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Framework Agreement and Collaborative Procurement in Italian Legislation Enhancing a BIM Approach

KEYWORDS: Collaboration, Multiparty, Relational Contracts, Legal BIM, Alliance.

The research proposes an overview of the importation of a Relational Project Delivery Agreements (RPDAs) procurement in Italian legislation and the related issues. The AEC sector fragmentation, caused by an increase of building complexity and a change in the industry structure, is demanding a collaborative approach to the project to allow the possibility of a holistic vision based on a BIM approach. This work provides an overview of RPDAs applications on different contexts, highlighting benefits and issues related, including litigation resolution processes. A special focus has been kept on Italian context, where the stagnant construction market needs to be revolutionized, and better interactions among stakeholders are required. The research imports and adapts a collaborative procurement model, FAC-1 (Framework Alliance Contract), on Italian framework, tailoring the most important features of the model to the Italian legislation. The goal of this work is providing a methodology to validate a standard form of contract, aiming at an added value to construction sector and at applying them to framework agreements. Further developments consist in guidelines for contract management and evaluation of the project behaviour during different phases of the process.

INTRODUCTION

This research proposes an analysis of the fragmentation of the construction sector, due to the contractual tradition, that obliges the different parties to act in pursuit of their own interests, producing an escalation in re-work and in lack of process optimizations performances, as well as collaboration with the supply chain (Akyuz, Gursoy, and Celebi 2014).
In most Countries, construction projects are carried out by means of standard contracts, this procedure is new on the Italian scene, still used to building custom contracts (McKinsey Global Institute 2017).
In order to optimize the entire process, an analysis on the worldwide different types of contracts and their implications for the construction process was carried out. In this sense, the study of the state of the art of collaborative contracts, Relational Project Delivery Agreements (RPDAs), has highlighted their wider potential impact on the sector. In order to import and adapt a collaborative procurement model in Italian legislation, a collaboration has been developed among some Italian universities (University of Milan, Politecnico di Milano and University of Brescia) and Prof. David Mosey of Kings College London. This alliance framework, considering the actual Italian procurement law, defines a new standard contract able to create collaborative interactions.

The collaborative potential of contracts could be enhanced if several projects with common features were implemented within the same agreement, such as FAC-1. The article 54 of Italian Legislative Decree 50/2016 foresees a two-stage procedure, defined as “framework agreement”: in the first phase the framework agreement is concluded with one or more economic operators on the basis of one or more conditions governing the performance of works, services or supplies, which will be performed following the award of individual contracts; during the second phase, the "call-off contracts" are awarded with or without reopening the competition between the winners of the framework agreement . This research highlights the benefit of collaborative procurement model applied to frameworks agreements that could amplify the potentiality and benefits of collaborative contracts for at least two reasons. First, the biphasic nature lends itself to separating the pre-construction phase (first phase or conclusion of the framework agreement) from the phase in which the construction contract is awarded (the awarding phase through call-off contracts). The aggregation of different works within a single framework agreement makes it possible to maximise the exchange/sharing of information among the client(s) and the successful tenderer(s) of the agreement. As a result, the contracting authority is not in a situation of 'tied negotiation' of a bilateral nature, as envisaged by Mosey (Mosey 2009), but it makes room for competition. Secondly, the adoption of a framework agreement makes it possible to create the conditions for repeated interaction between one or more contracting authorities and all the successful tenderers, a condition which is essential in order to be able to manage the relational aspects of construction contracts (Mosey 2009).

COLLABORATIVE PROCUREMENTS IN A WORLDWIDE SCENARIO

Beside different contract approaches, there are different collaboration levels that could be set in a project (Lahdenperä 2012).
The contract could be seen just as a promissory agreement among people recognized by the law which sets the rules of interactions among the participants. According to Construction Leadership Council (CLC) (Construction Industry Council 2013) report on productivity, collaboration set at the contractual stage, provides the basis for the Lean principles of reducing reworking and optimizing processes.
The misalignment of design team’s goals and the site design work-flow goals create a waste, especially during the construction phase, resulting in time and budget overrun (Sacks, Radosavljevic, and Barak 2010). The lack of communication among team members’ produces (Tauriainen et al. 2016) misunderstanding resulting in sub-optimized buildings (e.g. re-work caused by unsolved spatial clashes during construction phase) (Sacks, Radosavljevic, and Barak 2010).
All these circumstances are emphasized when collaboration doesn’t involve all the participant to the project (Myerson 1999).
Over the recent decades, some traditional project delivery systems have emerged claiming to fill the gap between the design and construction projects, but they have shown to be not efficient enough (e.g. Design Build or Construction Management at Risk) even if they are generally used. Most of the time, people try to plan collaboration just modifying traditional contract standard.
Therefore, collaboration has completely different structure. In this context, collaborative contracts standard (e.g. AIA C191, PPC2000, FAC-1, NEC4, JTC) were developed in many countries, but they mainly have the same characteristics, which can be summarize in the following: (i) multi-party, (ii) Early Involvement of Key Participants, (iii) team goal validation, (iv) shared risks and rewarding and (v)

collaborative decision making (Di Giuda and Villa 2016).
In the global panorama, two main approaches have been developed: (i) the first consists in the American approach, called Integrated Project Delivery (IPD), where the same contract groups the different participants in the process, entrusting in a single contract all the phases of the project; (ii) the second, on the contrary, typically European, is based on the union of several contracts previously awarded via an alliance framework, the main example of this approach is the FAC-1.

AMERICAN APPROACH TO COLLABORATION

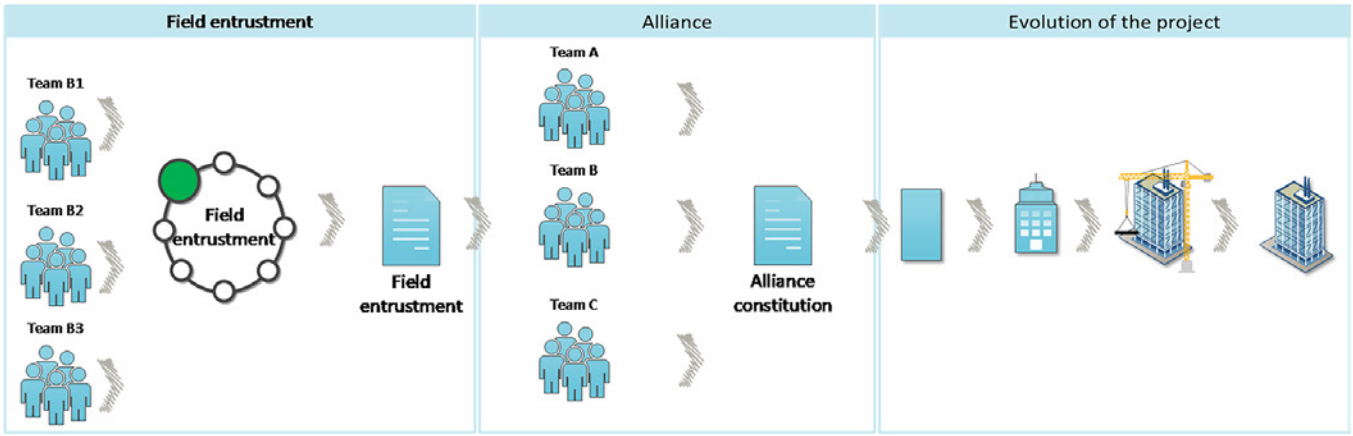
In US, a new form of collaborative contracts is called Integrated Project Delivery (IPD) (Miller et al. 2014). It started as an alternative to the tradition Design-Bid-Built in order to reduce complex project risks, and imposed a mental shift in the fulfilling of the contract (Lichtig 2010).
Due to their structure and composition, traditional contracts unavoidably create a conflict of interest and they impose a rigid division of the stakeholders' works. The two main standard contracts developed in US, which can help people establish s real collaboration through a multi-party integrated project delivery agreement, are AIA C191 and ConsensusDocs 300 series. The integrated agreement creates a system of shared risks, with the aim of decreasing total risks of the entire project. IPD contracts aim at including most of the consultant and sub-contractors in the agreement.
A general rule is to have at least half of the construction costs discussed at the decision table (Lichtig 2010). There are two ways to add new subjects to the team: the first is through call-off contracts. This approach set the new member in the teamwork with the same duties of the other parties, but he do not share nor profit nor right to vote. The second is through a joining agreement, as a consequent amendment to the original version.
The American experience has demonstrated how the public administration prefers a joint entity before a contract is stipulated in which they entrust the design and/or build a project. Even though, according to the past application of IPD (e.g. Sutter Health, Cardinal Glennon Children's Hospital Expansion), this contract model provides many benefits in terms of cost and time control, in management of the supply chain and reducing the risk in comlpex project.
This approach is common in US, but it is still not seen as the solution to a collaborative approach. This is one of the main reasons why framework alliancing was created, to accommodate market needs through a transition instead of a paradigm shift.

EUROPEAN APPROACH TO COLLABORATION

In Europe, the collaborative approach is quite new in the AEC, beside the form of Design Built.
Even though, some European countries (e.g. UK) are applying these practice for quite a few years. A new standard of contract, PPC2000, has been created at the beginning of this century: used in the last few years, it has had a great usage in the private sector and it was also validated by many companies and by the UK government. This document is close to American conceptualization, as it is a contract which includes (i) the aggregation of the team, (ii) the entrusting of the project, (iii) the construction phase and (iv) the maintenance.
As shown in Figure 1, this contractual typology allows to join in a unique framework different call-off contracts, previously awarded, and mage all the interaction among them. Shared objectives, success measures, targets and incentives are the core of the framework alliance, especially in the FAC-1, which can take a multi-party or poli-party configuration according to a case-by-case evaluation, namely adding to the core group of the contract or all the representative of the parties, as in the first case, or all the representatives, as in the last case.
This collaborative agreement standard has been introduced in 2016 in the United Kingdom and has been used for many public and private projects, such as in the case of the Surrey County Council Trial Project, it was adopted over the year in over 12 B£ of procurements.
The alliance has a joint aim, the realization of a project guarded by the governance structure of a core group.
FAC-1 is the first standard contractual model in Europe able to accommodate all the characteristics of this methodology allowing a transition from traditional contracts to collaborative ones. At present, some States such as Brazil, Bulgaria and Germany are adapting this contractual form. FAC-1 is structured as a Common Law Contract; and for this reason, it's useful starting from the General Conditions, containing

the general rules, then moving on to the initial part. The entire document is related to the Definitions, which states the way to read correctly the standard contracts. Consequently, the General Conditions, referred in the Cooperation Agreement, are the contract column. One of the main features of the contract is that it could be bended to the requests of the collaboration members just selecting the clauses that they want to apply. FAC-1 has pre-structured Annexes and Modules in order to set the requests made or the action carried by the collaboration. Through an information preset included in each request, each party structures the request in order to provide all the needed information.

In this scenario, UK is the leading country that has applied and developed a RPDA for AEC industry. FAC-1, Framework Alliance Contract, is the first European contractual standard that is able to link more single set from a bi-lateral contracts in a multi-party agreement. This approach is applicable in different scenarios and its methodology fits with BIM methodology and with collaborative system (Di Giuda, Giana, and Villa 2017). The European Directive 2014/24 recognizes the joint planning as one of the methods for building public works, the core principle of that partnership is that the design quality would be superior if the project is developed jointly. The Laws realized on January 28, 2016, Legislative Decree 50/2016, no. 11, (Italian Parliament 2017) has drastically limited the use of integrated tender based on technical design. The reviewed Contracts Legislation has further restricted the joint design operation scope and execution contract to activities characterized by high technology or innovation elements that need the division of these phases. The value of a joint project development is superior when the project is produced by a collaboration instead of a sequential development, so a joint alliance adoption impacts on time and costs.



METHODOLOGY

The evolution of BIM methodology is imposing also a shift from traditional contract, which segregates different stakeholders, to a collaborative one. In this context, the BIM helps control and implement the result of the contractual evolution form during the whole project evolution. This research provides an analysis of the importation of a collaborative agreement in Italian legislation enhancing a BIM approach. The adaptation of FAC-1 was conducted by the teamwork of three different universities, which considered the alliance framework the most suitable and flexible standard form of RPDAs contract. The analysis of the state of the art of collaborative procurement in a worldwide scenario, summarised in this article, provides a comparison of the most suitable contract for Italian legislation. Namely, the American approach, where the same contract aggregates different parties entrusting different phases of the project via the same agreement. This approach is not feasible to be applied both for public and private scenario due to the limitation of contract law. The UK approach, on the other side, is based on directive 2014/23/EU and 2014/24/EU and it allows the union of several contracts previously awarded in a framework through a procedure called alliancing, the main example of this approach is the FAC-1.

A multidisciplinary group of researchers understood the possibility to import FAC-1 into Italian legislation. The FAC-1 was conceived and drafted by Prof. David Mosey PhD, Director of the Centre for Construction Law and Dispute Resolution of King's College in London. This process is not a simple translation from a different language, but it involved a drastic modification of its content to fit a different legislative standard. The process was developed

Figure 1:Alliance procurement process

by a collaboration among people with different background, who could exchange information and fully comprehend the implication of each single word, through a crosscutting analysis. This research will provide a project and program management tool to clients, who would like to manage complex situations.
To prove the importation legitimacy four levels of control analyses were put in practice. The first approach to the alliance framework imposed a deep understanding of the word included in the contract definitions. This first step imposed an iteration of translations to fit the meaning and the philosophy of the contract. When the entire contract was translated a first control, researcher conducted a first internal control.
An internal quality control of the contractual model was conducted both in term of immediate comprehensibility of the terminologies used in the translation and the consistency of the contractual model with the reference market (Italian end European). It required many adjustments in order to realign the contract philosophy to the Italian contractual code.

A second step consisted in the resolution of the problems previously individuated and in the validation through an expert. This process was developed in collaboration with Prof. David Mosey, who drafted the original agreement. He validated the agreement according to the theoretical flux of the contract. The comparison between the two versions occurred among the two team explaining the modification of the contract to fit the Italian legislation and through the explanation of the adjustments of the contract. The third step was conducted after the validation of the previous one. In this case, external experts reviewed the Italian form of the framework agreement.
Various institutional entities, local authorities, universities, trade associations, representatives of the administrative judiciary and private operators was consulted to analyze the contract. They provided some doubts and uncertainties, from different perspectives, which were analyzed and solved discrepancies. The multidisciplinary group embraced all the doubts and problems detected and re-finalize the contract standard. A second round of external controls was conducted providing the contract to the reviewers and all the comments were discussed during a round-table discussion.
All the people, invited to discuss during the previous step to submit comments to the contract standard, attended the discussion. During this event, a few points of the standard were discussed, explained and commented for the regulatory bodies sensitivity, the coherence with Italian legislation and the market requests. A last adjustment was brought into the contract.
The contributions received - further verified, also from the point of view of consistency with the original philosophy of the contractual model - were included in the final version of the document. The process, structured in such a way, allows, enriching the alliance contract by the experience of various leading players of the national panorama.

ADAPTATION OF FAC-1 ON ITALIAN LEGISLATION

The adaptation process of FAC-1 was developed by a collaboration among people with different background and adapted the standard to Italian legislation, modifying its content in a drastic way in order to fit a different legislative standard. This framework provides a project and program management tool to clients, who would like to manage complex projects. According to the analysis conducted by OICE (Association of Organizations of Engineering and Technical-Economic Consulting), BIM projects are drastically increasing their importance in Italian market and for this reason, the framework will provide to it a solid base on which BIM methodology can fit the client requests. The Italian FAC-1 establishes a system regulates legal relations among several subjects involved in the implementation of one or more projects, defined as Programs, by linking several contracts with a view to encouraging collaboration and coordination of the various activities. Through the stipulation of FAC-1, parties undertake to work in a collaborative spirit and to carry out activities, called “Alliance Activities” – added value, site organization efficiency, BIM use - consistent with the aims identified by the Customer, which may be public or private. The provisions contained in the General Conditions and Annexes may be departed from or modified in the FAC-1 which is composed of several Modules, specifying respectively:

- The Objectives (KPI), Success measures, Targets, Objectives and Bonuses (Schedule 1);
- The Timetable (Schedule 2);
- The Risk Register (Schedule 3);
- Awarding Procedures (Schedule 4);
- Contractual Models (Schedule 5);
- Legal requirements and special terms (Schedule 6);

FAC-1 is a contract that suits a general goal called Objectives, which will be accomplished by specific Objectives measured through Key Performance Indicator (KPI) (Jonsson and Rudberg 2017). The contract can pursuit both

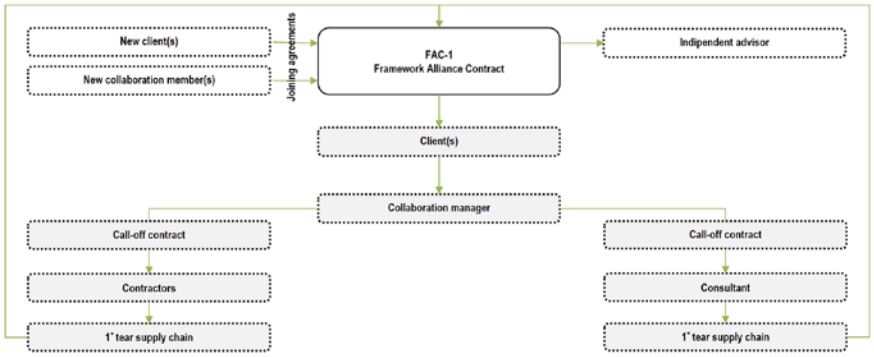


Figure 2:FAC-1 interactions among members

the aim of a Project or a Program. The collaboration is set among the Client, the Alliance Manager and the Collaboration Members who sign the FAC-1.
The standard flexibility allows including more members to the collaboration both as a New Client and as a New Collaboration Member. To pursue Collaboration, a series of activities have to be completed and each member can propose a series of activities to the Client in order to optimize the project, their payment is at the discretion of the Alliance Manager and the Client. Sometimes the added value that gather from a new activity repay the effort extended in the action. Whether FAC-1 intervenes in a Program already in the design or execution phase, or where FAC-1 precedes the start of any activity related to a Program, the Collaboration Members are required to present their Collaboration Proposals, which may be limited to simple participation in meetings, drafting reports or sharing relevant information with other Collaboration Members, or they may consist in the provision of specific services. The Collaboration Activities execution takes place - according to the schedule in part two - on the basis of Requests formulated by the Client, indicating the contents to be implemented, the execution terms and the amount due for them, calculated on the basis of the Collaboration Price. Payment for Collaboration Activities shall be made in accordance with the conditions set out in FAC-1, a specific payment policy states the workflow of the procedure to trace all the payment among all the parties and to set the fee for delays. The Alliance Manager in relation to the Purposes of Collaboration monitors the performances and the Objectives, based on Members' activities, are assessed by shared KPI. The profit sharing is one of the key of contracts based on collaborative procurements. For instance, the partaking of the supply chain can optimize the process and produce a huge reduction of the costs, thanks to shared procedures.

THEORETICAL APPLICATION OF FAC-1

In order to demonstrate FAC-1 flexibility, two examples of its application are presented, both on side of public and private investors. Starting with an example from the public sector, we can imagine being in a situation where three municipalities with their street lighting companies decide to optimize the service offered to their citizens by creating a single management system for the three municipalities.
This alliance can provide a facility management system, shared among them, to provide a major reliability due to its development supported by experts. Thanks to the framework, parties can be joined in the contractual scheme by establishing a dialogue aimed at a single goal dictated by the Client. Single installation companies can participate by offering, for example, an implementation of their System's performance. This can be achieved by sharing supply chain information, for example, using the same supplier. In this sense, supplier optimization could generate a better result. At the same time, the various companies being companies in the sector can help the maintenance manager to choose ways that are more appropriate by improving the Final Service. Clients can choose which of the improvement proposals to adopt, and accept it only if the proposal improves the final result. The final result is obtained via a cooperative approach. For example, in this case, the maintenance platform will fit the requests and the standard procedure of the client. This collaboration can optimize the cost of the service, imagining that the maintenance procedure is close to the standard procedure.
If we deal in the context of the private client, the general contractor of a work, decides to establish a collaboration agreement with the other participants in order to optimize the process in terms of (i) certainty of outcome, (ii) integration between design and construction and finally (iii) safety. In this hypothetical scenario, for example, the designer could offer as an additional service, even

payed, the implementation through BIM methodology so to reduce the design errors and clashes, increasing the reliability of the process. In this sense the client could accept an extra cost in face of fewer problems during the construction phase in regard to a final saving due to a certainty of the result. In this scenario, others parties can promote different proposals, such as energy improvements for the reduction of the cost of management or changes to the schedule for the optimization of the workflows. The collaboration sets not only a legal agreement, but it aims at improving the quality of the project. It is the reason, why collaboration has the ability to improve the quality of the project and improve the exchange of information.

The client, who set the framework does not need to be the owner of the construction, but he could be a person or a firm that want to set a collaboration to improve the project. This approach could put also the design firm as employer in the collaboration process to show its flexibility of application.

CONCLUSION AND FURTHER DEVELOPMENT

The research investigated different contractual typology in a worldwide scenario, among them researchers individuated the one closest to Italian legislation. This approach provided a solid base to adapt it in Italian legislation. FAC-1 is a flexible meta-contractual model, in which parties are given the opportunity to consider efficiencies in the supply chain that make the flow of information more transparent and reduce the overall cost of performance. The Client could use the standard in order to create a collaboration, legally valid, among their sub-consultants and/or sub-contractors. The higher level of transparency and increased responsibility, towards both the Client and other Collaboration Components, required by each private operator in the pursuit of collaboration, are counterbalanced by the economic compensation provided. FAC-1 is a contract that regulates and manages the inter-relations among different contracts and, namely, the relation among parties, which are not directly associated over a contract. In addition, FAC-1 is intended to build a solid legal framework for the BIM use in the construction sector, through the following means of developing a positive interaction among different design teams and linking the various phases of construction of a work (Alwash, Love, and Olatunji 2017). FAC-1 approach invites the participants to submit their Collaboration Proposals and enhances the professional expertise, thereby exploiting economies of scale and achieving cash or other benefits.

This meta-contractual form permits to increase the coordination of different subjects' activities with greater guarantees of results and with a reduction of unexpected interference, possible over-budget and overrun of time. Especially in complex project, this approach allows an efficient management with multiple subjects' contributions. Collaboration, in such a way, providesan added value in terms of work or service sustainability, site organization and working conditions efficiency, collaboration with the supply chain, reducing re-work. The early involvement of all professionals allows to prevent and/or reduce the mistakes, which must be reported to Alliance Manager that improves project final quality. The alliance members promote transparency in relation to the specific aims and objectives of collaboration. The intensive exchange of information enhanced by the meta-contract provide a risks prevention and management during execution, because problems are shown to all parties. In conclusion, this approach leads to a reduction of the litigation by preventing and extra-judicially handling possible claims. This contract provides the ability of team members to rely on the exchanges of BIM data and setting among different call-off contract the same rule in order to provide data consistently among parties.

At this point, the research provides an approach to the problem of the SMEs of the sector, in fact the collaboration that RPDA established among stakeholders is difficult to achieve and, most of the time, it is unattainable in a traditional process, although the promised success (Ghassemi and Becerik-Gerber 2011). The new contract improves the processes management decreasing the public administration burden often due to litigations caused by traditional contractual procedures. The research will produce guideline for the contract application both for private and public users to integrate smoothly collaboration in work procedures. The "Adda Martesana" Municipality is applying this contractual model as part of the project to build a middle school in Liscate (Italy) as first case of framework alliancing in Italy.

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