

**KEYWORDS** ■ alliance collaboration ■ alliancing ■ managing Risk ■ uncertainty ■ ambiguity complex project

✓ **ABSTRACT**

Complex projects are characterised by not only known risks that present challenges in integrating technical and human related interface issues but also by uncertainty about unknown unknowns and ambiguity about that which is assumed to be known but is indeed a potential source of confusion. How best to establish a project delivery approach for these types of projects? We know from government reports, audit office reports, academic research and often personal experience that typically such complex projects are delivered late and well over budget. Surely, there must be a better way to deliver complex projects. One project delivery approach that has generally offered a great deal of promise to managing risk, uncertainty and ambiguity is through the use of alliancing. This paper draws upon evidence from government reports, academic studies and a wide body of risk management and project delivery theory to illuminate this issue and to suggest a way forward. Several key points are drawn in this paper: 1. Alliancing is not a panacea for managing any complex projects, there are some important pre-conditions that need to be met and these are discussed further in the paper; 2. Where alliancing has been used in both Australia and New Zealand it has been successful in delivering in terms of time/cost/quality as well as in delivering many intangible benefits, these delivery benefits are also briefly discussed; 3. Alliancing requires additional skill sets, knowledge, personal attributes and experience of participants and this is perhaps the most important issue facing the future of alliancing and similar project delivery firms that are evolving from alliancing; and 4. Australia and New Zealand lead the world in this form of project delivery. A short section concludes the paper.

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RISK MANAGING  
**COMPLEX  
PROJECTS**

**INTRODUCTION**

Project delivery success or failure is usually expressed in terms of the 'iron triangle' factors of being on time, to budget and fulfilling fitness for purpose criteria. This begs the following questions:

1. Was the time schedule realistic, reasonable and balanced between being challenging yet capable of being achieved?
2. Was the budget realistic, sustainable for all parties concerned, deliverable at that price and competitive?
3. Was the purpose adequately defined, communicated and thought through in terms of what was specified? As the Rolling Stones song title states 'you can't always get what you want but you can get what you need' or another way of thinking about this is did you get what you asked for but not what you wanted or needed?

Such questioning is fundamental when deciding a project procurement approach that has a focus on value not cost and sustainability not short term advantage. Traditional project procurement approaches that define, design bid and tender to deliver assume that the client (*the project owner's representative*) can effectively specify what it wants/needs. It assumes that the client's designers can best shape the functional brief into an optimal design. It also assumes that the tender price plus whatever contingency that is set aside for modifications and variations during delivery are both adequate and realistic.

The alliancing form of project delivery has been in existence for decades with early reports of its use in the development of oil and gas industry facilities and evolving from forms of partnering in the USA and UK to its adoption and extension in Australia (*Lahdenperä, 2012*).

The Department of Finance and Treasury Victoria describes project alliancing as, "... *a method of procuring ... (where) All parties are required to work together in good faith, acting with integrity and making best-for-project decisions. Working as an integrated, collaborative team, they make unanimous decisions on all key project delivery issues. Alliance agreements are premised on joint management of risk for project delivery. All parties jointly manage that risk within the terms of an 'alliance agreement', and share the outcomes of the project*" (2010, p9).

Most project alliances have been centred in Australia and New Zealand since 2000 but the literature indicates that this form of procurement has been used for several alliances in Finland (*Lahdenperä, 2012*) and The Netherlands (*Laan, Voordijk and Dewulf, 2011*) with NetworkRail in the UK also using project alliances. The USA health services provider Sutter Health also uses a similar arrangement called Integrated Project Development (*IDP*) (*Cohen, 2010*) and discussions with those experienced with its use in the USA reveal that the inspiration for IPD came from the Australian Alliancing model. Procurement arrangements developed by British Airports Authority for Terminal Five, known as the T5 Agreement, also features many alliancing-like characteristics but with greater supply chain management integration (*Brady, Davies, Gann and Rush, 2007; Doherty, 2008*). Clearly forms of alliancing in the construction industry deliver an intense form of one-team collaboration to deliver highly complex and risky projects.

Not all clients rank cost and time delivery as being the key indicators of project delivery success. Public sector clients, particularly for infrastructure projects, have oth-

THROUGH  
**ALLIANCING**

er key result areas that pertain to the public good. These projects have stakeholder engagement, physical environment and other social benefit value performance requirements. However, these social value outcomes can be specified and measures identified for their performance. This evidenced by results from a study of 58 alliances in Australia and two from New Zealand (Walker, Harley and Mills, 2013) in which the top three key results areas (KRAs) were reported to be environment, community and stakeholder relations across those 60 alliances. Alliancing also appears to be effectively used under conditions of uncertainty, ambiguity and high risk on complex project. The author has been involved in several studies on alliancing in Australia and has interviewed 60+ senior team members involved in alliancing at the alliance manager or alliance leadership team level and participated in research on over 100 alliances. Most research interviewees cite the main reason for adopting an alliance is that it allows clients to closely collaborate with the design and delivery teams on complex projects where flexibility and resilience is needed to respond to unknown or unknowable conditions. Inherent uncertainty and ambiguity demanded that the project owner's representative take an intense hands-on role with the design and delivery teams.

While assumptions may be reasonable and valid for projects where much is either known or knowable with readily available specialist advice it is not true for projects where much is unknown, unknowable, uncertain and ambiguous. These conditions are common for complex projects. Bent Flyvbjerg and his colleagues (2002; 2003) use the term 'strategic lying' about the way that large scale infrastructure business cases purposely underestimate costs and overstate revenue projections. They also assert that most infrastructure projects in their large data base are alarmingly over budget; around 28% on average. Ed Merrow (2012) takes a focus on time performance and concludes from his huge data base of oil, gas and resource industry projects that a major problem that is encountered is that insufficient effort is placed at the front end of projects and that leadership of the project delivery is often fragmented and ineffective to understand risks faced and how to best deal with them.

However, the story is not one of total woe and anguish. Success in project delivery by a public private partnership (PPPs) approach has been argued to be far more successful than adopting traditional approaches. Raisbeck and colleagues (2010) com-

pared 33 traditional projects with 21 PPPs and found that cost efficiency of PPPs 'ranged from 30.8% when measured from project inception, to 11.4% when measured from contractual commitment to the final outcome' and that 'Between the signing of the final contract and project completion, PPPs were found to be completed 3.4% ahead of time on average, while traditional projects were completed 23.5% behind time'.

What is it about PPPs that seem to deliver better time and cost outcomes over traditionally procured projects? The literature points to two important factors, effective input into project definition and integration of the project design and delivery teams with the project owner (*in terms of having to operate the facility over the long term*), and more effective risk management. However, PPPs still need an effective brief and they still suffer from several disadvantages. PPPs engenders essentially a 'hands-off' relationship between the client and PPP special purpose vehicle (SPV) where the client hands over all risk to the SVP to manage. It is a service agreement for a project outcome such as patients treated, prisoners incarcerated away from the general public, road traffic users facilitated to travel from points A to B etc. But what if the client wants to retain ownership of the facility?

Part of the success of the PPP delivery model is attributable to the integration of the design, construction and operational management team with a single team goal to deliver a winning bid proposal and technically and commercially successful project outcome. This requires intense team interaction and collaboration and highly skilled risk, uncertainty and ambiguity management. If the SPV delivers what is technically asked for as stated in the client's specifications that were tendered upon then the client is happy as long as the commercial and risk, uncertainty and ambiguity management of the SPV allows its sustainable continuity to deliver the service.

If the client wishes to retain the infrastructure asset (*rather than receive a project outcome service*) and the project is complex then the key aspects of the project delivery mechanism that needs to be retained is sound risk, uncertainty and ambiguity management, a competitive delivery proposition and excellent collaboration between design, delivery and operational management teams. This is essentially what an alliance delivers. Project alliances have been shown to deliver project outcome at or beyond expectation levels. A study by Wood and Duffield (2009, Appendix 1 page 1) reported that on a study of 71 alliances 85% of alliances had an actual outturn

cost (AOT) less than the target outturn cost (TOC) and that 94% of projects were completed ahead of schedule. In another Australian study involving 60 alliances Walker, Harley and Mills (2013) reported similar results with 51 out of 60 alliances being within budget and 46 out of 49 within budget time and a substantial number of projects being completed well within time and cost budgets. This suggests that something radically different and better is happening when compared to the data base sets of Bent Flyvbjerg and Ed Merrow which is based on data from more traditional project delivery methods. Walker and Lloyd-Walker present a tool that illustrates how collaboration can be better understood (2015, Appendix 2) and this is based on identification and measurement of characteristics of a 16 sub-element taxonomy that form three main elements. These elements include provision of platform integration facilities to facilitate collaboration, behaviour factors that drive normative practices and processes, routines and means that reinforce behaviours supported by the platform facilities.

Regardless of the form of project delivery to be adopted to procure the project, the client needs to have sufficient technical and business expertise, foresight, market and internal customer knowledge and general all round sophistication to be able to provide clear and understandable briefing instructions and knowledge of potential solutions to be able to know what to ask for, understand what is proposed and judge which of the proposed solution options should be chosen.

Thus far conclusions and the chain of reasoning can be summarised as follows:

1. Clients need to be sophisticated to demand, specify and judge what constitutes value from their perspective in order to ask the right questions that prompt the right solutions (technical, commercial and project delivery method);

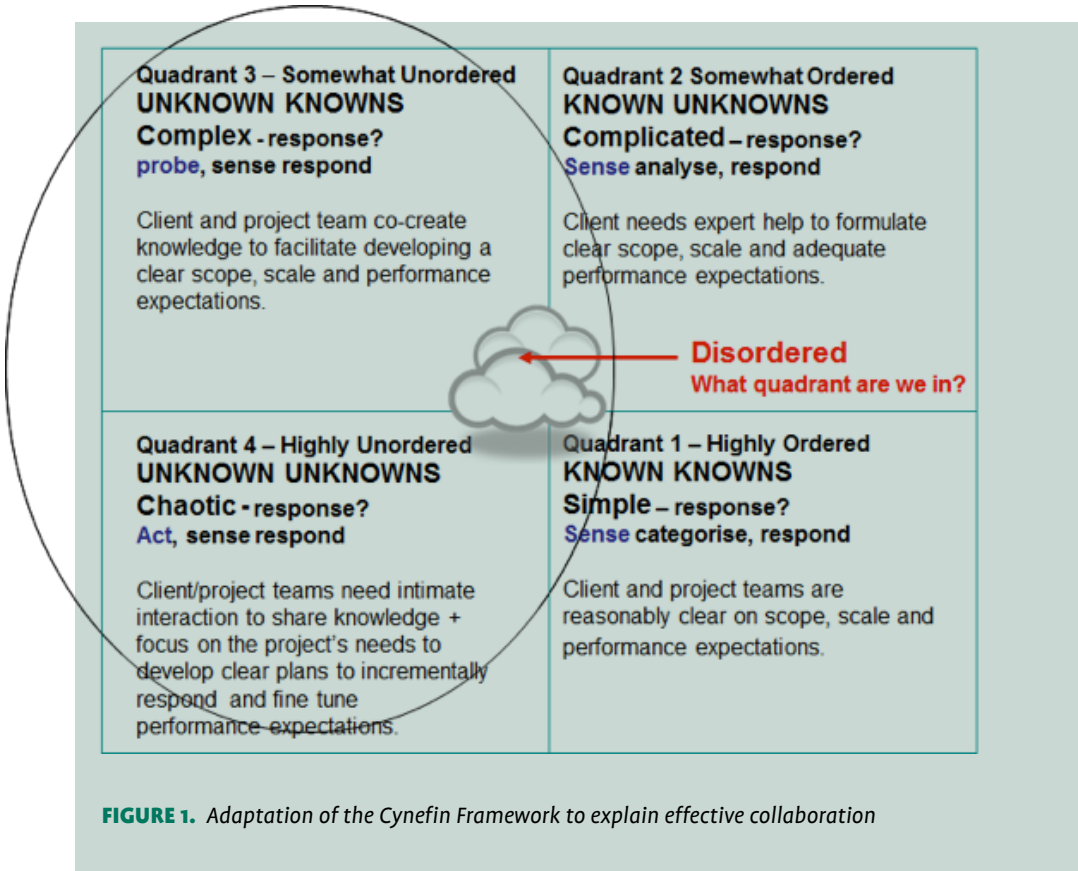


FIGURE 1. Adaptation of the Cynefin Framework to explain effective collaboration

2. Clients need to understand that complex projects, particularly infrastructure projects engaged in a brownfield site context. They need to understand that they are central players in making the ultimate risk, uncertainty and ambiguity decision. Two basic bifurcations unfold:
  - Whether to take a hands-on or hands-off approach to the project delivery and
  - Whether the project outcome is a product (the infrastructure asset) or a service that is typically delivered in PPPs.
  - Assuming that we address the product outcome and not a service option then within the complex project context the evidence presented suggests that high levels of competency in risk, uncertainty and ambiguity management and high levels of collaboration to be able to identify and manage risk, uncertainty and ambiguity is required. Additionally there is a need for the client, design and project delivery teams to have the requisite levels of knowledge, skills, attributes and experience to handle the challenge of such complex projects.
3. The alliance form of project delivery provides significant improvements in project success likelihood and seems to manage this through high levels of collaboration, excellent levels of risk, uncertainty and ambiguity management. However, this requires high levels of sophistication in the client, design and delivery team to be able to collaborate as well as requiring a governance structure that links the provision of platform integration facilities to support collaboration, behaviour factors that drive normative practices and a set of processes, routines and means that reinforce behaviours that are supported by the platform facilities.



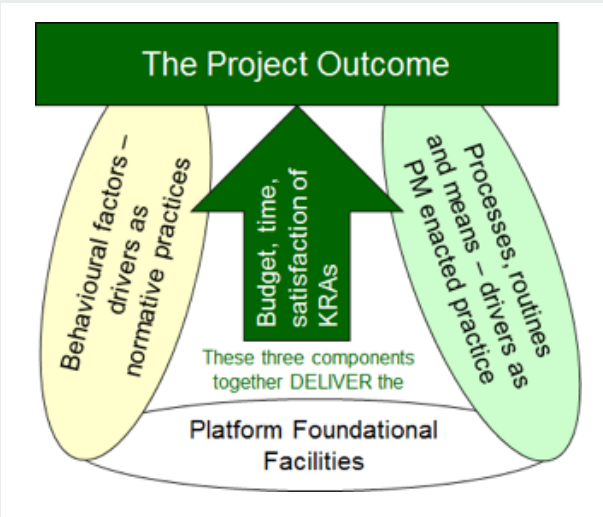


FIGURE 2. The Relationship Based Procurement Taxonomy

**Platform Foundational Facilities supply the basics for any form of collaboration. Sub-elements include:**

- Motivation and context to collaborate;
- A joint governance structure;
- Integrated risk mitigation strategy;
- A joint communication strategy;
- Substantial co-location.

**Behavioural factors drive normative practice. Sub-elements for this element include:**

- The degree of an authentic leadership style;
- A balance between trust and control;
- A commitment to be innovative;
- A common best for project mind set;
- A no-blame culture.

**Processes, routines and means reinforce behaviours and are supported by the platform facilities. Sub-elements include:**

- Consensus decision making between teams;
- A focus on learning and continuous improvement;
- Incentive arrangements;
- Pragmatic learning in action;
- Transparency and open-book processes; and
- Mutual dependence and accountability.

Given point four above indicates a better way forward to successfully manage complex projects, how does this happen? What are the pre-requisites? Why do alliances seem to succeed where traditional approaches seem to generally fail?

# 1. Managing Risk, Uncertainty and Ambiguity through Collaboration

David Snowden’s Cynefin Framework (Kurtz and Snowden, 2003; Snowden and Boone, 2007) provides us with a clue about how to successfully manage risk, uncertainty and ambiguity.

The URL <http://www.youtube.com/watch?v=N7oz366X0-8> provides a brief but comprehensive summary of the framework. **Figure 1** adapts that framework for the specific purpose of exploring

risk, uncertainty, ambiguity management in a collaborative context. **Figure 1** illustrates a cloud at the centre of the diagram that indicates where most project team members find themselves when confronting a new situation that demands a decision and action. It’s a state of disorder where they don’t quite understand the situation and context that they are facing. They don’t know which way to jump. Quadrant 1 is a place of safety for some because they may see the situation as being standard and well known where standard solutions and ‘best practice’ apply. However there are acute dangers in assuming that standard solutions can be applied in a one-size-fits-all manner. Each project has its own context, history and set of unique systemic drivers that interact in a complex and unpredictable way (Duffield and Whitty, 2015). Quadrant 2 is a place that is complicated but it may be manageable because it is just complicated and once what is unknown is identified then experts who understand the context and interactions between the project’s systemic parts

Aspect	Specific means	Comments
Identifying problems, issues or potential ambiguity.	Collaboration through common communication tools and platforms.	Joint governance structures of the ALT and AMT and substantial co-location as well as shared and joint communication channels set all teams up to freely communicate.
Motivation to identify problems, issues or potential ambiguity.	No-blame culture, incentives are based on project not team performance, mutual dependence.	The consensus decision making requirement means that AMT and ALT decisions commit all parties in one direction. Dealing with early warning signals therefore makes sense.
Commitment to action on issues.	Authentic leadership, no-blame culture focus on learning and continuous improvement.	Teams expect to be Quadrant 3 of <b>Figure 1</b> due to the project complexity levels. They inherently know that response to issues requires probing and action and that monitoring and review are natural parts of learning by doing. No-blame facilitates transparency.
Dealing with the ‘disorder’ cloud in <b>Figure 1</b> .	Authentic leadership, transparency and pragmatic learning-in-action.	Leadership is more authentic; people do what they say they will do. Open debate is encouraged. No-blame encourages pragmatism and innovation to experiment and try new approaches.
Rewarding teamwork	Incentive arrangements, governance and learning.	The joint reward based on project outcomes is supported by confidence that teams support each other. People love to learn.
Quality of understanding	Collaboration	More realistic, reasonable and sustainable estimates are developed

TABLE 1. Exploring Aspects of Alliances that Enhance Dealing with Complexity Issues

can be commissioned to solve the problem. These contexts are basically quite ordered so traditional approaches (*generally standard PM practices*) suffice.

Quadrant 3 is interesting and is the world context for most complex projects. It is a somewhat unordered context where ‘best practice’ does not exist but a set of better practices do. The key to this realm is unlocking people’s ability to rapidly collaborate and talk through issues, problems consequences and potential solutions. This requires intense collaboration and an ability to take the perspective of others in the project team (Parker, Atkins and Axtell, 2008). The context is highly dynamic so a lot of experimental probing and ‘testing the waters’ is needed. Response is governed by perceived consequences and projections so collaboration needs to be free and open and brave. Mistakes need to be expected and reacted to with fixes, quickly and without attribution of blame. Quadrant 4 is even more unordered and perhaps patterns and cause and effect loops

are impossible to perceive so the response needed is to boldly act, rapidly sense the consequences and respond. This needs special skills, deep perspective taking ability and an environment in which it is safe to offer advice and opinions, where power and communication asymmetries are flattened and a set of platform facilities that supports collaboration and complex decision making.

When projects start to unravel it is often because the team in their disordered state in a complex project decides to position themselves in the ordered space of Quadrant 1 or Quadrant 2 when they should be taking actions shown for Quadrant 3 or Quadrant 4. The mindset for Quadrant 1 is that ‘best practice’ must be followed and this is disastrous in that situation. Space is limited in this paper but experienced practitioner readers will get the picture.

Risk is generally about what can be measured and managed. Uncertainty relates to that which is partially known or is fuzzy to comprehend. Ambiguity is dangerous because it lulls us into think-

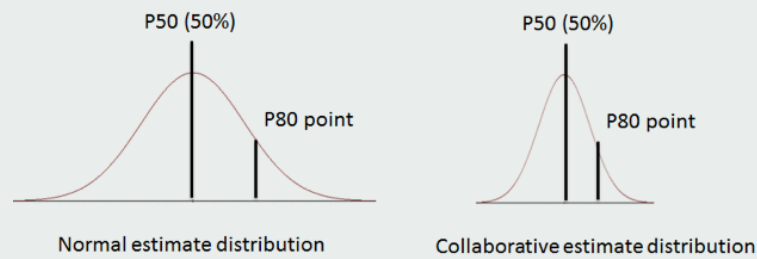


FIGURE 3. Illustration of the Estimate of Cost/Time based on Traditional and Alliancing Delivery

ing we know when in fact we are communicating at cross purposes. Open collaboration exposes assumptions and perceptions to allow resolving ambiguity before it may cause a lot of strife and it helps to reduce fuzziness of uncertainty. It also allows risk to be better understood and thus managed. The key aspect of collaboration is that it allows knowledge transfer, perceptions to be better understood and complexity to be unpacked so that a lot of complexity can be reduced to mere complicatedness. This in turn improves understanding of the situation so that budgets and time plan are more likely to be realistic and sustainable.

Collaboration requires three main elements as noted above and 16 sub-elements in total as illustrated in **Figure 2**. The intensity of presence of each of the sub-elements can be assessed as being between low and high. The RBP Taxonomy provides guidance to measure these.

**Figure 2** indicates that collaboration requires a solid platform of facilities to enable collaboration to be possible. This supports the necessary behavioural factors that are necessary for effective collaboration. However, while platform facilities and behavioural factors are necessary they are not sufficient for effective collaboration to take place. The identification of the processes, means and routines draws our attention to the ‘teeth’ required to reinforce collaborative behaviours. The alliance agreement has specific clauses and requirements such as a governance system with consensus between alliance operational members and alliance leadership team members together with a no-litigation clause that reinforces the logic that if the ‘team’ makes a consensual decision then individuals within the team can hardly complain later that they were railroaded into the decision. Consensus brings with it responsibilities. Similarly the alliance agreement has a pain

and gain sharing mechanism to reinforce performance because it is based on project and not individual team results. In alliancing the means and routines are designed to underpin and shape behaviour in a way not evident in other forms of project delivery, even for PPPs.

A significant emphasis on lowering asymmetries of power, information and formal status is evident in alliances that function well. The Walker et al. (2013) study clearly shows that well integrated platform facilities enhance opportunities for open communication and that collaborative behaviour is closely linked to requirements in a project alliance agreement that specifies not only behaviours but includes governance means such as an alliance leadership team (ALT) structure and an alliance management team (AMT) structure that formalises norms and practices. Incentive arrangements as well as transparency are configured into the alliance agreement with clear key results areas and key performance indicators. The literature shows that alliances can be contrasted with partnering arrangements in the level of formalisation and linkage of the three elements illustrated in **Figure 2**. Partnering provides a charter and other related aspirational norms but these are neither reinforced by common platform facilities nor a formal contractual agreement and so partnering may be a ‘feel-good’ compact but it has no ‘teeth’. An alliance has teeth and specific standards and expectations. These encourage and demand collaboration so that perceptions are shared and greater levels of intensity of knowledge is focussed on not only problems to be solved but actions to be taken and monitored for dealing with risk, uncertainty and ambiguity. This results in estimates of time, cost effort and actions to be more reasonable, balanced, valid and sustainable.

Limitation and constraint	Comment
Setting up an alliance	This can be highly intensive in energy for the client ( <i>project owner representative</i> ) as well as for alliance consortium participants. The intensity of effort in cost competitive alliance tendering can be similar to that of a PPP or complex D&C project. Costs awarded to unsuccessful consortia in developing the TOC is far less than costs expended.
Opportunity cost	The alliance tender stage requires a sustained and significal call upon high level participant organisation resources and executive talent in developing the proposal and tendered TOC.
Complexity of project	An alliance is best suited to projects in which there will be high levels of uncertainty and potential ambiguity because of the intense whole-of-team involvement in understanding the project. For more straight forward projects the cost of the intense inter-team interaction is a distraction and does not deliver sufficient benefit to justify an alliance.
State of the market	In overheated markets alliancing may be crowded out by other more lucrative opportunities for non-owner participants and this paradoxically makes an alliance more attractive to clients to help them retain key staff and competencies. During ‘bad’ market times clients that choose an alliance are subject to criticism that they may have been better off to go with a more traditional approach to take advantage of their market power.
Skills, knowledge attributes and experience of participants.	Both for the client and non-owner participants the demands for a special set of competencies are significant for alliances. The need for intensive collaboration places large leadership quality and ‘people’ skills demands upon all parties. These are in short supply and also represent an opportunity cost that needs close scrutiny.
Ownership of the project asset.	Unlike a PPP an alliance results in the client owning the asset. This may be desirable and is a key rational for choosing an alliance over a PPP delivery. In terms of risk, the client needs to ensure that the project owner team has adequate representation of operational users and facility managers in their team so that operational matters are adequately considered.

TABLE 2. Limitatiions and Constraints to using Alliancing

**Table 1** summarises links between collaboration and risk, uncertainty and ambiguity management within the context of an alliance.

**Table 1** provides a brief taste of how alliances work in practice. The better ones tend to have greater intensity of shared norms, objectives and ways of working together as a single ‘family’. As we find in all functioning democratic families and societies, dissent and challenge are a part of the daily work of making sense of shifting events. Fundamental rules and norms govern the general path but the direction may weave and wander to find the best route through to the goal. Alliances tend to be a combination of apparent chaos and order where diversity of opinion and perspective is welcomed to

enable a greater pool of ideas that are available to solve any issue.

The main advantage of an alliance is that through processes briefly discussed above, the ‘normal’ contingency allocation for risk and uncertainty is substantially reduced as alliance members share knowledge and jointly better understand the project’s technical and other needs. When skilled client, design and delivery team entities collaborate as a single integrated team they provide a knowledge space where understanding the complex interplay of systems and events that impact and drive the project’s trajectory, then there is a greater understanding of the interconnectedness of the project’s constituent parts. This impact squeezes down the contingency budget because

it reveals what in a traditional approach would remain unknown and unknowable and so the previously unknown becomes better known and accounted for and the remaining contingency requirement is reduced. The contingency is partially offset by additional costs for the team to gain a better understanding but in general the alliance substantially reduces the ‘normal’ contingency figure. Teams are then better prepared because of gaining this deep project knowledge to manage the project’s design and delivery. Moreover, one of the senior alliance subject matter experts interviewed explained that the spread of estimate of cost and time is reduced forcing the profile of distribution from a flatter shaped distribution curve to a more peaked one.



To the left of **Figure 3** we see the Normal situation with the notional P50 or 50% chance that the cost or time would be ‘x’ and the 80% point on that curve. To the right we see the illustrated same project notionally estimated under intense and effective collaboration. Notice how the curve is far less spread between the 50% probability and 80% probability points. The additional clarity and use of broader perspectives allows much ‘tighter’ and more confident estimation of cost or time.

Evidence from the studies cited in this paper together with the illustration presented in **Figure 3** indicates that close collaboration between the client, design team and project delivery team provides the real potential and actuality of more accurate estimates of time and cost as well as being able to ‘walk through’ the issues surrounding a project to enable the scope and requirements to be more effectively enunciated and understood by all parties.

## 2. Limitations and Constraints

The picture of alliancing as a project delivery form painted above may seem utopian. Certainly in presentations given in the USA and parts of Europe on alliancing this author has encountered a great deal of scepticism about the applicability of alliances. In one paper published to describe what it may feel like to be in an alliance (*Walker and Lloyd-Walker, 2014*) reviewers of the paper expressed concerns that an ambience was so personal that it could not be accurately documented. This author has undertaken research on over 100 alliances through discussion with key alliance team members. It became apparent that the way that alliance projects are conducted, the way that risk, uncertainty and ambiguity is treated, is radically different in an alliance compared to other project delivery forms. Is this an advance?

Earlier in the paper it is stated that data from alliance studies suggest that something radically different is happening compared to the data used by for example Bent Flyvbjerg and Ed Merrow on more traditional project approaches. Results from the alliance studies suggest significant, perhaps overwhelming, improvements in project delivery performance. We can be confident that alliances work very well in certain circumstances. Howev-

er, alliances are expensive and time consuming to establish and as intimated earlier, specific skill sets are necessary and so the alliance is not a panacea. Limitations and constrains are summarised in **Table 2**.

## 3. To Conclude

This paper outlines managing risk, uncertainty and ambiguity and proposes that where a client wishes to retain the asset being developed for a complex project then the alliance approach should be seriously considered. The Cynefin framework provided a useful theoretical lens in which to consider not only risk but uncertainty and ambiguity. Many clients tend to underestimate the potential impact that ambiguity may have on emerging risks in projects and they also tend to also underestimate the need for uncertainty reduction through great cross-team understanding. The RBP Taxonomy was introduced and briefly explained to illustrate how alliancing may best address risk, uncertainty and ambiguity in complex projects. Some reference to studies undertaken of complex infrastructure projects presents interesting results that suggest that alliance projects can provide a solution to problems of poor complex project delivery.

To summarise the paper key points to be drawn are as follows:

1. Alliancing is not a panacea for managing any complex projects, there are some important pre-conditions that need to be met and these are discussed in Table 2;
2. Alliance collaboration intensity and depth allows parties to better understand each other’s perspective, assumptions and business processes. This leads to more realistic, reasonable, valid and sustainable estimates of time, resource and effort required of participants;
3. Where alliancing has been used in both Australia and New Zealand it has been successful in delivering in terms of time/cost/quality as well as in delivering many intangible benefit;
4. Alliancing requires additional skill sets, knowledge, personal attributes and experience of participants and this is perhaps the most important issue facing the future of alliancing and similar project delivery firms that are evolving from alliancing; and
5. Australia and New Zealand lead the world in this form of project delivery.

Readers may be interesting in consolidating greater knowledge about this interesting topic by accessing the following references.



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