Understanding the Motivation and Context for Alliancing in the Australian Construction Industry

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Abstract

Purpose: The purpose of this paper is to explore and explain the circumstances in which a highly collaborative integrated project delivery form such an alliance is the most appropriate choice of delivering infrastructure projects.

Design/Method/Approach: The paper draws upon two previously published studies on alliancing to enable gathering insights from a quantitative study with some qualitative data that indicates project alliance delivery performance is high and suggests why it may be adopted as a project delivery form. A second qualitative study recently completed and published on integrated collaborative forms of project delivery such as alliances is re-analysed to better understand how and why this form may be successful. Together these two studies allowed a focus on the motivation to form an alliance and specific conditions relating to the alliance party’s level of ability and willingness to deeply collaborate.

Findings: The motivation to deeply collaborate may be triggered by specific internal and external trigger mechanisms. These are identified in the paper together with discussion about the requirement of parties to have sufficient knowledge, skills, attributes and experience to collaborate at a deeply engaged level.

Research limitations/implications: The data used in the studies was from large scale infrastructure construction projects. The examples are mainly drawn from countries where collaboration is common and culturally acceptable; results may not apply to cultures, country or workplace, where high levels of competition are seen to be the optimal strategy for project delivery success. Also, the data was drawn from construction project management. Other project-based areas such as professional services for example may present a different context and hence a different rationale.
**Practical Implications:** The study provides deep insights about the nature of collaboration. It may have wider applicability.

**Originality and Value:** This is a new area of research in project management and the world faces a massive demand for large scale complex projects. This paper may provide a rational to drive policy in project delivery choices.

Keywords: Project Alliances, Australian public infrastructure, project management.
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Introduction

Project and program alliances have been an accepted form of project procurement for public-good infrastructure engineering projects such as those delivered in the road, rail, water, sewage and utilities sectors in Australia and New Zealand. Project alliances have been evident in only two institutional building projects in Australia, the National Museum of Australia completed in 2001 and the Hamer Hall extensive renovation and upgrade completed in 2013. While alliancing has been argued to often provide best value and superior value for money as compared to traditional approaches such as Design and Construct, considerable debate continues about its success and applicability as a project procurement delivery strategy. This paper takes its focus on the decision to adopt an alliancing approach. It draws upon survey research undertaken on 61 completed project alliance
performance in Australia in 2008, 2010 and 2012, a further study of program alliances undertaken in 2013 in which 50 subject matter experts from Australia, Europe and the USA were interviewed about alliancing projects and/or programs in Australia or Integrated Project Delivery projects in the USA. The second study led to the development of a relationship based project procurement taxonomy with one important element of the 16 element taxonomy being the motivation and context that led to the choice of project procurement method. This paper is focused on that element and explains why intensely collaborative project delivery forms such as alliancing or integrated project delivery or framework agreements may be made.

Globally, an increasing focus on the purpose of delivering public sector projects has been centred on achieving value as defined by the government’s strategic aims. Indeed government now demands that public sector projects apply a stringent gateway or stage gate process (Office of Government Commerce, 2007b; Commonwealth of Australia, 2009; Samset, 2009). This process checks project proposals against its business plan and value statement to ensure that the proposal explicitly expresses the strategic benefits to be delivered. The front-end phase of project delivery has been a popular project management (PM) topic of interest of late because it is seen to be the phase that sustained and rigorous effort helps to deliver the greatest benefit in facilitating a successful project (Morris, 2010). This effort is argued to often help drive project delivery success (the process) and project success (the impact of the project’s delivery outcomes). The effectiveness of efforts applied at the front-end of a project varies and an important part of this inconsistency is related to what has been termed as ‘scant knowledge’ (Næss, 2009; Samset, 2009; Williams, Samset and Sunnevåg, 2009; Wright, Bolger and Rowe, 2009). Other important limitations on effectively dealing with project issues include uncertainty of knowledge and ambiguity.

So, what has this to do with the paper’s title? This introduction serves to alert us to a systemic problem of managing the front-end of complex projects and the importance of choosing an appropriate form of project procurement and delivery to ensure best value benefits are achieved. It also prompts us to consider the legitimacy of convergent and divergent thinking at various stages of the project design and delivery phases.

Traditional approaches to procuring construction projects such as a design-bid-build (DBB) or design and construct (D&C) certainly have their place in the mix of project procurement options but they have been eschewed in favour of highly collaborative integrated project delivery (IPD) forms such as alliancing in Australia, IPD in the USA and framework agreements (FAs) in the UK. This begs the question why take this approach?

Research question: In what circumstances might highly collaborative integrated project delivery forms such as alliancing be more appropriate than traditional project procurement and delivery approaches?

This paper is structured as follows. First we briefly present a summary of the Relationship Based Project Procurement (RBP) Taxonomy with a focus on Element 1, the motivation and context that defines the need to adopt a highly collaborative approach to project delivery. This presents the circumstances that need to be considered when making a choice of project procurement and delivery form. We follow that with a brief explanation of our research approach to justify our argument and clarify the strengths and weaknesses of our research approach to enable readers to judge the quality of data we draw our conclusions from and the likely validity of our argument. We then discuss each of the seven sub-elements to Element 1 and draw upon illustrative quotes from interviewees as well as theoretical and literature citations to explain the relevance of each of these sub-elements. We then conclude the paper by summarising main findings and their implications to theory and practice.

**Summarising the RBP Collaboration Taxonomy**

Taxonomy is a term derived from the Greek word for ‘arrangement’ used to describe the conception, naming, and classification of organism groups. Its use has widened to the classification of things by their characteristics or properties. A taxonomy of RBP forms was recently developed by Walker and Lloyd-Walker (2015). This was adapted from the Wittgenstein idea of family resemblance as applied to partnering approaches first developed by Nyström (2005). The final form of the taxonomy was then shaped using the concept of its three
main components as forming a basis for delivering collaborative arrangements as proposed by Jacobsson and Roth (2014) who conceptualise partnering as a potential engagement platform and used that concept to explain how partnering is structurally and logically based, enabled and the behaviours that sustain it through factors that they describe as means, foundations, and process/routines.

The main aim of any project procurement form is to find the most effective way to deliver the intended value and benefits to be derived from the project. Mullally (2014, p518) argues that projects are ‘a means of implementing organisational strategy, and that organisations need to ensure that they are “doing the right projects the right way”’. The strategic goals and aims are operationalised into key results areas (KRAs) and the important feature of Figure 1 is that achieving the KRA outcomes are dependent upon the quality and appropriateness of the foundational facilities that support and drive team behaviours to achieve those KRAs. Additionally, having an effective and appropriate facilitating foundation is necessary but not sufficient without the processes, routines and means to reinforce desired behaviours.

The central overarching purpose of the RBP Collaboration Taxonomy is to achieve well-articulated key results areas (KRAs). The KRA categories of cost, time and satisfaction remain stable across all projects, though with some variation in emphasis, across infrastructure sectors. Other KRAs are often identified relating to environmental or social objectives. In collaborative arrangements the project owner (PO) or that entity’s representative (POR) has a ‘hands-on’ interaction with the project design and delivery team members. The PO/POR actively engages in decision making as a highly sophisticated participant bringing knowledge of what the strategic aim of the project or program is and other knowledge about the prevailing project or program political and contextual environment. This may present a constraint if the PO/POR does not have the requisite ability, capability or resources: perhaps due to these being stretched for some reason. The design and delivery team non-owner participant (NOPs) need to be able to work collaboratively with the PO/POR and also have the requisite ability, capability and resources.

NOPs agree to deliver the project for a rigorously developed target outturn cost (TOC) within a similarly rigorously developed target time and to also deliver on PO/R specified KRAs. Emphasis varies with the extent of and the mechanism for rewarding performance. In many RBP forms there is often a contractual clause offered in terms of sharing the gain or pain associated with delivering the project under or over the TOC. A gainshare results from delivering the project (or program) within the specified KRAs. For example this may be applied for delivering the project under the TOC or earlier than the agreed delivery time or by exceeding KRA targets as represented by key performance indicators (KPIs). A painshare (dis)incentive will occur if the cost, time or KRAs are not met. The extent of pain and gain sharing and emphasis on KRAs may vary with the type of service delivery.
Project delivery to achieve the KRAs is supported by three categories of elements consisting of 16 elements. Intensity of presence or absence of these 16 elements can explain variations in RBP forms. Each form has different characteristics, and degrees of intensity, of each element that fall within a general resemblance and when visualised holistically, they can help us identify variety and commonality to help us better anticipate expectations of the various parties to that particular procurement arrangement. Delivery success is defined by the PO’s defined KRAs. These include cost and time performance but they often include other key results related to service delivery of strategic aims.

We briefly illustrate the three categories of elements but we do not explain them fully, readers may refer to Walker and Lloyd-Walker (2015) for details on not only the 16 elements but also the associated measures that can be applied to gauge the intensity of their presence, and details about the required knowledge, skills attributes and experience of participants to achieve at the highest levels for each of the elements.

Five platform foundational facilities provide the infrastructure elements that provide the basis for collaboration. Each element is presented in Figure 2 together with its sub-elements. The motivations and contextual circumstances element, together with the other four elements in that platform foundational facilities category, define and shape the logic of the level of collaborative approach that is adopted for each RBP form.

Figure 2 – The Platform Foundational Element of the RBP Collaboration Taxonomy
Figure 3 – The Behavioural Factors Elements of the RBP Collaboration Taxonomy

The second component of the taxonomy comprises five behaviour-shaping factors that drive normative practices to support collaboration. These five elements in Figure 3 illustrate the nature and degree of: authentic leadership; trust-control balance; commitment to be innovative; common best-for-project mindset/culture; and no-blame culture. High intensity levels of each of these five elements are need to achieve high levels of collaboration. Low levels of intensity influences lowers levels of collaboration.

Figure 4 – The Processes, Routines and Means Elements of the RBP Collaboration Taxonomy
Having the foundations and good will for high levels of collaboration is necessary but insufficient. Institutional rules and processes, consistently supported by the foundational elements, are needed to reinforce the behavioural elements. These behavioural factors drive six processes, routines and means factors that shape how the RBP form will respond to the platform foundational facility factors. These comprise consensus decision making, a focus on learning and continuous improvement, incentive arrangements, pragmatic learning-in-action, transparency and an open-book approach to the relationship and degree of mutual dependency and accountability. Each element and their sub-elements are illustrated in Figure 4. Figure 1 thus illustrates the meta-level components of the taxonomy and Figure 2, Figure 3 and Figure 4 illustrates the detailed elements and sub-elements that may be detected to be present for the various forms of RBP. The level of presence of these elements may range from being fully developed and high visible to having been discarded and appearing invisible. Terms and labels to describe these RBP forms may change over time and change through cultural, geographical, historical and other contextual influences characteristics to reflect changes in emphasis in the level of intensity of these characteristics but the basic characteristics remain stable.

The RBP Collaboration Taxonomy Element 1 ‘motivation and context’ discussed in detail in this paper relates to the circumstances impacting upon a procurement choice. Its measure is illustrated as being characterised by being represented between two anchor points Low = 1 and High =5. The Taxonomy specifies low and high anchor points for each of the 16 elements. An illustration of the anchor points for Element 1 is provided below.

**Low** levels would be related to a **hostile environment** for collaboration. This may be for example due to lack of conviction of project participants in the value of collaboration within this project’s context. Alternatively, it may be due to institutional imperatives that values strict competitive tension above collaboratively seeking win-win outcome solutions.

**High** levels would relate to the procurement choice solution being driven by the acceptance of project participants in the logic of a clear advantage being gained by adopting a focus on a supportive and collaborative approach to delivering benefits that align with the values of participants.

The assessment for Element 1 motivation and context for collaboration is based on an overriding sense of one or more sub-elements (best value through to unknown risks) influencing the assessment. The dominant reason may be due to an acute emergency because a deadline is unmovable. This occurred in the case of the National Museum of Australia alliance project (Walker and Hampson, 2003) and other case study examples offered by Wearne and White-Hunt (2014) in their book on urgent and unexpected projects. It may also be related to a realisation that past experience of being faced with both known and unknown risks in a critical aspect of a project compels an alliance or alliance type arrangement as being the only viable choice. An example of this is discussed by Walker and Jacobsson (2014) in which a part of a PPP project was delivered via an alliance because parties to the alliance realised that past toxic relationships had led to numerous problems that could be overcome through forming an alliance if that project delivery form had been put in place. Reasons for forming an alliance are discussed in depth later.

**Summarising the RBP Collaboration Taxonomy Research Approach**

The research approach that was adopted for this paper was initially informed by two research studies that have been published. The first was a mainly quantitative research study with its unit of analysis being alliance performance undertaken on 61 completed project alliances completed in Australia in 2008, 2010 and 2012 (Walker, Mills and Harley, 2015). The second study of alliances was undertaken in 2013 and involved a qualitative approach with interviews of 50 subject matter experts from Australia, Europe and the USA conducted to learn about their knowledge of various features and characteristics of alliances. Results from that study were published in the form of a book (Walker and Lloyd-Walker, 2015). A summary of the two studies is presented in Table 1.
The first study consolidated three separate state-of-the-art surveys providing results on alliance performance in Australia against a range of KRAs. In 2008, 30 alliance managers were sent a survey instrument of 12 questions about alliance performance on recently completed (within the last year) projects. After completing the survey they were each interviewed by telephone for an average 30 minutes. Based on the results of the initial study, the survey instrument was significantly expanded to 52 questions in order that more focus could be placed on understanding inter-team relationships and interactions to explain alliance performance. Eighteen respondents were surveyed and interviewed in 2010 and 13 were surveyed and interviewed in 2012. Results from this extensive study were collated to provide a summary of performance on 61 alliances. The study’s aim was to gain greater understanding into the influences on performance of these 31 alliances by using ‘why’ questions. Findings from that consolidated study (Walker et al., 2015) suggested similar alliance performance results to a separate survey undertaken on 46 alliances and 14 case studies of alliances by Wood and Duffield (2009). The 61 alliances study provided much quantitative data and results to suggest that alliancing was successful and performed far better than business as usual DBB or D&C approaches but did not probe deep enough to be confident about answering ‘why’ questions about how that performance was achieved and when it was appropriate to use an alliancing form.

The second study provided in-depth insights from 50 experts. The format followed involved a semi-structured interview with 34 senior project delivery team members that probed for details about how project performance was formulated and managed on highly integrated alliance/IPD/FA projects. Interviewees were also asked to comment on inter-team relationships and how alliances were experienced by them when compared to other more conventional and traditional forms of project delivery. This provided deep practitioner insights. Deep academic insights were gained from interviews with 16 experts with experience in researching project procurement forms who had written widely on this area, been published in refereed and industry publications, and who could provide theoretical insights into issues that had been raised by practitioners. This provided very useful answers to ‘why’ and ‘how’ questions.

The combined results of these two studies have provided a sound basis for understanding how well alliancing may perform and the fundamental factors that explain actions required and the motivation to form an alliance. The RBP Collaboration Taxonomy developed as an outcome of Study 2 provides a useful structure for analysis to answer the research questions raised in this paper. Relevant and salient participant quotes to support and further explain the taxonomy are provided in Appendix 2 of the book which provides a full description of the research and its findings (Walker and Lloyd-Walker, 2015). In particular, Appendix 2 provides a useful basis for explaining the rationale for using alliancing for infrastructure project delivery.

Table 1 - Summary of Research Studies Informing this Paper

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<td>1 - Project alliance performance in Australia and New Zealand</td>
<td>Phone survey of 61 alliance managers using a structured telephone survey instrument to measure alliance performance. Mainly quantitative data but also some open-ended qualitative responses for quantitative question.</td>
<td>Provided the ‘what’ answers to questions about KRA performance of alliancing and some limited ‘why’ choose an alliance aspects.</td>
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<td>2 - Understanding RBP forms in Australia, Europe and the USA</td>
<td>Thirty four in-depth semi-structured interviews with senior practitioner subject matter experts and sixteen academic experts in this field. Analysis of transcripts publishing numerous quoted responses to support findings.</td>
<td>Provided deep insights to answer ‘why’ questions about alliance performance and motivation and collaborative form characteristics.</td>
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Motivation and Context RBP Collaboration Taxonomy Sub-Elements

Figure 2 illustrates Element 1, the Motivation and Context that define the need for collaboration, and its seven sub-elements. We now explain these in more depth and draw upon theory as well as quotes drawn from Study 2 to illustrate our position.

Best Value

As MacDonald (2011) argues, true best value means more than value for money (VfM) and the narrow view of project delivery success expectations based upon the ‘iron triangle’ of cost/time/fitness for purpose has expanded considerably. Transactionally oriented project procurement forms usually focus more rigidly and narrowly on an iron triangle interpretation with lowest cost and shortest time (bid), and quality or fitness for purpose, viewed as meeting immediate needs only. Higher levels of RBP approaches have a longer term strategic success focus. VfM can only obtain what the POR asked for but not necessarily what the PO actually needed. Often the act of dialogue and articulating needs and wants reveals hidden assumptions that could be important in clarifying the brief. Higher order RBP often seeks greater effort and emphasis being placed upon ensuring the purpose of the project is clear. We see more thought being placed upon coherence in strategy, on supporting sustainability, and on creating a ‘big picture’ view of the project outcome, increasingly incorporating social responsibility and triple bottom line (3BL) considerations. Even hard-headed business gurus have accepted that a focus on cost without consideration of value is restricting and delivers sub-optimal outcomes (Porter and Kramer, 2011).

Maintaining a focus on creating value rather than minimising cost requires deep levels of collaboration to facilitate an environment in which views of and opinions on what constitutes value can be openly explored. This is particularly true when a PO/POR is not fixed on any particular project solution to meet strategic goals and is open to suggestions. Sometimes the KRAs also require deep collaboration between parties to best operationalise KPIs to minimise creation of unintended adverse consequences (Kerr, 1995; Sargut and McGrath, 2011).

Participant 28 in Study 2 illustrates a nuanced meaning between cost and value. Key strategic objectives are centred on values of having a safe and effective road network rather than a particular road section’s capital expenditure.

“... two really overarching objectives were safety and reliability for all of the motorway. This section of the motorway had a horrendous safety record... there was a need for adaptability and flexibility to fine tune construction operations to prioritise safety for road users and site workers so alliancing offered that level of best-for-project mentality while maintaining high collaboration levels.

... [KRAs were] traffic flow, safety, traffic flow reliability, community and stakeholder, connectivity and access, design optimisation and maintenance minimisation, there was nine of them.”  P28

Emergency Recovery

Unexpected situations may arise where recovery may be needed within a required specific project delivery strategy as quickly and as feasibly as possible. There are circumstances where the main objective of a project is to recover after an emergency. This may occur for projects responding to (natural or human caused) disasters. They may also be a response to a business emergency, such as an accelerated new product delivery or process re-engineering where time-to-market is vital for corporate survival.

Emergency situations, or when recovering from a crisis or disaster, require swift responses in an environment where little may be known about the scope and scale of recovery works. A series of such situations is well documented in the literature (Waugh and Streib, 2006; Weick and Sutcliffe, 2007) and more recently by Wearne and White-Hunt (2014) in their book on managing the urgent and unexpected. Here the key objective is to start recovery work very quickly while at the same time providing sufficient resilience to enable rapid changes in direction and/or emphasis. This requires deep collaboration to ensure agility, responsiveness and reflexivity.

1 3BL refers to three bottom line performance values, financial, environmental and social outcomes.
A quote from P31 illustrates how an alliance can best support rapid response to any emergency (burst water pipes for example). This example is drawn from a program alliance (similar situations arise in FAs) and illustrates the need for this form of collaborative RBP arrangements.

“If there is something like a large burst or some emergency works, we’ve got the capability in-house, the alliance itself is a partnership between [POR X], [NOP A] and [NOP B], we’ve got the [NOP A] grunt to get in there and do a job that’s an emergency job or high risk job. So those one-off that need to be responded to quickly will be done by us where the more routine projects we tend to outsource to open market.” P31.

Experimentation
An experimentation strategy is needed for developing innovation and building new competences. There are times when a project is triggered by the need to experiment; to try something new. Brady and Davies (2004) class projects whose prime purpose is co-learning and exploration as ‘vanguard’ projects. These projects may be designed to develop completely new stand-alone outcomes or to be part of a ramping up of a learning curve to move to a more production-line approach for new standard-type projects. On other occasions vanguard projects may be used to pilot new products, assemblies, systems or procedures.

Key strategic objectives are centred on experimenting with new technologies or processes. The strategic aim is to effectively create and disseminate knowledge and expertise.

Participant 41’s quote clearly illustrates the value of being able to experiment, model and learn within a collaborating team environment.

“...our process people our planning people in this area are very knowledgeable ... probably on the cutting edge of knowledge around this. So we do have that knowledge in-house, no doubt it was their efforts and they really made it possible that we could eliminate this barrier to achieve our treatment outcomes. The other thing that we were able to do on our capital plan was a $400 million outfall extension to take the outfall from initial discharge a couple of kilometres out. That was a $400 million job ... and what we did through our trial period ... was actually eliminate the need to spend that $400 million. That’s where the real innovation was, that really was the innovative part, but that was pre-alliance. We had some design partners helping us with it, but I’d say that we were the intellectual powerhouse.” P41.

P41 illustrates how a program alliance allows access to design expertise and construction expertise to pragmatically test out ideas. This quote provides an example of how a program alliance can result in design alliance opportunities after the design phase has been completed.

The Competitive Resource Availability Environment
The competitive resource availability environment can impose both opportunities and constraints upon RBP choice from a value for money perspective. In highly buoyant economic times government agencies and other highly constrained (employment levels and conditions) organisations may form alliance type arrangement to offer opportunities to key employees to retain and upskill them. In less buoyant economic times (POs may feel that they are in a strong position to demand more of those delivering projects. The business boom and bust cycle and the long lead time required to prepare staff capabilities for involvement in complex project delivery means that for government authorities, agencies and many large bureaucratic POs retaining key staff and accessing expert temporary staff can be a real challenge (Davis-Blake, Gibson, Dickson and Mentel, 2001; Gardner, 2002; Benest, 2008; Lawler III, Pringle, Branham, Cornelius and Martin, 2008; Martin and Schmidt, 2010).

There are conditions in which creating an alliance may be motivated by the need to enact cultural change and to at the same time upskill key staff. This can offer staff the advantages of a home-base while being seconded to a program alliance to rub shoulders with designers and contractors in an integrated project delivery organisation. This can be attractive as described by Participant 29 in Study 2.

“...that this was all happening at the time of the engineering boom ... a very hot market out there. We were having trouble retaining engineers who wanted to go onto bigger and better things either within the water
industry or in the mining boom etc. So we had to come up with a strategy that was going to provide the resources both internally and externally to not only delivery the big projects, but our overall program so we set up the [X] Alliance a bit over four years ago. ... it delivers those smaller type projects that have built up in the order of $90-100 million dollars’ worth of a year within a project. ... 15-25 projects a year. ... So it was about coming up with a methodology to deliver the program. Secondly, it was about trying to provide opportunities to retain our staff, but also to secure external resources rather than have to compete all the time.” P29

A Relational Rationale

The relational rationale inherently implies a perceived need to create, nurture and maintain a form of a relationship, though the extent of commitment may vary. Some choices may be based upon negative past experiences and the need to overcome problems caused, or at least exacerbated, by the chosen project procurement form. Other choices are based on positive past experience with use of a specific form of procurement that worked well within that context. Experience can form the basis for rationalising any given procurement choice within its given context.

Another quote from P31 provides an ideal illustration of an alliance rationale being centred on building relationships and skill within the POR and throughout the supply chain. This presents a sophisticated best value, as opposed to VfM, rationale. There is an element of co-learning through collaboration as well as simply building positive relationships. As Forgues and Koskela (2009) suggest, developing situations in which various groups are co-located can help teams better understand their various perspectives. Purposefully entering an alliance-like arrangement to build and enhance relationships is a recognised procurement strategy. Indeed, in one case of an alliance being formed for a large and particularly complex component of a major project delivered under a Public Private Partnership, the rationale for this unique example of an alliance was motivated by the need to create and improve relationships between the participants to overcome past bad experiences (Walker and Jacobsson, 2014).

‘[POR X] saw that there’s a massive increase in capital works from $200 million over five years to $900 million over five years. They saw that as an opportunity to bring someone like [NOP A] down into the region, impart [NOP A] key capabilities on contractors in the region so that when the alliance leaves, [POR X] is left with a set of contractors that are really good at not only putting pipes in the ground, but their safety systems are first class, their quality systems, their environmental systems – all that sort of stuff that ... comes from a tier one contractor. A lot of the focus for us is getting the contractors on board ... working with them to build their capabilities. All our systems are designed to be shared. All our project management, environmental safety, our quality systems are available on a portal that any contractor that works with us can download, put their branding on and use. So quite a few of the contractors use the alliance as an opportunity to build their business to the next level and obtain certification, expand the type and range of clients that they can go for.’ P31.

Known Risks

Uncertainty and risk are acknowledged as present within all projects, to varying degrees, with some projects experiencing high levels of uncertainty that may also be difficult to quantify (Atkinson, Crawford and Ward, 2006). This, Atkinson, et al. (2006 p688), acknowledge requires “management flexibility and tolerance of vagueness”. Alliancing by its nature supports flexible approaches to dealing with uncertainty. Likewise, sense can be better gained from the initial vagueness often present in a no-blame environment, where open discussion and transparency are present.

The data from Study 2 suggested that motivation for an alliance was different for known risks as opposed to unknown risks. Decisions to use a higher or lower intensive RBP form often depend upon the level of perceived complexity relating to known risks —technical, management, political/stakeholder – or for influencing commitment. More critically, it is about the level of flexibility that can be achieved through collaboration to manage somewhat expected risks that may arise but where the shape and details of the risk are unknown (so called ‘known unknowns’). Managing risks is best deployed by allowing those who can best manage the risk taking responsibility for that identified risk and being compensated for doing so. This situation occurs when a sophisticated PO/POR knows the strength and limitation of their in-house knowledge to manage identified risks.
Typically, on highly complicated projects dealing with known unknown risks, the PO/POR does not have sufficient knowledge about proposed solutions to be able to frame their brief or define requirements. They are aware of what they don’t know, and they are also aware of what other parties do not know. This requires deep levels of trust between parties so that sufficient leeway can be granted to participants to have confidence that there has been no opportunistic behaviour that may disadvantage the parties. Collaboration, in this context, allows consideration of a wider range of potential solutions and a richer conversation about how to achieve the project goals. A good example of this relating to RBP forms comes from the Heathrow Terminal 5 project and illustrates how known risk management can be effectively undertaken within an alliance-like form (Gil and Tether, 2011). The HR and organisational effectiveness director for the T5 project specifically states in her book that the choice by British Airports Authority (BAA) to use the T5 Agreement was due to an acute appreciation of risks it faced. It was for this reason that they insisted on a procurement approach that included the PO (as BAA) requiring participants to share knowledge and information on risks as they became evident rather than hiding them (Doherty, 2008, p98).

P45 provides a quote that illustrates a rationale based on intelligently managing known risks that may introduce significant opportunities. Often the alliance form brings out novel solutions to known risks. In a renewal project of a 100 year old sewer main, there were many unknowns about ground conditions and the existing condition of the sewer.

“...a lot of the advantages came by throwing constructors and designers in the same room. Now you don't need an alliance to do that but the alliance is set up like that that you're all co-located and once those relationships start to build, you can really get a lot of your construction ideas fed into the design early and one example I can think of was an old 100-year-old brick lined sewer that we were asked to make redundant and effectively build the new one, tunnel a new one, the construction guys went out there and thought "I reckon we can save this drain here and use it as a sleeve to push some pipe through and save a kilometre of boring" and they then got the designers and brought them out to site and asked them what their thoughts were and in the end, we were able to do that and if it was just a traditional contract, it would have come out to us with a new drain designed, we would have priced it and then we would have gone and delivered it. But you get face-to-face access with designers, the client, the client’s delivery people, their operational people, their technical people.” P45

As this example suggests, the alliance approach facilitated better handling of a known risk than would be the case using a traditional project delivery form. Often projects, such as those involving sewer renewal work, present a range of risks that can be simply and easily overcome through leveraging on the contractor’s practical knowledge linked to the designer’s expertise and knowledge, and the PO’s clarifications of preferences and objectives.

Unknown Risks
Dealing with unknown risks (unknown-known and unknown-unknown risks) poses a particular challenge to traditional and low level RBP forms because high levels of specification inhibit performance through encouraging defensive routines and associated high levels of transaction cost. In this hyper-uncertain and ambiguous context the POR and project delivery management team members need a system that allows rapid flexibility to adapt to emerging realities with high level collaboration to facilitate maximising access to relevant knowledge, skills, attitudes and experience to resolve uncertainty. In this situation, all parties know that there are risks out there that they do not know enough about to identify, plan for, and deal with. This is different to the fear of the unknown; it is more about understanding limitations of detailed knowledge, or the opportunity cost of attempting to gain that knowledge … ‘just in case’ …

Complex, rather than complicated, situations arise or, more threateningly, chaotic situations may arise and result in what is referred to as ‘unknown unknowns’. Knowledge uncertainty pertains to a class of problem where we know that we do not yet know something vital but that somebody ‘out there’ must possess that knowledge. Here the issue to be addressed is the sourcing of that expert advice. This situation falls into what Snowden (Kurtz and Snowden, 2003; Snowden and Boone, 2007) describes as being within the ‘knowable’ domain. Things are complicated and cause and effect loops are disjointed but there are patterns that can be discerned. This domain, as is the case with the ‘known’
domain (in which most of the required knowledge and information is known and there is little linear
disruption to disturb understanding cause-and-effect links) is often ordered and predictable and
explicit technical advice can be readily sought. Governments are used to delivering complicated
projects hence their bureaucrats and administrators often have sufficient expertise to manage a linear
process of developing a project brief, designing a solution, then procuring a team to deliver that
solution.

Major infrastructure projects in particular present government POs and PORs with a complex project
situation. Snowden refers to this complexity domain as being unordered because cause and effect
loops are only coherent in retrospect, and are not repeatable. Knowledge uncertainty in this domain
extends to PORs being uncertain about what it is that they don’t know but that they should know.
Complexity can relate to technical-technical, human-human interface matters or the human-technical
interfaces. The domain of chaos lies beyond complexity. Here PORs face unknown-unknowns where
they are uncertain about what they should know but that ‘unknown’ is difficult to identify, and it is
impossible to appreciate its potential impact. Both complex and chaotic situations are unordered and
they demand a non-linear approach to generating and using information and knowledge. Because
linear approaches do not work PORs are faced with the need for dynamic reasoning and an iterative
and emergent approach to problem solving and experimentation (Cooke-Davies, Cicmil, Crawford
and Richardson, 2007).

Ambiguity presents yet another set of problems for those involved in delivering projects. Ambiguity
relates to multiple and often contradictory ways that a direction, strategic aim or vital piece of
information may be interpreted. A number of theorists on decision-making offer valuable insights into
how decisions are made in practice in complex situations (Lindblom, 1959; Langley, Mintzberg,
Pitcher, Posada and Saint-Macary, 1995; Uhl-Bien and Marion, 2009; Mullaly, 2013). Problems arise
when what has been decided upon, or what appears to be a universal truth, is opportunistically
manipulated. In the gateway process (Cooper, 2005; Office of Government Commerce, 2007a), for
example, a business case may become subject to quite radical reinterpretation in a way that delivers
either a sub-optimal outcome or, worse still, a toxic or adverse outcome. This may be dismissed as
‘unintended consequences’ but ambiguity management is a real and serious part of the project front-
door to delivery interface stage (Flyvbjerg, Rothengatter and Bruzelius, 2003; Clegg, 2008).

Participant 28 provides an example of building a highway across unstable ground where there was a
known history of mine shafts being present but where no clear maps showing the locations of these
mines or their condition were available.

“We knew somewhere around there were mines, we didn't know the extent of the underground coal mines, we
hadn't acquired any land and things like that. With all that risk and the political nature we did what we always
do in coming up, we work shopped the delivery method and we also similarly work shopped the delivery method
with industry... Considering all the risk and all those constraints ...the alliance was the only one which was
going to meet that timeframe that we were tied into and to be able to manage all the risk suitably or
appropriately and all stakeholder and political issues associated with it.” P28.

Alliancing encourages early detection of situations, such as the example above. Alliances provide an
environment where the situation can more effectively and in a more timely manner be dealt with than would be
the case when traditional project procurements methods are being used.

Discussion about the Rationale for Choosing an Alliance

We have provided evidence to support the use of alliancing as a viable alternative to the traditional
transactional project delivery approach. We have demonstrated that alliancing delivers better
outcomes when deployed by both PO/PORs and NOPs who have sufficient expertise, sophistication in being able to effectively collaborate across teams. We now turn our focus on explaining why an alliancing approach might be adopted. Figure 5 suggests that the trigger conditions for deciding to adopt an alliance form of project delivery may be either internally driven or externally influenced. It also shows that the POR and NOPs must be both able to collaborate effectively and also committed to collaborating.

Figure 5 – Alliance Decision Model

The internal/external logic mix that indicates an alliance would be the appropriate choice varies with each project. There may be one overriding determinant, or there may be a combination of factors that tip the balance in favour of an alliance solution or one that closely resembles an alliance. These are discussed and explained below, using the sub-elements illustrated in Figure 2 as a guide.

**Best value** is a good example of an internal driver for selecting an alliance. This is particularly true when the identified motivation relates to best value and not VfM with its focus on only benefits that can be monetised. Another purely internal driver may be experimentation where the need for versatility is pressing and/or continuous improvement and changes in process or product or other innovation are necessary. In this situation the flexibility of contract provisions and cross-team behaviours demand an alliancing approach. Similarly, a key internal driver could highlight a relational rationale linked to alliance program lifespan learning and upskilling of in-house staff or contractors in a rural setting to ensure that over local subcontractors could achieve a standard consistent with ‘major’ best-practice sub-contractors.

The most obvious purely external driver of a decision to commit to an alliance is when faced with a crisis or emergency. An alliance provides the ability to respond quickly to the emergency because the design, contracting and POR expertise is available and flexible in the way its energies may be applied. An alliance allows flexible interpretation of priorities and implementation plans when an emergency or crisis erupts. In these cases, where the client is reimbursing the cost of direct works any re-work due to a natural external emergency can be effectively and quickly handled with no need to worry about ‘over-claims’ for damaged work. This is because all work performed is paid for automatically, and in the case of re-work, a collaborative focus on repairs rather than blame or the administration of claims for ‘extra’ money is avoided (Ross, 2003).
A second purely external driver encountered in the study was identification of situations where the competitive resource availability environment presents severe challenges. During booming economic times the issue becomes not only price escalation, or untimely availability of resources due to the balance of power shifting towards the market, but also the issue of POs potentially losing key staff from the public to the private sector. An alliance helps form a single team enabling POR staff to have exposure to and experience with private sector NOPs. This illustrates how an alliance can help the POR ensure that not only do their staff on the alliance gain valuable upskilling but that this helps their organisations avoid being ‘hollowed out’ such as when corporate memory is eroded and skills and expertise are lost that, in the longer term, may make the PO vulnerable to having less project management capabilities than their project partners.

The exposure to both known and unknown risks may influence the alliance option decision, based on a mixture of internal and external risk drivers. In terms of known risks, it may be more advantageous for the POR to accept that risk. The ability of the POR, with knowledge of a rail network system for instance, to accept certain risks in temporary rail shut-downs. It makes greater sense for the PO to accept that risk than to simply pass all risk to the contractor or designers.

Findings from study 2 suggests that dealing with unknown risks presents a challenge that is ideally suited to alliancing. Unknown risks are accompanied by uncertainty and/or ambiguity. There may be uncertainty about an aspect of the project and under normal best-practice an appropriate, estimated, contingency fund to ensure that these unknowns can be funded as they emerge. The open-book and ‘best for project’ mindset that is evident in alliances allows contingency funds to be better identified, more comprehensively understood and more effectively managed. These funds can be better understood through an open workplace culture, where the no-blame culture makes discussion of unknowns ‘safe’. The process of openly sharing information and knowledge often dissipates uncertainty and ambiguity, because the situations are discussed collegially and openly. This open-book approach also helps to minimise padding out or ‘gold plating’ estimates because the process is open to scrutiny. Genuine unknown risks can also be more rapidly and more effectively dealt with.

The behavioural component of the RBP taxonomy provides details of the specific skills, knowledge, attributes and experience (SKAE) necessary to effectively participate in an alliance from entry level through to alliance project leadership roles. SKAEs identified by Walker and Lloyd-Walker (2011) for alliancing are supported by others (Dulaimi, Ling, Ofori and De Silva, 2002; Baiden, Price and Dainty, 2003; Dainty, Cheng and Moore, 2005; Dainty, Qin and Carrillo, 2005; Baiden, Price and Dainty, 2006; Ibrahim, Costello and Wilkinson, 2013) who have studied a range of high-level project team collaboration situations. Clearly attitude is a highly relevant characteristic. Having the right skills, knowledge, and abilities, and having had project experience, is a necessary but insufficient requirement for successful high-level collaborative integrated team approaches such as alliancing. Hence when developing the rationale for undertaking an alliance there is a need to consider the additional attributes of attitude and orientation of ability and motivation to be committed into account, which could be expressed as SKAEs+.

Figure 5 indicates that if this package of characteristics cannot be established then an alliance is jeopardised. Alternatively, if participants to a project demonstrate willingness and capability to collaborate, and the internal/external logic demands high levels of collaboration between the PO/POR and NOPs, then the most effective way to design and deliver the project is to engage in an alliance, FA or high level IPD.
One final comment about the decision logic for an alliance needs to be made clear. Alliances in the construction industry are generally recognised in three forms. The most commonly understood alliance is established on a project only basis. An alliance may, however, may be formed at the start of the project development phase as a design alliance (DA). DAs are particularly appropriate in situations of high complexity and uncertainty and they can effective for the POR, design team and contractor NOPS to learn more about the project context from multiple perspectives and transform using their knowledge, transform a complex situation into a complicated or perhaps simple one through more clearly understanding and thinking through options and scenarios that present high levels of project technical, relational, organisational, governance or other dimensions of complexity. Thus a DA may be viable to be used to a point where the project delivery decision can be reassessed to include more traditional or transactional approaches. We have seen examples of this reported as case studies for example by the Australasian Alliancing Association (2008;2012). A third form alliance is sometimes referred to as a program or service alliance where a program of work as a series smaller project alliances may be bundled together to span a specified period. Often we see these as service alliances in the rail, road or water infrastructure sectors to undertake capital expenditure and operational maintenance work over a five year period for example (Alliancing Association of Australasia, 2010; Walker and Harley, 2014).

Conclusions
Drawing upon recent alliancing studies, we were able to establish that alliances generally provide sound outcomes that overcome critical problems encountered in many traditional transactional approaches to complex construction infrastructure delivery projects. The RBP taxonomy we developed and present in Figure 2, Figure 3 and Figure 4 provides a model that identifies the composition of elements that are essential for collaboration. Figure 2 illustrates the motivation and context that suggest the formation of an alliance, with the identified sub-elements for the motivation and context defining the collaborative circumstances that drive the internal and external logic to collaborate. Selected representative quotes were cited from a recent large research study into alliancing and applied to the sub-elements of element one in Figure 2. These explain the rationale for forming an alliance and this helps us answer the research question \textit{in what circumstances might highly collaborative integrated project delivery forms be more appropriate than traditional project procurement and delivery approaches?} Figure 5 summarises our research question answers. We can conclude that:

1. First, there must be a compelling logic to choose a highly collaborative integrated project delivery form of project delivery such as an alliance. This logic follows either a single overriding single driver or a combination of internal and external drivers comprising best value, emergency recovery, experimental; competitive resource availability environment; relational rationale; known risks; and unknown risks. The cited literature and quoted comments of interviewed participants provides detailed explanation of \textit{why} and \textit{how} these drivers shape an alliance project delivery decision.

2. Second, high levels of specific people-relevant expertise and ability to form alliances must be present. This means that PORs and NOPS need to be capable of developing and exercising the necessary levels of collaboration and to work within a rigorous governance framework to undertake an alliance. Figure 2, Figure 3 and Figure 4 provides a model that illustrates the framework. Figure 1 illustrates how the platform foundational facilities detailed in Figure 2 and how that supports the behavioural factors that drive collaborative normative practices detailed in Figure 3. We highlighted in this paper how the processes, routines and means detailed in Figure 4 provide the ‘teeth’ to ensure that behaviours are supported. We stress that
behaviours and intentions to collaborate are necessary but insufficient and that the model in Figure 5, when viewed in conjunction with the taxonomy, more fully answers the research question.

The RBP Collaboration Taxonomy provides a framework for analysis but we stress that it is a sensemaking tool to understand a range of project procurement and delivery choices and so ultimately its value lies in its ability to provide cogent and clear reasoning in answering the paper’s research question about what drives the decision to deliver a project through alliancing within the context of Australia.

We hasten to point out that in Study 2 that several of the subject matter experts interviewed came from the USA and spoke about the highest level of IPD that shares many similarities with alliancing in Australia. Similarly, in the UK Study 2 participants were also familiar with FAs and the T5 Agreement which share many features of a program alliance in Australia and New Zealand. Other participants interviewed from Northern Europe had experience in alliancing, FAs and other close collaboration RBP forms. We therefore argue that the RBP Collaboration Taxonomy may have wider application in understanding RBP and the basic requirements for effective collaboration more generally.

References


