

THESIS

IDENTIFYING ISSUES RELATED TO INTEGRAL ASPECTS OF COLLABORATIVE  
CONTRACTS FROM THEIR STAKEHOLDERS' PERSPECTIVE

Submitted by

Anuj Marathe

Department of Construction Management

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Colorado State University

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Master's Committee:

Advisor: Bolivar Senior

Co-Advisor: Kelly C. Strong

Vickie Bajtelsmit

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## ABSTRACT

### IDENTIFYING ISSUES RELATED TO INTEGRAL ASPECTS OF COLLABORATIVE CONTRACTS FROM THEIR STAKEHOLDERS' PERSPECTIVE

Performance in construction is strongly dictated by the processes, technologies, and the people involved. To increase performance, the construction industry has witnessed innovations in project delivery systems - partnering or collaborative contracts is one of those. This thesis focuses on the 'people' part as one of the major factor affecting the performance of a collaborative approach. In this thesis, dispute resolution and incentive provisions have been deemed to be the most vulnerable aspects of construction in which the 'people' part can play an influential role. Collaborative contracts often include a laddered dispute resolution method which includes negotiations as the first few steps and inherently attempts to avoid litigation. Such a process oriented method promotes an inexpensive and non-adversarial approach to dispute resolution. This thesis investigates if such process oriented dispute resolution methods can eliminate the effect of the 'people' part. Moreover, it identifies issues associated with dispute resolution methods and incentive provisions typically found in construction contracts. This thesis also identifies some of the benefits and drawbacks of using an Owner Controlled Insurance Program (OCIP).

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## DEDICATION

*To my 5 foot (and 1 inch) high source of motivation, Priya*

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## CHAPTER 1: INTRODUCTION

### **1.1 ‘People’ – a challenge to collaboration**

Traditional delivery systems have proven to be ineffective in controlling cost and time overruns (Ojo, Adeyemi, & Fagbenle, 2006). Cost and time overruns are also the key performance indicators (Mahmid, Bruland, & Dmaidi, 2012). Fernane (2011) suggest that many construction projects have suffered cost and time overruns due to the traditional Design Bid Build delivery system. Efforts have been made in the past to resolve the inefficiencies in the process of delivering a construction project. However, many of these changes have been incremental or driven by trade associations that do not necessarily represent all project partners. A better approach would be to devise a system that adds value to all project partners as well as broader indirect stakeholders such as the community, the natural environment and society at large. The importance of collaboration on construction projects is increasingly recognized as vital to achieve the desired levels of performance (Rahman, Endut, Faisol, & Paydar, 2013). Collaboration is also one of the key aspects of an effective contractual relationship (Rahman et al., 2013); this directly ties to project performance. The contractual and legal responsibilities between project partners are important in defining how the soft-side of project management (Mossman, Ballard, & Pasquire, 2013) will be executed – relationships between people working together in a collaborative setting. In the traditional way of contracting, risk is commonly transferred by project partners rather than being shared or allocated rationally (Sakal, 2005). Different disciplines working on the same project do not work in collaboration because of the way the contracts are written – not a single contract between all the major participants but multiple dual-party contracts, and because of contract language and case law that creates liability associated with traditional contracting (Thomsen, Darrington, Dunne, & Lichtig, 2009). The fear of disputes and litigation holds back participants

from sharing information with others and actively collaborating on the same project. Resultantly, the lack of collaboration has caused low productivity (Singh, 2013). Matthews and Howell (2005) describe four problems associated with traditional construction contracting:

- good ideas are held back
- contracting limits cooperation and innovation
- inability to coordinate
- the pressure for local optimization

These problems are strongly connected together and only promote a self-defensive approach towards a project. When contracts are written in the traditional way, this approach is justified and the fear of disputes and litigation is understood, but at the same time this limits innovation and suppresses the ability to innovate and add value across the entire life cycle of the project. Collaborative contracts aim to overcome these barriers, and are at the center of this research study.

Integrated Design and Delivery Solutions (IDDS) is one of the central themes of the International Council for Research and Innovation in Building and Construction (CIB), an association which platforms exchange of information between governmental research institutes with a specialization in the technical fields of research (CIB website). The definition of IDDS that was accepted by the team for this theme is “Integrated Design and Delivery Solutions use collaborative work processes and enhanced skills, with integrated data, information, and knowledge management to minimize structural and process inefficiencies and to enhance the value delivered during design, build and operation, and across project.” (CIB, 2009, p. 3). CIB identified three major challenges in the implementation of an integrated approach in construction – process, technology, and people. The basis of this thesis is the ‘people’ challenge which Mossman et al.

(2013) define as the ‘softest part’ of construction. The ‘people’ factor can heavily influence the success of a construction project, and is a significantly vulnerable factor out of the three identified by CIB. Dispute resolution methods and incentive provisions are typically found in all collaborative contracts. Because the ‘people’ part heavily influences the success of dispute resolution and incentive provisions, those two have been deemed to be integral aspects of a collaborative contract. The following section in this chapter and sections 2.5.3.1 and 2.5.3.2 in the following chapter expand on how the ‘people’ part acts as a catalyst in dispute resolution and incentive provisions.

## **1.2 Integral aspects of collaborative contract**

There are issues other than time and cost overruns that can potentially arise when using the traditional delivery system – legal issues, disputes, claims, etc. (A. Chan, Chan, Fan, Lam, & Yeung, 2006). In traditional delivery, adding whole life cycle value to the project is difficult because the builder is not brought onto the team until relatively late in the process. In collaborative contracts, the goals and interests of the project participants can be made to converge; this can significantly reduce the number of disputes and conflicts that generally arise in the span of a construction project (John Hinchey, 2013). There are several such standard collaborative contract agreement forms prevalent in the construction industry – Integrated Form of Agreement (IFoA), ConsensusDocs 300, AIA C191-2009 and the Project Partnering Contract (PPC) 2000 as developed in the United Kingdom.

### *1.2.1 Dispute resolution*

A collaborative approach lays its foundation on the relationship between project participants and the true test of that relationship ensues when disputes arise. This is the stage in a project which can heavily influence its performance and productivity. It may seem ironical to have

disputes arise when projects are founded on good relationship amongst project participants to start with. Having said this, not all projects are equal in size, complexity, number of variables, and unknowns and there is always a possibility of a conflict of interest or a dispute arising because of the confrontation prone nature of construction (Findley, 1997). One of the integral reasons why there are a lot of conflicts and disputes in construction, are the people (Hohns, 1979; Williamson, 1979; Diekmann and Girard, 1995; Shin, 2000; Thompson et al, 2000). Literature review in the following chapter of this thesis explores in detail how the ‘people’ part finds its place in the core of the problem of disputes. Process oriented dispute resolution methods are an inherent part of collaborative contracts. One of the objective of this thesis is to see if such process oriented dispute resolution methods work and if the effect of the ‘people’ factor can be reduced, in resolving disputes. The supplementary to this objective is to identify the issues associated with such dispute resolution models.

### *1.2.2 Incentive*

The goal of a collaborative approach is to realize better project performances and the resultant increased productivity. The fact that an incentive provision in a contract is crucially associated with project performance is widely accepted (Hasan and Jha, 2016). Collaborative contracts typically include an incentive provision. Hasan and Jha (2016) explored that though the inclusion of an incentive provision in a contract can yield better project performance, in reality the true purpose of providing incentives is not fulfilled – details of which have been provided in the following chapter. There are variables and certain aspects of an incentive provision which do not work out as theoretically planned. Just like dispute resolution models, incentive provision (or incentive model) too are influenced by the ‘people’ part. Hence, the other objective of this thesis is to identify the issues associated with such models.

### *1.2.3 OCIP/CCIP*

The concept of an OCIP/CCIP, which by definition covers all its insureds under one single policy, seems to align with the goals of collaborative contracting. The third objective of this thesis is to identify the pros and cons associated with an OCIP/CCIP.

### **1.3 Research question**

The idea and promise of Integrated Project Delivery (IPD) and other innovative collaborative models require that the variables and unknowns typically associated with the business of construction and human nature, are taken into account. The dynamics of dispute resolution and incentive models, and the associated variables, typically get heavily controlled by the softest part of construction – the people (Mossman et al., 2013). It becomes necessary to get answers from the various stakeholders involved in a project on whether such models can work or not, and if not, then what are the factors that govern the failure of such models. In essence, this research tries to investigate the human element which is typically hard to write down in a contract language.

The four objectives of this thesis are listed below:

1. To answer the question - Do these process oriented dispute resolution methods hold the potential to resolve the disputes efficiently without having an influence from the ‘people’ factor?
2. To identify issues associated with collaborative contracts’ dispute resolution models.
3. To identify issues associated with collaborative contract’s incentive models.
4. To identify the pros and cons associated with an OCIP/CCIP.



### *1.3.1 Research statement*

Identifying issues related to some of the integral aspects of various collaborative contracts from their stakeholders' perspective.

Four standard collaborative contract forms were used as the bases to ask questions on the topics of dispute resolution and incentive models. The methods implemented in collecting and analyzing data are discussed in detail in Chapter 3 and the findings are discussed in Chapter 4.

Collaboration holds a high potential in delivering a project with in an increased efficiency and considerably lesser disputes (A. Chan et al., 2004). As discussed in detail in the following chapter, the construction industry has suffered heavily due to many reasons, one of them being - inefficient ways of resolving disputes. Success of alternative dispute resolution methods would significantly serve the construction industry in reducing the adversities associated with traditional methods. This thesis makes an attempt to identify issues involved with innovative dispute resolution methods which promote non-adversarial approaches. This thesis also makes an attempt to identify issues associated incentive provisions typically found in contracts to motivate project participants for a superior performance. Incentive provisions if used and implemented as planned can yield beneficial results for the involved project participants and the project as a whole as well. Hence it is believed by the researcher that the findings of the issues associated with innovative dispute resolution methods and incentive provisions can prove beneficial to construction stakeholders.

### **1.4 Description of terms**

This section lists out some of the terms with their definition that are often used in this thesis. The terms given below can have varying definitions depending on a given particular context. This thesis is using the following definitions for the given terms.

### *Integrated Design and Delivery Solutions (IDDS)*

“IDDS use collaborative work processes and enhanced skills, with integrated data, information, and knowledge management to minimize structural and process inefficiencies and to enhance the value delivered during design, build and operation, and across project.” (Owens, 2009, pg. 3).

### *IPD*

The American Institute of Architects (AIA) defines IPD as a collaborative project delivery approach that utilizes the talents and insights of all project participants through all phases of design and construction.

### *Traditional Contracting*

Traditional contracting refers to multiple, dual party contracts used in the same project where the designer (and sometimes the construction manager) are agents of the owner and the General Contractor is an independent entity.

### *Collaborative contracting*

Collaborative contracting is a type of contracting in which the major project stakeholders (owner, designer, contractor,) are mutually bound to act in good faith and fair dealing for the good of the project, where risks are allocated rationally, and where project incentives have been created, such as shared profits and losses or cost savings between the stakeholders.

### *Dispute resolution model (or process oriented dispute resolution method)*

Typically, collaborative standard contract forms have laddered dispute resolution methods written in a dispute resolution clause. Such a model includes ‘negotiation amongst the involved parties’ as first step to resolve the disputes. If the disputes do not get resolved in the first step, the core project group (executive representatives from different stakeholder organizations) attempts

to resolve the dispute. Furthermore, the following steps include either a Dispute Review Board or mediation – whichever is pre-chosen by the parties when the contract is written. The parties typically maintain their rights to resort to arbitration or litigation, if the dispute remains unresolved after the third step. Such a laddered dispute resolution method is termed as process oriented dispute resolution method in this thesis.

### *Incentive models*

Collaborative contract forms generally have an incentive provision included in the contract agreement which entails the method in which cost savings or overruns on a project (if any) will be shared amongst the stakeholders. These are also sometimes referred to as risk-reward models. In this thesis, the term incentive model has been used.

### *OCIP/CCIP*

OCIP or CCIP is a single insurance policy sponsored by an owner or a contractor which covers all the participant insureds under a single policy.

## **1.5 Thesis Organization**

The thesis is divided in five chapters. The following chapter entails the literature review which covers the various elements of collaborative contracting. Chapter 3 describes the research methodology used in collecting, analyzing, and reporting the data. The results and discussions as a result of the analysis are presented in Chapter 4. Comparison of the findings from Chapter 4 is done against existing literature in Chapter 5. Questions and ideas for future research are also presented in Chapter 5.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Inefficiencies in traditional construction project delivery systems

The statistics given below grew out of unproductive project delivery methods and hurt construction productivity over the years. This section consists of a background study on how the different traditional project delivery systems adversely affected the construction industry. This sets context for the literature review that follows.

Since the latter part of the of the 20<sup>th</sup> century, delivery systems evolved in the construction industry due to inefficiencies of the traditional delivery system as noted by the following studies:

- 30% of projects suffer from time and cost overruns (Darrington, 2014; FMI & CMAA, 2007).
- 92% of project owners believed that architects' drawings were not adequate for construction (Darrington, 2014; FMI & CMAA, 2005).
- 37% of materials used in the construction industry are converted to waste (Darrington, 2014).
- Up to 75% of time spent on construction activities do not add value to the project, which increases to 90% if indirect construction work is factored in (CII, 2004; Darrington, 2014).
- The AEC industry's productivity decreased by 25% compared to the non-farm industry's productivity rise of 125%, from 1964 to 2004 (United States Department of Labor, Bureau of Labor Statistics).

These numbers and statistics definitely tell a story. FMI and CMAA (2005) 6<sup>th</sup> Annual Survey of Construction Owners reports that, the inefficiencies in the construction management processes and not the cost of material and labor, have the biggest cost impact on projects. Grau,

Abbaszadegan, Tang, Ganapathy, and Diosdado (2014) point out the poor productivity of construction operations as one cause of waste and inefficiencies. If productivity in construction industry is addressed, there will be an enhancement in project performances and construction costs could also be reduced (Dobbs et al., 2013). Collaboration, involving a cross-functional approach which also involves early involvement of key project participants can be an answer to the low productivity problem (Dobbs et al., 2013).

One of the keys to successful collaboration is the management of risk, specifically how it is contractually shared among project partners. Successful collaboration can reduce risk and equitably distribute remaining risks among the project participants (Darrington, 2014). In a traditional delivery system, failure of a project does not necessarily imply failure of all the key participants. For example, in a Design-Bid-Build (DBB) project, the structural engineers who design the building as per architectural requirements take on no risk if the project suffers a time or cost overrun because their service fee is predetermined at the start of the project and is not associated to the losses that might occur in the construction phase. As the structural engineering company has a separate contract with the owner, the structural engineers' involvement in the construction phase is almost zero. The Emmerson Report of 1962 stated that the construction industry was the only one wherein the responsibility and involvement of design was not to be seen in the production phase.

Minchin, Li, Issa, and Vargas (2013) studied duration performances of thirty DBB projects which were similar in nature with respect to the type of work performed; also, all the projects were budgeted \$7 million or more. After analysis it was found that - schedule was overrun by 23% on average by the DBB projects. The actual project duration for a DBB project was found to exceed planned duration in all the investigated projects, ranging from 2.74% schedule growth to 86%

schedule growth. According to Korkmaz, Riley, and Horman (2010) DBB projects showed higher cost growths as compared to CM at Risk and DB system. This is indirectly related to the weak integration between different participants in the DBB system (Pocock & Bryant, 1996). The downsides to the DBB system are multiple (Rojas & Kell, 2008).

- the contract awarding procedure is based on the lowest bid and not on the skill and/or experience of the contractor;
- discrepancies and errors in the design stage can cause cost-overruns and time-overruns during construction;
- there is a high probability of claims and/or change orders during the construction process;
- Participants in the DBB system work individually as separate entities, so there is little collaborative dialogue between any of them.

All these factors hamper the overall productivity of the project increasing the cost and duration of the project (Rojas & Kell, 2008).

Konchar and Sanvido (1998) evaluated the performance parameters of different delivery systems on a scale of 1 to 10 where 10 represented exceeding performance expectations, 5 represented meeting owner's expectation and 0 represented not at all meeting owner's expectations. The quality parameters were the following: Start Up, Call backs, Operation and maintenance, Envelope, roof, structure, and foundation (ERSF), Interior space and layout, Environment and Process equipment and layout. DBB system showed a poor performance rating in the ERSF and Environment parameters, scoring below 5. DBB performed poorly compared to DB and CM at Risk delivery systems in almost all the quality parameters listed above. The DB

system was found to have an average of around 6.5 as compared to CM at Risk delivery system's average of 6.4, and DBB's average of 5.7.

The drawbacks in the CM at Risk delivery system have been identified by the Construction Management Association of America - the CMAA (2012) points at the change in contractual relationship between the owner and the agent CM once the GMP is fixed. As the GMP includes unfinished and future design features of the project, actual costs are only established after design features are finalized and bids have been received. When the relationship changes from agent CM to more of a General Contractor once construction begins, it can negatively impact the relationship between the CM/GC organization and the owner.

The 6<sup>th</sup> Annual Survey conducted by FMI and CMAA (2005) reveals that the owners are not satisfied with their project performances. The owners concerns range from repetitive failures to a lack of co-ordination and collaboration among project participants. This consternation of the owners is also due to lack of interest from certain participants in the design phase and their self-centered approaches in a team-oriented project.

The research above suggests the need for a better structured, collaborative and more efficient project delivery system to be put in place – a collaborative approach that underlines the relational trait between key participants, in which, the responsibility for positive project outcomes is realized between all the participants (Harper & Molenaar, 2014). Kent and Becerik-Gerber (2010) suggest that as the project goals and shared rewards are aligned for all key participants, the different teams tend to work together diligently both in design and construction phases of the project.

## **2.2 Downside of traditional contracts**

This section explores the downside of traditional contracting and how it adversely affects relationships between stakeholders.

Disputes and claims arise due to a non-cooperative outlook which then lead to legal proceedings (Schottle & Gehbauer, 2012). It is not uncommon that construction contracts are written in a way to transfer risk to other project participant(s) in the project. Contract documents written in a way to transfer risk create an atmosphere of mistrust and an attitude of self-interest is reflected. This results in an increase in the construction costs and engenders adversarial relationships between project participants involved in the contract (Zaghloul & Hartman, 2003). Epstein (2005) mentions that litigation is an inexorable element of construction. This often leads to increased self-security shown by some or all participants whilst the project as a whole suffers an increased cost plus adversarial relationships among organizations. With traditional contract, different project members are inclined towards increasing their profit with disregarding value for the customer (Schottle & Gehbauer, 2012).

Association contract forms like the ConsensusDocs 300 seem to favor general contractor (Stein, 2008). This clearly can create waves of mistrust between different project participants of the same project. Not only can this inflate the project cost, but also create a non-trustworthy environment in which there is a high potential for the project to suffer. Construction claims arise due to changes in the project, incomplete drawings, delayed permits and links this primarily to the lack of co-ordination between all the project participants including the owner (Epstein, 2005). These problems are sometimes caused when a project is executed with project participants working in silos protecting themselves from construction claims and litigation (A. Chan et al., 2006; Strahorn, Gajendran, & Graham, 2015).



### **2.3 Construction litigation statistics**

This section providing statistics on construction industry litigations by building upon the previous section. Traditional contracting has had an important part to play in causing an increase in the number of litigation cases in the field of construction (Yiu & Cheung, 2007). This is an important section to the overall literature review as it solidly bolsters the preceding assertions about traditional construction contracting.

Pulket and Arditi (2009) mention that approximately \$5 billion is spent on lawsuits in the construction industry in the United States of America every year. Costs of litigation in the construction industry have increased at an average rate of 10% per year (Pena Mora, Sosa, & McCone, 2003; Pulket & Arditi, 2009). Fulbright's 9<sup>th</sup> Annual Litigation Trends Survey in 2013 for construction revealed that 80% of engineering and construction companies have filed at least one lawsuit in the 12-month study period. The survey also noted that 92% of the participants did not expect the number of lawsuits to be reduced in the next year. Bramble and Cipollini (1995) mention that approximately 38% of construction disputes are given cause by design deficiencies. The above statistics clearly suggest that the dollar amount spent in solving disputes or lawsuits or being involved in a construction litigation is concerning.

There are multiple factors that have had a part to play in the trends identified. One of the reason that acts as a foundation to all these problems is the way specific clauses of a construction contract are written (Epstein, 2005). Traditional contracting methods have forced stakeholders to safeguard their own interests, rather than being cooperative and working towards a unified goal (Chan et al, 2006; Strahorn et al, 2015). Various strategies have been used with an intention of resolving and anticipating construction disputes (Pulket & Arditi, 2009). Methods to resolve construction disputes, like mediation, arbitration, and negotiation have been suggest over the years

to avoid construction litigation. Artificial intelligence methods too have been used for the same purpose (Cheung, Tam, & Harris, 2000; Pulket & Arditi, 2009). Even though construction dispute prediction approaches and dispute resolution methods have the potential to save costs for construction project participants by avoiding litigation, the root problem of working in silos and transferring risks still exists.

#### **2.4 Integrated Project Delivery (IPD) and its elements**

IPD is a type a of project delivery system that brings together all the key participants – architect, owner and contractor, for their involvement in the preconstruction stage of the project (El Asmar, Hanna, & Loh, 2013). This concept is said to exhibit the intellectual collaboration of all the project participants that complex and demanding projects of the 21<sup>st</sup> century call for (Thomsen et al., 2009). Thomsen et al. (2009) also states that the IPD system is not a collection of different contracts with different responsibilities and different rewards and risks, but is a unified and a cohesive agreement that binds the different participants toward one single goal.

Even though IPD has not been established fully nor does it have a standard definition, it is evolving toward fruition with an aim to increase efficiency, reduce waste and increase productivity of a project (Thomsen et al., 2009). The AGC of America (AGC, 2014) defines IPD as a project

delivery system which completely unifies all the participants to share and take advantage of the different bodies of knowledge to maximize project efficiency.

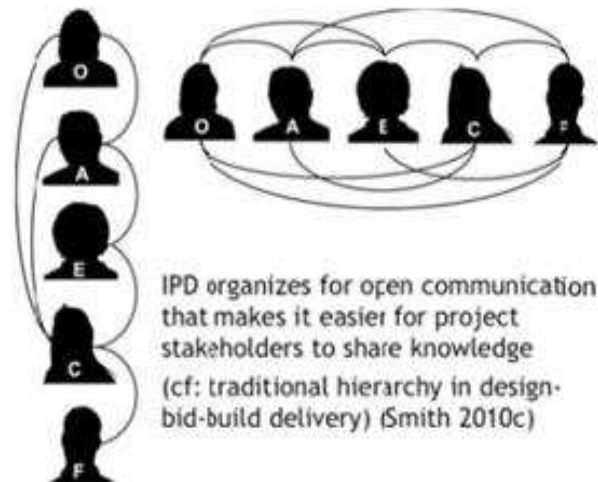


Figure 1: Traditional relationship structure v/s. IPD relationship structure (Smith, Mossman, & Emmitt, 2011).

Figure 1 shows the interconnectivity between the different project participants. As can be seen in the traditional vertical relationship structure, all the project participants are weakly connected: the architect is not connected to the engineer, engineer is not connected to facilities management, and facilities management is not connected to the owner, and so on. The IPD flat relationship structure shows the connection of all the participants to each other which basically forms the essence of IPD.

Focusing on a broader explanation, IPD is a type of project delivery system that brings together people, systems, and business configurations on the same plane of communication so that different sets of knowledge, talents, practices and insights are shared among all the participants. This collaboration can propel the efficiency of project, increase value to the owner, reduce construction wastes, and enhance project outcomes (AIA, 2007).

The characteristics of traditional delivery systems and IPD have been compared with respect to the different components of a construction project by the American Institute of Architects. Components having fixed outcomes and those having uncertain outcomes, both have been taken into consideration in this comparison. As can be clearly seen in the comparison in Table 1, IPD has an upper hand in every component; the true meaning of IPD is reflected at every stage of the construction project: team organization, risk/reward and communication etc. The definition of IPD can be comprehended by reading the following comparison established by AIA.

Table 1: Comparing characteristics of traditional delivery and IPD system (AIA, 2007)

NO.	COMPONENT	TRADITIONAL DELIVERY SYSTEM	IPD
1	Teams	Fragmented, assembled on “just-as-needed” or “minimum-necessary” basis, strongly hierarchical, controlled	An integrated team entity composed key project stakeholders, assembled early in the process, open, collaborative
2	Process	entity composed key project stakeholders, assembled early in the process, open, collaborative	Concurrent and multi-level; early contributions of knowledge and expertise; information openly shared; stakeholder trust and respect

3	Risk	Individually managed, transferred to the greatest extent possible	Collectively managed, appropriately Shared
4	Compensation/ Reward	Individually pursued; minimum effort for maximum return (usually) first-cost based	Team success tied to project success; value-based
5	Communications/Technology	Paper-based, 2 dimensional; analog	Digitally based, virtual; Building Information Modeling (3, 4 and 5 dimensional)
6	Agreements	Encourage unilateral effort; allocate and transfer risk; no sharing	Encourage, foster, promote and support multi-lateral open sharing and collaboration; risk sharing

#### 2.4.1 IPD principles and characterization

IPD relies on collaboration of participants of the project for the complete benefit to be realized and hence there are some principles that have to be inculcated in all the phases if IPD is utilized (AIA, 2007).

AIA (2007) lists the following principles of IPD:

1. Mutual Respect and Trust
2. Mutual Benefit and Reward
3. Collaborative Innovation and Decision Making
4. Early Involvement of Key Participants
5. Early Goal Definition
6. Intensified Planning

7. Open Communication
8. Appropriate Technology
9. Organization and Leadership

The first two principles suggest inter-dependability of all the key participants of the project on each other and encourage a selfless attitude toward the project goal. Rewards and incentives are based on participant's contribution toward the project outcome and all the participants are benefitted because IPD involves all the participants early in the project (AIA, 2007). IPD has mostly been used in Health Care facilities and hospitals, and Robeznieks (2014) credits the American Institute of Architects for organizing the IPD principles in 2007.

Efficiency can only be achieved when proper planning is established early in the project; Collaborative Innovation and Decision Making and Early Involvement of Key Participants facilitates an exchange of ideas among all the players of the project. Ideas and implementation of knowledge can only be fruitful if it is accepted on its excellence and can yield maximum results if they are established early in the project. Exchange of ideas and knowledge also fosters the improvement of decision making and thus can have an positive effect on the final product (AIA, 2007).

Wolfe (Kitchell Project Director for San Diego Jacobs Medical Center) was quoted: *Each key team member brings a specific skill set to facilitate discussions within each studio to connect designer and trade partners to produce a comprehensive BIM model with zero redundancy* (ENR California, 2014, pg. 3) This was in relation to the medical center project which successfully implemented IPD. Kitchell's director of field operations Alan Gunnin states that the greatest benefit of implementing IPD was to bring together all the team members and solve the issues in half the time it would take otherwise (Brown, 2014). Alan is further quoted: *By not working in*

*silos, we have been able to work through several issues and hold our original schedule dates* (ENR California, 2014, pg. 3). The above statements indicate the relevance of the first four principles of IPD put forth by the AIA. It reveals the magnitude of effect simple team-work ~~ethics~~ and collaborative tactics can have on crucial project phases and final outcome.

The need for improvement of design results and increment in efficiency are two of the many driving factors to bring IPD into implementation. The AIA guide suggests that these two factors can be achieved through intensified planning wherein all the project participants share their ideas, work methodologies and inputs for a better project outcome. Gilbane Building Co. is a leading practitioner of IPD with 91 IPD projects under its belt in 2013 (Robeznieks, 2014). Gilbane officials, in their survey response related to the implementation of IPD were quoted as follows: *If properly implemented early in the project, the integrated team institutes open, collaborative, project-oriented goals which result in cost-effective and timely built facilities that are of the highest quality* (Robeznieks, 2014).

Team organization will play a crucial role if all the principles have to be exhibited in their true sense. A project's success is directly proportional to the team integration process. Hence, a project team is chosen not only on the basis of their technical competence and expertise but also on their dedication and their inclination to accept ideas of transparent communication and risk sharing. This encourages effective collaboration and innovation (Sakal, 2005).

As far as leadership in IPD is concerned, two major roles are associated at that level. One is to form a single point of contact for external administrative issues related to the client and second is to effectively manage a project controlling different factors such as technical advice and expertise from the team members. The nature of the project governs the selection of the IPD team leader; for example if a project relies heavily on the mechanical contractor's expertise and is

mechanically intensive, it would better serve the purpose if the mechanical contractor is given the lead position (Wang, 2008).

## **2.5 Integrated Design and Delivery Solutions**

IDDS, which primarily focuses on people, technology and process is being discussed here. Here, the inception of the idea of IDDS is described which also entails its vision and principles. The three categories mentioned above are then examined upon separately with respect to the challenges in implementing IDDS. (Mossman et al., 2013) assert that the softest part of construction is people. The “what is in there for me?” question is the strongest force that prevents industry professionals to adapt to different methods or processes.

Though IPD promotes integrating Building Information Modeling (BIM) in the design and construction phase of a project – it is more about having a collaborative involvement of the Owner, Architect and the Constructor in the quest of shared risks and rewards. Lean construction and BIM have developed separately (Sacks, Koskela, Dave, & Owen, 2009) in a completely unrelated manner, though the purpose of their development has many overlaps. The parameters creating this overlap are collaboration, solid exchange of information, interaction between project participants and as (Sacks et al., 2009) mention, the overarching interactions between people, process, and technology.

Rekola, Kojima, and Makelainen (2010) talk about challenges related to implementation of appropriate technology for the successful application of IDDS. IDDS, would rely heavily on information and communication technology (ICT), for example, BIM, for its successful implementation. IDDS has the potential to be a more comprehensive makeover to the construction process (Mossman et al., 2013), which is what the requirement is as far as increase in construction productivity is concerned. CIB is an association having various research institutes as its members,



with a goal to promote and enable research and development in the building and construction sector. At present, CIB has 500 member organizations and 5000 individual experts participating in over 50 CIB Commissions (CIB World Home. (n.d.). Retrieved October 27, 2015). IDDS is one of the priority themes created by CIB; the first workshop took place in Turkey in 2006 and the first conference in 2009 in Espoo, Finland.

The key topic that was discussed in one of the sessions in the conference was on unified design and the understanding was that a pan-disciplinary team was required to achieve unified design rather than a combined effort of a multi-disciplinary team working separately. All the discussions and sessions in this conference lent themselves to a vision in which the construction industry would be more like the manufacturing industry using the lean approach. Some of the highlights of this vision were: construction will be digitally maintained, controlled and modelled, collaboration facilitating system and service integration throughout the lifecycle of the building, and clients and customers putting forward their needs to the designers and then the designers facilitating the constructors with well-defined guidelines for the construction phase, thus creating an effective supply-chain.

In CIB's first conference report of IDDS, the three major elements that were focused upon were – technology, processes, and people which form an integral part of IDDS. The opportunities seen by the experts in CIB in these three aspects give an all-round and a holistic meaning to IDDS. Table 2-2 lists the opportunities in the three categories, mentioned in the conference report:

Table 2: Opportunities for improvement seen in People, Process and Technology category  
(Kokkala, 2009)

<b>The Opportunities</b>
--------------------------

<b>PEOPLE</b>	<b>PROCESS</b>	<b>TECHNOLOGY</b>
Education by the people and for the people	Process modularization	Interfaces to standards
Well trained, motivated, and skilled workforce	Automation to allow concentration on what matters instead of routines	Technological penetration through demonstration of benefits
Current market recession provides opportunities for skill tune-up	Focus on results not routines	Solutions for learning from “models”
Multidisciplinary, distributed teams collaborating across organizational boundaries	Use of manufacturing knowledge common inter-organizational incentives	Multiple user type and context specific interfaces and solutions
-	Shift from cost-driven process to value provision	Adaptation and not adoption
-	-	Creative use of technology

In the same report, challenges to the successful implementation of IDDS were categorized in People, Process, and Technology. Following are the problems in these categories that were presented in the conference report:

Table 3: Challenges categorized in People, Process, and Technology (Kokkala, 2009)

<b>The Problems / Challenges</b>		
<b>PEOPLE</b>	<b>PROCESS</b>	<b>TECHNOLOGY</b>
Lack of motivation for change	No “why” behind process descriptions	Information exchange across disciplines

Lack of communication and trust	Models not a basis for contracts	Existing standards and technology hinder interoperability
Gap between education and industry requirements	Service logic missing	Excessive and unrealistic expectations
Personal egos	Multiplicity of issues and interdependency of actors	Islands of automation
Lack of holistic view	Model ownership	-
Islands of professions	-	-

As can be seen, there is a lack of collaboration among people and/or companies in all the three major aspects of the construction process. This required integration can be achieved when knowledge and information is shared; when project members are capable of working in a collaborative environment; when all the project members are working towards a unified goal and there is a successful supply-chain of information from one phase of the life cycle to the other.

In the following section, the challenges to successful implementation of IDDS are divided into process, technology, and people. First, the challenges associated with ‘processes’ are discussed, followed by the challenges associated with “technology”. Then the ‘people’ part is investigated as to how it affects two important aspects in construction – dispute resolution and incentive provision.

*2.5.1 Process*

CIB’s white paper on IDDS talks about multiple factors that stand as barriers to modification in the construction process – current contract models, strict legislative rules, existing project management tools and lack of understanding to name a few. CIB (2009) in their Integrated

Design and Delivery Solutions paper mention the productivity paradox which is when modest productivity gains are achieved even though there is an increased investment in information technology. This, they suggest is because of the negligence shown in process development when implementing any new technology. Reinforcing this, they also state that existing project management tools are one of the primary barriers when benefits of investment in technology are tried to be realized. There has been a development in technology related to construction, but the implementation or adoption of the same has been comparatively slow (Rekola et al., 2010).

This points at the fact that even though new technology is available to increase construction productivity and reduce the inefficiencies, the processes that need to change to accommodate these developments are not changing. One of the reasons they are not changing at the pace at which they are required to, is people. Challenges related to people will be talked about later in this review of literature. In the concluding remarks of their paper, CIB (2009), mention that information and communication technology is given the most attention as far as development and bringing a change is concerned, but for the change to be actually successful, new ways of producing, modifications in the processes that lead to adding value to the lifecycle of the project, collaboration, and knowledge sharing are of utmost importance. Rekola et al. (2010) suggest that CIB (2009) definition of IDDS too has the elements of process, competency, and technology which are aimed at minimizing structural and process inefficiencies and bolstering the value. (Sacks et al., 2009) assert that the IDDS method would need a combination of process re-engineering, responsive information technology and integrative knowledge management, among others, if an essential

change is to be realized. These three parameters are the fundamental challenges under the process category that need to be given attention.

Structural organization of the construction sector is considered to be a relevant factor in the sector's inability to incorporate management and technical collaboration early into a project. This, says Singh, will affect the IDDS development adversely. His paper talks about challenges for IDD teams with respect to mental models in four different aspects – Task, process, competence, context and team member mental models. One of the major challenges for organizations is to understand a diverse set of mental models in the above mentioned aspects. Having an understanding of project members' mental models will be useful in achieving effective team performance, to the organization. In his data collection which included focus group and face to face interviews, the concerns shown for processes were comparatively higher. Figure 2-3 below from his paper, shows the bar chart.

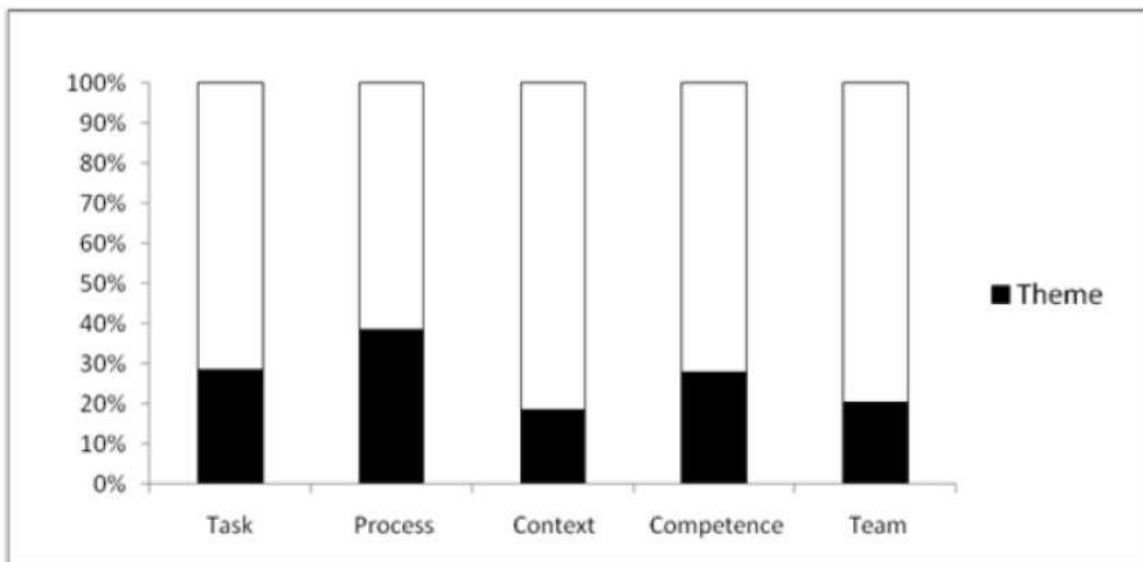


Figure 2: Concerns shown by focus group interviewees for different mental models (Singh, 2013)

Some of the key points in the Process mental model discussions were Business processes, Design Review and Clash detection, Version management, and Data Organization and management. The discussion is Business processes revolved around legal implications and fee structure related to the distributed (yet collaborative) work load. There was little clarity on information exchange and the related information supply chain. A need for shared understanding of data management processes was comprehended if excessive amounts of data were to be handled, archived, stored and traced (Singh, 2013).

### *2.5.2 Technology*

As far as technology is concerned in adopting an integrated approach, (Kokkala, 2009) mentions that a set of technologies and capabilities is an important parameter in implementing an integrated approach. He further asserts that the progress of Integrated Design is intensely connected to Building Information Modelling. BIM, on its own offers solutions to counter construction inefficiencies, which can then save considerable construction costs – inefficiencies like rework and constructability issues can be solved using BIM. The potential to realize the full benefits of BIM can only be seen in an integrated approach. But as BIM develops, there are some challenges associated to it which pose a threat to the evolution of IDDS as a whole. Many challenges associated with BIM are heavily linked to people. Singh (2013) talks about the BIM model development being a multi-user activity. Further, he also mentions that there are different versions of BIM models that can be created depending on the type of user – designers, contractors or facility managers – so, he emphasizes that the BIM model development planning should be done between the different type of BIM users to minimize rework and duplication. Again, this leads to a need for different skill sets to match if any level of coordination is expected to be achieved.

There are two aspects of challenges with regards to technology that need to be looked at separately – challenges regarding adaptability of BIM, effective usage of BIM, competency of using BIM and the challenges that are absolute technical challenges which are software related. For successful implementation of IDDS, the former set of challenges look crucial as compared to the latter ones because it tied to the other challenges in the process and people category. Some of the challenges identified by (Migilinskas, Popov, Juocevicius, & Ustinovichius, 2013) are as follows:

- Data transfer is not completely possible from one project participant to the other – one of the reasons being non-compatibility issues.
- Project participants fear technology related failure and the associated low return on high investment costs.
- The time it takes to learn new technology is an anxiety project participants have.
- Proper support from leaders in the organization in implementing (and learning) new technology is missing.

Apart from these barriers, one of the major challenges is the lack of educational training in BIM. Even if there is some form of educational training in BIM, it is not uniform or consistent within the construction industry. In other words, not all organizations have inculcated BIM training as a requirement for relevant employees. C. Chan (2014) also points out that lack of BIM education is a critical barrier in employing BIM. It is clear that technology related problems do stand as crucial barriers to implementation of an integrated approach.

### 2.5.3 *People*

The most crucial factor that would eventually play a part in moving towards an integrated approach is people. The softest aspect of construction lies in people which is not only difficult to change but also challenging to analyze and modify (Mossman et al., 2013). They also claim that CIB's IDDS Priority Theme paper focuses predominantly on technology for successful implementation of IDDS, in comparison to people. The Priority Theme paper also emphasizes on major project participants' contribution of shared knowledge and skills to collaborate construction processes and insists that availability of an integrated database will link processes from one phase to another which will eventually increase the efficiency towards project goals (CIB, 2009). Even though the above is true and promising, the catalyst which has the potential to bring this in effect is people. Not only do people need to change individually, they also need to have an understanding of how other people think, function and operate (Singh, 2013). The two critical concerns that were noted in Singh (2013) focus group interviews with regards to team member mental model were disciplines working in isolation for the same project and little trust on the information produced by other disciplines. It is evident that people need to integrate on every stage of the construction process to realize full benefits of an integrated delivery system.

There are aspects in a collaborative contract in which the 'people' part plays an important role. The following section explores how the 'people' problem is at the core of two of aspects of a collaborative contract – dispute resolution methods and incentive provisions, and how the 'people' part makes the two aspects integral to the success of a collaborative approach.



### 2.5.3.1 *Dispute resolution:*

Rahman et al. (2013) concluded that the avoidance of disputes, among many other factors, was key in achieving successful collaboration. (Jaffar, Tharim, & Shuib, 2011) noted that conflicts and the resulting disputes have become an intrinsic part of the construction business. Their study also asserted that because it is almost impossible to completely eliminate the scope of disputes in construction, the methods used to resolve the disputes should be part of the day to day project management and should have the ability to prevent them in escalating further (Jaffar et al., 2011; Shin, 2000; Whitfield, 1994). Even though this has been a requirement for long, Arditi and Pulket (2005) noted that the construction industry has not been able to come up with inexpensive and non-adversarial methods to resolve disputes. To prevent disputes from escalating to a level where binding litigation or other comparable methods are the only answers, it becomes necessary to first understand the causes of disputes. Following is some of the existing literature which is focused on the causes of disputes, of which ‘people’ part is a key cause:

- The ‘people’ factor was found to be one of the causes of disputes in construction (Hons, 1979).
- One of the biggest base causes of disputes in construction that were identified, were problems associated with people’s behaviors (Williamson, 1979).
- People, processes, and other various project characteristics were deemed to be the three major causes of disputes in construction, in Diekmann and Girard (1995) study. They further emphasized that the ‘people’ factor was the key in dispute avoidance.
- Stakeholders play a crucial part in the existence of disputes in a construction project (Shin, 2000).

- Poor communication was identified as one of the reason to cause disputes, in Fenn, Lowe, and Speck (1997) study and (Edwin & Henry, 2005).
- Disputes are primarily caused by lack of communication and mistrust (Thompson, Vorster, & Groton, 2000).

Adnan, Shamsuddin, Supardi, and Ahmad (2012) study listed out factors that affected conflicts in a collaborative approach. It was noted that, out of the ten factor listed in their study, six had the ‘people’ factor at their core. The six factors are as follows:

- Relationship problems
- Distrust
- Failure of sharing risk
- Cultural barriers
- Communication problems
- Dishonorable relationships

It becomes evident that, for a partnering contract or a collaborative approach to successfully work, the ‘people’ part needs to flourish. The above existing literature suggests that one of the phase in a construction project where the ‘people’ part plays an integral role, is that of conflicts and the resulting disputes. Given the fact that disputes have become an unavoidable part of construction (Jaffar et al., 2011), the performance of dispute resolution techniques becomes critical to a collaborative approach. Hence, the aspect of dispute resolution mechanisms is deemed to be integral in the performance of a collaborative approach.

### 2.5.3.2 *Incentive:*

Jaafari (1996) notes that the inclusion of incentive provision in a contract can combat problems associated with project performance. (Bower, Ashby, Gerald, & Smyk, 2002) emphasize the importance of having an incentive structure in a contract to improve project performance. Hasan and Jha (2016) assert that, the fact that existence of an incentive provision is critically associated with project performance, has received acceptance from experts. In traditional contracting, it is difficult for the contractor to work on the bases of client's objectives; rather, the contractor typically works in ways which maximizes its financial gains, and minimizes its risks. Ashley and Workman (1986) note that the goals of a contractor in a given particular project can be brought to align with those of the client by the means of incentives. Barnes (1981) notes that when risks are shared, project participants' objectives converge to align. The basic principle of having an incentive provision in the contract, as noted in Bower et al (2002) study, is to motivate the contractor to perform in way which is beneficial to the client in that the contractor's performance meets client's objectives, and resultantly, beneficial to the contractor itself by the means of either shared savings and bonuses, among many others.

Existing literature suggests that, theoretically, incentives can improve project performance. Though this is true, Hasan and Jha (2016) noted that the concept of having an incentive model in a contract has not been widely accepted. There are factors which undermine the true potential of an incentive model (or provision) when the model is actually put into practice. It was noted that it was typically easy for contractors to achieve the incentives without the effort it demanded (Hasan and Jha, 2016). Their findings on this claim are as follows:

- An overestimated project duration can allow the contractor to gain the incentive associated with a time underrun, with no effort (Hasan & Jha, 2016; Herbsman, Chen, & Epstein, 1995; Shen, Drew, & Zhang, 1999; Shr & Chen, 2004).
- 99% of contractors in the U.S.A. involved in a contract with an incentive provision, received the associated bonus due to the very argument made in the above point (Hasan & Jha, 2016; Herbsman & Ellis, 1995).
- Hasan and Jha's (2016) findings also note that contractors typically compromise crucial factors associated with a project's success, viz. safety and quality.

The points made above exhibit that an incentive model in a contract is vulnerable to manipulation by the contractor. So, even though the goal of an incentive model is to align contractor's goals with that of the client's thereby producing better results in terms of cost and schedule, there are examples which tell a contradicting story. The core problem in this phenomena, which is not difficult to be identified, is related to the 'people' part, which is identified as one of the primary challenges in implementing a collaborative approach by CIB. Collaborative contracts typically include an incentive provision in their standard forms and with the above literature, it is visible that if an incentive model works as it is theoretically designed to, the overall performance of a project can truly improve. Hence, the aspect of incentive models is deemed to be integral to the success of a collaborative approach.

## **2.6 Need of effective contract language for dispute resolution and incentive structure models**

Exchange of information, technology advancements, promotion of lean principles in construction, and early involvement of stakeholders in the project indeed show promise in improving performance in construction, along with an increased productivity. The promise is only

in the air until the contract language is changed such that it inherently promotes a collaborative approach. Even though construction processes have evolved in the late 20<sup>th</sup> century, some critics have claimed that the construction industry is the least efficient industry in the U.S.; primary reasons for this label are the dispute and confrontation prone nature of the construction (Findley, 1997). The senior vice president of the American Arbitration Association, Mark Appel, was quoted by ENR (2000, p. 1) as saying “the construction industry is really the industry that sponsors our work”. There is always a possibility of legal proceedings in the event of a claim or dispute even when innovative processes are implemented in a project – which then lead to adversarial relationships during the execution phase resulting in schedule and budget overruns.

One of the ways the project teams can be guarded from the evils of disputes and claims is to have effective contract language which promotes field-level negotiations and internal resolution procedures. Steen (1994) talks about five approaches to resolve disputes – four out of which, are non-binding. This not only would save organizations the dollars it costs to be involved in the legal proceedings, but also their invaluable reputation, among many other things. Steen (1994) further mentions that an unbiased contract is a primary step that needs to be taken in order to promote collaboration among project participants. (Mante, Ndekugri, N., & Hammond, 2012) believe that a collaborative approach will foster the implementation of alternate dispute resolution procedures. The methods to resolve a dispute do play a game-changing part in the success of a construction project. To further understand the idea of dispute resolution methods implemented in a collaborative approach, it becomes important to gain stakeholder standpoint on it. Existing literature suggests that the ‘people’ part is the key in resolving disputes. This thesis aims at exploring if this is indeed true, or if the process oriented dispute resolution methods drafted in

collaborative contracts can alone resolve the disputes irrespective of the ‘people’ element. Section 2.7 explores various collaborative contracts and their dispute resolution clauses.

Inclusion of an incentive provision can motivate workers and resultantly lead to an increased productivity (Laufer & Borcharding, 1981; Schottle & Gehbauer, 2012). An ideal contract is the one where in the client’s financial shared-savings program governs the contractor to make efforts to reduce cost (McAfee & McMillan, 1986; Wamuziri & Seywright, 2005). Laufer (1992) suggests that an incentive provision is an integral factor in improving project performance. *Use incentives wisely for areas of project performance where participants normally need added motivation and to create a complementary set of incentives that keep key project goals in balance* (Thomsen, Darrington, Dunne, & Lichtig, p. 39 of 104). Financial and non-financial incentives do carry a high potential of inducing motivation in project participants and this seems to align with the goal of collaborative contracting in construction. Such programs do look promising theoretically, but there are variables (some of which have been identified in section 2.5.3.2) which need to be taken into account for such programs to work practically. There needs to be extensive research done for those variables which can affect the success of such programs and hence this thesis is one of the steps taken to identify issues associated with such programs, from a stakeholder standpoint.

The following section explores four collaborative contract forms used today which include process oriented dispute resolution methods and an incentive provision.

## **2.7 Collaborative contract forms**

This section explores incentive structure, risk sharing and dispute resolution models from the following collaborative contract forms: Integrated Form of Agreement, ConsensusDocs 300, AIA C191-2009 and PPC 2000. Literature search yielded these four contract forms to being either

used or being widely discussed and commented on. How these contract forms offer solutions to mitigate litigation, motivate collaboration, and promote a team-work attitude, is reflected in this section of the literature review.

The European Federation of Engineering Consultancy Associations (efca) in its publication *Guidance for Engineering Consultancy Firms* which focused on Integrated Contracts, points out that in alliance contracting there are no contractual walls as project decisions are to be taken unanimously. There are different collaborative contract forms which cater to the above mentioned spirit of a collaborative approach (Mossman et al., 2013):

- Integrated Form of Agreement
- AIA C191-2009 Standard Form Multi-Party Agreement for IPD
- ConsensusDOCS300
- PPC2000 and PPC2000 International

Even though the essence of all these contract forms is a collaborative approach, some aspects and their language in the contract forms differ from one another. The following section explores some of the integral aspects of the above mentioned contract forms.

### *2.7.1 Integrated Form of Agreement*

#### 2.7.1.1 Dispute resolution model

Clause 31 *Dispute Resolution* in the IFOA entails procedures to be followed in sequence in case a claim/dispute arises. After a claim arises, a Notice of Potential Claim should be submitted to the Core Group. The first approach would include the Owner, Architect and the GC trying to resolve the dispute by negotiation. If this does not get solved, the claim is passed on to the Core Group (comprising of senior member representatives from Owner, Architect and GC). If the claim/dispute is still unresolved at this stage, it will be forwarded to Executives of the project

stakeholders. If this approach fails, an independent expert, cost of which will be borne by the Core Group, will try to find a solution to the problem. If at all this sequential internal resolution process fails, then the parties involved in the dispute have the option of solving the issue with the help of an arbitrator; the arbitrator will be selected from a list of arbitrators pre-established by the Core Group (Integrated Form of Agreement). As can be clearly seen, the efforts to resolve any claim or dispute internally are maximized within human capacity. This exhibits the true meaning of collaboration of project participants on a project, not only to provide an efficient engineered product with low costs, but also foster relationships, which at the end matter equitably.

#### 2.7.1.2 Incentive model

The aspect of this contract that stands out from others is the fact that the members of the tri-party agreement put all or a significant amount of their profit at risk. These amounts will be used to fund any project cost overruns after the project contingency has been exhausted. Sub-clause 3.4 *Incentives and Risk Sharing* in essence states that, if the actual costs of the project are less than the expected costs of the project, the profits will be shared between the members participating in the IPD Risk Pool as pre-determined in the contract. The above mentioned incentive structure clearly promotes collaboration of the project's integral members. On the same lines, Schottle and Gehbauer (2012) postulate that existence of an incentive scheme improves the project performance.

#### 2.7.1.3 Risk sharing model

Sub-clause 3.4 *Incentives and Risk Sharing* has a provision which states that the Owner understands that the project cost overruns (actual costs exceed target costs) will be borne by the owner unless it is expressly mentioned otherwise in the contract document. Sub-clause 3.2 IPD Team Risk Pool Plan states that a detailed plan shall be prepared that entails specifics on funding,



administration, allocation, and distribution of the IPD team Risk Pool. There is also an exhibit (Exhibit 9) in IFOA related to the responsibilities of the Risk Pool members, identified in a Responsibility Allocation Matrix. This type of matrix can clearly delineate the risks amongst project participants while minimizing confusion of responsibilities and the associated overlaps.

## *2.7.2 AIA C191-2009 Standard Form Multi-Party Agreement for IPD*

### 2.7.2.1 Dispute resolution model

In the event where a dispute rises, the dispute resolution committee (this committee includes senior members from multi-party agreement participants and a project neutral) will meet within fifteen days after the dispute was originated. The method of mediation will be implemented to resolve the issue (in conformance with American Arbitration Association's Construction Industry Mediation Procedures) with the project neutral being the mediator. The cost of this process will be borne equally by the involved parties. If the mediation process does not yield success, the involved parties can resort to the provision which allows them to choose arbitration (with the project neutral being the arbitrator) or litigation as a dispute resolution methodology (AIA, 2009).

### 2.7.2.2 Incentive model

Agreement participants will be reimbursed for the cost incurred in the services provided. The profits will be achievable through Goal Achievement Compensation and Incentive Compensation. The participants are required to set project goals and the associated compensation. If a goal is achieved in the course of the project, the compensation will be distributed amongst all the non-owner participants based on their level of effort towards achieving the goal. Incentive Compensation will be achieved when the actual costs are under expected target costs. In this case the savings will be distributed amongst the owner and the agreement participants. This type of

incentive structure promotes collaboration and encourages participants to reduce costs towards the project (AIA, 2009).

#### 2.7.2.3 Risk sharing model

The General Conditions of this form requires that the parties involved in the agreement create a Risk Matrix in which all the potential risks be identified and appropriate allocation be given to the participant most proficient of controlling it. The agreement also requires each participant to waive liability, consequential damages and subrogation against each other participant involved in the agreement. Risk is also managed by the inclusion of mutual indemnities between all the parties of the agreement (AIA, 2009).

#### *2.7.3 ConsensusDocs 300*

##### 2.7.3.1 Dispute resolution model

A sequential approach is found in the ConsensusDocs300 as far as dispute resolution is concerned. Parties are expected to resolve any disputes through negotiation. If the negotiation at the field level fails, then The Management Group takes up the responsibility to resolve the dispute. If still the dispute remains unsolved, a Project Neutral or a Dispute Review Board steps in to formulate a solution to the dispute (Salmon, 2008).

##### 2.7.3.2 Incentive model

A financial incentive program will be devised by The Management Group which will not only measure financial success but also incorporate performance measurements on ‘quality, safety, innovation and teamwork. There are other goal compensations associated with performance with respect to safety, quality and innovation (ConsensusDocs-LLC, 2013).

### 2.7.3.3 Risk sharing model

There are two ways in which risks can be distributed using the ConsensusDOCS300 document: Safe Harbor Decisions and Traditional Risk Allocation. If the Safe Harbor Decisions system is used, the participants will waive any liability associated with decisions made unanimously, to each other. In the other approach, each participant is liable for self-negligence or breaches of contract or warranty. The Designer and Constructor have the option of limiting their liability up to a specified predetermined amount (ConsensusDocs-LLC, 2013). A mutual waiver of consequential damages exists even when the Traditional Risk Allocation approach is adapted (Salmon, 2008).

### *2.7.4 PPC2000*

#### 2.7.4.1 Dispute resolution model

The dispute is first tried to be resolved with the client's representative. If this fails, it is forwarded to the Core Partnering Group or to a project mediator, agreed to by the parties. The parties do have their rights reserved for adjudication and when the dispute remains unresolved even after the non-adversarial methods, the parties can choose either arbitration or litigation as the final binding approach (Mante et al., 2012).

#### 2.7.4.2 Incentive model

There would be incentives related to cost savings and added value proposals that emerge from the implementation of value engineering. Financial incentives would be directly associated with Key Performance Indicators (KPI) and Key Result Areas (KRA) established for the project

#### 2.7.4.3 Risk sharing model

This contract form provides a strong risk sharing system and also includes the scope to amend any changes made equitably. The contract puts the responsibility of risk management on

the partnering teams and also provides a clause which gives them the ability to confirm or deny the established risk management plan.

## **2.8 Insurance requirements in collaborative contracts**

AIA C191-2009 contract form requires the involved parties to have an insurance consultant who can provide advice on project specific insurance programs. This is advantageous to the sponsor (owner or general contractor) with respect to costs as compared to individual fragmented insurances, and also advantageous to other insureds as it provides coverage limits greater than what they could have achieved individually (AIA, 2009). Mossman et al. (2013) point out to the following sentence mentioned in the AIA C191-2009 contract form, which more or less promotes a collaborative approach: “Any insurance program the Parties select shall be structured to provide adequate coverage at reasonable cost, striving to avoid duplication in coverage or exposure gaps.” (AIA C191-2009, Article 7, p. 21&22). Participants are required to buy their own insurance policies in ConsensusDocs 300. IFoA states that the Core Group will evaluate the practicability of a project specific insurance and also describes the procedure that will be followed when an insurance claim is made, if a project specific insurance program is adopted. PPC2000 expects one of the collaborating participants to sponsor a project specific insurance for the whole project and also requires every participant to be individually covered for third-party and professional indemnity (Mossman et al., 2013).

## **2.9 Owner Controlled Insurance Program (OCIP) / Contractor Controlled Insurance Program (CCIP)**

Insurance-claims process in the case when each participant is required to have insurance coverage individually and the resulting locking of horns between involved parties can be detrimental to a project’s success even when a collaborative approach is implemented. In the event

of a claim, when all participants bring their own insurance to the table, the claim handling process can become difficult to manage (Mossman et al., 2013). Falling in line with the principles of a collaborative approach, the concept of an integrated insurance program or a project specific insurance should do justice to the project owner and other key stakeholders. Owner Controlled Insurance Program (OCIP) (sponsor is the owner) or Contractor Controlled Insurance Program (CCIP) (sponsor is the general contractor), is a single insurance policy which provides coverages for multiple insureds for a project, under the same policy (The Green Law Group, LLP, n.d.). Departments of Transportations surveys suggested that owners enjoyed the cost savings that can be achieved through an OCIP (Schexnayder, Weber, & David, 2004). Schexnayder et al. (2004) also mention that there were 2% of construction savings realized in the Suncoast Parkway Project in Florida with the implementation of an OCIP.

## **2.10 Stakeholder opinion**

Collaborative approach holds the promise to solve the problems associated with productivity in the construction industry. Section 2.5 and 2.6 helped in identifying the barriers to successful implementation of a collaborative approach. Furthermore, in section 2.5.3.1 and 2.5.3.2, it was noted that the ‘people’ part was crucial in:

- Avoiding disputes
- Success of an incentive provision

As far as disputes are concerned, it was evident from the literature research that disputes have become an intrinsic part of construction and that they are almost unavoidable (Jaffar et al, 2011). Having said that, including mechanisms to resolve disputes becomes a mandatory requirement in any contract. As described in section 2.7, collaborative contracts include dispute resolution methods which primarily involve negotiations as the first measure, and then have, either

a laddered approach to resolve the dispute or provide directly with an option of binding arbitration or binding litigation. Literature review suggested that one of the crucial factor revolving around disputes is the ‘people’ factor. This can imply that irrespective of how the disputes arise, or are intended to be resolved, the ‘people’ part will play an important role. Do the dispute resolution methods drafted in collaborative contracts suggest that the ‘people’ element can be removed to a certain degree and the involved parties can be obligated to resolve the disputes as given in the contract? This thesis aims at answering this question by identifying issues related to the process oriented dispute resolution methods found in collaborative contracts, from stakeholders’ standpoint.

As far as an incentive provision is concerned, section 2.5.3.2 suggested that though incentive provisions promise increased project performance theoretically, the models have not been accepted widely. Literature review suggested that such models can be manipulated by contractors to their advantage thereby receiving more than what they deserve or compromising quality and safety on a project in the lure of receiving the incentive. Collaborative contracts do include incentive provisions in their contracts and the idea of incentives does promise better project performance. Hence, one of the objective of this thesis is to identify issues associated with such incentive models from stakeholders’ standpoint.

The concept of an OCIP/CCIP aligns with the overall vision of a collaborative approach. This thesis aims at identifying the advantages and disadvantages associated with an OCIP/CCIP and how those advantages and disadvantages can affect the performance of a collaborative approach, from stakeholders’ standpoint.

## CHAPTER 3: RESEARCH METHODOLOGY

### 3.1 Objectives

The identified integral aspects to a collaborative approach through literature review were dispute resolution methods and incentive models. The concept of OCIP/CCIP was evaluated to align with the goals of a collaborative approach. The primary objectives of this thesis are:

1. To answer the question - Do process oriented dispute resolution methods hold the potential to resolve the disputes efficiently without having an influence from the 'people' factor?
2. To identify issues associated with collaborative contracts' dispute resolution models.
3. To identify issues associated with collaborative contract's incentive models.
4. To identify the pros and cons associated with an OCIP/CCIP.

The questionnaire for the structured interviews also included the two following questions:

- What are the main factors affecting a collaborative approach?
- What are your comments on the different collaborative contracts?

This thesis primarily focused on the topics of dispute resolution, incentive provision and OCIP/CCIP. The two questions above were considered as supplementary questions to the primary topics; the purpose of these questions was to provide a broad context to this thesis. It was later observed through the interviews and the following analysis, that the answers to these questions held integral links to the topics of dispute resolution and incentive provisions – this has been expanded in Chapter 5 of this thesis.

This study sought participants who have had extensive experience in the industry dealing in the subject matters of dispute resolution and incentive models. Therefore, participants were chosen from the upper management bracket of a stakeholder organization who were typically involved in dispute resolution procedures and business decisions for their respective organizations.

Construction attorneys, who typically represent stakeholders in litigation, act as project neutrals in a Dispute Review Board (DRB) or serve the role of a mediator or arbitrator also became an integral part of the required sample. The following sections describe in detail the strategy implemented in selecting appropriate participants, collecting and analyzing the data, and finally reporting the findings.

### **3.2 Sample Selection Strategy**

J. W. Creswell (2009) mentions about the importance of purposefully selecting individuals for a qualitative study. He further asserts that the meaning of a qualitative research study is yielded when the participants are purposefully selected individuals – this assists the researcher in comprehending the research question better. A pool of industry leaders and experts were selected based on who the researchers thought to be proficient in the subject matter and were capable of answering the questions in their entirety. The sample consisted of key players in the project management process: Owner, Architect, General Contractor and Attorney, all experienced in the design and construction industry.

The initial opportunity sample consisted of fifteen experts in the state of Colorado, where the research was performed. All were contacted through e-mail. A formal consent form (APPENDIX I) providing information about the study was attached to the e-mail. The consent form provided information on the participant's role in the study, a brief context to the study, purpose of the study, details, contact information of the researchers, and the means and methods of how the collected data would be handled.



### **3.3 Data Collection Strategy**

Out of fifteen experts, seven responded affirmatively to participate in the research. Out of seven, there were two participants in each of the following participant categories – General contractor, Owner, and Attorney. There was only one participant in the Architect category.

Data was collected in the second half of January, 2016 and the first half of February, 2016. The data collection process included a thirty minute structured face to face interview session with the participant at a location preferred by him/her. The researcher sent the agenda (APPENDIX II) of the interview session prior to the actual meeting, to the participant. First, the researcher obtained the participant's consent in continuing with the interview. Once consented, the researcher gained demographic information about the participant (APPENDIX III) through a form which was filled out by the participant.

At the beginning of the interview, the researcher provided verbally a short context and introduction of the research project to the participant. The structured interview included five open-ended questions (APPENDIX IV). The first two open-ended questions initiated discussions on dispute resolution methods and incentive models by gaining context from the summary of dispute resolution and incentive provisions from the four collaborative contract forms – AIA C191-2009, ConsensusDocs 300, Integrated Form of Agreement, and PPC 2000. The participant was also asked to rank order the four contract forms based on his/her preference in implementing a collaborative approach. Once this step was complete, the interviewer (researcher) asked for specific reasons to the participant on his/her ranking preference which may or may not have derived from the prior general discussions on the same topic. To identify issues associated with process oriented dispute resolution methods and incentive provisions, participants were asked to give their general commentary on those two aspects. To accurately collect participants' responses,

the interviews were audio-recorded depending on the participants' permission to do so in the consent form.

Three additional questions were asked to participants:

- What are OCIP/CCIP pros and cons?
- What are the main factors affecting a collaborative approach?
- What do you think in general about the different collaborative contract forms?

### **3.4 Data Organization / Transcripts**

The audio recordings were transcribed verbatim. The transcripts were organized under each participant category, for all the five questions. APPENDIX VI shows an example of a participant transcript.

### **3.5 Method of analysis**

An in-depth exploration of the subjective issues of dispute resolution and incentive provisions, was the requirement. This was the reason why a qualitative research tool was chosen over any other. Researchers doing qualitative analysis generally detect themes, later to comprehend and describe them (Creswell, 2009). Burnard, Gill, Stewart, Treasure, and Chadwick (2008) suggest that the method typically used to analyze qualitative data is thematic content analysis – the researcher tries to determine themes and patterns emerging from the transcripts by reading them carefully and verifying and confirming the themes after repeated transcript perusals. Hence, the next step was to identify converging and/or diverging arguments and discussions and group them together. All the various participant categories were examined for that theme, in a single discussion topic. The following section describes in the detail the process of implementing thematic content analysis.

### *3.5.1 Thematic Content Analysis*

Thematic content analysis is an individual, adjustable, and useful qualitative research tool used to classify, analyze, and report themes found across an interview or set of interviews (Braun & Clarke, 2006; Vaismoradi, Turunen, & Bondas, 2013). DeSantis and Ugarriza (2000) state that thematic analysis includes the process of identifying repeating patterns in interviews. The result of thematic content analysis is an absolute qualitative detailed interpretation of the collected data with the identified themes and repeating patterns (Braun & Clarke, 2006; Vaismoradi et al., 2013). This research followed a similar process in analyzing data collected in the form of interviews. The primary goal of this research was to identify issues surrounding some of the integral aspects of a collaborative contract and hence this approach was deemed to be the best fit for this thesis.

Burnard (1991) lays out a detailed stage-wise explanation on thematic content analysis as a qualitative research tool. He states that the method of thematic content analysis is founded upon the ‘grounded theory’ devised by Glaser and Strauss and other different works on content analysis (Babbie, 1979; Berg, 1989; Burnard, 1991; Fox, 1982; Glaser & Strauss, 1967). Burnard’s (1991) work is used as a solid reference in carrying out the thematic content analysis procedure for this research project. Before laying out the steps involved in performing a thematic content analysis, Burnard (1991) puts forth an important limitation of this approach – he questions the trueness of finding common patterns; more specifically questioning the correctness of the patterns being common. He later suggests that in the stages prescribed for thematic content analysis in his paper, the researcher’s interpretation of two or more patterns or themes being common has been accepted to be judicious. Following this, Burnard (1991) describes in detail each stage in performing thematic content analysis for qualitative research. He uses an example to describe the sequence followed in this method. Following is the sequential approach.

Stage 1: Researcher (interviewer) takes notes during each interview. These notes are used later during analysis and help the researcher reflect on the subjects/topics talked about during the interview. Such notes might contain specific keywords which relate to crucial pieces of information given by the participant in the interview.

Stage 2: Researcher tries to get involved with data at great depth by reading interview transcripts and notes. The author asserts that this way the researcher attempts to become fully aware and familiar of the data in the transcripts. By doing this, the researcher starts the first step in generating post-evaluation themes.

Stage 3: Researcher starts the process of open coding (Berg, 1989; Burnard, 1991) where in parts of interviews are categorized under an identified initial theme. In this stage, an attempt is made to cover all the data across all the interviews.

<b>Interview transcript</b>	<b>Open coding</b>
<b>I suppose most people need counselling at some point in their lives. I would think that some nurses are quite good at it. They have the skills. Although I'm not sure if many nurses get counselling training as part of their nurse training.</b>	<b>Open coding Most people need counselling . . . Some nurses are good at it . . . They have the skills . . . Not sure about counselling training in nurse education . . .</b>

Figure 3: example from Burnard (1991, p. 2) paper demonstrating Stage 3 of this process

Stage 4 and 5: An attempt to filter the categories is made to eliminate monotonous categories or headings. In the 5th stage, a final list of categories is created. Using the example in the figure above, the different categories that can be compressed into one, are:

- Some nurses have counselling training

- Nurses have training in counselling
- Need for counselling in training

The author names the main category for the above listed, as Counselling Training for Nurses (Burnard, 1991).

Stage 6: To reinforce the validity of categories created and to eliminate researcher bias, a peer or colleague is requested to execute Stage 1 through Stage 5 independently. Based on the comments from the external validator, adjustments are made to the final list created by the researcher.

Stage 7: A process of re-evaluating the transcripts is implemented to cross-check if all of the interview data has been categorized in one or more of the identified themes.

Stage 8: The interview data is now divided into the created categories. Different colors are designated to different themes and are called out to the side of the theme. The data pertaining to a particular theme is then highlighted with the appropriate color under which that data falls. Using the example shown in the figure above:

- Definition of counselling – BLUE
- Patients' needs for counselling – RED
- Counselling Training for Nurses – GREEN

The author suggests that this helps the researcher categorize parts of transcripts for the identified themes efficiently (Burnard, 1991).

Stage 9 and 10: Texts pertaining to categories are collected together and categorized under the identified themes.

<b>Transcript</b>	<b>Categories</b>
<b>Counselling, for me, is a question of helping people to sort out their own problems in their own way.</b>	<b>Definition of counselling</b>
<b>There are other definitions, of course. This is not the only one</b>	<b>Definition of counselling</b>
<b>I would think that a lot of nurses get taught something like this during their training</b>	<b>Counselling and nurse training</b>
<b>I suppose that we were taught the non-directive approach which says that patients have to find their own solutions.</b>	<b>Definition of counselling</b>

Figure 4: example from Burnard (1991, p. 3) paper demonstrating Stage 9 and 10 of this process

Stage 11: The created categories are sent to the participants to be verified for their correctness. This further reinforces the validity of the categories or themes created.

Stage 12 and 13: Researcher compiles all the categorized data appropriately and starts the interpretation process. While doing this, it is imperative that the researcher keep the original transcripts and audio-recordings handy for clarification and to clear any ambiguity during the writing process. The researcher connects similar quotes and examples under a theme along with providing his/her own interpretation.

Stage 14: Researcher in this stage can choose to implement one of the two approaches: first, the researcher can write a separate section comparing the findings of the research to the existing literature on the same topic – this section will follow the section in which the findings are reported. The author claims this approach to be a pure one in qualitative research. The second approach suggested by the author is to write the comparison of findings of the research to the

existing literature in the same section. In doing so, it makes it more easy and practical for the reader to comprehend the findings against existing literature on a particular topic.

This stage wise approach was implemented in this research and has been described in the following chapter. The researcher used the manual process of identifying themes instead of using a computer based software.

### **3.6 Reporting the findings**

More often, qualitative findings have been presented in a narrative form (J. W. Creswell, 2009; Miles & Huberman, 1994). Creswell (2009) too states that the common method to report the findings of analysis in a qualitative research is to provide a descriptive paragraph about the identified themes. According to Burnard et al (2008), the traditional approach in presenting results of qualitative analysis is to report significant results and findings for each identified theme or issue. A similar approach was implemented for this research. Findings on the various issues identified for dispute resolution methods and incentive models were reported first. Then, a chart summarizing ranking results of all participant categories was created. This chart represented frequencies of different ranks (from 1 to 4; 1 being most preferred and 4 being least preferred) received by a collaborative contract form with respect to dispute resolution and incentive models. This chart was significant in that it exhibited participants' preference for a standard contract form with respect to dispute resolution and incentive models. It is understood by the researcher that the four contract forms used in this research were in their standard forms. It is very likely in almost all projects that a standard contract form will be modified as per a particular project's characteristics. To keep matters simple and consistent, summaries of dispute resolution and incentive models from the four standard forms were given to the participants to evaluate (APPENDIX V). On the basis of the prescribed models presented in the standard forms, the participants were required to rank order the

four contract forms, with rank 1 being the most preferred dispute resolution model and rank 4 being the least preferred. It was understood by the researcher that the numerous variables in a particular project and the associated characteristics will influence the participants' ranking preference. Because it was impossible to cover every aspect of the varying nature of a construction project, the summary from the standard forms was provided to the participants. Hence, the rankings provided by participants were not taken as their strict preference, but were considered as conditional.

Following this, findings on the pros and cons of OCIP/CCIP, and factors affecting a collaborative approach were reported. Subsequently, a section reporting the findings on the comments made by the participants on the topic of various contract forms, was included. The rank frequency chart and the participants' comments on contract forms were deemed to be good indicators to see if there existed a bias amongst stakeholders for a particular standard contract form.

Burnard et al (2008) state that when the traditional approach is used to present qualitative results, the results are followed by a section which compares the results with the prevailing studies and literature on the same topic. Creswell (2009) mentions that comparisons made of such nature have the potential to create questions which were not attended by the researchers. Resultantly, this process helps the subject matter to evolve further. In this research as well, the same procedure was followed. A section following the findings included the comparison of the results with the existing literature on the topics of dispute resolution methods, incentive models, and OCIP/CCIP. It is typically not easy for a researcher to answer all the questions with one research study and hence efforts were made to identify any gaps or unexplained material in this study requiring further research.



### **3.7 Generalizability**

Qualitative research promises particularity instead of generalizability (J. W. Creswell, 2009; Greene & Caracelli, 1997). This research aimed at putting forward stakeholder perspective in the state of Colorado due to geographical limitations, because of which the sample size was not too large. A total of fifteen participants, three to four from each participant category (owner, architect, general contract, and attorney) were contacted to participate in this research. With this sample size it was difficult to generalize the findings to a broader population and hence the findings of this research were only be representative of industry leaders working in the state of Colorado, to some extent.

On the other hand, the researchers believed that in-depth exploration of this subject is more relevant to the research than it being capable of generalization. Myers (2000) mentions that meticulous analysis of qualitative data can result in the emergence of new questions that may be equitably relevant to the research topic. She also states that, qualitative analysis gives the researcher a potential to express the “relationship among variables” (Myers, 2000, p. 1). It is important in the construction industry to understand relationships among project participants which in many cases affects the overall success of a project. The researchers believe that discussions by various stakeholders in this research will shed light on how the strength of relationships drives certain critical decisions in a project. The discussion topics in this research have little impact from demographic or geographic parameters and hence the fact that the findings cannot be generalized to the whole industry does not necessarily diminish the contributions of this research. In qualitative research, situational representativeness is required and the idea of generalizability then becomes “the extent to which theory developed in one study may be

exported” (Horsburgh, 2003, p. 5). Hence, attempts were made to carefully analyze the data so that it yields useful findings and intriguing questions that may form the bases of future research.

### **3.8 Validity**

Interpretation by researcher in qualitative research creates the potential of researcher bias affecting the quality of results. Thus, it becomes important to make attempts in eliminating this bias to the maximum degree possible. In order to do that, the researcher in this research implemented Stage 11 of the method prescribed in this chapter – it is described below.

The transcripts, themes, and the appropriate data pertaining to those themes identified by the researcher were sent to participants of this study. This was done to reinforce the validity of the themes. Participants were also asked to evaluate if the data falling under a particular theme was appropriate or not. Their response was received through e-mail and has been incorporated in the following chapter.

Another approach, apart from Burnard’s (1991) validation approach, was also implemented in the validation phase. The findings of this thesis were categorized per the integral topics. The findings were sent to two national construction law experts, to see if they converged or diverged with the findings based on their knowledge and expertise in the field of design and construction. A validity check form (APPENDIX VII) was created and sent to the experts. Results of this validation have been included in the following chapter in section 4.4.

## CHAPTER 4: RESULTS AND DISCUSSION

### 4.1 Overview

A total of seven experienced individuals participated in this study out of the fifteen initially contacted through e-mail (Figure 6). As can be seen in Figure 6, there were two participants in owner, general contractor, and attorney categories and one architect in architect category. The experiences of the participants ranged from eleven to thirty five years in the field of design and construction. All the participants were asked the same questions in the exact same order (APPENDIX IV). Every structured interview was audio-recorded when the interviews took place. The interviews were then transcribed verbatim in a notebook and the transcripts were categorized in the appropriate participant category. Once this was done, the process of thematic content analysis was implemented for the following issues: dispute resolution methods, incentive models, pros and cons of OCIP/CCIP, and factors affecting a collaborative approach.

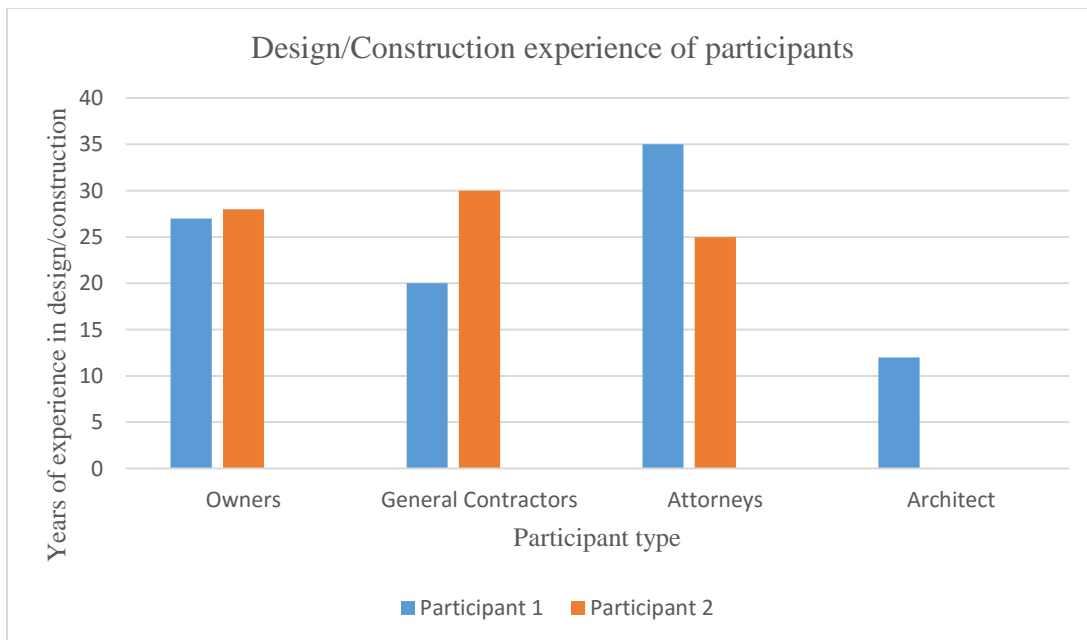


Figure 5: Experience of participants in design/construction industry

## 4.2 Thematic Content Analysis

The steps of thematic content analysis used in this thesis have been described below to show how the data in this research was analyzed. The full stage-wise thematic content analysis procedure is shown below, for only one topic – dispute resolution methods.

Stage 1: During the face to face structured interview, the researcher took notes from the answers given by the participant.

Stage 2: To become familiar with the collected responses, the researcher read the transcripts and the notes repeatedly. This helped the researcher in gaining a firsthand impression of the themes that could be identified.

Stage 3: Table 4 (left column) shows an excerpt from the transcripts of one of the participants. The researcher started the process of open coding the transcripts. Through open coding, relevant phrases and keywords were created (right column). All the transcripts in their entirety were open coded using Stage 3, but for brevity, only an example (Table 4) has been presented.

Table 4: example of open coding done for a part of an interview transcript on the topic of dispute resolution methods

<b>Interview transcript</b>	<b>Open coding</b>
None of the dispute resolution clauses actually address complicated issues. Typically, dispute resolution with the involvement of a project neutral are slow and cumbersome – because the project neutral is sometimes ill informed of the contract, and in some cases the nature of the dispute also. Typically, dispute resolution with the involvement of a project neutral are slow and cumbersome – because the project neutral is	<p>Dispute resolution not addressing complicated issues</p> <p>Dispute resolution procedures are slow</p> <p>Project Neutral is ill-informed</p>

<p>sometimes ill informed of the contract, and in some cases the nature of the dispute also. You can write whatever you want in a dispute resolution clause, but that language does not matter generally when it comes to actually resolving the disputes. Mutual understanding and relationship between the parties can actually resolve the dispute.</p>	<p>Dispute resolution contract language does not really matter</p>
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Stage 4 and 5: For all the data in all the transcripts, similar phrases and keywords as a result of open coding were grouped together under the heading Repetitive / similar theme (left column, Table 5, 6, and 7). In Stage 5, a single name for the final themes were designated (right column, Table 5, 6, and 7). This was done to reduce and categorize the similar themes, under one final theme.

Table 5: grouping monotonous themes on the topic of dispute resolution models regarding the issue of time consumed in a dispute resolution model and reducing to one single theme

<b>Repetitive / similar theme</b>	<b>Final theme</b>
too time consuming	Time consumption in Dispute resolution
too cumbersome	
Spend a lot of time	
Much shorter time frame	
Several steps	
Dispute resolution procedures are slow	
Push and stretch an issue	
Two step process	
Too many steps	
Lot of time	
So many steps	
More chances	

Table 6: grouping monotonous themes on the topic of dispute resolution models regarding the issue of project neutral concerns and reducing to one single theme

<b>Repetitive / similar theme</b>	<b>Final theme</b>
Separate roles of Project Neutral	Project Neutral concerns
Project Neutral is ill informed	
Selection criteria for Project Neutral	
Project Neutral skills in arbitration	

Table 7: grouping monotonous themes on the topic of dispute resolution models regarding the issue of practicality of dispute resolution models and reducing to one single theme

<b>Repetitive / similar theme</b>	<b>Final theme</b>
Language of Dispute resolution does not matter	Dispute resolution practicality
Approach looks more practical	
Not widely adopted	
No empirical evidence	
Sounds great in theory	

Stage 6: To reinforce the reliability of the identified themes, the transcripts were sent to an external analyst. He was asked to follow Stage 1 through 5 to identify themes that could emerge from the transcripts. This method of validating the themes by an external analyst is used when doing thematic content analysis (Burnard, 1991). From his analysis, the following themes were identified, which are compared to the themes identified by the researcher.

Table 8: external analyst reliability results

<b>Dispute resolution</b>	
<i>Researcher</i>	<i>External analyst</i>
Time consumption in dispute resolution	Time efficient / shorter processes

Project Neutral concerns	Role and identification of Project Neutral
Dispute resolution models practicality	Practical use of various dispute resolution clauses
Architect’s standpoint	Friendly/Informal/Non-binding outcomes
<b>Incentive provision</b>	
<i>Researcher</i>	<i>External analyst</i>
Incentive models mechanics	Clarity of incentives
Stakeholder fee at risk	Associated risk limitation
	Neutral administrator verification
<b>OCIP/CCIP</b>	
<i>Researcher</i>	<i>External analyst</i>
Cost savings	Savings to the owner
Claims management	Time and cost efficient
Administrative burden	Administrative burden
Participation rate	Lack of expertise
<b>Factors affecting collaborative approach</b>	
<i>Researcher</i>	<i>External analyst</i>
Relationship	Relationship/trust
Risk allocation	Appropriate accommodation of risk

In the topic of dispute resolution, all the themes but ‘Friendly/Informal/Non-binding outcomes’ were similar in nature to the ones identified by the researcher. This theme was found to

be a sub-set of the ‘Time consumption in dispute resolution’ theme originally found by the researcher, and has been incorporated in the findings in section 4.3. In the topic of incentive provisions, the external analyst identified three themes, of which two were similar in nature to the ones identified by the researcher. The theme ‘Neutral administrator verification’ was found to be a sub-set of the broader theme ‘Incentive models mechanics’ as identified by the researcher. In topic of OCIP/CCIP, the external analyst identified four themes, of which three themes were similar in nature to the ones identified by the researcher; the fourth theme ‘Lack of expertise’ was found to be a sub-set of the broader theme ‘Administrative burden’ as identified by the researcher. In the topic of ‘factors affecting a collaborative approach’ the themes identified by the researcher and the external analyst matched.

Stage 7: After Stage 6, all the transcripts were read again and evaluated for the identified final themes. This was done to confirm if all the relevant data in the transcript was categorized.

Stage 8, 9, and 10: The final themes were designated a color and the parts in the transcripts pertaining to a particular theme were highlighted with that color. The parts highlighted in a given particular color were then grouped together and categorized under their respective themes (Table 9, Table 10, Table 11, and Table 12).

Table 9: color designation for final themes in the topic of dispute resolution

<b>Final theme</b>	<b>Color</b>
Time consumption in Dispute resolution	green
Project Neutral concerns	blue
Dispute resolution model practicality	pink



Table 10: grouping parts of transcripts pertaining to the final theme of Time consumption in dispute resolution models; color code – green

Participant type	Transcript part	Final theme
Attorney 1	<p>For a medium to small size project, in my view they are too elaborate and too expensive and time consuming. On major projects they are much more appropriate. Are you familiar with a concept of a dispute review board?</p>	Time consumption in Dispute resolution
Attorney 1	<p>The next one in the same order would the IFoA – it is just too cumbersome and time consuming – the approach should be to resolve the dispute or claim as soon as possible. You are really spending a lot of time to address something that should be done quickly. The ConsensusDocs has a much shorter time frame to resolve or address the dispute.</p>	Time consumption in Dispute resolution
GC 1	<p>But it seems some of the other ones are trying to have the team members work it out themselves so seeing these for the first time – the ConsensusDocs has several steps before you get to a binding process – I kind of like this idea. The IFoA again is kind of the same thing</p>	Time consumption in Dispute resolution
GC 2	<p>Typically, dispute resolution with the involvement of a project neutral are slow and cumbersome – because the project neutral is sometimes ill informed of the contract, and in some cases the nature of the dispute also.</p>	Time consumption in Dispute resolution

<p><b>Architect 1</b></p>	<p>ConsensusDocs 300 says that the cost of a binding approach will be borne by the losing party – this is a multi-party agreement, so it should be <u>parties instead of party.</u> Our preference is ‘bear your own costs’ in litigation because it discourages frivolous lawsuits. That is another reason why we prefer litigation over arbitration because some people may want to push an issue much more in arbitration, and less willing to push an issue in litigation.</p>	<p>Time consumption in Dispute resolution</p>
<p><b>Owner 2</b></p>	<p>Based on the summary they all have their drawbacks for a variety of reasons. For example, the AIA, I like the two step process – I think that is ideal because it is more efficient that way.</p>	<p>Time consumption in Dispute resolution</p>
<p><b>Owner 2</b></p>	<p>There are just too many steps and it just takes a lot of time.</p>	<p>Time consumption in Dispute resolution</p>
<p><b>Attorney 2</b></p>	<p>The more chances you give something to succeed before you turn to a final decision maker the better, right? <u>In practice, it works exactly the opposite!</u> So many steps can make a given participant “madder” as they go along each step of the process until they finally get through them.</p>	<p>Time consumption in Dispute resolution</p>

Table 11: grouping parts of transcripts pertaining to the final theme of Project Neutral concerns; color code – blue

Participant type	Transcript part	Final theme
Attorney 1	<p>The next least desirable is the AIA – the reason is because it requires arbitration with a project neutral. I think you need to separate the roles. The project neutral should be there to facilitate resolution of dispute in a cooperative sense and been put into a position of having to be the arbitrator of the dispute if it proceeds to a formal claim. Those 2 roles need to be separated.</p>	Project Neutral concerns
GC 2	<p>Typically, dispute resolution with the involvement of a project neutral are slow and cumbersome – because the project neutral is sometimes ill informed of the contract, and in some cases the nature of the dispute also.</p>	Project Neutral concerns
Owner 2	<p>I would probably choose the ConsensusDocs 300 as a favorite but it needs greater specificity in terms how the project neutral or dispute review boards are selected and their levels of authority</p>	Project Neutral concerns
Owner 2	<p>Because if the project neutral in the mediation process (first step) cannot foster an agreement and settlement in a non-binding format, why would then that party expect him to have the skills to resolve the agreement in a binding format.</p>	Project Neutral concerns

Table 12: grouping parts of transcripts pertaining to the final theme of Dispute resolution model practicality; color code – pink

Participant type	Transcript part	Final theme
GC 2	You can write whatever you want in a dispute resolution clause, but that language does not matter generally when it comes to actually resolving the disputes. Mutual understanding and relationship between the parties can actually resolve the dispute.	Dispute resolution practicality
GC 2	My preference would be the IFoA as the first because of arbitration in there; then the AIA C191 – the approach in this summary looks more practical.	Dispute resolution practicality
Owner 2	I personally have not been involved in disputes using these dispute resolution models from the four standard forms. They are not widely adopted yet. But realistically because parties have their own interests and their exposure is going to be based on the risk that they face, the risks are not proportionate b/w. the parties.	Dispute resolution practicality
Owner 2	Is there enough empirical evidence that these type of contracts produce better results? I don't think there is enough empirical evidence out there, it is all anecdotal right now. There has not been enough measurement of the KPIs that are associated with project delivery to say yes this type of IPD model is producing better results.	Dispute resolution practicality
Owner 2	You hear about these but there is no specific evidence; it sounds great in theory but the challenge is to get companies put their own financial interest in stake for the betterment of a project.	Dispute resolution practicality
Attorney 2	The worst thing is the dispute resolution clauses to do if you are talking to be collaborative – because you are already talking about “what are we going to do when we fight”. I think part of the problem is that is sort of built into construction and there is	Dispute resolution practicality

	an understanding that you have to have dispute resolution processes...	
<b>Attorney 2</b>	Because there are too many moving parts and variables – you have to plan for these things in advance but it is like ‘planning for your divorce when you are getting married’.	Dispute resolution practicality
<b>Attorney 2</b>	These things are not self-executing; you can write 50 mediation clauses in different contracts and that mediation will feel 50 different things when you mediate those different disputes – it all depends on the personality of the people, strength of the mediator, nuances of the dispute – these are not one size fits all things.	Dispute resolution practicality

Table 10, 11, and 12 represent grouping of transcript parts for the themes in the topic of dispute resolution. The transcript parts pertaining to themes in the topic of incentive provision, OCIP/CCIP, and factors affecting collaborative approach were similarly grouped. For brevity, those have not been shown here.

Stage 11: The identified themes and the relevant highlighted data in the transcripts were then sent to the participants of this study. This was done to reinforce the correctness of the transcript and the identified themes under each give topic. Participants were sent an e-mail and their responses were also collected through e-mail (APPENDIX VIII). Five out of seven participants reviewed the transcripts and identified themes. Two out of the five had the following clarifications based on their perusal of the transcripts.

Clarification 1: Participant 1 (Attorney category): The original transcript part said ...*the owner is really the least culpable in a cost overrun unless the owner has directed changes that increase the cost.* The participant made the following clarification through e-mail: *One correction on the Incentive Structure portion - the statement that “in most cases the owner is not culpable for*

*overruns or losses in a project” is incorrect. An owner often bears some degree of responsibility for cost overruns or losses, and the particular facts and circumstances of the project will determine the pro-rata share of responsibility between the participants in the project. No findings of this thesis were particularly related to this modification of the transcript.*

Clarification 2: Participant 2 (General Contractor category): The participants’ modifications did not affect the themes directly but had an impact on the findings – those have been incorporated. The participant had the following modifications to make:

1. *Incentives – the overarching theme I think you are missing is that contract participants react in their own interest to incentives. (The items in green – manipulating and gaming are reactions to the incentives.)*

2. *OCIP/CCIP – the grey item you have characterized as “managing claims in the event of disputes gets easy”. I think the more appropriate evaluation is that “coverage under an OCIP is better compared to projects where each contractor has its own insurer. The OCIP/CCIP eliminates competing interests of multiple insurers. Thus, in the event of covered claims, under an OCIP/CCIP there is a much lower probability of disputes (among the various subcontractors or their insurers).*

*Otherwise, I concur.*

Table 13 shows if a participant reviewed the transcripts and themes sent to them.

Table 13: Participants’ validation response

Participant		Reviewed transcripts and identified themes
Owner	Participant 1	YES

	Participant 2	NO
<b>General Contractor</b>	Participant 1	YES
	Participant 2	YES
<b>Attorney</b>	Participant 1	YES
	Participant 2	NO
<b>Architect</b>	Participant 1	YES

Stage 12 and 13: In this stage, the researcher categorized all the relevant data from the transcripts with the appropriate final theme. The writing process of reporting the findings was started in this stage.

Stage 14: The findings from this analysis have been reported below. A comparison of these findings to the existing literature has been made in the following chapter.

In qualitative research, there are no set guiding principles as to an ideal interview sample size (Guest, Bunce, & Johnson, 2006). They further suggest that an appropriate sample size in a qualitative study can be achieved when the collection of data reaches a point of saturation. This implies that there is no new significant data collected from the interviewees after a certain point in the sample size, at which the collected data becomes saturated. A minimum of six participants are required in a phenomenological studies (Guest et al., 2006; Morse, 1994). J. Creswell (1998) also suggests that there should be a minimum of five participants in a phenomenological study. As can be found in themes reported below, there was a high level of consistency achieved with regards to

responses on different questions, with seven participants. Majority of the participants' responses intersected with each other on the various questions asked. Hence, even though this study had a small sample size of seven, the researcher believes that the data collected through the seven participants was close to being saturated. However, this study only had one participant in the architect category and hence the scope to validate the architect's responses was diminished considerably. This limitation has been covered in section 5.3 of the following chapter.

### **4.3 Findings**

After a complete analysis of all the transcripts plus the incorporation of the external analyst's input and participants' clarifications, following were the final themes identified in the topics of discussion of dispute resolution models and incentive models.

Dispute resolution models:

THEME 1: Time consumption in dispute resolution processes

THEME 2: Project Neutral concerns

THEME 3: Dispute resolution model practicality

THEME 4: Architect's standpoint

It should be noted that, THEME 4: Architect's standpoint exhibits the opinions of the participant in the architect category only.

Incentive models:

THEME 1: Incentive model mechanics

THEME 2: Stakeholder fee at risk



The findings for each theme listed above have been described below. 4.3.1 refers to the first topic of discussion – dispute resolution models and 4.3.1.1 refers to the first theme in the topic of dispute resolution models. There are a total of five topics on which the findings are reported in the order shown below.

- 4.3.1 Dispute resolution models
- 4.3.2 Incentive models
- 4.3.3 Standard contract form rank frequencies for DR models and Incentive models
- 4.3.4 OCIPs/CCIPs pros and cons, and factors affective collaborative approach
- 4.3.5 Comments on collaborative contracts

#### *4.3.1 Dispute resolution models*

##### 4.3.1.1 THEME 1: Time consumption in dispute resolution processes

Having been involved in various dispute resolution instances, participant 2 in the GC category was of the opinion that such processes are slow. He believed the role of a Project Neutral makes the process more cumbersome as the Project Neutral is sometimes not well versed with what the contract says, and sometimes is not well versed with the nature of the dispute. Participant 1 in the GC category believed that it is best to have the disputes resolved in a short time frame. He was in favor of the idea of having numerous steps of an informal resolution process before heading into a binding form of resolution. The ConsensusDocs 300 and the IFoA prescribe such dispute resolution models and the participant thought of those to be very robust in resolving disputes that might arise on a construction project.

Participant 2 in the owner category believed that a shorter time frame to address the dispute will be much more effective than having several steps of resolutions. For this, he liked the two step approach prescribed by the AIA C191-2009 standard form. The participant believed that having

several steps of informal resolution processes will only take a lot of time and those steps will be devoid of any objectivity to resolve the dispute as the arguments of the stakeholders will be emotionally charged.

Participant 1 in the attorney category believed that dispute resolution models are too time consuming and expensive on small to medium size projects, and appropriate for large major projects. Participant 1 was also of the belief that the steps in solving a dispute should be less in number and the resolution should be achieved as soon as possible. Hence, he did not prefer the laddered and long approach prescribed by the IFoA. He was quoted as saying *it is just too cumbersome and time consuming – the approach should be to resolve the dispute or claim as soon as possible. You are really spending a lot of time to address something that should be done quickly* (Participant 1, attorney). Participant 2 in this category, believed that, theoretically, the IFoA provides the best approach to resolve a dispute – he was quoted as saying *the more chances you give something to succeed before you turn to a final decision maker the better, right?* (Participant 2, attorney). But, he concluded that practically the case is always opposite. He suggested that having many informal steps to resolve a dispute can only worsen the condition and frustrate the parties involved due to lack of neutral authoritative decisions and the resulting lack of objectivity.

The participant in the architect category touched upon the issue of frivolous lawsuits – he asserted that they (participant’s employer architect firm) prefer litigation over arbitration as there is less latitude for the issues to be stretched and pushed further because of the cost associated with it.

In an overall sense, a liking for shorter dispute resolution methods was observed. Though the laddered and sequential approach for dispute resolution models was appreciated, it was noted that there was an understanding that they will not work in the real world.

#### 4.3.1.2 THEME 2: Project Neutral concerns

As initially noted in the previous theme, participant 2 in the general contractor category claimed that typically dispute resolution processes are slow and cumbersome because of the involvement of a project neutral – he owed this to the Project Neutral being either ill-informed of the contract or the nature of the dispute itself.

Participant 2 in the owner category did not agree with the dual responsibility of the Project Neutral as mentioned in the AC191 – 2009. He was quoted as saying *...this is a drawback because if the project neutral in the mediation process (first step) cannot foster an agreement and settlement in a non-binding format, why would then that party expect him to have the skills to resolve the agreement in a binding format* (Participant 2, owner).

Participant 1 in the attorney category too did not approve of the dual role of the Project Neutral as given in the AIA C191-2009 – he believed that the role of a Project Neutral in mediation is different than the role of an arbitrator in arbitration and hence having a single entity for two differently demanding roles will not help the cause.

There was clearly a concern shown on the roles and responsibilities of Project Neutral in the event of dispute resolution. There was a consensus shown by the commenting participants to assert that mediation and arbitration are two different scenarios altogether and demand different sets of skills to be run efficiently.

#### 4.3.1.3 THEME 3: Dispute resolution model practicality

Participant 2 in the general contractor category claimed that dispute resolution models look good theoretically, but rarely do they work out as planned in the real world. He said that the dispute resolution models can be written and structured in any given way, but the two main factors that have the maximum potential in resolving a dispute are mutual understanding and relationship

between the parties. Out of the four contract forms, the participant 2 preferred the approach prescribed by the AIA-C191 in that he believed that it looked more practical than the others.

Participant 2 in the owner category was of a similar view that the dispute resolution models look good on paper, but are anecdotal. He claimed that in his opinion, there is not much empirical evidence to prove that such process oriented models work in actual practice. He believed that it is a challenge for the stakeholders to put the project's interest over and above their company's corporate interests.

Participant 2 in the attorney category was of a strong belief that dispute resolution models do not work in practical world as planned in a contract. On the issue of various dispute resolution models prescribed by collaborative contract forms, he was quoted as saying *...you can dress it up however you want, you can call it whatever you want, but I can tell you, if you let lawyers run it, they will run all the same way* (Participant 2, attorney). The participant believed that trust and mutual understanding between project stakeholders can relinquish the requirement of such process oriented dispute resolution models.

There was a strong consensus amongst the commenting participants on the issue of practicality of a dispute resolution models. They all believed that the process oriented requirements in most cases do not yield fruitful results as they are originally planned to do.

#### 4.3.1.4 THEME 4: Architect's standpoint

The participant in the architect category asserted that they like to stay away from arbitration at all costs, as this is suggested to them by their (participant employer architect firm) attorneys. Architects typically waive some of their rights in arbitration, where as in litigation they maintain their rights. This was a primary reason for the participant's preference for litigation over

arbitration. Also, as mentioned earlier, in the opinion of the participant, litigation eliminates the scope of frivolous lawsuits and brings efficiency to the process.

#### *4.3.2 Incentive models*

##### 4.3.2.1 THEME 1: Incentive model mechanics

Participant 2 in the owner category concurred with participant 2 in the attorney category to a large degree. He emphasized that the incentive model needs to be defined with utmost precision covering all aspects of it. He pointed out that the topic of incentive models is highly subjective and can be manipulated in many ways. To reinforce this claim, he questioned the validity of the target price set; he questioned the trueness of an incentive pool which gets created as a result of the target price. So unless the target price is not validated by a third party neutral entity, there is always a chance that the resultant incentive pool may be a false one, thereby profiting the contractor the most. He concluded by asserting that such incentive models appear to be good on paper but they can get easily get manipulated.

Participant 1 in the attorney category addressed the issue of responsibilities associated with overruns on a project. He believed that there could be various reasons for an overrun and to precisely draw the lines of responsibilities amongst the different stakeholders for the overrun becomes a requirement for an incentive model to work. Participant 2 in the attorney category believed that the hard part in devising an incentive model is to come up with a definition of a goal to which the incentive is tied. The following excerpt from his transcript reinforces his claim ...*how do you measure when someone is contributing something that is improving the project and are entitled to an incentive? What to measure against, is the key* (Participant 2, attorney). He asserted that the objectives in an incentive model need to be defined at an early stage for the incentive

model's success. Overall, he concluded by saying that incentive models are very difficult to administer.

The participant in the architect category believed that there are many other factors apart from design errors and decisions, that a project can suffer overruns. In essence, the participant believed that holding the architect accountable for an overrun to an extent where it's fee or a portion of it is at risk, does not seem appropriate. He believed that the incentive models only work when risk is allocated appropriately as per the capacities of the various parties assuming those risks. He concluded by saying the following *...a lesson in contracting is put the risk where it fits best to be borne* (Participant 1, architect).

Participant 2 in the general contractor category believed that stakeholders react to incentives as per their own interests, defeating the purpose of an incentive provision. This concurs to the first paragraph in this theme which asserts that incentive models typically get manipulated by the stakeholders.

The fundamental issues that were raised by the commenting participants revolved around the mechanics of an incentive model. They believed that even though the models look innovative and promising, unless the models are defined accurately covering the length and breadth of each variable constituting that model, the models will not work as planned.

#### 4.3.2.2 THEME 2: Stakeholder fee at risk

Participant 1 in the general contractor category believed that asking a stakeholder to put a portion of fee at risk typically does not incentivize them to perform better. He believed that instead, it works the opposite way and forces parties to take decisions based on keeping or losing their fee.

The comments from participant 2 in the attorney category concurred with those of the participant in the architect category. The participant claimed that not all project stakeholders

assume the same level and magnitude of risk and thus to ask everyone to put of a portion of their profit at risk does not seem feasible. He also believed that it is really difficult to convince architects to assume overall project risk and resultantly put their profits or portion of it at risk.

The participant in the architect category started off by saying the following *...to be able to hold us accountable for our fee for how a total project works out in terms of budget is a difficult thing for us to swallow – it could kill our firm real quick* (Participant 1, architect). He preferred the approach prescribed by the IFoA which demands the project participants to put a portion of their fee at risk to fund the incentive pool. The participant commented that such risks are under the control of the architect and can be managed. He also liked the option for the owner to bear all costs in the event of an overrun as he believed that the owner is the one having the ultimate control in terms of budget.

All the commenting participants were not fully convinced of the idea of putting fee or a portion of it at risk. There was a sense of individuality observed amongst the participants, which was visible to a certain degree in the responses above.

#### 4.3.3 Standard contract form rank frequencies for dispute resolution models and Incentive models

Table 14: Frequency of ranks received by the four standard collaborative contract forms for dispute resolution models

<b>Dispute resolution models</b>				
<b>Rank</b>	<b>AIA C191-2009</b>	<b>ConsensusDocs 300</b>	<b>IFoA</b>	<b>PPC 2000</b>
<b>1<sup>st</sup></b>	1	6	0	0
<b>2<sup>nd</sup></b>	1	0	6	0
<b>3<sup>rd</sup></b>	4	0	1	2

<b>4<sup>th</sup></b>	1	1	0	5
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Table 15: Frequency of ranks received by the four standard collaborative contract forms for incentive structure models

<b>Incentive structure models</b>				
<b>Rank</b>	<b>AIA C191-2009</b>	<b>ConsensusDocs 300</b>	<b>IFoA</b>	<b>PPC 2000</b>
<b>1<sup>st</sup></b>	0	5	1	0
<b>2<sup>nd</sup></b>	2	0	1	3
<b>3<sup>rd</sup></b>	2	1	2	1
<b>4<sup>th</sup></b>	2	0	2	2

As mentioned in the preceding chapter, the ranking preferences of participants do not represent their strict preferences, but instead are conditional – both, dispute resolution and incentive structure models given to the participants were from the four standard collaborative contract forms. As can be seen in Table 15, six out of seven participants preferred the approach prescribed by the ConsensusDocs 300. The only participant that preferred the ConsensusDocs 300’s approach third in rank, was the participant from the architect category – the reasons have been presented in the findings for dispute resolution models.

Table 16 shows the frequencies of ranks received by the four standard contract forms for incentive models. The clear favorite among participants was the ConsensusDocs 300 which received the 1<sup>st</sup> rank five times.

*4.3.4 Owner Controlled Insurance Program/Contractor Controlled Insurance Program pros and cons and Factors affecting collaborative approach*



In the topics of OCIPs/CCIPs pros and cons, and factors affecting a collaborative approach, following were the themes identified as a result of thematic content analysis.

OCIP/CCIP pros and cons:

THEME 1: Cost savings

THEME 2: Claims management

THEME 3: Administrative burden

THEME 4: Participation rate

Main factors affecting collaborative approach:

THEME 5: Relationships

THEME 6: Risk allocation

Following are findings for the themes identified in the topic of OCIP/CCIP:

#### 4.3.4.1 THEME 1: Cost Savings

Almost all the participants in all the categories believed that there could be potential cost savings in an OCIP as compared to separate individual insurance programs. Participant 2 in the owner category mentioned that in the projects that he has seen implement an OCIP, the owner has realized 1% to 2% cost savings.

#### 4.3.4.2 THEME 2: Claims management

Participants in the GC, Attorney, and Architect category believed that claims can be managed better when using an OCIP because there is one single source of insurer compared to fragmented insurance policies. Participant 2 in the general contractor category further asserted that, because the coverage under an OCIP is better compared to the coverage when contractors have

their individual insurers, the conflicting interests of the various insurers can be eliminated. This results in lesser disputes compared to the traditional way of fragmented insurers.

#### 4.3.4.3 THEME 3: Administrative burden

The participants in the Owner, GC, and Attorney category asserted that the administrative burden in OCIP is higher than that being in administering separate individual insurance programs. Participant 1 in the owner category claimed that there is not much experience within institutional owners administering an OCIP. Participant 2 in the owner category concurred as far as experience of owners with OCIPs was concerned; he believed that the administrative burden becomes high because the owner is not equipped with the experience and expertise needed to run an OCIP efficiently.

#### 4.3.4.4 THEME 4: Participation rate

Participants in the Owner and General Contractor category claimed that it is generally difficult to get 100% participation rates from all the trades working in a project. Typically, trades are heavily influenced by their individual insurance provider and hence getting them to participate in an OCIP is difficult, said participant 1 in the owner category.

Following are the findings on the themes identified for the issue of ‘main factors affecting a collaborative approach’.

#### 4.3.4.5 THEME 5: Relationships

Participants from all the categories converged on ‘relationships’ as the main factor that can affect a collaborative approach. The general consensus was that no matter how the contract language is written, it is generally the business relationships between the project participants that affects the success of a collaborative approach. Participant 2 in the owner category was quoted as saying *...the thing about contracts is, they are only good when you do not need them. If you have*

*a good working relationship you hardly have to ever refer to your contract (Participant 2, owner).*

Participant 1 in the attorney category was quoted as saying *...it is all about people – you do not need a contract, you can go shake hands and build a job; people have done that for years – you need a contract when the people part breaks down (Participant 2, attorney).*

#### 4.3.4.6 THEME 6: Risk allocation

Participants in the GC, Owner, and Attorney category believed that risk language is an integral factor in promoting and affecting a collaborative approach. Participant 1 in the owner category believed that an ability to modify a contract according to the needs and capabilities of different stakeholders involved in a project can promote and affect a collaborative approach positively. Participant 1 in the attorney category was quoted as saying *...so what you are trying to do is find the most accommodating allocation of risk and responsibility amongst all and that for me promotes a collaborative approach (Participant 1, attorney).*

#### *4.3.5 Comments on collaborative contracts*

Participant 1 in the attorney category generally preferred the ConsensusDocs 300 document over any other. He believed that the AIA set of documents are good, but was of the opinion that the owner should be fully aware of the responsibilities the AIA documents put on the architects. In an overall sense, Participant 1 in the attorney category believed that standard collaborative contract forms are a starting point, and it is not advisable to use them in their standard form. Participant 1 in the general contractor category particularly disliked the AIA body of documents. He believed that the AIA contracts generally consist of multiple documents, and checking the consistency of terms across all the documents becomes an administrative burden. He concurred with participant 1 in the attorney category regarding responsibilities put on an architect in a construction project. He claimed that the AIA documents put the architects in a much stronger

position than what is typically seen. Participant 2 in the owner category claimed that the AIA contracts are not the favorites of sophisticated owners. Participant 2 too criticized the AIA contracts by saying the following: *Knowing what I know about the AIA, I would not expect them to come up with a good collaborative dispute resolution clause. By definition, they sort of see the world in one way* (Participant 2, attorney category).

Contrasting viewpoint was put forth by the participant in the architect category. He particularly disliked the ConsensusDocs because of its language, which typically is not in favor of the architect. This excerpt from the transcripts furthers his claim *...we have found ConsensusDocs to be difficult and we have maybe one or two jobs with the Consensus agreement but it included heavy negotiation from our side. When in a project we start talking about contracts and [if] it is not AIA, we try to stay away from the consensus docs* (Participant 1, architect category). The reasons for the disliking to the ConsensusDocs mirrored the reasons given by participant 1 in the attorney category and participant 1 in the general contractor category – roles and responsibilities of the architect. As far as preference of contract language is concerned, participant in the architect category preferred AIA contracts the most.

From the participants' comments on contract forms and their ranking on most and least preferred contracts with respect to dispute resolution and incentive model, it was seen that majority of participants disliked the AIA documents. The only participant that preferred the AIA documents the most was from the architect category. General contractors, attorneys, and one participant from the owner category preferred ConsensusDocs the most.

#### 4.4 Validation

Two validity checks were implemented – the first to validate the transcripts and the identified themes. This stage has been shown in Stage 11 in the analysis above. The other check was an attempt made to validate the findings of this thesis as mentioned in Chapter 3. Following are the results of validation.

The findings of this research have been condensed and listed below with the experts' agreement or disagreement with the findings:

*Dispute resolution models in collaborative contracts:*

FINDING 1: In a laddered dispute resolution approach in collaborative contracts, wherein the first step is non-binding mediation, and the following step is binding arbitration (after the first step fails), the person assuming the role of a project neutral in non-binding mediation should be different than the person assuming the role of an arbitrator in binding arbitration.

Expert 1: Expert 1 converged to the above finding. He believed that if the mediator was to serve as an arbitrator, the candid model of discussion would lose its purpose and the process would not work.

Expert 2: Expert 2 converged to the above finding.

FINDING 2: Stakeholders' typically determine how disputes will be resolved irrespective of what the contract language says in the dispute resolution clause.

Expert 1: Expert 1 suggested that this would depend on two factors:

- Type of issue
- Type of stakeholder

From the two factors, it can be inferred that, irrespective of the method written in the contract in the dispute resolution clause, a preference for a different type of dispute resolution method can

exist if a stakeholder's preferred method (which might be different than the dispute resolution clause) puts that stakeholder in a stronger position.

Expert 2: Expert 2 converged with the finding of this thesis.

FINDING 3: Architects typically prefer litigation over arbitration because they can maintain their rights in litigation, and have to waive some in arbitration.

Expert 1: Expert 1 disagreed to the above finding. He suggested that architects choose litigation because their professional liability insurance company wants them to choose litigation.

Expert 2: Expert 2 was unsure of this finding.

*Incentive models in collaborative contracts:*

FINDING 1: It is typically difficult to establish a conclusion on the pro-rata share of responsibilities of project participants that are associated with a cost overrun or underrun and time overrun and underrun.

Expert 1: Expert 1 contradicted. He believed that associating responsibility with an overrun is typically easy and obvious.

Expert 2: Expert 2 converged with the finding of this thesis.

FINDING 2: It is not fair to ask project participants to put their fee at risk because the risks assumed by a contractor are not the same in magnitude and type as the risks assumed by an architect.

Expert 1: Expert 1 converged with the above finding.

Expert 2: Expert 2 disagreed with the finding, and believed that it is fair to ask project participants to put their fee at risk, in a collaborative approach.

*OCIP/CCIP pros and cons:*

FINDING 1: When using an OCIP, there are typically cost savings realized by the owner and an ease & efficiency in the management of a claim.

Expert 1: Expert 1 converged with the above finding for cost savings. He further mentioned that, if the claim is related to personal injury, then there is efficiency in managing the claim. However, he noted that when the claim is related to construction defects, the efficiency in managing the claim is as low as when not using an OCIP.

Expert 2: Expert 2 converged with this finding of the thesis.

FINDING 2: When using an OCIP, there is a high administrative burden in managing the policy.

Expert 1: Expert 1 diverged from the above finding. He asserted that in an OCIP, an expert third party administrator is hired by the owner to manage the OCIP, and that is why the burden is never on the owner. On the other hand, a CCIP will typically be administered by an in-house entity within the contracting organization and because contractors look at this as a profit zone, the efficiency of the CCIP will not be compromised.

Expert 2: Expert 2 was unsure if the administrative burden in managing the policy is high.

FINDING 3: When using an OCIP, there is a low participant rate in joining the OCIP from all the trades on a project

Expert 1: As far as participation rate is concerned, Expert 1 believed that it becomes mandatory in an OCIP that all trades participate. Finding from this thesis suggested that sub-contracting trades typically do not participate in an OCIP.

Expert 2: Expert 2 was unsure of the finding.

#### **4.5 Comparison**

In the following chapter, the findings of this thesis were compared to the existing literature on these aspects of collaborative contracts, and attempts were made to find any gaps or evolving ideas that may require further research. The sample size for this research was considerably small and it was understood that these findings have little scope to be generalized. Having said this, the

researchers do not believe that there would be much variance in what other stakeholders, across the US and other countries using collaborative contracts, think about the integral aspects of a collaborative contract. The findings from expert validation have also been incorporated in the following chapter.



## CHAPTER 5: CONCLUSION

### 5.1 Objective-wise conclusions

The aim of this research was to identify issues related to some of the integral aspects of collaborative contracting. The primary objectives of this thesis were:

1. To answer the question - Do these process oriented dispute resolution methods hold the potential to resolve the disputes efficiently without having an influence from the ‘people’ factor?
2. To identify issues associated with collaborative contracts’ dispute resolution models.
3. To identify issues associated with collaborative contract’s incentive provisions.
4. To identify the pros and cons associated with an OCIP/CCIP.

The following conclusions have been presented in the order of the objectives as presented above.

1. *Do the process oriented dispute resolution methods hold the potential to resolve the disputes efficiently without having an influence from the ‘people’ factor?*

Through this thesis, it was found that dispute resolution models as written in collaborative contracts do not get implemented as planned. There was a consensus achieved that trust, mutual interests, and relationships hold the key in resolving the disputes, irrespective of what the dispute resolution clause in the contract says. National experts in the field of construction law too agreed that disputes typically get resolved based on stakeholders’ interests and preferences. Existing literature suggested that the ‘people’ factor is heavily involved in the existence of disputes (Hons, 1979; Williamson, 1979; Diekmann and Girard, 1995; Shin, 2000; Fenn et al, 1997; Edwin and Henry, 2005; Thompson et al, 2000). ABA (n.d.) believes that pre-specified sequential or laddered dispute resolution methods as seen in standard contract forms do not take into account the nature of the dispute and hence the models become ineffective. Most of the dispute resolution methods

have reached to arbitration or litigation, and seldom have the negotiations and friendly techniques, which are the first two steps in a laddered dispute resolution approach, been used (Slaikeu & Hasson, 1998). This implies to a certain degree that the ‘people’ part often fails while attempting friendly and negotiation based approaches and hence the failure of communication and trust often gives way to arbitration or litigation. McGeorge et al. (2007) suggest that non-binding methods to resolve disputes can work if the characteristics of the people involved and the nature of the disputes are substantially taken into account. They further suggest that non-binding methods will fail if parties essentially not willing to participate in a non-binding approach, are forced to do so. This can imply that willingness of the involved stakeholders is a dominant factor in resolving the disputes using non-binding methods. Groton (1997) and J. Hinchey and Schor (2002) suggest that alternative dispute resolution (ADR) techniques do not work for all types of disputes, due to the disputes’ varying characteristics; this implies the nature of the dispute and characteristics of the people involved.

Overall, this suggests that the method chosen to resolve a dispute often depends on stakeholders’ preferences – which are induced by their interests. It can be said that laddered dispute resolution methods as seen in collaborative contracts, may work, only if that method caters to the interests of the stakeholders; but in other cases, the stakeholders will typically undermine the existence of the initial non-binding steps, and resort to resolution methods that suit their interests, even if it means arbitration or litigation. A construction law expert (referred to as Expert 1 in Chapter 4) asserted that a given particular type of issue (nature of dispute) can force a stakeholder to choose one dispute resolution method over the other, if the chosen method puts the stakeholder in a winning position.

The findings of this thesis suggest that it is difficult to remove the ‘people’ part from influencing the performance of process oriented dispute resolution methods. This thesis found the issues of stakeholder-preference and stakeholder’ business interests in a dispute resolution method to be critical. So it can be said that it would be difficult for process oriented dispute resolution methods to perform efficiently unless variables such as characteristics of the people involved and nature of disputes (Groton, 1997; Hinchey & Schor, 2002; McGeorge et al, 2007) are taken into account.

## *2. Issues associated with collaborative contracts’ dispute resolution methods*

The critical issues identified from the findings of this thesis, in dispute resolution methods were (note that the identified themes in Chapter 4 are sub-sets of the following broad issues):

- Project Neutral dual role issue
- ‘One size fits all’/dispute resolution models practicality issue

Project neutral dual role issue: Findings of this thesis suggested that the concept of having the mediator serve as the arbitrator (in a ladder dispute resolution approach when arbitration is the next step after mediation fails) will not produce meaningful results. Construction law experts (referred to as Expert 1 and Expert 2 in Chapter 4) too agreed that the person assuming the role of an arbitrator should be different than the person assuming the role of a mediator. Phillips (2005) notes that the American Arbitration Association does not recommend the dual role of the mediator. Gould (2004) too suggested that in such a scenario where arbitration would be the concluding step, the mediation process will not work as the involved parties will be reluctant to reveal detailed information in a candid conversation. Baril and Dickey (2014) assert that if the mediator were to assume the role of an arbitrator, the confidential information gained by the mediator in mediation could adversely affect his/her final decision in arbitration. They also point out to eight different

problems associated with this method of dispute resolution. The findings of this research converge with the existing literature on the issue of dual-role of the mediator. Opportunities for future research with respect to this issue have been discussed in section 5.4 of this chapter.

‘One size fits all’/dispute resolution models practicality issue: It is evident through the discussion in section 5.1 of this chapter that dispute resolution methods as prescribed in standard forms do not work for all types of disputes. It was identified through the findings of this thesis and existing literature that ‘nature of dispute’ and ‘characteristics of people’ typically govern the suitability of a particular disputes resolution method. Though it becomes difficult to devise a versatile dispute resolution method, there have been efforts made to increase the efficiency of such models (ABA, n.d.).

### *3. Issues associated with collaborative contracts’ incentive provisions*

In topic of incentive provisions, there were two critical issues identified:

- Mechanics of incentive model
- Stakeholder fee at risk

Mechanics of incentive model: Findings of this thesis suggested that incentive models in a contract typically get manipulated by project participants, more specifically contractors. It was noted in the findings of this thesis that a contractor may artificially inflate the target cost, and then later be entitled to the agreed incentive without any substantial cost-saving contribution. It was noted by Hasan and Jha (2016) that contractors typically complete the project at a lower cost (than the target cost) and before schedule, along with compromising on quality and safety, and still receive the incentive. This supports the finding of this thesis and furthermore also presents the other side of the coin. Hasan and Jha (2016) noted that, as a result of manipulation of the incentive provision, contractors have received incentives without going the extra mile in achieving that incentive. The

fact that, 99% of contractors in thirty five states of the U.S. involved in a contract with an incentive provision received the incentive (associated with time underrun) due to an initial overestimated project duration, supports Hasan and Jha's (2016) claim (Herbsman and Ellis, 1995). Studies from Herbsman et al (1995), Shen et al (1999), and Shr and Chen (2004) have also concluded that an overestimated project duration can allow the contractor to the gain the incentive without an actual schedule-pulling contribution. Future research opportunities under the topic of incentive provisions have been identified in section 5.4 of this chapter.

Stakeholder fee at risk: CII (1995) note that appropriate accommodation of risks is crucial to a project's success. Findings of this thesis suggest that it is unfair to ask project participants to put their fee at risk, unless the risks can be handled by the participants, and are appropriately allocated. It was noted in the findings that stakeholders are typically reluctant in putting their fee (or even a portion of it) at risk. Construction law experts had differing opinions on this issue. Expert 1 believed that it was unfair to ask project participants to put their fee at risk and Expert 2 believed otherwise. Some collaborative contracts require project participants to put their fee (or portion of it) at risk. There is not much existing literature or empirical evidence to prove if such a requirement is advantageous or disadvantageous for a project; future research can help expand this issue.

#### *4. Pros and cons of OCIP/CCIP*

Cost saving to the owner and fewer conflicts in claims management process were identified as the two primary advantages of an OCIP. Construction law experts agreed to the findings. However, Expert 1 also noted that the efficiency in managing a construction defects claim is as low as when an OCIP is not used. Marzen (2011) notes that owners could realize cost savings and an increased inefficiency in managing claims. He further mentions that courts too have realized the benefits of OCIPs. He includes Maine Supreme Court's statement: *The State uses OCIPs to*

*save costs, secure better coverage, and have better safety programs* (Marzen, 2011, p. 1). Schexnayder et al (2004) study interviewed various Departments of Transportations (DOT) for their experience with OCIP. Cost savings was one of the benefits realized by the DOTs, among many others.

Administrative burden as a downside of OCIP was deemed to be a subjective issue. There was a contrast observed in the findings of this thesis and the experts' opinion. This thesis found that administrative burden is high in an OCIP, however, Expert 1 disagreed to this finding and suggested that this burden is reduced by the owner by means of hiring external OCIP administering experts. Schexnayder et al (2004) also note that there is a high administrative burden on owners, in using an OCIP. But they also suggest that, negotiations with the insurance provider and assistance from a representative of the insurer, can substantially reduce owner's work load.

## **5.2 Overall conclusions**

In the topics of dispute resolution and incentive models, it was seen that the 'people' part was an irremovable element, and hence dispute resolution methods and incentive provisions were deemed to be integral to the success of a collaborative approach. The responses to the supplementing question of 'what are the factors affecting a collaborative approach?' validated that 'people' are indeed integral to the success of a collaborative approach. Findings suggested that mutual trust, relationship amongst stakeholders, and mutual interests were key to collaboration. Furthermore, Strahorn et al (2015) study found that trust was a key aspect in the performance of a stakeholder-stakeholder relationship. Mossman et al (2013) also asserted that the softest part of construction is the 'people' part, which can be difficult to change. This thesis contributes in expanding the research domain of collaboration in construction with a specific focus on the 'people' part, which is viewed as one of the three challenges as identified by CIB. There are still

unanswered and unattended areas in this thesis which need future research. Such gaps and the resulting opportunities have been identified in the following section.

### **5.3 Limitations**

As noted in the earlier chapters, the sample population of this study was small. There was only one participant in the architect category because of which the architect's viewpoint, even though unique and interesting, does not hold much credibility. This limits the capacity of this thesis to make assertions about architects' preference of one particular dispute resolution method over the other. Having more than one participant in the architect category could have helped expand the issue of architect preference for dispute resolution method further.

This thesis did not take into account sub-contractors' point of view in the issues of dispute resolution and incentive provisions. Subcontractors' viewpoint could have given rise to issues not covered by other stakeholders during data collection. This could have added an all-round perspective to the overall study.

### **5.4 Future research opportunities**

With the findings of this thesis and existing literature, it is evident that the resolution of disputes is not as straightforward as it is written in a contract. This suggests that dispute avoidance, in place of dispute resolution, should be focused upon, if the adversities associated with dispute resolution processes are to be diminished. Future studies can aim at investigating factors that cause disputes on a project and can make an attempt to formulate a framework of dispute avoidance techniques.

It was also identified that there are concerns surrounding the dual role of a project neutral (or a mediator). However, Baril and Dickey (2014) note that the pitfalls to this type of system can be reduced if the mediator is skilled enough. It would be beneficial to this study, if future research

is aimed at exploring this issue at a greater depth. Can there be a framework of selection criteria devised to select an individual to serve the dual-role of a mediator and an arbitrator? What would be the critical factors in creating that framework? Can the nature of disputes be incorporated in the framework? These are some of the question, if answered, can indeed help this issue progress towards a definite solution.

As far as incentive provisions in a contract are concerned, it would be beneficial to this study if future research is aimed at the mechanics of how incentive provisions (or model) work. The fact that incentive models can be manipulated by the contractors is a concerning issue and that is why research aimed at incentive provisions with a specific focus on target-cost validation and target-schedule validation can help strengthen or weaken its reliability quotient.



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## APPENDIX I

### **Consent to Participate in a Research Study Colorado State University**

**TITLE OF STUDY:** *Understanding Construction Industry perceptions on Liability, Incentive and Insurance clauses from various collaborative construction contract forms.*

**PRINCIPAL INVESTIGATOR:** *Dr. Kelly Strong, PhD, Associate Professor, Department of Construction Management, Kelly.strong@colostate.edu*

**CO-PRINCIPAL INVESTIGATOR:** *Dr. Bolivar Senior, PhD, Associate Professor, Department of Construction Management, bolivar.senior@colostate.edu*

**ADDITIONAL CO-PRINCIPAL INVESTIGATOR:** *Anuj Marathe, Graduate Student, Master of Science, Department of Construction Management, anuj.marathe@colostate.edu*

**WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?** *You have been invited to take part in this study due to you being a professional/expert in the construction industry.*

**WHO IS DOING THE STUDY?** *This study will be conducted by the Department of Construction Management at Colorado State University. This study is not funded or sponsored in any form.*

**WHAT IS THE PURPOSE OF THIS STUDY?** *The purpose of the study is to understand Construction Industry professionals' perceptions on liability, incentive and insurance clauses from various collaborative construction contracts. Understanding attitudes of construction professionals in these aspects will give us an understanding of what they would like to see in a contract for them to implement an integrative collaborative approach.*

**WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?** *The "phone interview" part of the study will take place on phone as per your time and convenience. The remainder of the study will be conducted at Colorado State University in the Department of Construction Management.*

**WHAT WILL I BE ASKED TO DO?** *You will be asked to answer two open ended questions. A brief introduction about the research will be provided to you. The phone interview will take around 30 minutes to be completed.*

**ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY?** *Apart from your time-schedule, there is no anticipatable reason at this stage as to why you cannot participate in this study.*

**WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?** *It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.*

**ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?** *There are no direct benefits related to taking part in this study.*

**DO I HAVE TO TAKE PART IN THE STUDY?** *Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.*

**WHO WILL SEE THE INFORMATION THAT I GIVE?** *The data gathered from the phone interview will be kept confidential by not associating your name or job position with the information. Only the research team will have access to the original interview response. We may be asked to share the research files with the CSU Institutional Review Board ethics committee for auditing purposes.*

*The information could be published. You will be given the opportunity to review the draft, and we will incorporate your input in the final version in order to protect your privacy. We will keep private all research records that identify you, to the extent allowed by law, unless specified otherwise by yourself.*

**WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?** *You will not receive any compensation for taking part in this study.*

**WHAT IF I HAVE QUESTIONS?**

*Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Dr. Kelly Strong at [Kelly.strong@colostate.edu](mailto:Kelly.strong@colostate.edu). If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: [RICRO\\_IRB@mail.colostate.edu](mailto:RICRO_IRB@mail.colostate.edu); 970-491-1553. We will give you a copy of this consent form to take with you.*

**WHAT ELSE DO I NEED TO KNOW?** *The researchers would like to audiotape your interview to be sure that your comments are accurately recorded. Only our research team will have access to the audiotapes, and they will be destroyed once transcribed. Do you give permission to the researchers to audiotape your interview? Please initial next to your choice below.*

*Yes, I agree to be digitally recorded \_\_\_\_\_ (initials)*

*No, do not audiotape my interview \_\_\_\_\_ (initials)*

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 2 pages.

\_\_\_\_\_  
Signature of person agreeing to take part in the study

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of person agreeing to take part in the study

\_\_\_\_\_  
Name of person providing information to participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Research Staff

## APPENDIX II

### **Agenda**

I will give you a short introduction/context on the research project and then will begin asking the following questions:

1. You will be asked to compare (rank order from 1 to 4) four standard collaborative contract forms with respect to their Dispute Resolution and Incentive structure clauses. I will give you a short summary of the clauses from the 4 contract forms, printed on a paper. 4 contract forms that are being compared are: AIA C191, ConsensusDocs300, Integrated Form of Agreement (Lean), and Project Partnering Contracts 2000 from the UK.
2. Comments on dispute resolution methods and incentive provisions.
3. Pros and cons of OCIP/CCIP which is generally a requirement of collaborative contracts
4. General comments of collaborative contracts.
5. Factors affecting a collaborative approach in construction

APPENDIX III

**Demographics form**

What is your Title? \_\_\_\_\_

How many years have you held this position? \_\_\_\_\_

How many years have you been practicing in design/construction? \_\_\_\_\_

What is your company's primary business with the design and construction industry?

\_\_\_\_\_ **Integrated design-build company**

\_\_\_\_\_ **Architecture and Engineering**

\_\_\_\_\_ **Architecture**

\_\_\_\_\_ **Engineering**

\_\_\_\_\_ **Specialty design consultant**

\_\_\_\_\_ **Builder/General Contractor**

\_\_\_\_\_ **Specialty Subcontractor**

\_\_\_\_\_ **Vendor/Supplier**

\_\_\_\_\_ **Owner**

\_\_\_\_\_ **Owner's representative/Owner consultant**

\_\_\_\_\_ **Legal Services Provider**

\_\_\_\_\_ **Other:** \_\_\_\_\_

What groups are you associated with, either personally or through your organization?

\_\_\_\_\_ **DBIA**

\_\_\_\_\_ **AIA**

\_\_\_\_\_ **ASCE**

\_\_\_\_\_ **AGC**

\_\_\_\_\_ **ABC**

\_\_\_\_\_ **USGBC (LEED)**

\_\_\_\_\_ **Other:** \_\_\_\_\_

\_\_\_\_\_ **Other:** \_\_\_\_\_

\_\_\_\_\_ **Other:** \_\_\_\_\_

## APPENDIX IV

### Structured Interview Questions

1. Rank order from 1 to 4, the four standard collaborative contract forms with respect to their Dispute resolution models and Incentive structure models. The four contract forms that are being compared are: AIA C191-2009, ConsensusDocs 300, Integrated Form of Agreement, and Project Partnering Contracts 2000 from the UK.
2. What are the reasons for your preferences? What are your views on dispute resolution models and incentive models in collaborative contract forms?
3. What are the pros and cons of OCIP/CCIP which is generally a requirement of collaborative contracts?
4. What are the factors according to you which affect the success of a collaborative approach?
5. Any comments on of the standard collaborative contract forms?

## APPENDIX V

### Summary of dispute resolution models and incentive structure models from the four standard collaborative contract forms

#### DISPUTE RESOLUTION

##### Integrated Form of Agreement (IFoA)

- In the event of a dispute, a ‘Notice of Potential Claim’ is submitted to the ‘Core Group’ (a group that includes representatives from the parties involved in the agreement). A process of informal negotiation takes place on site amongst the involved parties, known as the ‘Special Meeting’; this meeting shall occur within 14 days of its request.
- If this fails, the process of negotiation takes place internally in the Core Group to solve the dispute. If this fails, senior executives from those parties try to resolve the dispute. Furthermore, if this process does not succeed within 7 days of the senior executive meeting, an independent expert will be appointed (cost of which will be shared by the involved parties) to solve the dispute within the next 21 days.
- If this too fails, the involved parties can resort to non-binding mediation (which should be completed within 30 days after the mediation process has started).
- If all of the above fail, the parties can try to resolve the dispute by arbitration (arbitrator being selected from the pre-established list by the Core Group).

- This agreement's dispute resolution process can be summarized in a simple 2 part process – A Non-Binding approach (Mediation through a 'Dispute Resolution Committee') and a Binding approach (arbitration or litigation as per the parties' choice).
- The Dispute Resolution Committee shall consist of senior representatives of the parties (involved in the multi-party agreement) and a 'Project Neutral' (selected by the parties). If the Dispute Resolution Committee's non-binding mediation process fails to solve the dispute within 15 days of initiation of the dispute, the parties can either choose – Arbitration with the Project Neutral being the arbitrator or Litigation.

#### ConsensusDocs300

- This document implements a 3 part approach in which 'Direct Discussions' amongst the involved parties occurs as the first measure.
- If this does not succeed within 5 days of the dispute, it is forwarded to the 'Management Group'.
- If this fails, the next approach is a non-binding approach (using a Project Neutral or a Dispute Review Board) which should resolve the dispute within 5 days of the start of the non-binding process.
- The cost of the non-binding process will be shared equally amongst the parties.
- If this fails, a binding approach will be implemented (arbitration or litigation), and costs of which will be borne by the losing party.

#### PPC 2000

- The core group (representative from stakeholders of the project) will try to resolve the dispute. If this fails, mediation, arbitration, or litigation will be carried out with the assistance of a Partnering Adviser.

## INCENTIVE

### Consensus Docs 300

- The management group will develop a financial incentive program to promote a collaborative approach in order to encourage the team to achieve superior performance and exceed project goal expectations.
- This program will continually monitor the team's performance and provide feedback for corrections and modifications to improve the quality of service provided and thus meet the project performance goals.
- Performance in cost, quality, safety, schedule, planning system reliability, innovative design, construction processes and teamwork, will be evaluated, as the basis to provide incentives. The method, amount and timing of the payments will be described in a separate document (as an amendment to the original agreement).
- This financial incentive program will be funded by any savings in the project costs (of work) and any preserved contingency.
- After the completion of the project, in the case when Actual cost of project is less than Target cost, the savings will be shared, either on a pre-decided percentage or on another decided basis.
- In the case when Actual cost exceeds Target cost, the parties have one of the two following options:
  - Borne by the owner



- Shared by contractor and architect (if this is selected, there is an option to limit the loss share to contractor's and architect's fee).

### AIA C191

- The savings will be shared based on if the Target cost is exceeded or not. In the case when Actual cost is less than Target cost, the savings will be shared based on the level of effort towards successful project outcome.
- In the case when the Target cost is exceeded, the losses will be shared based on percentages. As far as cost reimbursement goes, one of the following options can be selected:
  - The owner is required to reimburse for all labor costs
  - The owner is not required to reimburse for labor costs
- Also, if Actual cost exceeds Target cost, then 100% of the architect's and contractor's fee is at risk.
- Apart from the project cost saving incentive (after completion of project), the parties can also receive goal achievement compensation. The Management team will establish interim project goals which if are met, then the parties will receive goal based compensation (completely payable by the owner). This type of compensation will be paid even when the actual cost exceeds the target cost. The payment of such compensation will be done right after the goal is achieved.

### IFoA

- The parties will decide to put a percentage of their profit to the ‘At-Risk amount’. This will be used to fund any costs overruns, after the contingency gets fully used. From this ‘At-Risk amount’, the parties will be incentivized if they meet performance goals and also if they actual cost does not exceed the target maximum cost.
- After the completion of project, the savings (when actual cost does not exceed target maximum cost) will be shared by the participants who participated in the At-Risk pool.
- If the actual cost exceeds target cost, the owner agrees to bear the loss, unless it expressly stated otherwise.
- The contractor (CM/GC) and the architect’s fees and their associated labor costs are not put at risk in the event of actual cost exceeding target cost. The owner will reimburse the contractor and the architect all the costs incurred in the work.

#### PPC 2000 UK

- The constructor shall receive payment for pre-construction services (contributions to design and process prior to commencement on site).
- Savings and added-value incentives will be shared.
- Opportunities to work with the same partnering team in the future.
- Payments can also be linked to performance against key performance indicators (KPIs)

## APPENDIX VI

### Example of a participant transcript

██████████ (Attorney 2)

#### DR models

The worst thing is the dispute resolution clauses to do if you are talking to be collaborative – because you are already talking about “what are we going to do when we fight”. I think part of the problem is that is sort of built into construction and there is an understanding that you have to have dispute resolution processes to be able to deal with issues because things are not going to go smoothly – because there are too many moving parts and variables – you have to plan for these things in advance but it is like ‘planning for your divorce when you are getting married’. It is the wrong focus – this is one of the features of a relationship which you should not be keen on. Typically, mediation is preferred over litigation over arbitration because at least then parties have some control and have ability to share ideas in an informal sense. In arbitration it is all offence, you are just trying to win your case. The process of mediation is more consistent with the collaborative goal. When you go into mediation, there is a degree of admission from the participants’ side that they do not have the ability to close the deal themselves (resolve the dispute themselves). So the idea of getting the participants to resolve the dispute is good, but there needs to be someone involved in this process who is into involved in the day to day rumble of the construction activities and can make quick decisions.

As a practical matter doing this all the time, there is not a lot of difference between these. All the approaches have some kind of informal resolution and then you refer to a formal resolution – it is not rocket science. You can dress it up however you want, you can call it whatever you want, but I can tell you if you let lawyers run, they will run all the same way – because they will do whatever is comfortable. If you let people run it, they will probably do what is comfortable. These things are not self-executing; you can write 50 mediation clauses in different contracts and that mediation will feel 50 different things when you mediate those different disputes – it all depends on the personality of the people, strength of the mediator, nuances of the dispute – these are not one size fits all things. If you have people who can work together and can look at each other in the eye and can be objective while at the same time doing their job, they will solve their problems and they will not need any of this. And then you have people who will just give lip service to mediation and be focused on litigation from day 1 and they are going to know that no one can force them to do anything in mediation. It comes to “people” and people control these processes. So the key is honestly that at what point you take the control away from the people so that they no longer get to determine the outcome on their own. So to rank in a vacuum, on paper, the more chances you give something to succeed before you turn to a final decision maker the better, right? In practice, it works exactly the opposite! So many steps can make a given participant “madder” as they go along each step of the process until they finally get through them. Arbitration and litigation are the most inefficient problem solving methods we have ever come up with - they are not cost effective, and you have to give it all to someone else to make a decision for you.

#### DR models ranking

I like the consensus docs approach and I think that’s because you force people to have direct discussions but sometimes that’s like telling people in a bad marriage that they have to sit down and talk – it is not going to help, it may or may not. Consensus docs approach would be my top one. The IFoA is better than the AIA one. Knowing what I know about the AIA, I would not expect them to come up with a good collaborative dispute resolution clause. By definition, they sort of see the world in one way. PPC 2000 is the last because I am not familiar with it (and insufficient info provided by interviewer).

### Incentive models

First let me talk in general about these incentives. For an incentive to be attractive going in, it certainly needs to be tied to something over which that party has some control. Think about where the savings really come from? You go in and you start ideally and you start early with the contractor in the room with owner when the design is being formulated and as they are coming up with design suggestions, the contractor is going out to the subs and getting feedback from them as to what a certain approach is going to cost. As the design is progressing and maturing, they (contractor) are tracking the estimated total cost precisely. For the most part you will sub-contract the work on a fixed price – you will give them a scope and a dollar number associated with it.

So if you tell me that we will tie an incentive to a defined goal, then I will accept it and ask the question – now tell me what the goal is? But that is the hard part – what’s the goal going to be? It is easy to put on paper such aspirational language in a contract, but let me tell you when the rubber hits the road, it’s all different altogether. Measuring performance is the most difficult thing to figure out. How do you measure when someone is contributing something that is improving the project and are entitled to an incentive? What to measure against is the key. If you can define a goal, and get the parties to buy in to pursue that goal then tying an incentive to that may work. Defining the objective things early on is important in terms of incentives. Incentive structure is super difficult to administer.

Everybody has their little hold-back areas that they are not comfortable with and when you try to bring a whole group together and collaborate you end up with whatever the lowest common denominator is. You only get the benefit of that project of the level at which everyone feels comfortable and they are not beyond their comfort zone.

The biggest impediment, which people do not talk about is that the way an owner runs its business (or an owner or contractor or design team), they become very invested in that process. They have concluded that they are doing the best they can to enhance their own profit to be successful on their projects.

### Incentive models ranking

I do think the idea of ConsensusDocs 300 management of the contingency and the savings is good. The consensus docs looks a lot like the integrated contracts I have administered. IFoA does not really look realistic. It is fact that contractors take a higher level of risk than architects do. So when you try to put those people together and they really are different – so you have got someone controlling the design who is risk averse, you have got someone that is controlling the construction that cannot control the design and who is used to taking on risk and you try to put them together and you do this sort of “everyone has to put their profit at risk”, first of all those percentages are not going to equivalent and the cost of the construction and cost of the design are dramatically different. Whenever I have tried administering something like this, you kind of end up back to where you started because it is really hard to move architects to take on overall project risk and it’s hard to convince contractors unless they have some control to be responsible for a problem that has its genesis in the design. So administratively the IFoA is difficult. The AIA C191 looks a little more pragmatic, I like this one, put it second to ConsensusDocs 300. I will rank the IFoA third and then the PPC 2000 – I like this PPC 2000 contract. It is all about people – you do not need a contract, you can go shake hands and build a job; people have done that for years – you need a contract when the people part breaks down.

### OCIPs/CCIPs pros and cons

Pros: I do like OCIPs. The advantage that I see is not necessarily for the owner. One of them is the OCIP is literally going to be project focused, so it's more of a customized approach to a risk management plan that fits with that owner. If you insure a project through patch work of everyone's own insurance plan, you might have the same level of protection but you don't have the opportunity to customize and look at it and predict better if you have sort of gaps or problems in your coverage. Another advantage is that it is like putting a blanket over your job compared to 10,000 wash cloths. So it is easier to look at it and say, I know what level of protection I have for pollution, what level of protection I have for general liability and I kind of understand how this project is insured rather than relying on my contractor insurer, his subs' insurer. In my opinion on an equivalent coverage basis you should be able to insure a project for cheaper through an OCIP. The biggest advantage of OCIP is in handling the construction defects claim if they come out – because the claim is then handled by 1 carrier and 1 attorney, basically addressing claims and issues affecting the project versus everyone fighting in a turf war where they are all fighting each other.

Cons: the administering process of an OCIP may or may not be difficult depending on how capable the administrator is. But the ones that I have seen are not that hard to manage to.

### Factors affecting a collaborative approach

It is all about people – you do not need a contract, you can go shake hands and build a job; people have done that for years – you need a contract when the people part breaks down.

## APPENDIX VII

**NOTE** - The objective of this document is to validate the conclusions made on the topics of Dispute resolution models & Incentive models in collaborative contracts, and Owner Controlled Insurance Program (OCIP). Please read the questions and then select the appropriate option (by typing X next to option of choice) given below after each question.

---

### **1 - DISPUTE RESOLUTION MODELS (DR models) in collaborative contracts**

1) In a laddered dispute resolution approach in collaborative contracts, wherein the first step is non-binding mediation, and the following step is binding arbitration (after the first step fails), do you agree that the person assuming the role of a project neutral in non-binding mediation should be different than the person assuming the role of an arbitrator in binding arbitration?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

2) Do you agree that stakeholders' negotiations typically determine the terms to resolve disputes, irrespective of what the contract language says in the dispute resolution clause?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

3) Do you agree that Architects typically prefer litigation over arbitration because they can maintain their rights in litigation, and have to waive some in arbitration?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

### **2 – INCENTIVE MODELS in collaborative contracts**

1) Do you agree that it is typically difficult to establish a conclusion on the pro-rata share of responsibilities of project participants that are associated with a cost overrun or underrun and time overrun and underrun?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

2) Do you agree that in a collaborative approach it is fair to ask all project participants to put their fee at risk, even when a particular project participant may not be directly associated with a cost or time overrun (if there were to be one)?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

### **3 – OCIP/CCIP pros and cons**

1) Do you agree that when using an OCIP, there are typically cost savings realized by the owner and an ease & efficiency in the management of a claim?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

2) Do you agree that when using an OCIP, there is a high administrative burden in managing the policy?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

3) Do you agree that when using an OCIP, there is a low participant rate in joining the OCIP from all the trades on a project?

YES \_\_\_ NO \_\_\_ NOT SURE \_\_\_ COMMENT (optional) \_\_\_\_\_

## APPENDIX VIII

 [redacted] via colostate.edu Apr 8 (13 days ago) ★   
to Anuj 

Anuj

One correction on the Incentive Structure portion - the statement that “in most cases the owner is not culpable for overruns or losses in a project” is incorrect. An owner often bears some degree of responsibility for cost overruns or losses, and the particular facts and circumstances of the project will determine the pro-rata share of responsibility between the participants in the project.

[redacted]

**From:** Anuj Marathe [mailto:[redacted]]  
**Sent:** [redacted]

 [redacted] via [redacted] Apr 11 (10 days ago) ★   
to Anuj 

Here are my comments:

1. Incentives – the overarching theme I think you are missing is that contract participants react in their own interest to incentives. (The items in green – manipulating and gaming are reactions to the incentives.)
2. OCIP/CCIP – the grey item you have characterized as “managing claims in the event of disputes gets easy”. I think the more appropriate evaluation is that “coverage under an OCIP is better compared to projects where each contractor has its own insurer. The OCIP/CCIP eliminates competing interests of multiple insurers. Thus, in the event of covered claims, under an OCIP/CCIP there is a much lower probability of disputes (among the various subcontractors or their insurers).

Otherwise, in concur. Good work!

 [Redacted] via [Redacted] Apr 13 (8 days ago) ★   
to Anuj ▾

Very nice work Anuj. You've accurately reflected my comments.

[Redacted]

 [Redacted] via [Redacted] Apr 12 (9 days ago) ★   
to Anuj ▾

Thanks Anuj for including us in this study. A lot of work!

Your capture of our conversation looks accurate.

Thanks!

[Redacted]

 [Redacted] Apr 13 (8 days ago) ★   
to me ▾

Hi Anuj. I have read the document and offer the following edit:

The participant further mentioned that it is generally easy to track down costs of insurances issued to a GC when not involved in OCIP, but these costs are so minor in regards to the overall total development cost of the project that you might not want to spend a lot of time investigating it.

Other than that it looks good. Good Luck wrapping things up!