

# CONTRACTING FOR COLLABORATION IN CONSTRUCTION

David Willis<sup>1</sup> and Thais da C. L. Alves<sup>2</sup>

## ABSTRACT

Construction contracts represent instruments that bind project participants together to deliver a project. The industry still uses delivery methods and related contracts that are more traditional in nature, e.g., design-bid-build (DBB), and promote a sequential design and construction process, which allows for little to no collaboration between project participants. Over the past 25 years, more collaborative delivery methods (e.g., Design-Build) have gained more adopters, and been touted as the solution to problems of the construction industry. The promotion of more collaborative environments stands front and center as a solution to the industry problems by promoting, via contractual terms, collaborative behaviors and processes. This study investigates the language of construction contracts by identifying keywords commonly associated with collaboration and comparing the incidence of these keywords in contracts for different delivery methods. Results indicate that DBB contracts have few to no mentions of collaborative words, standing to no surprise that DBB environments are less collaborative in nature. In contrast, Integrated Project Delivery contracts not only use keywords associated with collaboration, but actually employ them in clauses to promote collaborative behaviors and environments.

## KEYWORDS

Contracts, collaboration, language, delivery systems.

## INTRODUCTION

Construction contracts represent instruments that bind project participants together to deliver a project. Currently, the industry still uses delivery methods that are more traditional in nature, e.g., design-bid-build (DBB), and promote a sequential design and construction process, which allows for little to no collaboration between project participants. However, over the past 25 years, more collaborative forms of delivery methods, and their related contracts, have been gaining more space and adopters, and being touted as the solution to endemic problems of the construction industry including, but not limited to: resource waste, poor performance in terms of time, quality, and schedule, poor value delivered to clients. Design-Build (DB) promoted by the Design Build Institute of

---

<sup>1</sup> Former graduate student, Department of Civil, Constr. & Env. Eng., San Diego State University, David.W.Willis@outlook.com

<sup>2</sup> Associate Professor, J.R. Filanc Construction Engineering and Management Program, Department of Civil, Constr. & Env. Eng., San Diego State University, talves@sdsu.edu

America (DBIA 2019), established 25 years ago, is arguably the fastest growing delivery method promoting highly collaborative environments in the United States. Whereas the Integrated Project Delivery (IPD) and the Lean Project Delivery System (LPDS) promoted by the Lean Construction Institute (LCI 2019) represent the runner-ups as they require the use of Lean tools, high levels of collaboration throughout the construction supply chain, and the use of collaborative tools in multiple processes, e.g., Target Value Design, Choosing by Advantages (Ballard 2008). Interestingly, in the United States, DBIA promotes its own series of contracts, which are highly integrated and standardized, to implement DB, whereas contracts to implement IPD are drafted by other organizations such as ConsensusDocs (2019) and private law firms.

The promotion of more collaborative environments stands front and center as a solution to many of the industry problems by promoting, via contractual terms, more collaborative behaviors and processes. While the delivery method is intended to create a culture of collaboration, are their related contracts being written in a way that requires collaboration? This study investigates the language of construction contracts by identifying keywords commonly associated with collaboration and comparing the incidence of these keywords in contracts for different delivery methods. Initially, a brief review of related literature is presented, followed by the description of the method used to conduct the investigation, and finally the presentation of results and conclusions.

## **CONSTRUCTION CONTRACTS AND COLLABORATION**

This section reviews common delivery methods currently used in the construction industry and used during the analysis. The review supports the discussion rather than fully characterizes any of the methods involved. For the scope of this study, contracts associated with the following delivery methods (Sweet and Schneier 2015) were used:

- Design-Bid-Build (DBB) – this is the most traditional of the delivery methods in use and comprises a sequential process where the owner initially hires an architect to develop the plans and specifications for the project. Once the design is deemed complete, the documents are used in a bidding process and the winning contractor gets to build the project. Due to the separation of the design and construction responsibilities in time and in contractual terms, there is not much incentive for collaboration as the architect and engineers design, and the general contractor builds. During the process, their communication is done via the owner as the architect and the general contractor are not contractually bound together.
- Construction Management (CM) – the construction management modality usually takes two major forms: construction manager as an agent of the owner and construction manager at risk. In both cases, the owner hires an architect to develop the design and specifications. In the former, the construction manager represents an entity that represents the owner's interests, and owes fiduciary duties to the owner, that is, it acts in the best interest of the owner. In the latter, the construction manager takes the role of a general contractor, who oversees the work and might start during the design phase providing preconstruction services and constructability reviews for the project alongside the architect. In the CM at risk (CMAR) delivery system,

the general contractor is at risk for the project performance, whereas in the pure CM (CM as Agent or Advisor), the manager is not at risk for the project's final performance.

- Design-Build (DB) – this delivery method is best characterized by the single design-build contract signed between the owner and the general contractor+architect. The general contractor usually hires the architect or forms a joint venture with the architect to deliver DB projects. The DB entity is responsible for both the means and methods to build the project as well as the design, thus, promoting a constant conversation between these parties as the project is developed. Due to this arrangement, it is in the best interest of the parties to collaborate to avoid mistakes during design and construction because the DB entity is responsible for both during the delivery of the project. Additionally, these parties bring the best of their knowledge to the table to define systems and methods that best suit the owner's needs.
- Integrated Project Delivery (IPD) – this delivery method is the most recent of all discussed in this paper; it integrates elements of the LPDS in its language and, most importantly, constitutes a multi-party agreement between the owner, the architect, the general contractor, at a minimum, and major specialty trades and suppliers involved with the project. Contracts used in IPD projects contain three main parts to define the organization of the project, its commercial terms, and the operating system that is used to conduct day-to-day activities based on largely on a cadre of Lean tools and principles (Darrington et al. 2009).

The use of more collaborative delivery methods requires different systems and incentives that support their implementation and behaviors that sustain the changes made to the construction process from design through construction, and hand over (Seed 2014, Aschcraft 2014). The University of Minnesota et al. (2016) have documented numerous practices and their effects on project teams and the final project delivered to the owner. Integrated teams spend months developing and refining not only the design of the project, but also the contractual agreement that will bind team members. During this time, team members get to know each other, align their goals, and define the best ways to deliver the projects. A similar process happens with teams working on progressive DB projects, where the design and price are progressively defined over time (DBIA 2017). The work of these teams ends up translated on specific design and construction documents, but also captured in contractual clauses that promote and sustain collaboration.

Considering these delivery methods and related practices outlined in their respective contracts, studies have documented the superior performance of DB over DBB, and CMAR (Konchar and Sanvido 1998) and, more recently, IPD over DB and DBB (El-Asmar et al. 2013), and IPD over DB, DBB, and CMAR (El-Asmar et al. 2016). Contracts for these delivery methods all address similar concerns regarding roles and responsibilities of the teams, risk management, document management, and commercial terms, among others. However, the working hypothesis of this paper is that the language used in these contracts differs from more prescriptive and compliance-related terms in traditional delivery methods, to language that is used to weave in collaboration in different areas of the project.

The language in these contracts is one of the elements that sets the tone for the collaboration among project stakeholders and the project's superior performance.

## RESEARCH METHOD

The research method employed to conduct the analysis uses the same steps outlined in Alves and Shah (2018) for the analysis of construction contracts, used to implement different delivery methods, with the goal of identifying collaboration related words. Initially, the first author analyzed various forms of contracts used across the construction industry in an effort to determine if contracts can be used to create a collaborative environment where all the parties involved will work in together. A total of 32 contracts for different delivery methods were analyzed including: design-bid-build (DBB), Design-Build (DB), Construction Management (CM) at Risk (CMAR) and as Agent, and Integrated Project Delivery (IPD). The contracts evaluated were either obtained through online searches, or through contacts found online for various public entities and organizations.

The analysis of the contracts was performed using a series of keyword searches. From a legal standpoint, words and clauses in a contract have no inherent meaning, they develop meanings after people using contracts and their related instruments communicate with each other using contractual terms, thus, attaching meanings to these terms (Sweet et al. 2015). However, words have social and psychological meanings, according to Tausczik and Pennebaker (2010, p.30) *“(t)he words we use in daily life reflect what we are paying attention to, what we are thinking about, what we are trying to avoid, how we are feeling, and how we are organizing and analyzing our worlds.”*

The first round of searches was performed using the word “Collab” as the root of other words such as collaboration, collaborative, collaborate, collaboratively, and other variations. The second round of searches included words commonly associated with collaborative behaviors and processes, namely: joint\* (joint, jointly), coop\* (for cooperation-related words), together, and trust\*. Additionally, a last round of analyses and discussion considered specific clauses, organized in the spreadsheet format, and the context where the keywords were used. The first author categorized the clauses that contained the keywords searched as collaborative clauses when the words were in fact used to promote collaborative environments and processes versus simply referring to terms (e.g., joint venture, joint checks) or titles of the clauses (e.g., collaboration responsibilities, participation in collaboration).

This study was developed as part of the first author's master's degree capstone project. It expands the findings reported by Alves and Shah (2018), and adds the word “trust” to the analyses. Limitations include: the sample size considering the 32 contracts analysed, the predominant focus on contracts used in the United States, and the subjective analysis carried out by the first author in terms of what words were being used specifically with a collaborative intent versus simply outlining a procedure, title or part of some term or practice.

## ANALYSIS

This section presents the two rounds of keyword search and related analyses for the different contracts used in the delivery methods investigated.

### FIRST ROUND – SEARCH FOR COLLAB\* KEYWORDS

Considering the 32 contracts that were searched only 10 used any words with the root “collab.” Of the contracts that returned words with the root “collab” in them, 2 were construction management (1 in each category), and 8 were IPD. There were 179 instances of words such as collaborate, collaboratively, collaboration, and other variations. Out of this number, 177 (99%) uses of the words specifically appeared in the IPD-related contracts, which represent about 31% of all the contracts analyzed (Table 1). This particular result, at first glance, suggests that contracts used in IPD projects are using a lot more collaborative words, while the other contracts analysed are not using specific words that directly call for collaboration.

Table 1: Delivery methods and keywords – 1<sup>st</sup> Round

Delivery Method	#	%	Keyword (1 <sup>st</sup> Round)
			Collab*
Design-Bid-Build (DBB)	7	22	0
Construction Management (CMAR)	4	12.5	1
CM as Agent or Advisor	4	12.5	1
Design-Build (DB)	7	22	0
Integrated Project Delivery (IPD)	10	31	177
<b>Total</b>	<b>32</b>	<b>100</b>	<b>179</b>

A more detailed analysis of these contracts resulted in the following findings (Table 1):

- Design-Bid-Build: seven contracts used for DBB were analyzed and returned zero words with the root “collab” in them.
- Construction Management: a total of eight contracts used in the CMAR and CM as Agent or Advisor were analysed, however, only two of these contracts each had one single reference to a word with the root of “collab.” In both contracts the word was specifically used in reference to expediting shop drawings. Both contracts use the word in the following manner: “*In collaboration with the architect or design team to implement procedures for the expediting of shop drawings and submittal approvals.*” This type of statement does not actually reflect collaborative work, but rather indicate a procedure for document acceptance.
- Design-Build: Seven contracts used in DB projects were analyzed and also returned zero words with the root “collab” in them. The fact that zero words with the root collab\* were returned might support the appearance that these contracts are not collaborative by nature. However, additional keywords searched in the second round of the analysis returned different results, analyzed later in this paper.

- Integrated Project Delivery: Ten contracts used in IPD projects were analyzed and eight had words with the root of “collab” used in them. 177 instances of the root appeared throughout the eight contracts, and over two thirds of the mentions were categorized as supporting clauses to promote collaborative environments. Some uses were written towards the selection of subcontractors who can work in a collaborative environment, using collaborative tools and methods; thus, depending on other clauses that established what collaboration meant in these contracts. The contracts indicated specifically how the architect, contractors, and owner would be required to work collaboratively and defined requirements to create a collaborative environment. The contracts even went so far as to allow termination of a subcontractor for not working collaboratively. This result supports the idea that IPD is designed to create highly collaborative environments in the construction industry.

## **SECOND ROUND – SEARCH FOR JOINT\*, COOP\*, TOGETHER, TRUST\* KEYWORDS**

The second round of searches resulted in higher uses of the searched words across all the contracts analyzed. The authors’ analysis of the results are presented next, with results found in Table 2. The following findings resulted from the second round of analyses:

- Design-Bid-Build: the searched words appeared only 10 times in the DBB-related contracts analyzed. The following statement exemplifies one of these instances: *“The Owner and the Architect shall cooperate with one another to fulfill their respective obligations under this Agreement. Both parties shall endeavor to maintain good working relationships among all members of the Project team..”* While this is a collaborative statement it still has a large grey area in that it only specifically calls for cooperation between the owner and architect, the two parties named in the contract, but not necessarily the additional parties later involved in the project via additional contracts. It also does not require anyone to work collaboratively but rather to try and maintain a good relationship among the project team. While it does seek to remove or control the contention of the contract, it is not fully collaborative.
- Construction Management: The CMAR-related contracts returned 53 instances of the additional keywords, whereas the CM as Agent or Advisor returned another 28 instances. The word “cooperate”, for instance, was used the most in the CM agreements to facilitate working together toward the interests of the project. One CMAR-related contract in particular used the word cooperate in what the first author deemed a collaborative manner six times in an effort to facilitate a cooperative environment. The remainder of the uses of the words were similar to the Design-Build uses, discussed later, in that trusts and joint ventures are used, or in respect to writing joint checks. These words are also commonly seen in the language of one item together with another construing the whole of something in regards to documentation or payments, exemplifying procedural requirements rather than collaborative processes, tasks, or environments. For instance, the writing of joint checks clearly addresses mistrust issues as the checks are issued to

- two or more parties that are aware that others are also named in the check and need to cooperate for it to be cashed.
- Design-Build: a total of 48 secondary keywords were returned for contracts in DB projects. These words were used specifically in reference to working in a cooperative manner and selecting subcontractors who will also work in a cooperative manner. There was also one reference to “*proceed on the basis of trust and good faith to permit each party to realize the benefits afforded under this Agreement.*” The remainder of the uses of the secondary keywords were used in various other ways depending on the word itself. Examples are joint ventures, trustees, or trust funds, and “*working together with parties not privileged to the contract in order to correct deficiencies or work offsite*”.
  - Integrated Project Delivery: as was seen in the primary search, the contracts for IPD projects returned results far different than all the other contract types. The secondary searches returned 186 instances of the searched words. The most common uses of the secondary words for collaboration were working jointly and in cooperation with the other contractors towards the goals of the project. While the chosen words are commonly used for joint checks, joint ventures, and taking documents together in the other contracts analyzed, in IPD-related contracts the idea behind these words was to create a contractual obligation for all the parties involved to work together in a collaborative environment.

Table 2: Delivery methods and keywords – 2<sup>nd</sup> Round

Delivery Method	#	%	Keywords (2 <sup>nd</sup> Round)				Total
			Joint*	Coop*	Together	Trust*	
Design-Bid-Build	7	22	3	3	4	0	10
CMAR	4	12.5	7	29	14	3	53
CM as Agent or Advisor	4	12.5	4	19	5	0	28
Design-Build	7	22	14	13	15	6	48
Integrated Project Delivery	10	31	114	24	36	12	186
<b>Total</b>	<b>32</b>	<b>100</b>	<b>142</b>	<b>88</b>	<b>74</b>	<b>21</b>	<b>325</b>

## DISCUSSION

Table 3 reveals that not all contracts analyzed contained the keywords searched. For instance, in DBB-related contracts the keywords related to joint\*, coop\*, and together were found respectively in only 2, 2, and 2 of these contracts. For the CM-related contracts, only one CMAR type and one CM as Agent or Advisor type had words related to the root collab\*, whereas most of them (7 out of 8) mentioned the root coop\*.

It is worth noting that in both rounds of the analysis, contracts for IPD projects presented a high number of collaboration-related words used as departing points for this study. Surprisingly, DB-related contracts, presented fewer related words than CM-related contracts. However, a subjective analysis conducted by the first author, by examining the

clauses and the context where the keywords were used, indicated that in IPD contracts, these words are used to promote collaborative environments, versus simply referring to terms, e.g., joint venture, joint checks. These findings are analogous to Alves and Shah’s (2018) study and Hamzeh et al’s (2019) study, in that contracts for more traditional delivery methods are drafted around compliance and not necessarily written to promote collaboration.

Table 3: Delivery methods and number of contracts where keywords were found

<b>Delivery Method</b>	<b>#</b>	<b>Collab*</b>	<b>Joint*</b>	<b>Coop*</b>	<b>Together</b>	<b>Trust</b>
Design-Bid-Build	7	0	2	2	2	0
CMAR	4	1	2	3	2	3
CM as Agent or Advisor	4	1	2	4	4	1
Design-Build	7	0	4	6	6	5
Integrated Project Delivery	10	8	9	8	9	6
<b>Total</b>	<b>32</b>	<b>10</b>	<b>19</b>	<b>23</b>	<b>23</b>	<b>15</b>

## CONCLUSIONS

The evaluation of the contracts used in this study shows that many contracts associated with different delivery methods lack the use of words that allude to collaboration and promotion of collaborative processes and environments. While some of the contracts analysed do attempt to create an environment of collaboration with specific actions and processes, in some cases, the words are used in a superficial manner. Of all the contract types analysed, the IPD-related contracts were specifically written to create an environment of collaboration between all parties involved. Contracts for IPD projects seek to harness the skills and talents of everyone involved through collaboration and as such the contracts are written with collaborative behaviours in mind.

The working hypothesis proposed that language contained in contracts for certain delivery methods sets them apart in terms of how collaborative they are. Results suggest that this hypothesis is confirmed, but it is important to highlight one caveat: the simple number of collaboration-related words does not define a contract as collaborative. The specific context and clauses where they are used are also very important. Moreover, parties involved in projects with different delivery methods might choose to promote collaboration regardless of contractual obligations, whereas parties in more collaborative delivery methods might also selfishly take advantage of contractual tools as outlined in Do et al. (2015).

The findings suggest that contracts drafted for more collaborative delivery methods, such as IPD and DB, contain a higher number of keywords associated with collaboration and collaborative behaviors. These contracts, as indicated in the literature reviewed, result in projects with better performance, suggesting a relationship between the contract language and resulting project performance. However, a more detailed analysis reveals that appropriate language is necessary but not sufficient to support collaboration. Contracts for



IPD and DB projects are very intentional when specific tools and processes are suggested to foster collaboration among the parties involved. The theory reviewed also indicates that words have social and psychological meanings related to the environments where they are used and the background of those using them. It also suggests that words have meanings that convey messages related to social relationships, status, hierarchy, honesty and deception to name a few (Tausczik and Pennebaker 2010).

Accordingly, the theoretical and practical implications of this study indicate that word choices in a contract might determine, or at least contribute to, the relationships among project participants and influence project performance. Therefore, owners should be very intentional when defining language to be used in their contracts, in addition to including mechanisms to promote collaborative behaviors.

Suggestions for future studies include the consideration of a higher number of contracts and delivery methods drafted in other countries and languages, which would require an international team of researchers to conduct the analyses. Additionally, the use of artificial intelligence and discourse analysis software can be employed to capture the surrounding context where the words are used, to avoid relying on perceptions. The use of performance metrics to evaluate the actual results of the use of collaborative language in contracts is another suggestion for future studies.

## REFERENCES

- Alves, T. C. L. and Shah, N. (2018). "Analysis of Construction Contracts: Searching for Collaboration." *Proc. 2018 Construction Research Congress*, ASCE. New Orleans, LA.148-157
- Ashcraft, H.W. (2014). "The Transformation of Project Delivery." *The Construction Lawyer*, Fall 2014, 35-41 and 57-58
- Ballard, G. (2008). "The Lean Project Delivery System: An Update." *Lean Construction Journal*, 1-19
- ConsensusDocs (2019). ConsensusDocs. <https://consensusdocs.org/>
- Darrington, J., Dunne, D., and Lichtig, W. (2009). "Organization, Operating System, and Commercial Terms." *Managing Integrated Project Delivery*. CMAA, McLean, Virginia, 10-47.
- DBIA (2017). *Progressive Design-Build*. Available at: <https://dbia.org/wp-content/uploads/2018/05/Primer-Progressive-Design-Build.pdf> assessed on 2/24/19.
- DBIA (2019). Design-Build Institute of America. <https://dbia.org/>
- Do, D., Ballard, G., and Tommelein, I.D. (2015). "An Analysis of Potential Misalignments of Commercial Incentives in Integrated Project Delivery and Target Value Design." In: *Proc. IGLC-23*. Perth, Australia, 277-286
- El Asmar, M., Hanna, A.S., and Loh, W. (2013). "Quantifying Performance for the Integrated Project Delivery System as compared to Established Delivery Systems." *J. Constr. Eng. Manage.*,139(11).
- El Asmar, M., Hanna, A.S., and Loh, W. (2016). "Evaluating Integrated Project Delivery Using the Project Quarterback Rating." *J. Constr. Eng. Manage.*, 2016, 142(1): 04015046-(1-12).

- Hamzeh F. R., Rached, F., Hraoui, Y., Karam, A., Malaeb, Z., El Asmar, M., and Abbas, Y. (2019) “Integrated Project Delivery as an Enabler for Collaboration: A Middle East Perspective.”, *Built Environment Project and Asset Management*, <https://doi.org/10.1108/BEPAM-05-2018-0084>
- Konchar, M. and Sanvido, V. (1998) “Comparison of U.S. Project Delivery Systems.” *J. Constr. Eng. Manage.*, ASCE, 124(6), 435-444
- LCI (2019). Lean Construction Institute. <https://www.leanconstruction.org/>
- Seed, W.R. (2014). “Integrated Project Delivery Requires a New Project Manager. ” In: *Proc. IGLC-22*. Oslo, Norway, 1447-1459.
- Sweet, J., Schneier, M.M., and Wentz, B. (2015). *Construction Law for Design Professionals, Construction Managers, and Contractors*. Cengage Learning: Stamford, CT.
- Tausczik, Y. R. and Pennebaker, J.W. (2010). “The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods.” *Journal of Language and Social Psychology*. 29(1), 24-54
- University of Minnesota, University of Washington, University of British Columbia, and Scan Consulting (2016). *Motivation and Means: How and Why IPD and Lean Lead to Success*. Available at: <https://tinyurl.com/y4kgp87y> (accessed on 04/13/2017).