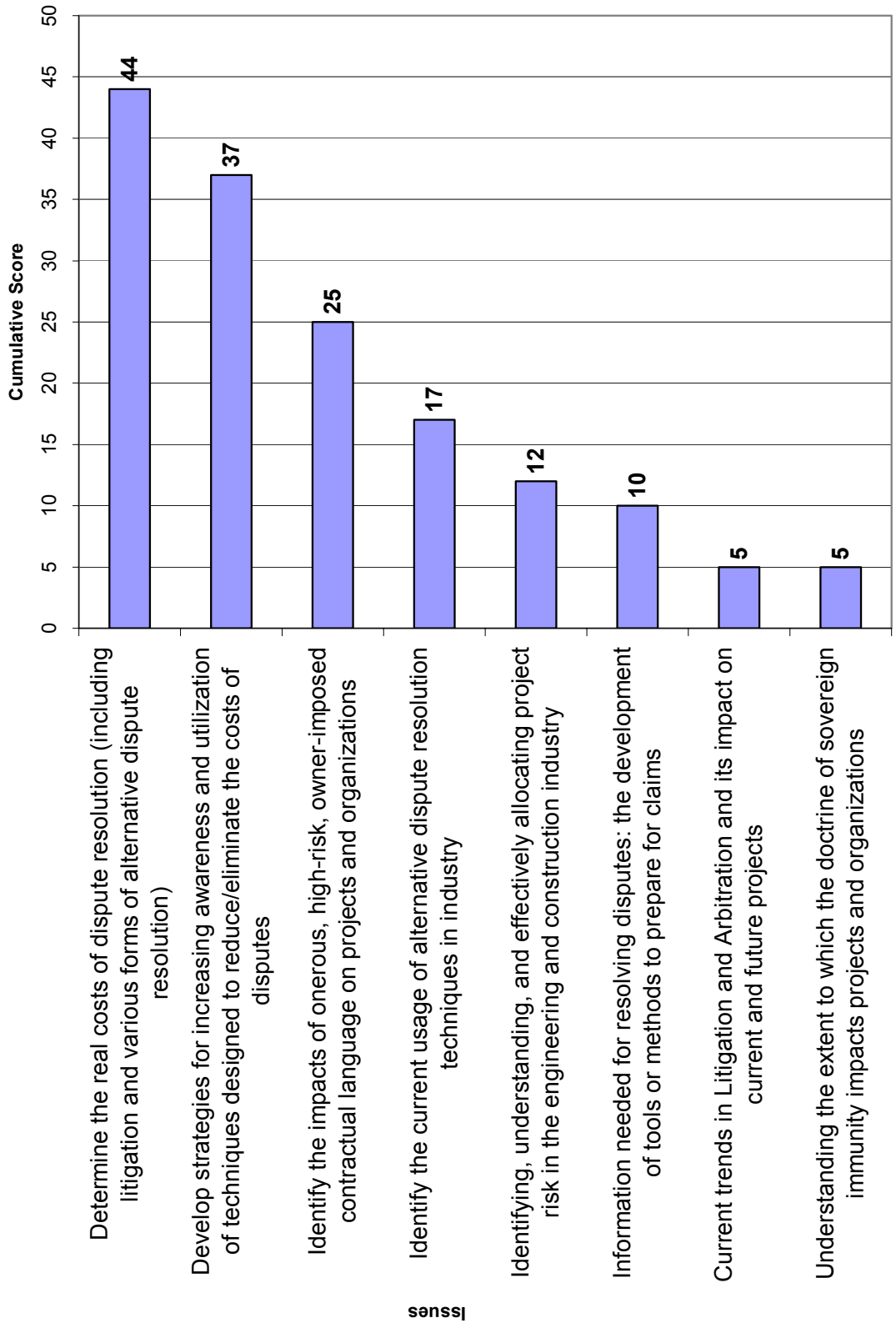

Figure 4: Area 3 Questionnaire Results – Legal Environment of the Construction Industry

2.5 Corporate-level Business Environment Breakout Group Discussion

In this section of the report notes and comments from breakout group one will be presented. This group examined the corporate/company-level business environment for topics of research. Participants in this group included Emerson Johns, Doug Morrice, David Nicastro, Jimmy Slaughter, Jan Summer, Dan Stoppenhagen, and Hans Van Winkle. The facilitator for the group was Dr. Edd Gibson and the scribe was Will Lyons.

The overall theme of most of the discussion in this session dealt with short term versus long-term view of business by the investor, owner and contractor perspectives of the capital delivery process. Specifically, much sub-optimization takes place in the business world without paying attention to long-term gain. The current economic environment is the result of a "perfect storm" of economic and managerial factors in the construction industry and a "shake-out" is occurring. It may be advantageous to investigate and describe behaviors that lead to this crisis as related to the construction industry. It should be noted that the construction industry is a combination of many different industries and some sub-sectors of this diverse industry are doing well. Among the issues discussed, included:

- The globalization of the engineering and construction market was discussed, with much of the move to globalization being driven by owners concentrating on short-term financial results. Certainly when performing projects overseas the source and form of funding must be taken into account. The industry must be prepared for quirks of different markets as they look for new work. In economic periods like the present, projects are cut; this affects engineers and contractors who are pursuing work worldwide. There has been a switch to lump sum contracting instead of reimbursable projects and adversarial relationships in this environment many times lead to disputes. In addition, contracts are not favorable to engineering and construction companies, domestically and especially internationally. It would be nice to have a snapshot of the market, including domestic vs. international work and indices measuring performance of construction companies and market segments

- What is the best way to judge project success? Currently, projects are authorized on dollar value and measured success is based on health, safety, environment (HSE), cost, and schedule performance. In the future, the focus should be on business objectives; i.e., reduction from $1.00/lb. manufacturing cost to $0.90/lb. versus capital expenditure of $100,000,000. The current authorization process reduces creativity and leads to adversarial contracting. Business results are almost never judged after the fact. We need to move to "friendly contracting" such that business success is shared.

- The Wall Street perspective causes a short term look at the capital delivery process—is this real or the perception of decision makers in our industry? Do project teams and sponsors understand this perspective? If it is a problem, how can it be changed? Does Wall Street understand the engineering and construction industry? Do we influence them by our decisions? The suggestion was made to talk to key players on Wall Street to test reality versus perception.

- How is downsizing of the white-collar workforce affecting project delivery? For instance, the Texas Department of Transportation's (TxDOT) recent experience with moving toward outsourcing design and project management to consultants and encouraging early retirements has lead to a serious "brain drain." In other situations, such as the new SH130 project, they are trying to run the project in a traditional manner, even though it is essentially a design build effort. Unfortunately, hiring consultants to perform traditionally owner-based functions can cause problems because many times they want to extend the project because of reimbursable contracts – the longer the project, the more fees. It should be noted that this happens in all industries, and is not just limited to engineering and construction companies. Many organizations no longer have in-house capabilities to produce quality products/projects and they end up hiring back the same employees but at higher consultant fees. Who is responsible in case of failure? Many organizations with in-house capital facility capabilities have marketing advantages because of experience, knowledge, and ability to deliver capital facilities.

- Blue-collar workforce issues continue to affect the industry, especially in terms of project quality. Unions are no longer as strong nationally in the construction industry – does union labor result in higher quality? A study of cost vs. quality comparisons (lifecycle cost) would be nice– for instance union labor costs are higher upfront, but will it balance out with less rework and fewer repairs down the road? What about workforce, health, and safety – the John Gray Institute did a study on this about 10 years ago. The labor market quality seems to be declining, but is it? Unions seem to be training less because of competition with open shop, but is this a perception? Training all workers leads to cost advantage for engineering and construction companies, but who pays? Should the owner pay or who can be a national advocate?

- What is the efficacy of peer review during the capital delivery process that encompasses all aspects of engineering and design? It appears (especially in the commercial building sector) that peer review is declining, while claims after the fact are increasing (example is roof construction). Peer review is part of Quality Assurance (QA) and Quality Control (QC) programs of engineering and construction firms participating in the industrial sector by necessity to reduce risk. Peer review should take place at all phases of the project to be effective. Perhaps insurance companies can benefit from fewer claims, but there is a need for supporting data of the value of using peer review in advance, including financial models to measure risk/reward trade off. Contractors need to understand consequences of not doing QA/QC well.

2.6 Project-Level Issues Breakout Group Discussion

Notes from breakout group two will be presented in this section. This group examined project-level issues facing the construction industry for topics of research. Participants in this group included Carlos Caldas, Keith Dodson, John Fleming, Patrick Flynn, Sherri Greenberg,

Ben Wheatley, and John Wray. The facilitator for this group was Dr. Jim O'Connor and the scribe was Mike Pappas.

- What can be done about the industry's general loss of business ethics? There is far too much "win at all costs" which, in the big picture, results in large "losses in social capital". How can corporate cultures regain the trust element? What tools or processes can help in dispelling contract parties' misconceptions of each other? How can the parties better understand each other and the realities of their project situations?

- Analyze project owners' willingness to pay for goods/services provided. Contractors need more assurance than currently exists. Thorough risk assessments (and related risk assessment tools) are needed to address the lender, owner, scope, budget, unrealistic expectations/rosy scenarios, "propensity for gamesmanship," etc. Tools should also address appropriate and thorough assignment of responsibilities.

- Document best practices and lessons-learned for avoiding/minimizing disputes and for managing disputes. Address all project phases.

- Problems with lenders and investment bankers: Their lack of understanding of the industry, including too many inexperienced decision-makers with unrealistic expectations. They must recognize that they share in the risks of a project.

- Problems with insurance: Broad exclusions and/or inability even to get insurance. Costs must be passed through to owners. Insurers' reaction to claims is too often "spend a bunch of money on attorneys and wear them out." They seem too eager to run up the legal expenses (with its lesser short-term impact on the balance sheet).

- Problems with sureties: Owners often over-rely on them for prequalification of contractors. In addition, too often they sidestep their obligations and don't deliver on the surety bond promise, again, trying to "wear out" any claimants.

- How to do value-based contracting effectively and consistently, avoiding the pitfalls of the low-bid and corruption/favoritism traps? This is particularly relevant for public projects.

- Need to identify procurement statutes, administrative law practices, and widely practiced contract management practices that are simply bad for business. How can these be realistically changed or overcome? Examples: low-bid award requirement, 5% change order markup limit, etc. In addition, related to this: what is the real cost of states' sovereign immunity (e.g., when one can only sue the state when the state gives permission).

- For overseas projects, how can U.S. contractors compete with overseas contractors that are subsidized by their governments (in a variety of ways, such as bonding and insurance)?

- How can mega-infrastructure projects (e.g., overhaul of the power grid) be financed?

- Recognition: there does not seem to be any easy fixes regarding accounting for construction projects. In addition, there seems to be widespread abuse when it comes to recognizing claims on the balance sheet.

2.7 Legal Aspects of the Construction Industry Breakout Group Discussion

In this section of the report notes and comments from breakout group three will be presented. This group examined the legal aspects of the engineering and construction industry for topics of research study. Participants in this research group included John Borcherding, Jim Groton, Robert Kehoe, Curt Martin, August Petersen, and Raymond Suire. The facilitator for this group was Richard Gebken and the scribe was Jeff Mays.

The main theme within this breakout group centered on dispute resolution and prevention; including their impact on engineering and construction companies and their projects. Benefits and costs analyses of dispute resolution, factors affecting the effectiveness of dispute resolution, current and proposed best practices for dispute prevention and resolution, and methods for increasing awareness about the growing knowledge of dispute control (i.e., prevention, minimization, and resolution) were all discussed as possible research investigations. Further details on these issues included:

- Understand the importance of measuring and understanding project risks. Proper allocation of risk at the onset of a project has been shown as one way to control the effectiveness of project uncertainty. However, many owner organizations and general contractors are transferring inherent project risk to parties who are less equipped and less capable of handling such risks. Finding ways to measure and understand project risk should help alleviate many of the issues facing project disputes.

- What effects does contractual language have on a project? Similar to proper allocation of project risk, contractual language is an important factor in determining the risks and costs of performing (or failing to perform) a project. Owners are increasingly utilizing specialized contract documents that purposefully transfer much of the risk of project execution, design, and overall coordination to other parties. Do these changes in language have an effect on the overall performance of a project or are they occurring without notice or concern by the parties who agree to them.

- What are the real costs of disputes? What are the economics behind resolving disputes (including monetary costs, non-monetary costs, and transactional costs)? This issue is seen as the key point for forcing change upon the industry. The ability to accurately estimate and account for the transactional costs of disputes is important in relating how the industry suffers as disputes continually grow over time. It is believed that the costs associated with dispute resolution follow an exponential curve along its duration – where minimal costs are needed to resolve disputes in the field and maximum costs are incurred when parties resolve their cases in the courthouse.

- What data is needed and/or required to resolve a dispute? Many comments were made about engineering and construction companies' failure to capture important information needed to proceed with a claim. This includes productivity data, baseline schedules and manpower curves, percentage of change orders issued and approved, and many other factors. Collecting information about what data is needed to negotiate successfully a project claim would help contractors and owners be more conscious about issues as they arose.

- What is the overall industry awareness/utilization of dispute resolving procedures? Is the industry unaware of many of the techniques of alternative dispute resolution, or are parties happy with the outcome of arbitration panels and courtrooms. There seems to be a wide belief that much of the progressive work into mediation, dispute review boards, and other "newer" alternative dispute resolution procedures are failing to make the jump into industry-wide utilization. What can be done to increase awareness about the strengths and weaknesses of alternative dispute resolution and their impacts in the overall project life cycle?

- What are the effects of project site people/procedures on disputes? Can systems and procedures be developed to reduce and resolve disputes from within the project site? In addition, what effect does project personnel experience play in dispute occurrence?

- What effects, or what importance does partnering play in dispute prevention and resolution. After reviewing results from a recent University of Texas study on Naval Facilities Engineering Command (NAVFAC) claims, can a definitive conclusion be made about the impacts of partnering on construction claims? Partnering as a process in and of itself has been used to a great extent over the last few decades. However, very little data has been collected to quantify its impacts. Can claims reduction be related to partnering?

- Quantify the benefits of utilizing techniques designed to reduce and/or eliminate the costs of disputes. This topic is concerned with the "flip-side" of quantifying the transactional costs of dispute resolution by looking at what benefits are gained, both by companies and by projects, in reducing the occurrences of and length of project disputes. What incentives are present to encourage owners, engineers, and contractors to resolve issues that may potentially become claims?

In addition to the above topics, another major issue raised by members of breakout group three was the term *legal* in the title of the research thrust. The point was made that many of the topics of relevance within this area do not fall within the legal system. In other words, much of the information, material, and actual procedures being used in the construction industry are being employed outside of the legal system (i.e. – mediation, arbitrations, dispute review boards, etc.). As such, the group suggested renaming this area of research to techniques of dispute prevention and resolution. This report subsequently utilizes the term dispute resolution in its description of research work in this area with the understanding that it includes ideas, concepts, and knowledge both inside and outside of the practice of law for resolving disputes.

2.8 Final Topics from Breakout Group Sessions

After brainstorming and discussing the topics listed above, each breakout group was asked to identify three to five topics to present back to the entire group. These final topics would be used for a multi-voting analysis that will be discussed in chapter three of this report. Below is the breakdown of each group's final topic list by area.

- Area # 1 – Corporate/Company-level Business Environment
    - Effects of downsizing owner's white-collar project workforce on project performance (in-house vs. contracted out)
    - Economic impact to engineering and construction firms of work going overseas; industry health
    - Gain an understanding of Wall Street perspective in regard to capital infrastructure development
    - Evaluating projects based on business results; increase creativity, "friendly contracting," product configuration, quality assurance

- Area #2 – Project-level Issues Facing the Construction Industry
    - Value contracting - not low bid, not corrupted, cost of sovereign immunity
    - Up-front programming, planning, and design phase process improvements for minimizing/managing disputes
    - Statutes that promote bad business practices
    - Willingness to pay - risk assessment, realistic expectations, etc.

- Area #3 – Legal Environment of the Engineering and Construction Industry
    - Determine the transactional costs of dispute resolution through the progression of the dispute
    - Quantify benefits of using techniques designed to reduce and eliminate the costs of disputes
    - Develop methods for increasing awareness/utilization of techniques to reduce/eliminate disputes

Chapter 3

MULTI-VOTING ANALYSIS AND PATH FORWARD

3.1 Overview

After the workshop breakout sessions, a multi-voting analysis session was held to distinguish and prioritize the research topics discussed in the small groups. This chapter of the report will focus on the multi-voting analysis of the workshop. In addition, it will discuss the conclusions from the workshop and the path forward for the EFDR research.

3.2 Multi-voting Procedures

A multi-voting analysis was chosen to help finalize the results of the workshop for three reasons. First, multi-voting is a technique by which consensus can be reached by a large group of individuals easily and visually. Second, multi-voting allows all group members to participate in the decision making process, thus facilitating ownership of the results by all participants. Lastly, multi-voting helps establish a prioritized ranking of results.

The multi-voting analysis used in this workshop consisted of several steps. First, each breakout group elected a spokesperson (or spokespeople) to present their findings to all of the workshop attendees. Based upon these presentations, workshop participants were given five orange "voting" dots. The rules for voting were simple. Each participant must place all of their votes on the topics in front of the group. Each individual may place a vote on any topic of their choosing; however, no more than two votes may be placed on any one topic. When all votes were placed, a quick tally was made to identify which topic should be worked on first, second, and so on.

3.3 Multi-voting Results

Using the topics listed in section 2.8, workshop attendees used the multi-voting analysis described above to prioritize the research topics. Figure 5 summarizes the multi-voting analysis in a Pareto chart. From these tallies, it can be seen that two of the top three vote receivers were from the legal environment of the construction industry area – determine the transactional costs of dispute resolution through the progression of the dispute, and quantify the benefits of using techniques designed to reduce and eliminate the costs of disputes. However, many of the issues involved with these topics are interrelated with the other areas as well. In fact, the second highest vote receiver was also related to construction disputes – up-front programming, planning, and design phase process improvements for minimizing/managing disputes.

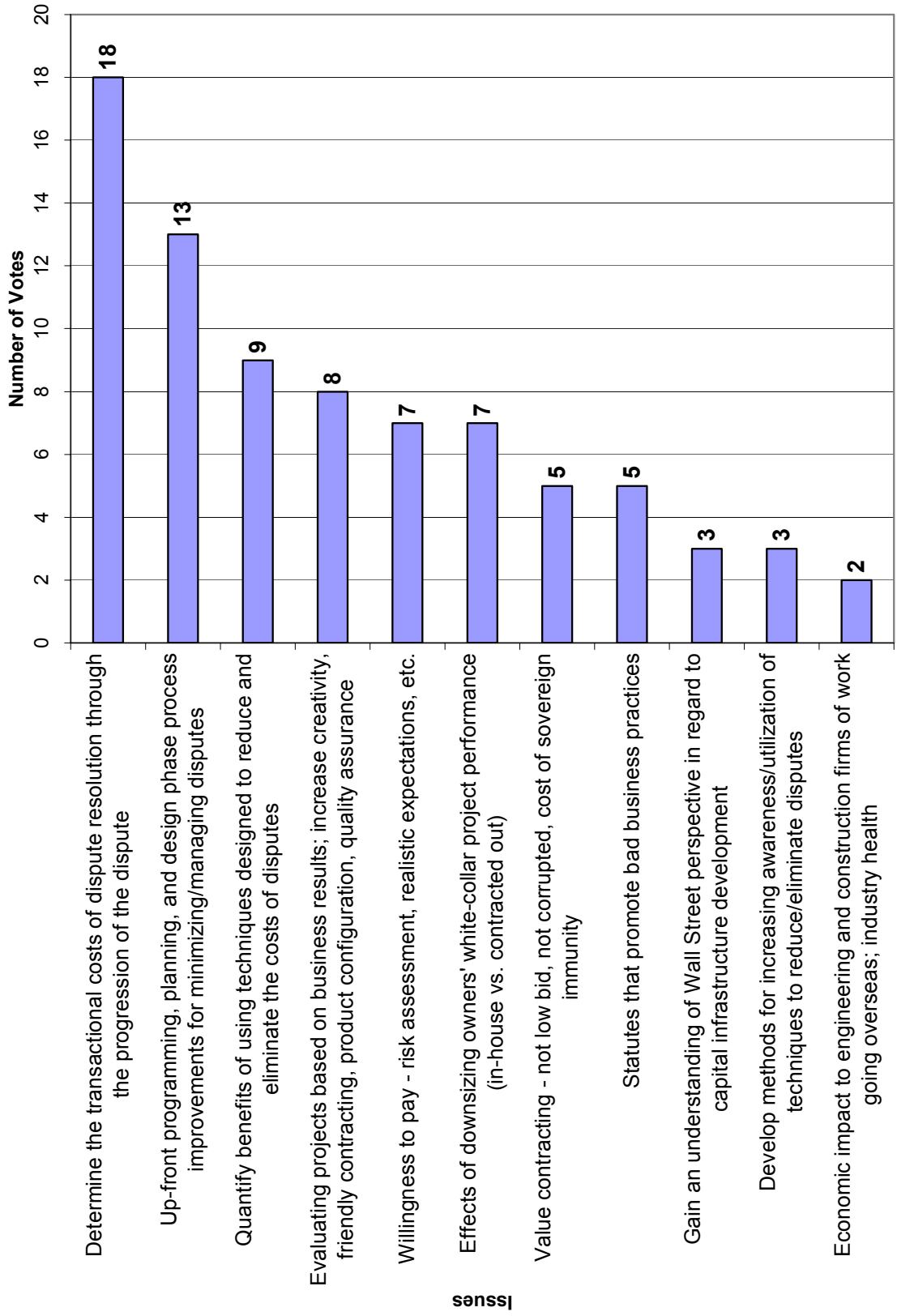

Figure 5: Final Multi-Voting Results

3.4 Path Forward

The EFDR Research Workshop conducted on September 5, 2003 was the first step in developing and conducting new research investigations in the engineering and construction industry at CCIS. The authors felt that there were many reasons to conduct new research including industry concerns over insurance and surety issues, perceived increases in construction disputes and litigation, and a downturn in economic market indicators. However, it was felt that using industry feedback as a barometer of what topics would offer the highest impact and highest "doability" was needed.

From the multi-voting analysis, the top three areas of research opportunity, in rank order, for the workshop attendees were as follows:

- Investigate and document the transactional costs of dispute resolution through the progression of the dispute
- Identify up-front programming, planning, and design phase process improvements for minimizing/managing disputes
- Quantify benefits of using techniques designed to reduce and eliminate the costs of disputes

The research workshop not only helped identify which areas of concern were most important to practitioners and related academics but also began the process of establishing a multi-disciplinary research team for future work. Most of the workshop participants indicated they were willing to participate in future research studies in this EFDR area. Follow-on activities for the EFDR workshop include finding research partners, data sources, and possible sources of additional funding.

A brief post-workshop survey was administered to the participants to gather their input and feedback about both the relevance of the research investigations in the EFDR area and the usefulness of the workshop format. Out of the 15 respondents, the average score for the overall usefulness of the workshop was 4.3, where a 4.0 was very good and a 5.0 was excellent. With respect to the overall relevance of the EFDR research topic area, the average score was a 4.4, where a 4.0 was very good and a 5.0 was excellent. In addition, respondents were asked if they would be interested in participating in EFDR research in the future and an overwhelming majority (93%) responded in the affirmative. These evaluations, in addition to the enthusiasm for future studies, show the efficacy of research issues in the EFDR area.

This workshop provided a rich insight into doable, high impact studies. Based upon the multi-voting analysis results, investigations into determining the transactional costs of construction disputes will be undertaken. In addition, methods to implement up-front programming/planning to reduce the costs of disputes, and the benefits from using alternative techniques to dispute prevention and resolution might also be examined.

Finally, the thrust area title was changes to Economic, Financial, and Dispute Resolution (EFDR). This name change better represents the nature of the research being undertaken by CCIS in this area. In addition, it will ease many of the workshop participants' concerns over the confusion between the legal system and the resolution of construction disputes.

Appendix A
September 5th Workshop Attendees

Industry Representatives

D. Keith Dodson
Consultant; formerly V.P. Brown & Root Intl., President John Brown, Sr. V. P. of Engineering for Enron Engr. & Const. Co.

John C. Fleming
Attorney-Mediator,
Adjunct Professor of Law
Galton, Cunningham & Bourgeois, P.L.L.C

Patrick Flynn
President
Flynn Construction

Sherri R. Greenberg
Lecturer in Public Administration; former member, Texas House of Representatives
University of Texas at Austin

Jim Groton
Partner, retired
Sutherland Asbill & Brennan LLP

Emerson T. Johns
Operations Leader and Chief Financial Officer of the DuPont Engineering, Facilities, and Safety, Health, and Environmental Operations
E. I. duPont de Nemours & co., Inc.

Robert P. Kehoe
Manager, Construction of Facilities Program
NASA - Johnson Space Center

Curt Martin
President
Construction Resolutions

Douglas J. Morrice
Professor in Mgmt. Science and Info. Systems
University of Texas at Austin

David Nicastro
Chief Executive Officer
Engineering Diagnostics, Inc.

August C. Petersen
Lecturer
University of Texas at Austin

Raymond Suire
In-house Counsel
Zachry Construction Corporation

Jimmy Slaughter
President
S&B Engineers

Dan Stoppenhagen
Director, Transportation
Fluor Enterprises, Inc.

Jan Summer
Adjunct Professor of Law; Exec. Dir. of The Center for Public Policy Dispute Resolution
University of Texas at Austin

Hans Van Winkle (MG, Ret.)
Director, Construction Industry Institute; formerly Deputy Chief, U.S. Army Corps of Engineers

Ben T. Wheatley
Partner
Allensworth and Porter, L.L.P

John Wray
Vice President
Westney Project Services, Inc.

UT Construction Engineering and Project Management Faculty

John D. Borcherding
Adjunct Professor in Civil Engineering
University of Texas at Austin

Carlos Caldas
Research Fellow in Civil Engineering
University of Texas at Austin

G. Edward Gibson
Professor in Civil Engineering
University of Texas at Austin

James T. O'Connor
Professor in Civil Engineering
University of Texas at Austin

UT Graduate Research Assistants

Jui-Sheng Chou
Graduate Research Assistant
University of Texas at Austin

Richard Gebken
Graduate Research Assistant
University of Texas at Austin

Will Lyons
Graduate Research Assistant
University of Texas at Austin

Jeff Mays
Graduate Research Assistant
University of Texas at Austin

Mike Pappas
Graduate Research Assistant
University of Texas at Austin

Appendix B
Pre-Workshop Questionnaire

In order to facilitate the process of identifying and prioritizing the key research topics within the *Economic, Financial, and Dispute Resolution (EFDR)* thrust area, we ask that you take a few minutes to answer some questions. We will use these questions to both structure the workshop on September 5 and direct future research. Please feel free to provide comments or concerns about the research endeavor as well. We value your input and appreciate any comments.

Name: _____

Area 1 – Corporate/Company Level Business Environment
(i.e. – industry economic drivers, industry fragmentation, industry consolidation, company financing, accounting/auditing, profitability, income recognition, etc.)

Please identify the top three (3) concerns facing companies within the construction industry with respect to corporate level business activities.

Area 2 – Project Level Issues Facing the Engineering and Construction Industry
(i.e. – innovative project financing, sureties and bonding, project insurance, job cost accounting, etc.)

Please identify the top three (3) concerns facing the construction industry at the project-level.

Area 3 – Legal Environment of the Engineering and Construction Industry
(i.e. – claims avoidance, construction litigation, alternative dispute resolution, contract language concerns, risk allocation, etc.)

Please identify the top three (3) concerns facing the construction industry with respect to its legal environment.

Point of Contact

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