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Collaborative Contracting

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1 Introduction

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The construction industry has suffered from poor productivity growth for decades.[2] Labour-productivity growth has lagged well behind that of manufacturing and the total economy. The problem is not unique to Australia – it is a global phenomenon. Given spending on construction equates to about 13 per cent of the global GDP[3], a lift in construction productivity could have a massive impact on our ability to meet our infrastructure needs.

The causes of poor productivity growth are many, and include extensive regulation, site-specific complexities, high dependency on fluctuating public sector demand, inexperienced buyers/owners, the fragmented nature of the industry, and underinvestment in technology. According to contractors and suppliers, however, the most significant cause of inefficiency is the misalignment of incentives between project owners and the other participants involved in the delivery of construction projects – designers, main contractors, specialist sub-contractors, equipment suppliers, consultants and the like.

Conventional procurement models have long been preferred by most project owners for their simplicity, and for the certainty and risk transfer that they provide to owners. But conventional procurement models create commercial incentives for non-owner participants to act in a manner contrary to the interests of the project owner, and vice versa. This misalignment of commercial interests discourages the collaboration between project participants that is needed to improve construction productivity.

It was from a desire to overcome this misalignment of interests that 'collaborative contracting' was born. The expression embraces a wide and flexible range of approaches to managing the relationship between project owners and other project participants, based on the recognition that there can be a mutual benefit in a more collaborative and cooperative relationship between them. If the project owner contractually commits to share the benefits it receives from outstanding performance by the non-owner participants, the contract can financially motivate the non-owner participants to achieve such outcomes, even if they need to expend more effort and money to do so. This is often expressed as the establishment of a win-win scenario.

Enthusiasm for collaborative contracting by those who usually determine the contracting model for a project – the project owners – tends to follow the cycles in the construction and engineering market. The preference of project owners, particularly the less experienced ones, for the simplicity, risk transfer and price certainty associated with conventional contracting is greatest when contractors and other industry participants are hungry for work, and are prepared to price risks aggressively in order to win it. But when the construction and engineering industry is busy, project participants become more selective about the work that they will tender for and the risks that they will accept, thus many project owners embrace collaborative contracting approaches to attract participants to their projects and/or obtain better value for money outcomes.

For the same reasons, it is often considered for 'mega' projects, where the pool of project participants with the financial strength and capabilities required to undertake the project can thin out to a level that constrains the project owner's ability to extract value and transfer risks through conventional competitive tendering processes.

But collaborative contracting is more than just a response to an overheated construction market, or inadequate competition for major roles on mega projects. It is also a mechanism that could unlock significant productivity improvements that would enable the industry to deliver more infrastructure for less.

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[1]The author gratefully acknowledges the contributions of various colleagues to this paper over many years, not least Doug Jones AO, Stuart Connor and Hannah Stewart-Weeks.

[2] McKinsey Global Institute, *Reinventing construction: A route to higher productivity*, February 2017.

[3] McKinsey Global Institute, *Reinventing construction: A route to higher productivity*, February 2017, p1.

2 The problems with conventional contracting

2.1 Allocating responsibilities and risks encourages the blame game, rather than problem solving, when things go wrong

Conventional procurement models allocate specific project responsibilities and risks to each participant. The designer is responsible for completing the design, and bears the risk that the design does not comply with relevant design standards. The main contractor is responsible to the project owner for all construction work, including that performed by sub-contractors, but isn't responsible for defects in the works caused by a design deficiency (unless it ought to have brought the deficiency to the project owner's attention and failed to do so). Sub-contractors are responsible to the main contractor for the quality of construction work performed by them, but not for the construction work performed by other sub-contractors. And so on.

Under this arrangement, and variants of it, each project participant has strong financial incentives to perform well the responsibilities that are allocated to it, but is far less invested in how other project participants perform their responsibilities. The project essentially becomes a collection of sub-projects, where each non-owner participant is rewarded by reference to the performance of the sub-project for which it is responsible, rather than the performance of the entire project.

Indeed, late or poor performance by another participant will typically excuse a project participant from the need to strictly fulfil its own obligations as originally proposed. Accordingly, when things start to go wrong, the financial interests of participants are usually best served by demonstrating that another participant is to blame for the problem, rather than working cooperatively with the other participants to overcome the problem. This is one of the reasons why conventional construction contracts are often described as being 'inherently adversarial'.

2.2 Fixed prices motivate participants to do the minimum required, even if doing more would result in better project outcomes

When a project participant is engaged under a conventional fixed price contract, it is financially motivated to minimise the cost of performing its obligations, in order to maximise its profit margin. Accordingly, when the project owner separately engages the designer and the main contractor under fixed-price contracts, each of them is financially motivated to do no more than the minimum required of them, even if doing more would reduce the costs incurred by the other, or result in better outcomes for the project owner.

For instance, having agreed to produce a design for a fixed price, there is little if any incentive for the designer to do extra work to produce a design that will reduce the cost of constructing the asset, or minimise operation and maintenance costs, unless the design brief requires this.

Likewise, if the main contractor encounters unexpected ground conditions, there is no incentive for the designer to change the design to overcome the unexpected conditions, unless the owner agrees to pay the additional costs incurred by the designer in adjusting the design. Conversely, if a deficiency in the design is discovered during the construction of the works, there is no incentive for the main contractor to develop a construction solution that overcomes the deficiency, if doing so will increase its costs without a corresponding increase in the fixed construction price.

If the project owner wants a project participant to do more than the bare minimum required of it, to overcome a problem and achieve a better outcome for the project, the project owner will usually have to compensate the participant for the additional costs, to restore the participant's profit margin.

2.3 No incentive on other participants to contain the cost impacts of changes

Conventional procurement models provide no incentive for project participant to minimise the cost impacts of changes to the project. Rather, they provide an opportunity for the incumbent project participants to charge 'monopoly' prices for the additional work, as it is usually impractical for the owner to competitively tender the extra work.

2.4 Obligations to co-operate don't really work

It's easy for the participants to say they will cooperate and collaborate with one another at the commencement of a project. Indeed, undertakings to cooperate and collaborate can be given contractual force by including them in the contracts.

But when a project runs into trouble, the benefits to a participant of blaming others, and putting its own interests ahead of the interests of the project or other participants, can soon outweigh the potential downsides of breaching an obligation to co-operate. It's at this point that the commercial incentives built into conventional contracts render useless commitments by project participants to working co-operatively to jointly solve problems. Commencing legal proceedings to recover losses arising from a breach of an obligation to cooperate is rarely an attractive or effective remedy.

2.5 Fast tracking and early contractor involvement is difficult

Conventional procurement prefers a sequential approach to project scoping, design and construction. The scoping and design of conventionally procured projects is generally completed, or well progressed, before the project owner calls for tenders from construction contractors. And engaging with one or more construction contractors during the scoping and design process, with a the view to making the project easier to build and less expensive, or fast-tracking the project development process by running scoping, design and construction phases in parallel, can adversely affect an owner's ability to attract construction contractors that haven't been involved in the scoping and design process to competitively tender for the construction work. This can, in turn, hinder the project owner's ability to use a highly competitive tendering environment to obtain fixed construction prices that deliver best value for money.

3 The collaborative contracting spectrum

It was out of this commercial reality that 'collaborative contracting' was born. Collaborative contracts are contracts that incorporate features that are specifically designed to overcome the misalignment of commercial incentives associated with conventional fixed price contracts. These features can range from:

a. contractual commitments to co-operate and act in 'good faith';

b. early warning mechanisms, designed to alert other participants to emerging issues, so that solutions can be developed and agreed before the issue escalates;

c. early involvement of the main-contractor and key specialist sub-contractors in the design process;

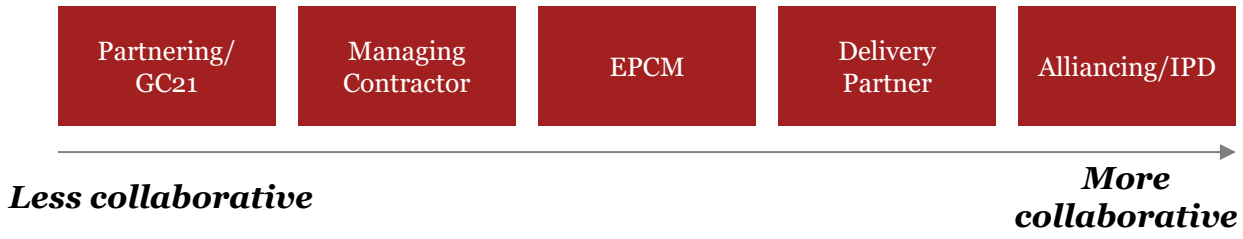
d. governance arrangements that facilitate collective problem solving and decision making;

e. payment arrangements that financially motivate each participant to act in a manner that is best for the project, rather than best for the participant;

f. the agreement of each participant to waive its right to sue any other participant for mistakes, breach or negligence by another participant (except in the case of wilful default).

Collaborative contracts take different forms. For example, many conventional contracts try to facilitate greater collaboration by incorporating contractual promises to co-operate, and early warning mechanisms. But these contracts fail to address the real obstacles to greater collaboration that are inherent in conventional fixed price contracts. To address these issues, more radical approaches are required.

Other forms of collaborative contracting that begin to address these obstacles include the Delivery Partner Model and the Australian Department of Defence's Managing Contractor model. The 'high-water mark' of collaborative contracting, however, is the project alliance model that incorporates all of the features mentioned above. The project alliance model emerged become very popular in Australia during the first decade of this century, before falling out of favour with treasury departments in various Australian state governments. More recently, the project alliance model has been discovered by the American construction industry, where it has been called 'Integrated Project Delivery' (**IPD**) and is increasingly being used with great success.



Collaborative contracting is sometimes referred to as 'relationship contracting'. However, the latter term is probably best reserved for contracting approaches that involve longer term relationships that span more than one project.

Sections 4-8 of this paper provide an overview of the main collaborative contracting models. A table that summarises how key risks are allocated across the models is included in Appendix A.

4 Partnering

Initial attempts at collaborative contracting in Australia were known as ‘partnering’. Although this form of collaborative contracting has fallen into disuse in Australia, it is useful to briefly describe it, to illustrate how the spectrum of collaborative contracting approaches has evolved. Partnering describes the situation where the parties to a conventional construction contract would set out in a separate document various guidelines as to how they would conduct themselves. The objective of partnering was to create an environment of trust and co-operation, to prevent disputes and facilitate the completion of a successful project.

The partnering process usually commenced with a workshop at which the parties sought to identify common goals, establish communication channels, and discuss procedures for handling and avoiding disputes prior to commencement of the contract.

At the conclusion of the workshop, the parties would sign a partnering charter which would 'sit behind' the conventional contract, and detail the mission and common objectives of the parties and demonstrate the commitment of the key people involved. The partnering charter would typically state that it has no legal force. It was the non-binding nature of the partnering charter, and the absence of any attempt to alter the way in which the construction contract deals with the fundamental issues of risk allocation and remuneration, that puts it at the beginning of the collaborative contracting spectrum.

5 Integrated Project Delivery

It is useful to describe the other end of the collaborative contracting spectrum, before returning to models that sit between the two end points. As already mentioned, the model at the most collaborative end of the spectrum has come to be referred to as Integrated Project Delivery (**IPD**), particularly in the United States where the model has been gaining in popularity in recent years.[4]

In the Australian context, it was previously referred to as alliance contracting, or a project alliance. This paper adopts the new terminology.

5.1 Core features

There are 5 features which differentiate IPD from conventional construction procurement:

- The first, and most fundamental, is the *remuneration regime*. IPD fundamentally alters the remuneration arrangements and risk allocation found in conventional fixed-price contracts, by replacing the fixed price with a performance based remuneration regime that better aligns the commercial interests of the participants.

- Second is the creation of a *virtual organisation* – the integrated project team or 'alliance' – comprising of the individual team members provided by the project owner and each non-owner participant.

- Third is the *continuous involvement* of all non-owner participants from the moment the contractual relationship is formed – usually very early in the project scoping and design process until project completion.

- Fourth is the requirement for all decisions regarding the project to be made by way of *unanimous agreement* between the owner and all of the other participants in the integrated project team.

- Fifth is the *no blame, no disputes* clause, under which each party agrees that it will have no right to bring any legal claims against any of the other participants in the integrated project team, except in the very limited circumstance of a wilful default by another participant.

Some IPD contracts don't fully embrace all of these features. These are often referred to as 'IPD-ish' or 'hybrid alliances'.

For example, there were many project alliances in Australia that did not fully embrace the no blame concept, or which allowed certain decisions to be made other than by way of unanimous agreement, for reasons which are discussed below. It is important to recognise, however, that these hybrids, whilst different to and departing from the full IPD model, are no less valid than a full IPD. They simply reflect the fact that there is no 'one size fits all' when it comes to contracting strategies.

What is important is that the parties understand the nature and the limitations of the particular contracting model that they are adopting. For instance, if an owner wishes to adopt a hybrid model under which a non-owner participant assumes sole responsibility for particular risks and is held legally accountable for its work, the owner should not expect the same level of innovation and resultant cost savings as might be achievable under a full IPD model, where the non-owner participants are free to pursue innovative ideas without fear of being sued if things go wrong.

[4] See, for example, American Institute of Architects, *Integrated Project Delivery: An Updated Working Definition,* Version 3, updated 15 July 2014, and University of Minnesota in collaboration with University of Washington, University of British Columbia, Scan Consulting, *Motivation and Means: How and Why IPD and Lean lead to Success,* November 2016.

5.2 Radical new approach to remuneration and risk allocation

Under conventional construction contracts, the contractor is typically remunerated on a fixed price basis, subject to increases (or decreases) for events detailed in the contract. As explained above, this conventional approach sets the interests of the owner and the contractor in fundamental opposition to each other. Dissatisfaction and disputes are almost inevitable.

The IPD model discards the traditional fixed price method of remuneration in favour of a radical new performance based remuneration regime.

Under the typical IPD model, the remuneration of each non-owner participant essentially comprises three discrete components:

- **limb 1 – direct costs:** the reimbursement of the non-owner participant's project costs on a 100 per cent open book basis;
- **limb 2 – fee:** a fee to cover normal profit and (non-project specific) corporate overheads; and
- **limb 3 – gainshare/painshare:** a gainshare/painshare regime where the rewards of outstanding performance and the pain of poor performance are shared equitably among the owner and the non-owner participants.

The compensation under limbs 2 and 3 relates to the concept of the target outturn cost (**TOC**), which is the estimate of the cost of carrying out the project works to completion, and achieving the minimum outcomes in the major project objectives that the owner requires. It includes a contingency for risks that may arise and often includes the project owner's own costs of participating in the integrated project team.

The TOC is the end product of the initial phase of the IPD relationship, during which the participants firm up the scope of works. There is usually some level of negotiation of the TOC and scope adjustment, and often an independent validation that the TOC represents value for money.

a. **Limb 1 – Direct Costs**

Direct costs are all specific costs and expenses directly incurred by the non-owner participants (**NOPs**) in performing the project works, excluding profit and overheads. The owner pays the NOPs 100 per cent of these costs, regardless of whether they exceed the TOC.

There are usually a number of agreed principles for the calculation of these including the demarcation between what are direct costs, and what are corporate overheads and the business as usual treatment of a number of specific costs, such as wages and salaries and plant hire. For consultants, there is often an agreed multiplier which is applied to the salaries of fee earners to determine the consultant's direct costs.

b. **Limb 2 – Fee (to cover normal profit and contribution to overheads)**

Before the IPD contract is signed, perhaps the most significant issue for commercial alignment is the percentage fee the NOPs will be entitled to. The fee is intended to cover the profit margin and contribution to overheads which the NOPs would expect to derive for 'business as usual' performance.

The fee may either be calculated on a fixed or variable basis. For constructors, the fixed model is generally used, which is the multiplication of the pre-agreed percentage by that part of the TOC which is attributable to the constructor's work. This avoids the situation where a constructor can earn a greater fee by incurring more direct costs. For designers, the fee is often calculated on the variable model, by applying the agreed percentage to the actual direct costs which the designer incurs. This avoids the designer being reluctant to take on additional scope after the TOC is set because it will not receive an equivalent increase in fee.

c. **Limb 3 – Gainshare/Painshare**

The object of the gainshare/painshare regime is, as the name suggests, to share with the NOPs the benefits or dis-benefits derived by the owner from excellent or poor project outcomes and, by so doing, align the commercial objectives of the NOPs with those of the owner.

It does this by setting out gainshare entitlements or painshare liabilities of the NOPs by reference to the performance of the project against the owner's project objectives. The owner's project objectives almost always include time and cost, and usually include a range of other non-time or cost key result areas (**KRAs**) such as quality, sustainability, aesthetics, functionality, operational efficiency, whole of life costs, safety outcomes, community satisfaction and local industry participation. These are commonly referred to as performance KRAs.

Gainshare for the cost objective is usually the simplest with the NOPs sharing a proportion (usually 50 per cent) of cost overruns or underruns against the TOC. Variations on this include varying the percentage for early cost underruns (to minimise the opportunity for the NOPs to make windfall gains by picking low lying fruit) or setting aside part of the cost overruns as a top-up to the pool available for gainshare for successful outcomes in time and performance KRAs.

Time is usually dealt with on a project specific basis as there is often significantly different value outcomes for early or late completion on different projects. For example if an asset is needed to link into an existing network and cannot be used before a particular date there may be little value in early completion, but significant loss in late completion.

Outcomes in the performance KRAs are often more difficult to measure. Often a points system is devised to measure the project's performance against these KRAs. There may be clear objective project outcomes that can be measured (such as road ride quality, in the case of a road project) or outcomes may be more subjective such as community satisfaction with the project, which can often be measured by survey.

The total amount payable by each NOP as painshare is usually capped at the NOP's fee entitlement. This way, each NOP effectively puts 'at risk' its profit and contribution to overheads, but not its direct costs. Components of painshare are often capped at lower amounts than the overall cap, although cost overrun painshare is usually capped at the full amount of the fee.

TOC gainshare is usually self-funded in that it is simply a share of cost underruns. The pool available for distribution of schedule and performance gainshare is made up of a seed amount provided by the owner, sometimes topped up by a proportion of cost underruns.

Importantly, the risk/reward regime is set up to cost or benefit each NOP according to *project* outcomes, rather than *individual* contributions of the relevant NOP. This aligns the decision making incentives – a decision that is best for the project will benefit all of the participants ("we all win"), and one that attempts to benefit one participant at the expense of the project will reduce profitability for all participants ("we all lose").

d. **Sharing of risks**

At first, the requirement for the project owner to pay all the costs incurred by the NOPs – regardless of whether the project comes in over or under the TOC – suggests that the owner solely bears the risk of increased or unforseen costs. However, the risk is in fact shared between the owner and the NOPs, as any cost overruns will cause the actual outturn cost to exceed the TOC, thereby reducing the gainshare payment or increasing the painshare liability, and hence reducing the profit derived by the NOPs. In effect, the 'at risk' component of the NOP's limb 2 fee provides the owner with a buffer against cost overruns.

This sharing of risks, by which all participants benefit or suffer together, incentivises all of them to prevent and solve problems, rather than seek to allocate blame.

e. **Potential cost savings for owners**

IPD can deliver projects at a lower cost than would have been possible under conventional contracts. How is this possible? The potential for cost savings is attributable to the following features of IPD:

- Firstly, the fixed price under a conventional contract will typically include an amount to cover costs which the NOP may incur if risks which it bears under the contract eventuate (commonly referred to as the 'contingency'). Under a fixed price contract, the owner pays this contingency amount, regardless of whether or not the risks which it is intended to cover materialise. Under an IPD contract, the NOPs are always reimbursed their direct costs, so there is no need to charge the owner a contingency on account of the risk of incurring unexpected direct costs. Although the TOC will typically include a contingency for 'business-as-usual' unexpected direct costs, the owner only pays these direct costs if the risk eventuates and the costs are incurred. Further, the total contingency amount included in the TOC can be less than the aggregate of the contingency amounts that each NOP would include in its fixed price under a conventional procurement model, for the reasons explained at section 5.9 below.

- Secondly, there is a potential for a reduction in the direct costs due to the *no blame, no disputes* clause. This clause is discussed in more detail at section 5.3 below, but essentially the no blame, no dispute clause allows the participants to innovate and take risks in the pursuit of cost savings and enhanced project performance without fear of legal claims if they fail. This no blame culture, coupled with each NOP's entitlement to share cost savings under the gainshare regime, should result in increased innovation and resultant cost savings which would simply not be achievable in a traditional, adversarial contracting environment.

- Thirdly, the collective sharing of all project risks, together with the no blame regime, creates an environment which facilitates good risk management practices. Everyone can talk openly without the need to protect their respective legal positions. In this environment, risks are more likely to be identified, and appropriate strategies put in place to mitigate and manage them. As a consequence, the financial impact of risks which do eventuate are likely to be less. This may (or may not) result in a lower outturn cost for the owner depending on whether such risks would have been allocated to a NOP under a conventional contract, the additional payments the owner would have been required to make to the contractor under a traditional contract as a result of the risk (or the additional internal costs the owner would incur in defending claims arising from the risk) and the contingency amount which the contractor would have included in its lump sum price on account of the risk.

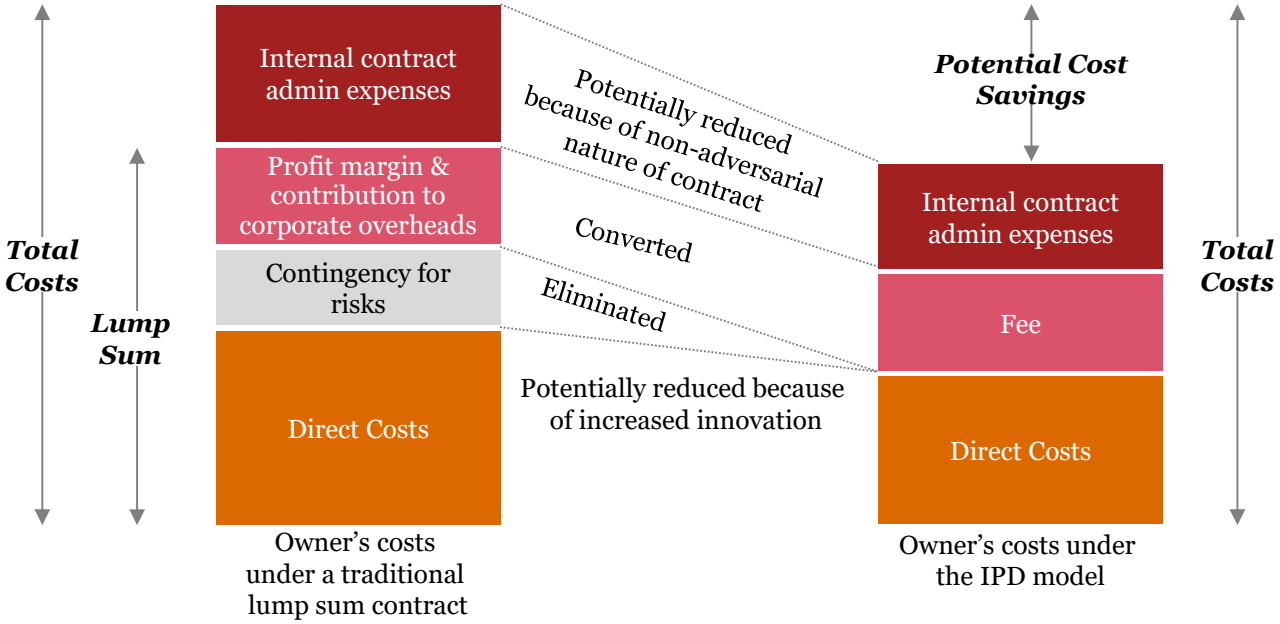


Diagram not to scale

- Fourthly, the owner's internal contract administration expenses may be less on account of the non-adversarial nature of the relationship which reduces the resources required for managing and defending claims and disputes. However, IPD contracts typically involve higher tender and contract establishment expenses, which may outweigh these cost savings.

- Fifthly, if there are variations to the scope of the project (particularly variations which would not justify an adjustment to TOC or performance targets – see section 5.5) the cost of such variations is likely to be less under an IPD contract than under a conventional construction contracts.

- Finally, because the liability of the NOPs to the owner is capped at loss of its fee, the owner may consider that the fee should be set at a level lower than amount of profit and contribution to overhead which the contractor would expect to receive under a traditional lump sum contract where the risks borne by the contractor are much greater.

f. **No guarantee of a lower project cost**

Although there is potential for the owner to derive cost savings, there is no guarantee that the adoption of IPD will result in the delivery of the project at a lower cost than would have been achievable under a conventional procurement approach. Indeed, given that the owner is obliged to pay all of the direct costs incurred by the NOPs, the owner's cost exposure is potentially unlimited (subject to its right to terminate the contract). It is for this reason that the adoption of IPD by the owner can be said to require a 'leap of faith' on the part of the owner that the potential efficiencies available under an IPD model will be realised and result in a lower outturn cost or better project performance.

g. **Owner pays for mistakes of NOPs**

Compounding the above issue is the fact that under an IPD contract, the owner is obliged to pay the costs incurred by the NOPs in redoing work which they fail to do properly the first time. Whilst such additional costs will be at the expense of each NOP's fee and gainshare entitlement, the direct costs of the NOPs are guaranteed. This is a feature of the IPD model which some owners have found to be a difficult pill to swallow and which has caused them to explore some of the variants to the no blame regime discussed below.

h. **Need for care in structuring gainshare/painshare regime**

In structuring the gainshare/painshare regime, it is important to try to avoid a situation in which poor performance against any single KRA will wipe out the entire fee; otherwise, having fallen behind in one area, the NOPs may have no financial motivation to achieve any of the owner's other project objectives. Of course, even in these circumstances the NOPs would not be free to 'walk away' from the project, as to do so would be a wilful default (discussed below) to which liability would attach.

5.3 No blame, no disputes – but consider the ramifications

Under the *no blame, no disputes* clause found in the full IPD model, each participant (including the project owner) agrees that it will have no legal claims against any of the other participants, except in the case of narrowly defined *wilful default*.

This creates a commercial framework in which there is no point in seeking to allocate blame for problems. Rather, the commercial interests of each participant are best served by helping to solve the problem in a way that maximises the performance of the project against the KRAs.

The no blame, no disputes clause also encourages the participants to come out of their comfort zone, to take risks, and to accept stretch targets in the pursuit of extraordinary results, without fear of legal claims if they fail.

However, the ramifications when things go wrong can be far reaching.

a. **No blame may mean no claim and no remedy**

For example, because the entitlement of each NOP to its fee and potential gainshare payment depends on the performance of the other participants, if any one of them fails to perform adequately then all of them will suffer – but none of them will have any claims against the non-performing participant.

Furthermore, the inclusion of this clause also means that the owner will have no remedy against any NOP for losses suffered by the owner as a result of the negligence, or inefficient or defective work practices, of the NOP.

Whilst the no blame, no disputes clause applies to both the owner and the NOPs, it generally involves a greater concession on the part of the owner given that on many IPD projects it is the NOPs that carry out most of the work, with the owner's main obligation being that of payment (a breach of which is usually defined to constitute a wilful default).

b. **Difficulties with traditional insurance policies**

Issues may also arise under typical insurance policies as a result of the no blame, no disputes regime. Consider the example of standard material damage policies: typically when an insurer pays a claim, it has a right of subrogation such that it can step into the shoes of the insured party and seek recovery of that part of the claim that came about as a result of the negligence of another participant. However, because of the no blame, no disputes clause, a participant that suffers loss will have no legal recourse against the participant causing that loss.

There is one school of thought that the result may be that the insurer is entitled to reduce the claim payment to the insured participant to the extent that the insurer has lost its expected right of recourse against the negligent participant. However, this can be readily overcome by requiring the insurer to confirm that the material damage policy will respond notwithstanding the no blame regime.

The no blame, no disputes clause can also give rise to problems in relation to design insurance (and other forms of professional indemnity insurance). This is because most insurances available to designers are liability-based insurances under which the insurer will not pay unless the designer is *liable*. Under a no blame, no dispute clause the designer (like all participants) will only be liable for wilful default, which most design insurances specifically refuse to cover. As a consequence, it may be that even though loss is suffered by the participants as a result of a design defect, there is no 'trigger' for a claim against the design insurance policy.[5]

[5] Note, however, that this concern only arises in terms of the operation of the insurance as between the participants. As discussed below, a no disputes regime does not prevent liability arising to third parties. Therefore the trigger of legal liability remains appropriate in respect of losses incurred as a result of damage caused to third parties by the professional negligence of alliance participants.

Accordingly, if the owner is to have any comfort in this area, it will require some tailored form of insurance. Insurance products specifically designed to respond to the unique structure of an IPD contract are available. However, these tailored policies tend to be (comparatively) expensive; the exact cost will of course depend on size and complexity of the project, together with the insurer's assessment of the allocation of risk.

c. **Collaborative contracting without a no blame, no disputes clause**

Given these ramifications, some owners have adopted collaborative contract models without the no blame, no disputes clause, or with a no blame, no dispute clause providing for broader exceptions than those allowed for under the definition of wilful default.

Some will argue that the no blame, no disputes concept is an essential ingredient of the IPD approach. Certainly, if the owner wants to achieve a high level of innovation from the NOPs (which necessarily involves risk taking), then the inclusion of a no blame, no disputes clause will assist in achieving this objective. However, there does not seem to be any reason why some of the benefits of the IPD model, such as the ability of a carefully structured gainshare/painshare regime to align commercial interests and drive desired behaviour, cannot be obtained (at least in part) without such a clause.

d. **Limits of the no blame, no disputes clause**

Even if a no blame, no disputes clause regime is incorporated into the contract structure, it will not have the effect of preventing any and all liability from being incurred by the participants.

Most obviously, the no blame, no disputes clause only has effect between the participants, and cannot limit any rights which third parties might have to bring a claim against one or more participants arising out of the conduct of a participant. As with any contract, an IPD contract will only bind the parties to it. However, many IPD contracts provide that uninsured liabilities to third parties will be treated as direct costs which the owner must reimburse.

Even as between the IPD participants, there are some matters for which it is not legally possible to exclude or limit liability. An example of this is liability which a project participant might incur to another project participant under section 18 of the Australian Consumer Law, which prohibits corporations from engaging in misleading or deceptive conduct. Liability under section 18 cannot be excluded or limited by contract. Nor could one participant enforce a promise by another participant to waive any rights to commence proceedings arising out of a contravention of section 18.

5.4 Issue resolution and the requirement for unanimity

As mentioned above, a unique feature of the full IPD model is the establishment of joint decision making bodies, typically called a *project board* or a *project leadership team,* comprising representatives of the owner and each NOP, and the requirement that all decisions be made by these bodies by unanimous agreement.

The project board is analogous to a board of directors and fulfils a high-level management and decision making function. Important decisions concerning the IPD contract, such as whether adjustments should be made to the remuneration regime following a major change to the scope of the works, are referred to the project board for resolution. The project board is also required to consider and resolve any differences of opinion which cannot be resolved within the integrated project team.

Whilst the establishment of such a body is not unique to IPD, the requirement for all decisions of the project board to be made by unanimous agreement is. The requirement for unanimity means that each participant has a right of veto, and if unanimous agreement cannot be reached, no decision is made. The full IPD model does not include a deadlock breaking mechanism.

This arrangement is considered by many to be crucial to the success of the IPD approach. They argue that the need to achieve unanimity to proceed (and the absence of a deadlock breaking mechanism) forces the parties towards mutually acceptable solutions. The requirement for unanimity coupled with the *no blame, no disputes* clause takes away the options of “I’ll do it your way, but I’ll claim it” or, “You’ll do it my way, and if you don’t like it, claim it”.

On a practical level this may be correct. However it is in the interests of all parties that an IPD contract be a legally enforceable agreement. Contractors in particular have a lot to lose if the contract is held to be unenforceable as they would lose the benefit of the no blame clause. An inability to resolve a dispute which cannot be resolved by the project board can bring uncertainty to the ongoing legal basis of the IPD contract. A court will not enforce an agreement to agree. Accordingly, if an IPD contract is dependent upon the project board reaching unanimous agreement in relation to a matter which needs to be resolved in order for the project to continue, then the parties run the real risk that the agreement will be legally unenforceable in the event unanimity cannot be achieved. This risk can be minimised by including a deadlock breaking mechanism to provide a course of action if unanimous agreement cannot be reached.

The alternative view to those who argue that a deadlock breaking mechanism is contrary to the spirit of IPD, is that having such a mechanism which is only to be used as a tool of last resort increases the incentive for the project board to come to unanimous agreement. This is because it would be a matter of professional embarrassment for the individual members of the project board if they had to resort to that mechanism.

The absence of an ability to quickly resolve deadlocks at the project board level can also result in significant delays to the progress of the project, although this will have commercial ramifications for the NOPs where a schedule KRA is included in the gainshare regime.

Some owners have also made the observation that the requirement for unanimity has resulted in a loss of ownership and control over the project.

It is for these reasons that some contracts incorporate variations to the full IPD model involving:

- in some cases, the ability to resort to a deadlock breaking mechanism to resolve those deadlocks which can't be resolved within the project board; and

- in other cases, the owner reserving the power to unilaterally make certain types of decisions, but on the basis that the 'knock-on' effect of the decision on, say, the remuneration regime will be determined by the normal decision making process.

One deadlock breaking mechanism that some Australian IPD contracts have adopted is the so called *swing-man* dispute resolution process. Under this process, deadlocks that cannot be resolved unanimously by the project board are referred to an independent third party, and each participant submits to the third party its position as to how the deadlock should be resolved.

The independent third party must then choose which of the competing positions it prefers, having regard to the terms of the IPD contract. The independent third party is only entitled to choose between the competing positions submitted to it by the participants, and is not entitled to impose its own solution on them. The position chosen by the third party is treated as final and binding on the participants.

The theory behind this form of deadlock breaking mechanism is that the participants will be discouraged from putting extreme positions to the independent third party, for fear that the third party will prefer the position of another participant, and that this will assist in achieving a resolution which all participants can live with, minimising any ongoing damage to the their relationship.

5.5 Scope changes

Under the IPD model, the risk of the vicissitudes of the project which arise are to be shared by the participants. This means that a number of situations that would be treated as variations under a traditional contract are not cause for amending the remuneration regime under an IPD contract. If costs increase, or time blows out, the NOPs are paid their additional direct costs, but painshare and gainshare payments are calculated in accordance with the agreed regime. This includes alterations to the project works to deal with such vicissitudes.

However the owner retains the ability to require significant changes to the scope of the project works, and if the project board unanimously considers that this has occurred, the remuneration regime (including the TOC) is adjusted. Typically, all modifications to the remuneration regime are to be determined by unanimous decision of the project board.

The line between what is a 'significant change to the scope of the project works' and what is a vicissitude of the project can be a fine distinction, and often the participants' workshop possible examples in scope change benchmarking workshops during the selection process or when the TOC and other performance targets are being established.

5.6 Termination

The IPD model usually gives the owner the right to terminate the contract for convenience (that is, without cause), subject to the owner reimbursing the NOPs for all direct costs incurred by them prior to and as a consequence of the termination, together with a portion of the fee and gainshare/painshare payment based on the proportion of the works completed at the time of termination.

Also, if a NOP commits a wilful default or becomes insolvent, then the remaining participants acting together will typically have the ability to suspend any further payments to the defaulting NOP until the default is remedied, and/or to exclude the defaulting NOP from any further participation in the project and engage a third party to replace the defaulting NOP.

This right of exclusion for wilful default or insolvency is considered important given that non-performance by any one NOP will affect the gainshare/painshare payment, and hence the rewards, available to others.

Consistent with the no blame, no disputes concept, the owner does not usually have the right to exclude a NOP from further participation for a breach which does not constitute a wilful default. However, as mentioned above, some owners are adopting 'IPD-ish' structures that do not incorporate the standard no blame, no disputes concept. In these cases, owners may also consider it appropriate to include in the contract a right to terminate for serious breaches falling short of a wilful default, with the defaulting participant forfeiting its entitlement to any fee or gainshare payment.

5.7 Sub-contracting

It is in the interests of all IPD participants that the financial interest of every participant that could have a material effect on the project outcomes is aligned. If a key project participant is engaged by a member of the integrated project team under a conventional fixed price subcontract, the problems with conventional contracting identified in section 2 of this paper will apply. In particular, each project participant that is engaged under a conventional form of subcontract will:

- be motivated to do the bare minimum required of it under the subcontract, even if doing more would result in better project outcomes;
- be motivated to blame the other project participants when things go wrong, rather than helping to solve the problem; or
- have no incentive to contain the cost impacts of changes to the project that affect the work under the subcontract.

Accordingly, the better approach is for all key project participants to be parties to the IPD contract, or for the subcontractor to be engaged under some form of performance based sub-contract that supports the KRAs in the main IPD contract. But this can be a challenge in the case of equipment suppliers that are not prepared to accept open book scrutiny of its manufacturing costs.

5.8 The selection process and value for money

a. **Selection process based on 'non-price' criteria**

The selection process which owners will adopt for IPD is quite different to that used for a traditional contract. In particular, projects owners typically select the non-owner participants based on *non-price* criteria, such as expertise of proposed team, ability to work within an IPD framework, ability to work with other participants, ability to achieve project objectives, preliminary ideas on innovation and strategies to deliver exceptional results. Price related considerations, such as the TOC, the fee and the gainshare/painshare regime, are often not finalised collaboratively with the preferred non-owner participants after they have been selected.

b. **Establishing value for money**

Establishing value for money is a challenge for both public and private sector owners even under conventional procurement models with price competition during the tender process. The tendered 'contract price' is rarely the sole indicator of value. Other factors which may affect the value for money proposition of a tender include:

- risks to be borne by owner (which if they materialise will affect the final outturn cost);
- expected quality and asset performance outcomes;
- expected whole-of-life costs;
- other benefits associated with the tender; and
- certainty of promised outcomes.

Accordingly, even with tenders for a traditional fixed price contract, the tender with the lowest tendered price will not necessarily be the tender which offers the best value for money.

The challenges associated with establishing value for money are exacerbated with an IPD contract where:

- the preferred tenderer is selected on the basis of non-price criteria; and
- the TOC, and other performance targets which will ultimately influence the final 'price' paid to the NOPs, are not determined until after the preferred tenderer has been selected.

Demonstrating the veracity of the TOC and other performance targets is central to establishing value for money on an IPD contract, given these are the factors which ultimately determine the profit and contribution to overheads derived by the NOPs. There have been some IPD projects which have been delivered for less than the TOC, or which have met or exceeded other performance targets, where it has been suggested this is due to the TOC and other performance targets being 'soft' because they were established in an uncompetitive environment, rather than due to better than usual performance by the participants.

The level of the limb 2 fee is also central to establishing value for money when using IPD.

c. **Demonstrating value for money**

Steps which can be taken to assist in demonstrating value for money where the TOC and other performance targets are set after the preferred tenderer is selected include[6]:

- the owner preparing a rigorous cost estimate for the project before deciding to proceed with the IPD model;
- requiring tenderers to bid their limb 2 fee, or the percentages and methodology for establishing it, and locking this in prior to selection of the preferred tenderer;
- alternatively, requiring tenderers to provide their expectation for the limb 2 fee, evaluating this separately to the non-price criteria, but reserving the right to vary this fee during the commercial alignment process in light of the financial audit;
- engaging a financial auditor to audit the financial and cost accounts of each proposed NOP to establish a clear basis for the limb 1 reimbursement and the limb 2 fee;

[6] See Victorian Department of Treasury and Finance *Project Alliancing Practitioners' Guide*, (April 2006) section 5 for more details.

- asking tenderers to critique the owner's cost estimate;
- asking tenderers to provide their proposed subcontracting and procurement strategy and explain how they will achieve best value for money outcomes for the project from subcontractors and suppliers. The IPD contract should require the participants to comply with the agreed subcontracting and procurement strategy;
- conducting scope change benchmarking workshops with shortlisted tenderers, prior to the selection of the preferred tenderer, to ensure reasonable alignment of understanding on what will and won't constitute a scope change justifying an adjustment to the TOC and other performance targets. This understanding should be recorded in 'interim scope change benchmarking guidelines', which should be validated with the preferred tenderer before the owner decides to proceed with the project;
- engaging an independent estimator to confirm that the TOC is a fair and reasonable estimate of the outturn cost;
- utilising a budget KRA, whereby a share of any underruns in the approved TOC against the owner's cost estimate is added to the pool to be paid for excellent performance in other KRAs;
- benchmarking the TOC to similar projects;
- reconciling the TOC with the owner's cost estimate;
- preparing a report which explains why the agreed KRA/KPI targets represent value for money, and having this independently verified;
- engaging a financial auditor to confirm that all payments made to the NOPs are in accordance with the terms of the contract; and
- preparing detailed value for money reports during the project delivery phase and following completion which reconcile the actual outturn cost (AOC) with the TOC and the owner's costs estimate.

d. **Competitive bid processes for establishing TOCs?**

Some project owners have also sought to address the value for money concern by:

- deferring the selection of the successful participants until after the TOC has been developed and bid by the competing teams; and
- factoring the TOCs bid by each team into the evaluation process.

There is, however, some debate within the industry as to the potential downsides of this approach and whether it has the potential to undermine the very foundation of a successful IPD project. If an owner imposes a competitive bid process with regard to the TOC, some NOPs may be tempted to underbid the TOC in order to win the job, knowing that the most they will lose is their limb 2 fee. Gaming of this nature undermines the trust needed for a successful project.

As the owner will typically fund the development of each TOC, the competitive TOC process adds to the owner's project costs, although these costs may be offset by the reduced need for independent auditing of the TOC and increased (competition driven) innovation during the TOC development process.

Also, even with a competitive TOC process, the TOC is likely to be adjusted in a non-competitive environment before the contract is signed. This is because in working up the TOC, each competing tenderer is likely to develop innovative, but different solutions. The owner may want to take advantage of at least some of the innovative solutions devised by the losing tenderer, which necessarily means a change to the scope of the winning team, and hence its TOC. To the extent this change is significant – and where the project is such that real innovation is available it may well be significant – arguably this undermines the competitive nature of the TOC.

e. **Establishing value for money of IPD model**

Of course, even if the veracity of the TOC and performance benchmarks, and the value for money of limb 2 fee, can be established, this does not necessarily mean that the delivery of the project using IPD will necessarily will result in a better value for money outcome than would have been achieved had the project been delivered under a conventional procurement model. Indeed, short of delivering an identical project in identical conditions at the same time under the conventional procurement model, it may never be possible to demonstrate with absolute certainty that the adoption of IPD has delivered the best value for money outcome possible.

That said, if:

- the project is suited to the IPD model and therefore capable of generating cost savings of the nature described in section 5.2; and
- the veracity of the TOC and performance benchmarks, and the value for money of the limb 2 fee, is established,

then the adoption of IPD can be justified on value for money grounds.

5.9 *The 2009 benchmarking study into alliancing in the public sector*

Given the similarities between alliancing and IPD, it is worth mentioning 2009 report from the Treasuries of Victoria (Chair), Western Australia, Queensland and New South Wales.

The report, titled 'In Pursuit of Additional Value: A benchmarking study into alliancing in the public sector' (**DTF report**)[7] details the results of a study on the performance of alliancing in Australia and investigated whether alliancing was delivering incremental value for money against other forms of procurement based on a five-year study of 14 projects covering a range of major infrastructure sectors.

While a major theme of the DTF report was that alliancing has the *potential* to deliver value for money outcomes for owners, it also revealed that the practice of alliancing was not actually achieving value in many cases. According to the DTF report, the actual outturn cost of the 14 alliance projects studied exceeded the business case cost estimate by an average of 50 percent – not exactly a ringing endorsement of the model.

These findings naturally raised concerns about the use of alliancing on projects in Australia. However, we don't think this report is necessarily a road block to the introduction (or reintroduction) of IPD style contracts. This is for a couple of reasons:

- First, the study found that, at the time, alliancing was often the default project delivery method choice for government departments. This was in part due to the state of the economy at the time. During the global financial crisis, the government was keen to stimulate the economy and used alliancing as a way to fast track infrastructure project which should perhaps have been delivered more slowly, under a different delivery model.
- Similarly, alliancing was being used to alleviate the skills shortage and capacity of agencies and industry in an overburdened infrastructure sector. Alliancing was seen as a very tempting procurement panacea for anxious agencies facing challenges with scaling and competencies or timeline imperatives for delivery. To a certain extent, some agencies lost some focus on value for money to the benefit of getting the job done and delegated some of their more complex owner responsibilities to an alliance team all too willing to help.

[7] Department of Treasury and Finance, Victoria, DTF Report, available at http://www.dtf.vic.gov.au/Publications/Infrastructure-Delivery-publications/In-pursuit-of-additional-value

So the problem was not so much alliancing as it was the implementation and indiscriminate use of alliancing. These issues are easily avoided with more careful analysis of the most appropriate contracting model at business case stage.

5.10 Critical Chain Project Management (CCPM)[8]

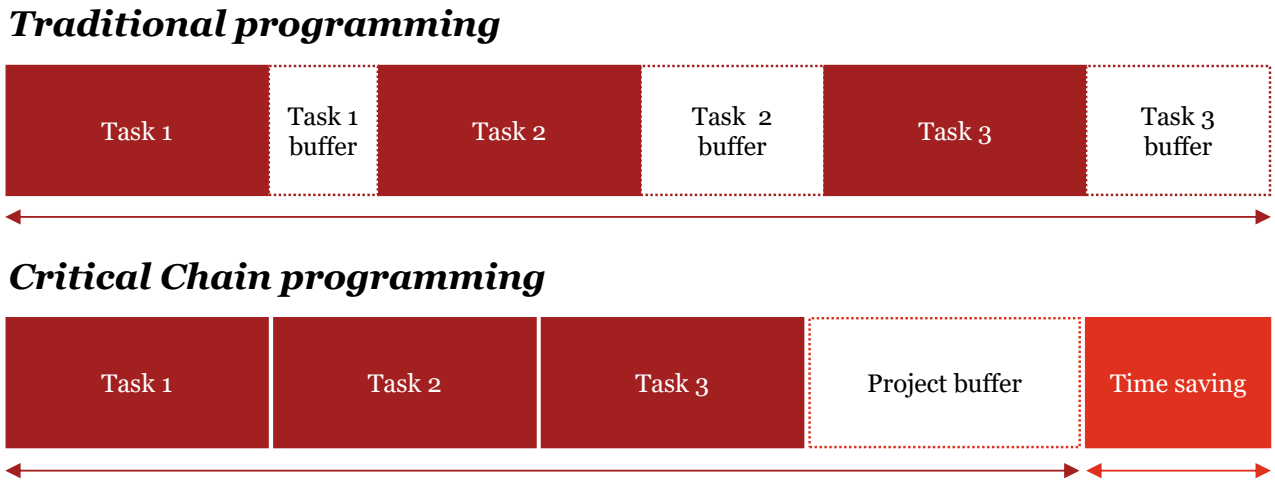
Projects comprise many tasks. The traditional approach to project management is to expect each task manager to manage the uncertainty in their task, and ensure the task is completed on time. When considering how long a task will take, we usually consider the shortest, the longest and the average duration for the task. When asked to commit to a duration, we don't want to be late, so we'll usually only commit to a duration much greater than the average task duration.

The same applies when we ask sub-contractors and suppliers to commit to completion deadlines for their tasks, and seek to impose liquidated damages for late task completion. This means most tasks are planned conservatively, even if the task manager is pressured to reduce their estimated duration. Giving the planner an 'average' duration is high risk, because by definition half the time you'll take longer than the average.

Building some safety into the duration of a single task is not significant by itself. But when a project consists of hundreds or thousands of task, it becomes a major issue, as far too much 'safety time' gets built into the overall program. This extra time leads to unnecessary cost, as we plan to have resources on site longer than necessary.

This traditional approach to project planning also means we fail to benefit from tasks that finish early, as we aren't ready to commence subsequent tasks early. If each task estimate contains sufficient time to complete in 90 per cent of situations, then there is an 89 per cent chance that the task will be completed earlier than planned.

If we remove the safety buffer from the estimated duration of each task, and instead put it in a pool that can be used by those tasks that actually need it, then the total time needed in the safety pool can be much less than the total time that is removed from each task.



By agreeing to share the safety pool with each project participant, rather than requiring each participant to manage the time uncertainty in its tasks, the project owner can reduce the planned duration of a project (and the time related costs). This is precisely how time risk is allocated among project participants under IPD. All non-owner participants share in any gain-share payment from the owner arising from early completion, and any pain-share to the owner arising from late completion. Under IPD, it is not possible for any one participant to benefit from early completion of its task, if the project is completed late.

However, if the project owner separately contracts with each project participant and requires the participant to commit to a deadline for completion of its tasks, then it's simply not possible for the project owner to adopt the

[8] This section draws on the innovative idea of combining IPD with CCPM first published in *The Executive Guide to Breakthrough Project Management* by Ian Heptinstall and Robert Bolton, Denehurst Publishing, 2016. See www.BreakthroughProjectManagement.com for further information.

CPPM approach and share a time safety pool with each participant. A project owner cannot access the benefits of the CPPM approach under conventional procurement models.

The same logic also applies to contingencies or allowances that task owners include in their cost estimates to manage uncertainty. The IPD remuneration model allows a pooled allowance for cost overruns to be shared between all project participants, thereby reducing the total quantum of the allowances that would otherwise be incorporated into the fixed prices charged by each participant.

5.11 Building Information Modelling (BIM)

Most readers will be familiar with BIM – systems that create digital three dimensional building models, intended to provide more accessible and versatile design data. By allowing project participants to access and share this data, BIM enables them to more effectively plan, design, construct and manage buildings.

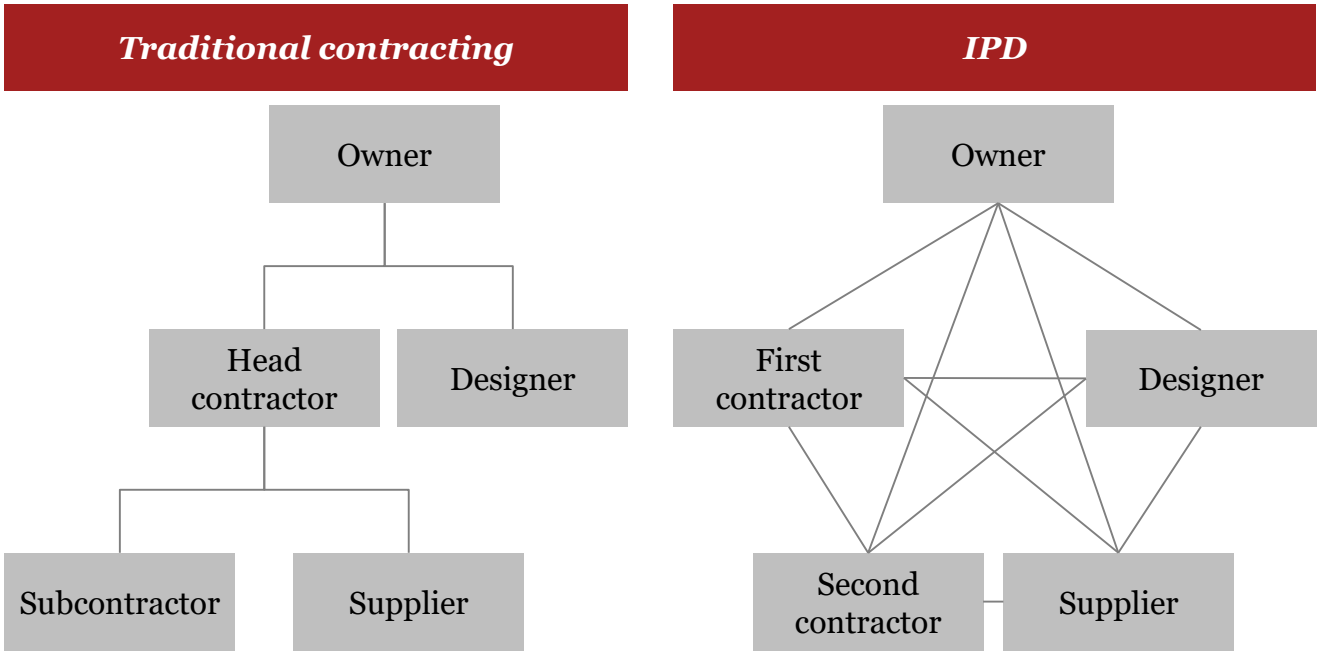
For BIM to fulfil its potential, each project participant that uses the model needs to be able to rely on it. This means they need to be able to rely on:

a. each other participant providing its inputs to the models to the agreed level of definition by the agreed deadlines, at each stage of the design and construction process; and

b. the accuracy of the data added to the models by each participant.

While conventional contracts may require non-owner participants to commit to the timely provision of model inputs, and to warrant the accuracy of the data that they provide under the contract, these contractual obligations are only owed to the counterparty to the contract, and it is common for non-owner participants to exclude liability for certain categories of loss, and to cap their liability for all other loss. This can leave a participant that has relied on incomplete or inaccurate BIM information without an effective remedy.

A more effective solution to this problem could be provided by the gainshare/painshare regime found in many collaborative contracts. If reliance by one or more participants upon incomplete or inaccurate information will lead to additional costs and/or delays that result in a painshare payment (or a reduction to the potential gainshare payment), all participants will be motivated to help solve the problem as quickly and cost effectively as possible. A gainshare/painshare mechanism also provides a good solution for sharing the pain of additional work required to resolve any BIM clashes.



The use of BIM also requires a complex web of mutual intellectual property licences between project participants. For conventional procurement models, the intellectual property licences would typically involve:

a. the project owner obtaining from each project participant directly engaged by the owner:

   i. a licence to use model information prepared by the participant for the construction, operation and maintenance of the project, together with

   ii. a right for the project owner to grant equivalent sub-licences to each project participant engaged by the owner, and for such project participants to grant sub-sub-licences to their sub-contractors;

b. the project owner granting to each project participant directly engaged by the owner:

   i. a licence to use model information for the agreed-project related purposes, together with

   ii. a right for the project participant to grant equivalent sub-licences to its sub-contractors;

c. the exclusion from the above licences of:

   i the right to amend the model information except for the agreed project-related purposes; and

   ii the right to reproduce model information for the purposes of project extensions; and

d. mutual obligations on the project owner and on each project participant directly engaged by the owner to use its best endeavours to procure licences from third parties, as required in order to meet the above licence obligations.

This arrangement offers a balanced approach, but the absence of a direct contractual relationship between the designer and the main contractor, or between sub-contractors to the main contractor, creates an additional burden on the project owner to create and maintain the full suite of matching BIM model licences. It also leaves most non-owner participants without a direct remedy against each other in respect of any breach of these licences. A single collaborative contract, to which each key project participant is a party, can simplify the process of obtaining matching intellectual property licences, and more appropriately share the risk of the model infringing third party intellectual property rights.

Indeed, the American Institute of Architects advocates for the use of BIM as an essential feature of IPD model (different to the Australian alliances in the early 2000s).

5.12 Projects suitable for IPD

The IPD model is best suited to projects with the following characteristics:

- complex risks, interfaces, stakeholder issues and the like, that are difficult to allocate and price;
- the scope of work is not sufficiently defined to enable sensible pricing, or where the likelihood of scope changes is significant;
- significant scope for value adding through innovation;
- tight timeframes which require scope definition, design and construction to occur concurrently; and
- the scale of the project, and the benefits which can be derived from using the IPD model, is sufficient to justify the additional procurement and contract establishment costs associated with the model.

5.13 Long term alliances

The features of the IPD model can also be applied to relationships which endure beyond any single project. They can be also applied to a program of projects, or to facility management/maintenance arrangements.

The appeal is most apparent where the owner's requirements involve the performance of routine and ongoing work, or a series of similar or related projects, and where there is impetus for the owner to decrease its engineering and/or maintenance departments. In such circumstances, work can be outsourced by the owner on

a longer term or continuing basis, and on terms where the participants agree to pursue mutual goals and share the benefits of the alliance. In particular, the reasons for instituting a long-term alliance structure include the following:

a. The longer term allows the contractor to train its staff and gear up in the confidence of a reasonable amortisation of its investments.

b. The longer term facilitates a more complete fruition of the attitudinal aspects of alliancing: the development of trust, intimacy and co-operation between the participants, and the adoption by the non-owner participants of a more 'owner-like' attitude.

c. Where the work involved is, for instance, the construction and maintenance of infrastructure, the duration of the alliance encourages the non-owner participant to use foresight in its planning and provides an incentive for the non-owner participant to develop, in advance, solutions to problems which may arise during the life of the alliance.

d. The costs of tendering and transition are significantly reduced.

e. Any improvement in performance will be continuous across projects.

Given that the contractor under a long term alliance will be committing resources on a long-term basis, the owner will as compensation for this risk allocate or guarantee to the contractor a certain amount of work – a core workload – for the period of the alliance.

There are some unique risks faced by parties who enter into a long term alliance. From the perspective of the contractor the risks are that:

f. There may be a possible loss of business from other owner clients because of a perceived special relationship with participating owner.

g. Although the contractor is guaranteed a workload (the core work programme), the margins are lower.

h. If the core work programme does not materialise, or is too variable, the commitment of resources by the contractor may prevent it obtaining adequate return on its personnel assets.

From the perspective of the owner the risks are that:

i. The absence of competitive bidding may reduce the benefit to be gained in the event of any market turndown, and remove the market pressure upon contractors to keep costs down.

j. There may be contractual uncertainty as to the contractor's obligations.

On the whole, a long term alliance requires a higher degree of trust from all parties than that required for a single project. The invitation to form a long term alliance is likely to come out of a situation where the parties have a history of working together harmoniously.

6 Managing Contractor

The managing contractor is an innovative structure that shares some of its characteristics with 'Design and Construct' (D&C) or Engineering, Procurement and Construction (EPC) contracts and others with the agency relationships and project management roles seen in the construction management models.

The model originated in Australia and has been used extensively by the Australian Department of Defence as well as a variety of private-sector owners. The managing contractor is responsible for the design and construction of the project from feasibility right through to the commissioning stage. The arrangement usually involves the owner entering into one contract with the managing contractor, who then subcontracts out all of its design and construction obligations.

This differs from the construction or project manager model where the owner contracts with a manager to provide project management services only, and then contracts directly with each of the other project participants. Under the managing contractor model, the managing contractor is legally accountable to the owner for the delivery of the project, not just for managing its delivery.

The managing contractor can be distinguished from a conventional fixed price D&C contractor in two key aspects: role and risk.

6.1 Role

Although the managing contractor accepts legal responsibility for the design and construction of the project, its key role is project management, as it is usually obliged to subcontract out all of its design and construction obligations. The only services carried out by the managing contractor itself, using its own in-house resources, are the management and advice services provided throughout the project, and also the provision of on-site preliminaries such as hoarding, plant and sheds.

A key difference between this model and a conventional D&C contract lies in the degree of control that an owner retains over the selection of subcontractors. While a D&C contractor has autonomy to appoint subcontractors of its choosing, a managing contractor must undertake subcontracting in close consultation with the owner, who will retain the ultimate authority to approve or reject tenderers. This right is consistent with the owner's obligation to reimburse the managing contractor for costs incurred in the design and construction.

Another important difference between a managing contractor and a conventional D&C contractor is point in the project development process at which they are engaged by the owner – the managing contractor is appointed much earlier.

The project would normally proceed as follows. First, the owner invites tenders from potential contractors for management services and defined common site facilities. Once a successful tenderer has been chosen as managing contractor, it will coordinate the feasibility stage of the project, including hiring any consultants required and providing advice to the owner where needed. If the project does not progress past the feasibility stage, the contract may be terminated.

The next stage is the design phase; this will be carried out by the managing contractor, from design brief through to detailed documentation. Throughout this process, the managing contractor will consult closely with the owner, who has the final say as to all decisions made. First, the managing contractor will prepare a design brief that must be approved by the owner. Then tenders for the design subcontract will be invited. Although the managing contractor can recommend a candidate, once again, the final decision is subject to the owner's approval. When the successful tenderer has completed the design, this must again be approved by the owner before construction can begin. This procedure differs from a conventional D&C arrangement, under which the owner minimises its involvement in the design phase to avoid diluting the D&C contractor's design liability and affecting any warranty for fitness for purpose.

During the construction phase, the managing contractor has a variety of responsibilities. These will include:

a. advising on the appropriate contract strategy for each package;

b. managing the tender process and award of packages;

c. engaging subcontractors to execute the construction work;

d. programming and timetabling the construction work;

e. supervising the construction to ensure it accords with design specifications;

f. managing and administering the subcontracts;

g. instituting a system of cost control;

h. managing community relations; and

i. managing industrial relations on the project.

The process of selecting construction subcontractors is performed by the managing contractor in close consultation with the owner. Again, the owner exercises significant control over the decision through its right to finally approve a nominated candidate; this procedure is identical to that used in the selection of a design subcontractor.

The final stage of the project in which the managing contractor is involved is the commissioning phase. During this phase, the managing contractor coordinates the handover of the project and ensures any defects that become apparent during the defects liability period are rectified.

6.2 Risk

The other feature distinguishing the managing contractor from a D&C contractor is the risk it bears. The managing contractor is exposed to lower risks in terms of both cost and time than a conventional D&C contractor.

In respect of cost, while a D&C contractor normally remunerated on a fixed price basis, a managing contractor is generally remunerated on the basis of a combination of a fixed price and reimbursable components. The fixed price component is designed to pay for management services and site facilities, and allows the contractor to extract a profit. The owner separately reimburses the managing contractor for all amounts paid by the managing contractor to subcontractors and consultants. This remuneration arrangement shifts all of the project cost risks onto the owner, except those for management services and site facilities. The managing contractor is only reimbursed for costs that it incurs reasonably. Costs incurred from unauthorised variations, rectification of defects, breaches of contract or wrongful acts by the managing contractor that give rise to liability to third parties are usually excluded from the reimbursement regime.

Time-delay risk is often also borne by the owner. The managing contractor will only have a ‘soft’ time for completion obligation in the sense that it will be required only to use its ‘best endeavours’ to achieve a target date. Accordingly, a failure to achieve timely completion will not expose the managing contractor to liability for liquidated or general damages, so long as it tries its best to achieve the target date. However, because the managing contractor is paid a fixed lump sum for its management services, it is clearly in its own commercial interest to achieve completion as early as possible so as to preserve its profit margin. The incentive for timely completion is achieved not through the threat of damages claims but instead through the alignment of commercial interests.

6.3 Benefits

The managing contractor model allows for early involvement of the contractor in the project, with close collaboration throughout. This means that the owner is able to achieve completion of the project in the manner it desires, using a spread of industry involvement and expertise but without the need for high-level management commitment. The owner can share some of the risks associated with a major construction project with a contractor and can achieve maximum flexibility in determining the elements to be included in a project and the design of those elements. At the same time, it provides the owner with the management expertise of a contractor organisation to assist and advise upon the design and construction of the project while planning for and remaining within a target time and cost for delivery of the project.

7 EPCM

EPCM stands for Engineering, Procurement, Construction Management. The role of an EPCM contractor is often very similar to the role of a managing contractor, as described in in section 6.1 above. The EPCM contractor is typically appointed by the owner early in the project development process, to coordinate the feasibility stage of the project, before progressing to manage the design/engineering, procurement and construction phases of the project. But as with the managing contractor model, the owner retains control over the design brief, the selection of design/engineering consultants, the scope of each construction contract, and the selection of subcontractors and equipment suppliers.

The feature that distinguishes EPCM from the managing contractor model, is the lower level of risk that an EPCM contractor is exposed to in terms of the quality of the work.

Cost and time risk is usually treated similarly to the managing contractor model, i.e.:

a. the EPCM contractor is usually remunerated on the basis of a combination of a fixed price and reimbursable components. The fixed price component usually covers the management services and site facilities, and allows the EPCM contractor to extract a profit. The owner separately reimburses the EPCM contractor for all amounts reasonably incurred to subcontractors and consultants. Again, costs incurred from unauthorised variations, or wrongful acts by the EPCM contractor that give rise to liability to third parties, are excluded from the reimbursement regime. Sometime the remuneration model will also include gainshare/painshare regime, to better align the contractor's commercial interests with those of the owner, particularly in relation to quality and fitness for purpose; and

b. the EPCM contractor will only have a 'soft' or 'best endeavours' time obligation, as per a managing contractor. Again, because the EPCM contractor is paid a fixed lump sum for its management services, it is financially motivated to achieve completion as early as possible to preserve its profit margin.

The EPCM model typically departs from the managing contractor model in terms of how it allocates the risk of design and construction defects; whereas a managing contractor typically accepts responsibility for ensuring that the design is fit for purpose and the works are constructed free of any defects – same as a D&C contractor – the EPCM contractor usually only accepts an obligation to exercise due care and skill in the performance of the design and management services that it provides. In these cases, so long as the EPCM contractor exercises due care and skill in the performance of these services, it will not be liable to the owner if the works are not fit for their intended purpose, or are otherwise defective.

However, because the EPCM contractor typically engages the designer, the construction contractors and the equipment suppliers as the agent of the owner (or the owner engages such parties directly), the owner will have a contractual remedy against the relevant project participant if it has breached its contractual obligations. That said, it is most unusual for an owner to obtain a fit for purpose warranty from the designer or a construction contractor. And any fitness for purpose warranty from an equipment supplier will be limited to the item supplied, and not the entire project.

If the owner wants a FFP warranty for the entire project it typically needs to engage a contractor under a D&C/EPC model, or a Managing Contractor model.

Like the managing contractor model, EPCM allows for early involvement of the EPCM contractor in the project, with close collaboration throughout. The owner can progress the development of the project in the manner it desires, using a spread of industry involvement and expertise but without significant high-level management commitment on its part. The owner can utilise the management expertise of the EPCM contractor to assist it to manage some of the risks associated with a major construction project.[9]

[9] For a more detailed analysis of the EPCM model, see Damian McNair, *EPCM Contracts in the Public Sector: project delivery through engineering, procurement and construction management*, PwC 2017.

8 Delivery Partner Model

The delivery partner procurement model is a recent emanation of collaborative contracting that combines elements of the managing contractor, IPD and engineering, procurement and construction management (EPCM) models. The delivery partner model enables a client to supplement its internal project management capabilities by engaging one or more delivery partners to assist the client with project planning, programming, design management and construction management services.

By engaging this expertise, the client is able, with the assistance of its delivery partners, to adopt a 'sophisticated-client' procurement strategy involving direct engagement of suppliers and subcontractors, as opposed to engaging a major contractor to manage this process. This can result in significant cost savings and other benefits for the project owner.

The remuneration regime for the delivery partners is similar to the three-limb remuneration model for IPD, with:

- reimbursement of actual costs;
- a fixed fee covering profit and contribution to corporate overheads; and
- a gainshare or painshare payment.

As with IPD, better than business-as-usual project outcomes (measured against pre-agreed KPIs) will result in a gainshare payment from the owner to the delivery partners, and poor outcomes will result in a painshare payment by the delivery partners to the owner. Again, the maximum potential painshare payment is usually capped at the amount of the limb-two fee, or a significant portion of it.

Like the managing contractor model, the delivery partners are precluded from performing design and construction services, which must be competitively tendered (unless the owner specifically agrees otherwise). The owner retains control over the appointment of suppliers and subcontractors, similar to the managing contractor model. But the delivery partners bear less risk in relation to poor performance by subcontractors and suppliers than a managing contractor. The delivery partner's liability to the owner for poor performance by subcontractors and suppliers is limited to any reduction in the gainshare payment (or the increase in the painshare payment) that occurs as a result of reduced performance against a KPI. The owner has the contractual relationship with each subcontractor and supplier, and looks to them directly if they breach their contractual obligations.

The model has been employed successfully in the context of publicly funded infrastructure projects and was first used by the UK government in the construction of infrastructure for the London Olympic Games, where the complexity of the project and time-critical date for completion meant a more traditional delivery model was considered unsuitable. A delivery partner enabled the Olympic Delivery Authority (ODA) to acquire the necessary expertise where the ODA did not have the time to find and engage personnel of the required calibre to meet the time requirements. A wide range of infrastructure was required – key Olympic venues such as the velodrome, aquatics centre, media centre and Olympic village, as well as 2km of new sewers and 265km of ducts for new utilities. The project was ultimately a success, being delivered three months early and under budget.

Since then, the delivery partner model has received attention in Australia as a potential delivery method for government infrastructure projects and is currently being used to deliver the Woolgoolga to Ballina Pacific Highway Upgrade (W2B) – currently Australia's largest regional infrastructure project. Like the London Olympic venues, the W2B project is a time-critical major project involving the duplication of approximately 155km of the Pacific Highway to a four-lane divided road at an estimated construction cost of AU$4.36 billion.

The delivery partner model was chosen for the W2B project because it avoided the need for Roads and Maritime Services (RMS) to procure and deliver five separate packages of works sequentially. RMS's business-as-usual procurement models and internal resources would have necessitated the works being divided into five packages, which could be procured and delivered sequentially. It was considered that aggregating the works into a smaller

number of larger packages would have resulted in a small field of potential tenderers and sub-optimal competition.

By adopting the delivery partner model, RMS expects, with the assistance of its delivery partners, to achieve significant time and cost savings through repackaging the works and tendering packages on a trade or activity basis, responding to a logical sequencing of work across the entire project, unconstrained by package boundaries. Essentially, with the assistance of its delivery partners, RMS has been able to implement the sort of sophisticated-client procurement strategy that a major tier-one contractor would implement, without having to first engage such a contractor under a traditional D&C contract and pay the associated risk premium that such a contractor would build into its fixed contract price for the management of the procurement and integration risks.

The associated downside of this model, of course, is less cost and time certainty at the time the owner contractually commits to the project. The owner ultimately bears these risks without the protection that a traditional D&C contract with a tier-one contractor would provide. This risk is mitigated, however, by the model's IPD style gainshare/painshare regime, which financially motivates the delivery partners to help the owner manage these risks effectively. The margin paid to the delivery partners for their services is also less than what would have been charged by a tier-one contractor for wrapping the delivery risks, on account of the lower level of risk borne by the delivery partners.

The delivery partner model is in its early years and it remains to be seen whether the model will gain broad acceptance. A more extensive and defensible analysis of the model and its potential uses and shortfalls will only be possible after the model has been more widely used.

That said, it seems well suited to major infrastructure projects where the client wishes to achieve time and cost outcomes that cannot be achieved via traditional procurement models, and is prepared to embrace and manage integration and other risks to achieve these outcomes, with the assistance of capable delivery partners.

9 Bankability of collaborative contracts

Collaborative contracting is generally considered an unsuitable delivery model if the owner wishes to raise finance on a project finance basis, i.e. where the financiers may only look to the cash flows and assets of the project to secure repayment, and not to the balance sheet of the owner. Traditionally, project financiers have required the project owner/borrower to transfer the risk of cost overruns, delays to completion and quality to a creditworthy head contractor via a conventional fixed price, fixed time contract.

However, it is not impossible to raise project finance for a project delivered under a collaborative contract. To address the greater risks assumed by a project owner under collaborative contracting models, project financiers may require:

- the equity investors in the special project vehicle/borrower to provide more equity upfront, together with binding commitments to provide additional equity in the event of delays or cost overruns. Completion guarantees from the sponsor equity investors may also be required;
- the establishment of separate cost overrun facilities with higher margins;
- that the contract itself includes certain features such as a well-structured gainshare/painshare regime, a prescriptive subcontracting regime, and the reserve power and deadlock breaking mechanisms discussed in section 5.4 above;
- more extensive due diligence in relation to technical issues, project risks and the capabilities of the participants; and
- tailored insurance policies – see section 5.3 above.

10 Which model is best?

There is no 'one size fits all' when it comes to contracting strategies. The model which will best suit a particular project will depend upon a range of factors including the project owner's objectives, the characteristics of the project, and the state of the construction market. What's important is that those who advise on or decide the contracting strategy for a project fully understand the characteristics of the different contracting models, and how they can be tailored to create a model that best meets the project owner's objectives.

11 Conclusion – a bright future for collaborative contracting?

Collaborative contracting, particularly alliance/IPD contracting, fell out of favour in Australia early this decade, as demand for construction and engineering services returned to more usual levels following the end of the resources boom and the negotiating power of non-owner participants dissipated.

Ironically, this actually contrary to the interests of most project owners, as the return to more conventional contracting models reinstated the misalignment of commercial objectives between project owners and non-owner participants that has long impeded improvements to construction productivity.

However, the recent uplift in government expenditure on public infrastructure in New South Wales and Victoria has once again caused the construction and engineering market in those states to overheat. This is likely to require project owners to adopt more collaborative contracting approaches in response. Whilst many project owners will bemoan the lack of price certainty, and the need to share construction risks, the more enlightened ones will view this as a positive development from a productivity and value for money perspective.

Appendices

Appendix A Overview of collaborative contracting models

	Partnering	D&C Contract with cooperation obligations	Managing Contractor	EPCM	Delivery Partner	IPD
Contract structure	Owner engages partnering contractor. Partnering contractor may subcontract work to others	Owner engages D&C contractor. D&C contractor may subcontract work to others	Owner engages managing contractor. Managing contractor must subcontract all design and construction work to others (with close owner control)	Owner engages EPCM contractor. Owner separately engages design and construction contractors (or EPCM contractor engages as agent for Owner)	Owner engages Delivery Partner. Owner separately engages design and construction contractors (or Delivery Partner engages as agent for Owner)	Owner, designer and key contractors and suppliers enter into a single multi-party agreement
Time	Hard obligation to complete on time	Hard obligation to complete on time	Soft (best endeavours) obligation to complete on time	Soft (best endeavours) obligation to complete on time	Soft (best endeavours) obligation to complete on time, supported by gainshare/painshare payment linked to time KPI	Target date for completion is supported by gainshare/painshare payment linked to time KPI
Cost	Generally fixed price lump sum	Generally fixed price lump sum	Reimbursement of subcontract costs + fixed price fee	Reimbursement of subcontract costs + fixed price fee (sometimes with an incentive payment linked to KPIs)	Reimbursement of direct costs + fixed price fee+ gainshare/painshare payment linked to KPIs	Reimbursement of direct costs + fixed price fee + gainshare/painshare payment linked to KPIs

	Partnering	D&C Contract with cooperation obligations	Managing Contractor	EPCM	Delivery Partner	IPD
Quality	Partnering contractor responsible for defects	D&C contractor responsible for defects	Managing Contractor responsible for defects	Each separate contractor responsible for their own defects	Each separate contractor responsible for their own defects (but defects may mean more time + cost-affecting DP gainshare payment)	All participants collectively responsible for defects. The cost and time pain of defect rectification is shared via gainshare/painshare regime
Fit for purpose warranty	Fit for purpose warranty	Fit for purpose warranty	Fit for purpose warranty	Warranty to exercise due care and skill	Warranty to exercise due care and skill	No warranty from participants, but the pain of defects is shared via gainshare/painshare regime
Liability	Traditional liability framework	Traditional liability framework	Traditional liability framework	Traditional liability framework	Traditional liability framework. Painshare of Delivery Partners is usually capped at loss of fee.	No blame no disputes. Painshare is usually capped at loss of fee
Self-performance	Partnering contractor can self-perform construction work	D&C contractor can self-perform construction work	No self-performance of construction work	No self-performance of construction work	No self-performance of construction work	Participants may self-perform construction work
Project control	Owner controls most project decisions	Owner controls most project decisions	Owner controls most project decisions, including selection of subcontractors	Owner controls most project decisions, including selection of subcontractors	Owner controls most project decisions, including selection of subcontractors	Joint control of all decisions

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