

Building Project Delivery Systems · see recommended guidelines on page 89

Definition

Building project delivery systems are defined as the contractual relationships between the project client and the other parties involved in the design, documentation and construction of buildings.

Background

Traditionally building project delivery systems have involved architects in the role of the project client's agent, with responsibility for the design, documentation and administration of the building contract.

Under many current and emerging building delivery systems the architect no longer acts as the agent of the project client. Therefore it is important that the roles, responsibilities and constraints placed on architects in providing their services under different building project delivery systems are clearly understood.

Policy

Architects should maintain high standards of professionalism and service under all forms of building project delivery systems. The skills of the architect are unique in guiding project clients to achieve the most effective balance between risk, cost, time and design quality. Member sections of the UIA are encouraged to actively promote the role of the architect in ensuring design quality.

Recommended Guidelines for the Policy on Building Project Delivery Systems

Accord Policy

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1. Definitions

The following definitions have been adopted for the purpose of these Guidelines:

Architect's client: The party that commissions the architect.

Brief: A detailed statement of the project client's requirements and other relevant information necessary for the commencement of design work.

Budget: the anticipated end-cost of the defined scope of works.

Buildability: The extent to which decisions made during the design process ultimately facilitate the ease, efficiency and quality of construction.

Building project delivery system: The contractual relationships between the project client and the other parties involved in the design, documentation and construction of a building.

Lifecycle cost: The total cost of a building over its economic life, including all capital costs, operating costs, maintenance costs and demolition costs.

Novation: An arrangement under which the rights and obligations of a party to a contract (commonly the design consultants) are transferred to a third party (commonly the builder or construction manager).

Procurement: The act or process of bringing into existence an operational building that did not previously exist.

Professional adviser: The party appointed by the project client undertaking a multi-party or alliance building delivery system.

Project client: The party for whom the building is designed and constructed.

Tender: An offer to provide a service or product for a defined price, usually by invitation.

2. Introduction

The traditional building delivery relationship between architect, project client and builder has generally been characterised by:

- the project client directly commissioning and briefing the architect;

- the architect preparing design and contract documents;
- the builder pricing and building from the contract documents;
- the architect acting as the project client's agent and as certifier of quality and payments during construction, often based on a lump sum contract.

However, this approach is no longer universal and alternative building project delivery systems have evolved, which may have both advantages and disadvantages when compared to the traditional method. Architects may therefore identify the need for, or be offered, a commission based on an alternative method, in order to meet particular objectives of the project client, which may include needs to:

- reduce *risk* associated with the project;
- ensure that critical constraints on *cost* or *time* (or both) are met;
- comply with significant *third-party requirements*, such as those of a financier or authority, or
- meet overarching *public accountability* requirements, such as where government is the client.

In order to maintain an effective professional role, the architect must:

- be able to clearly advise the project client of the advantages and disadvantages of each alternative system being considered;
- have a full understanding of the organizational structure, roles and responsibilities, and the lines of communication applicable to the proposed delivery method; and
- be able to assess the risks to their practice associated with the alternative method, from both a commercial and professional viewpoint.

3. The Alternative Methods

For virtually all building procurement methods, the core role of the architect is to deliver the building *design*. The most common alternative methods can be categorized by whether design services are procured *directly* or *indirectly* by the project client.

Direct procurement of design:

- traditional construction only contract (including a range of variant approaches)
- construction management
- managing contractor

Indirect procurement of design:

- design and construct
- novation
- public private partnership
- alliancing
- integrated project delivery

3.1 Traditional construction only contract

The traditional procurement method involves the project client commissioning the architect to substantially complete design and contract documentation before selecting a builder, usually, but not always, through a competitive bidding process. A contract between the project client and the builder is signed when the price and other contract terms are agreed. In the traditional method, the architect has a formal role in administering the contract.

Arriving at the contract price and the approach to controlling the construction cost, can involve any of the following variants:

(a) Tender

Completed contract documents are made publicly available (open tender) or provided to one or more selected builders (select tender). Generally the builder submitting the lowest reasonable price will be selected to undertake the construction work.

(b) Negotiated price

Either after a tender process, or without such a process, a contract price is negotiated with one or more selected builders. Such negotiations may involve changes to the design or scope of works.

(c) Cost-plus price

The builder may be selected through a modified tender approach or simply on the basis of credentials or previous successful projects for the same project client. The selected builder constructs the project using in-house or sub-contracted labor, or a mixture. Sub-contract tenders are generally administered by the builder but vetted and approved by the project client and/or the architect. The final project cost is determined by adding all the sub-contract prices and a pre-agreed percentage to cover the builder's overhead costs and profit.

(d) Two stage tender

Where early selection of the builder is preferred, an initial first stage tender is sought based on schematic plans and an outline specification. Contract documentation is developed with input from the builder, allowing a thorough analysis of buildability and providing a realistic basis for assessing the cost benefit of various aspects of the design. A final, second stage price is then agreed based on the completed contract documents.

3.2 Construction management

A construction manager is commissioned by the project client to manage the construction of a building project. Materials and labor are supplied through a series of separate contracts between individual suppliers or contractors and the project client.

The role of the architect and the relationship with the project client and the construction manager may be much the same as in traditional contracts between architect, project client and builder. It has become more common, however, for the construction manager to take over some of the architect's traditional roles during construction, such as certification. It is also increasingly common for the architect and other design consultants to be novated to the construction manager.

While the construction manager may be engaged when all design and documentation is complete, they are more often engaged during the design or documentation phase to assess buildability and to assist in tailoring the design to meet the client's budget and other requirements.

As a single overall tender is not required before any work begins, an early start on site is possible by completing the documentation, tendering and letting contracts for the early trades while documentation for later trades is still in progress.

The construction manager is generally paid on a fee for service basis (fixed, percentage or time-based) and does not usually accept any design risk or cost risk. They can thus provide independent cost advice to the project client as a consultant. All risks are borne by the project client and the separate contractors.

Construction management can be an advantage for very large projects, where an early start on site is necessary or where a large part of the site needs to remain occupied (eg. shopping centres, hospitals).

3.3 Managing contractor

A managing contractor is appointed by the project client in a similar way to a construction manager, with the significant difference that the managing contractor, rather than the project client, enters into various separate contracts with individual suppliers and contractors.

The managing contractor assumes responsibility for administering the separate contracts and accepts some responsibility for time and cost outcomes. They are generally paid on a fee for service basis (fixed, percentage or time-based) and may also receive incentive payments for achieving project cost or time targets.

The architect and design team may be appointed early, in order to develop a design brief and contract documents as a basis for tendering by competing managing contractors. After selection of the managing contractor, the consultant team can continue to develop contract documents to enable letting of each trade package.

Alternatively, the managing contractor may be appointed first, to manage the process from briefing through design and documentation to construction. They are then paid for these services, for which they may enter into additional sub-contract arrangements with the architect and other design consultants.

3.4 Design and construct

[sometimes referred to as *Design/Construct*, *D&C* or *Design/Build*]

In design and construct arrangements the project client enters into one contract for the design and construction of a project with a single contractor that is responsible for providing both design and construction services.

A 'guaranteed maximum price' is commonly negotiated between the contractor and the project client based on the project brief or requirements, previous projects of a similar nature, a risk assessment by both parties and a reasonable margin to cover overhead costs and profit.

As with construction management and managing contractor approaches, the architect and design team may be appointed as part of the design and construct contractor's team from the outset, or by the project client initially, with subsequent novation to the contractor.

In principle, the design and construct method creates a basic conflict of interest for the architect, between their duty to the contractor as the architect's client and to the project client as the ultimate procurer of the building. It also creates a conflict for the contractor, who, having agreed to a fixed or limited price, will naturally seek to reduce costs wherever possible, sometimes at the expense of design quality.

The novation approach can however offer the advantage of allowing the architect and design team to settle the design (both scope and quality) with the project client, often in considerable detail, before transferring their allegiance to the contractor. Increasingly, inclusion of a 'whistle-blower' clause in the contract and novation agreements can protect the project client from contractor decisions likely to reduce design quality.

Obviously, where design quality is not a major priority of the project client (eg. factories and industrial buildings), the design and construct approach can be effective. Even when design is a

priority but cost constraints are critical, this approach can assist the client in minimizing financial risk.

3.5 Novation

Novation is not strictly a building project delivery system, but it can be a significant element of other systems, particularly where the project client wishes to ensure a high level of design quality but needs to manage risk associated with time and cost. Novation can be used where the project client intends to appoint a construction manager, managing contractor or design and construct contractor, but wishes to have direct control over the design solution and design quality.

The project client can enter into an initial contractual agreement for design services with the architect and design team, and once the design, ideally including detailed design, is locked in, that agreement can be 'novated' or transferred to the contractor or construction manager. After novation, the contractor is responsible for paying the architect's fees, and the architect takes instruction from the contractor, not the project client.

3.6 Public Private Partnership

[sometimes referred to as *PPP*, *Private Finance Initiative* or *PF*]

A Public Private Partnerships (PPP) is an agreement between a government entity (Public) and a private consortium for delivery of a package of services that commonly includes design, construction, finance as well as maintenance and operation of a public facility over a specified period of time (commonly 20-35 years). A PPP will be a favoured delivery method for government when the scale and nature of the project is such that initial capital costs or financial risks are substantial.

Most commonly, competitive bids are sought from a number of consortia, each incorporating the full range of required disciplines. Architects participating in a bid consortium therefore need to carefully evaluate the competitive position of the team they choose to join. The architect and design team will generally operate collaboratively within each bidding consortium, but until one bidder is selected, fees will generally reflect the speculative nature of the process. Being part of a PPP bid can thus be an 'all-or-nothing' experience and, like any other form of competitive design submission, should only be entered into by practices that can afford to absorb the cost of the required initial design work.

Payment for the services usually only commences once the facility is operating in accordance with contracted service levels. The government entity will usually specify measurable outputs, rather than inputs, encouraging the private provider to deliver the service in innovative ways. The initial bidding process is usually interactive, allowing the government client to offer feedback to bidders on their design, as well as other elements of the service agreement.

3.7 Alliancing

[sometimes referred to as *Partnering* or *Strategic Partnering*]

An alliance contract provides for the project client to work collaboratively with the other key construction and design participants to deliver the project. The most common use of alliancing has been in large infrastructure projects, but there are many instances of this approach in building projects.

The alliance contract establishes a formal legal 'partnership' between the project client, the architect and other design consultants and the contractor or contractors. In principle, it aims at creating a

positive “no-fault, no-blame” project culture where all decisions and outcomes are mutually determined or agreed. The behaviour of participants is crucial to the success of alliancing, and all participants, including the architect, should be selected for their ability to operate in this collaborative environment.

Essential to alliancing is the clear definition of mutual risk/reward arrangements and a methodology that supports the collaborative management of risk as the project proceeds. The risk/reward provisions are based on the project client’s specific objectives and key result areas (KRA’s) or key performance indicators (KPI’s) such as timeliness, cost, construction and design quality and user satisfaction. The alliance contract can reward exceptional performance, provide a basis for collaboratively addressing poor performance, and align the consultants’/contractors’ commercial interests with the project client’s objectives.

3.8 Integrated project delivery

Integrated Project Delivery (IPD) organises all the participants, systems, commercial arrangements and operations required for the delivery of a building project through a single integrated structure, rather than the sequential, iterative approach adopted in traditional delivery methods. Optimally, this structure is in place from the conception of the project through design, construction and facilities management phases.

Where alliancing creates a collaborative team, IPD goes a step further by establishing an integrated collaborative delivery system, which all participants contribute to. In its purest form it involves the creation of an integrated Building Information Model (BIM), which then forms the basis for computer-based fabrication of building components, cost management, construction sequencing, services coordination and ultimately programmed facility management.

However, like alliancing, the commercial relationships between participants rely on a shared risk/reward mechanism. This can be achieved through the one-off establishment of an integrated team for a single project, or through the engagement of an integrated practice, which incorporates all project design and construction disciplines in a single business entity.

4. Aspects critical to the success of alternative methods

It is assumed in this Guideline that different building project delivery systems can be appropriate for many projects, but that some critical aspects of each particular system are critical for success. The project client should be made aware of these critical aspects when alternative arrangements are being considered.

4.1 Independent assessment

Protection of the project client’s interests, as opposed to the vested interests of the other parties to the contract, relies on the facility for independent and objective assessment and advice. Such independence can be impacted by:

- (a) Method of payment – are the fees for professional services separated from or influenced by the builder’s profitability?
- (b) Level of design independence – is the authority of the design team clearly specified in relation to the management organization and the building organization?
- (c) Changed responsibilities during construction – Does the design team retain a reasonable degree of independence during the building process?

(d) Communication – are there clear lines of communication and does the architect have the capacity to deal directly with the project client?

(e) Liability – is responsibility and liability clearly defined?

4.2 Experience and expertise of the management service offered

Organizations offering construction management services must have a proven record, appropriate background and training, suitably experienced resources and a demonstrable capacity to balance the project client's requirements with the project budget and brief.

Management should not interfere with the design process, but add to it in a positive way. It should not isolate the client from the process or the design team, but provide another level of advice and reassurance to the project client.

It should not assume roles better undertaken by other members of the team (ie. co-ordination), but assist in the process. Finally, a good construction manager, on the right project, should be part of a team, not the director of it.

4.3 The value of a builder on the design team

One of the principal advantages of the participation of a builder in the design and documentation process is to provide a continuing buildability assessment of the project and an early warning of design or construction problems. The collaboration of an experienced builder with the design team, who understands the design process and the contribution that can be made, can provide some project clients, and the design team itself, with greater confidence in the outcome.

4.4 The risks of an early start

The most significant risks in an early start on site to reduce overall construction time lie in unrealistically shortened design times, hasty design or documentation decisions and the potential for a lack of thorough co-ordination of the work of the design team before the implications of the total design have been discovered. This can result in the need for modification to the early works or unfortunate limitations on the final design.

These risks are present, to varying degrees, in any fast track method of delivery, but can be minimized through careful design team co-ordination and monitoring.

4.5 Level to which the method contributes to a good design outcome

Ultimately, the role of the architect is to ensure design quality. With traditional project delivery approaches, the architect is accountable only to the project client, has a key role in the selection of the builder, and acts as the project client's agent (impartially) during construction. Such approaches give the architect a very high level of control over the resulting design outcome.

Where the project client procures design services indirectly however, through any of a number of alternative strategies, the architect may have multiple masters and the task of satisfying them all may be compromised. As a result, design quality may also be compromised.

It is thus desirable for the architect to ensure that, whatever delivery system is adopted, they maintain the ability to communicate directly with the project client about design quality, during the design and documentation phase, as well as during construction.

4.6 Scope for innovation

High quality design invariably involves the development of novel and innovative solutions to the challenges presented by the project brief. Where there are very tight time and cost constraints, or a low appetite for risk, the opportunity for innovation can be reduced.

It is important therefore that, where design innovation is one of the project client's ambitions, the detailed contractual provisions allow time and budget for the architect and other design consultants to explore and develop design innovations. This can sometimes be more difficult where the delivery method requires the builder or project manager to keep tight control over time, cost and risk.

4.7 Effectiveness of time and cost control

Where time and/or cost are especially critical project factors, effective time and cost control can be one of the most important advantages of some alternative methods. Involvement of the builder and specialist project management skills from an early stage can allow a thorough analysis of the design and documentation as they progress, in relation to time and cost. Independent management resources in close monitoring of the design and construction program can:

- facilitate decision making by all parties including the project client in a timely way;
- relate the implication of decisions to time and cost; and
- encourage all parties to contribute to meeting the program.

The same controls can be applied to a traditionally documented and tendered project with value management.

4.8 Extent of documentation

While the nature of documentation under some alternative methods may vary considerably from traditional contract documentation, it is possible that the final extent of documentation will be greater, particularly with packaged projects. In other cases, shop drawings will be developed from design sketches and often co-ordination may be more difficult with fragmented documentation. It is important that the extent and nature of documentation is clear and that the methodology and responsibility for co-ordination is clearly defined.

4.9 Suitability for the scale and level of complexity of the project

Different project delivery systems are best suited to projects of different size and complexity. Generally, the simpler the project and the lower its risk profile for the project client, the more suited it will be to direct, traditional delivery methods.

However, project clients undertaking large, complex or higher-risk projects are more likely to opt for what they perceive as the security of a more sophisticated delivery approach.

Because they involve more participants and a greater need to manage the relationships between them, multi-party contracts such as PPP's, alliancing and IPD can involve higher up-front cost and thus are less likely to be suitable for smaller or simpler projects.

4.10 Level of in-house resources of the project client

The suitability of some multi-party delivery arrangements, such as PPP's, alliancing and IPD can be largely dependent on the capacity of the project client to engage actively and effectively with the other major project participants. Where the project client has limited resources to devote to the project, delivery methods that don't rely on substantial input from the project client are likely to be preferable.

4.11 Significance of operational and lifecycle costs

For many projects, the cost of construction and of the design team will be relatively insignificant compared to the need for the building to operate cost-effectively, and for the whole-of-life costs associated with building operations to be kept to a minimum.

Part of the appeal of delivery methods such as PPP's and alliances is that they can be structured to incorporate the ongoing operation of the facility into the initial agreement, thus insulating the project client from risk associated with long-term operational costs.

5. Appendices

A – Checklist for architects giving advice

B – Checklist for architects considering their own involvement in non-traditional methods

C – Responsibilities of the parties

Appendix A

Checklist for architects giving "project clients" advice on building project delivery systems

1. What other methods, if any, may serve the project client's interests better?
2. Are there any cost penalties involved for the project client?
3. Are there any penalties in terms of quality?
4. Will the project client receive impartial and expert advice during both design and construction?
5. Who will certify payments, quality, time and completion?
6. Will the project client be required to enter into multiple contracts?
7. Who will be liable for defects?
8. Who will be liable for failure to meet the program?
9. Will the project client receive the benefit of competitive tendering?
10. Will the project client's decision making process be restricted?
11. Who will authorize variations and extensions of time?

Appendix B

Checklist for architects considering their own involvement in non-traditional methods

1. Who will be the client?
2. What will the relationship be with the user?
3. What will the relationship be with the other consultants?
4. Who will be the prime consultant?
5. What is the extent of legal liability?
6. Does the professional indemnity insurance cover the extent of liability?
7. Will the architect be able to impartially apply their professional knowledge and skill, and fulfil their professional as well as ethical obligations to society?
8. Who will be responsible for setting and controlling the budget?
9. What are the terms of engagement?
10. Do the terms of engagement protect the architects copyright in the design?
11. Are the design team members to be novated to another party and if so how will this affect their interests and their liability?
12. What is the fee?
13. Will there be a head contract, a builder and sub-contractors?
14. Who will certify payments for building work?
15. Who will inspect the building work for conformity with design?
16. Who will inspect the work for certification?
17. What are the arrangements for agreeing to and carrying out changes to design?
18. How will disputes be resolved?
19. Should there be any limitations to the architect's contractual liability?
20. Will the certifier be able to act impartially?
21. Who will instruct the persons performing the building work?
22. Are there any special program requirements?
23. Are the program requirements realistic?
24. Who will authorize extensions of time?
25. Which form of contract will be used for the works?

Appendix C

Responsibilities of the parties

Building Delivery Method	Brief and Research	Schematic Design	Estimate and Cost Plan	Design Development	Documentation	Construction Management	Inspection of Work	Certification of Payment
Traditional	Project client, Architect	Architect, Sub-consultants	Architect, Sub-consultants, Quantity Surveyor	Architect, Sub-consultants	Architect, Sub-consultants, Quantity Surveyor	Builder	Builder, Architect, Sub-consultants	Architect, Quantity Surveyor
Construction Management	Project client, Architect	Architect, Sub-consultants	Architect, Sub-consultants, Quantity Surveyor	Architect, Sub-consultants, Builder, Subcontractors, Quantity Surveyor	Architect, Sub-consultants, Subcontractors (shop drawings)	Construction Manager	Construction Manager, Architect, Sub-consultants	Construction Manager, Quantity Surveyor
Managing Contractor	Project client, Architect	Architect, Sub-consultants	Architect, Sub-consultants, Quantity Surveyor	Architect, Sub-consultants, Quantity Surveyor	Managing contractor, (Architect, Sub-consultants) Subcontractors (shop drawings)	Managing Contractor	Managing Contractor, (Architect, Sub-consultants)	Managing Contractor, Quantity Surveyor
Design & Construct	D&C Manager, (Project client)	D&C Manager (Architect, Sub-consultants)	D&C Manager	D&C Manager (Architect, Sub-consultants)	D&C Manager (Architect, Sub-consultants)	D&C Manager	D&C Manager	D&C Manager
PPP	Project client	PPP Consortium (Architect, Sub-consultants)	PPP Consortium (Quantity Surveyor)	PPP Consortium (Architect, Sub-consultants)	PPP Consortium (Architect, Sub-consultants)	PPP Consortium led by contractor	PPP Consortium (Architect, Sub-consultants)	PPP Consortium (Quantity Surveyor)
Alliancing	Project client and Project Advisor	Alliance entity led by Architect	Alliance entity led by Quantity Surveyor	Alliance entity led by Architect	Alliance entity led by Architect	Alliance entity led by Builder	Alliance entity	Alliance entity
Integrated Project Delivery	Project client, Architect	Project Team led by Architect	Project Team led by Quantity Surveyor	Project Team led by Architect	Project Team led by Architect	Project Team led by Builder	Project Team led by Architect	Project Team led by Quantity Surveyor

NOTE: Brackets indicate that the activity is undertaken by the group outside the brackets, who controls the input of those within the brackets.