

Incorporating a Human Systems Approach into Complex Infrastructure Projects – The Project Alliancing Experience

Greg Rooney

“As I hurtled through space, one thought kept crossing my mind - every part of this rocket was supplied by the lowest bidder”. John Glenn, American Astronaut.

PART 1

THE HUMAN ELEMENT IN BUILDING TRUSTING COMMERCIAL RELATIONSHIPS

The commercial, political and social world of the 21st century is interconnected at so many levels that any activity has significant levels of complexity. This creates high levels of uncertainty and ambiguity in any significant enterprise. Its greatest impact is at the human level.

The modern economy is built on the creative tension between risk-taking and innovation. This puts pressure on relationships which adds an extra level of unpredictability to any complex project. Therefore cultivating human skills, also known as ‘soft skills’, is crucial in navigating this tension.

The changing nature of knowledge has elevated soft skills into primary importance for business. No single organisation can hold a monopoly over a technical domain and in a world of increasing complexity and innovation it is the skills of building partnerships and collaboration that are important. The survival of any organisation or enterprise depends on these soft skills.

The challenge is to integrate soft skills within the management and process architecture of organisations and their alliances and leverage them to achieve better than business as usual outcomes.

Embracing this human element and establishing a culture of trust is essential for maintaining the increasingly short time at the top in the 21st century economy.

Redefining Competition

Project Alliancing is a relationship based project delivery system that is designed to leverage these soft skills. It seeks to modulate this human complexity rather than trying to constrain. It is built on maintaining creative and robust human connections to meet the challenges of complexity and ambiguity.

It does this by elevating the human dynamics over that of competitive pricing as the basis of the commercial relationship. This is established by the owner and the contractors creating an integrated team to scope and critically assess the project before a contract price is established. It is a front end loaded approach which allows the final commercial contract and price to emerge out of this human interaction. This removes competition as between the owner and the contractors over price and replacing it with the unified group competing to better a set of agreed business as usual standards. This aligns the human connection, the process that supports it and optimum outcomes.

It is different to the traditional 20th-century management and black letter contractual approaches. It is experiential in that it requires all parties including the owners to step back and allow patterns to emerge as the project moves forward. It is through this emergence that opportunities arise for innovation and creativity. It is a process that opens the door for luck and serendipity. The focus is on working as an integrated team to manage the present and to seek out its evolutionary potential.

It requires owners, contractors and managers to have a deeper understanding of the broader context in which they operate and the ability to not shy away from complexity and paradox. Because it is an evolutionary process it gives all parties the time and space to assimilate complex concepts and find novel solutions for emerging problems. The approach is to probe first then sense and respond. It is managing for emergence rather than outcome.

The unique feature of its process architecture is that all parties including the owner expressly agree to resolve all conflict internally, on the spot and without recourse to litigation or arbitration. Its foundations are built on selecting people who have the ability to develop a trusting working relationship and who can thrive in a no blame integrated team culture. Team selection is at the heart of the Project Alliancing approach.

Successful Project Alliances have resulted in project savings exceeding 20% of the estimated gross budget. It is a project delivery system that is compatible with and reflective of the emerging commercial, political and social dynamics of the 21st Century.

Redefining Value for Money

One of the challenges for governments and policymakers to overcome in working in a more relationship based process is the historic belief by politicians, treasury officials and finance departments that competition over price is the best way to achieve value for money in any project.

Much of this is based on Adam Smith's dictum that competition serves the common good and is therefore the best path to progress. It has also been assumed to be the benchmark for 'value for money'. Accordingly value for money has become inextricably linked to the concept of competition and that any perceived diminution of competition was deemed to result in an equal diminution of "value for money".

A counterview has been put forward by John Nash. Nash proposed that Adam Smith's dictum that competition served the common good was incomplete. He declared the best results are for everyone in the group doing what's best for him or herself **and** the group. This Nobel prize-winning discovery was based on symbolic logic and advanced mathematics to prove that there is a trap waiting for any non-cooperative situation

"Cooperation would lead to the best overall outcome in all ... cases, but Nash's Trap (which is now called the Nash Equilibrium) draws us by the logic of our own self-interest into a situation in which at least one of the parties fares worse but from which they can't escape without faring worse still. That is why it is such an effective trap. If we are to learn to cooperate more effectively, we need to find ways to avoid or escape from the trap." (Fisher)

The approach of one party totally transferring the risk onto other parties who lack any control over the scope of the project or outside prevailing factors is illusionary and sets off the path to the Nash trap. This is attested by the high incidents of costs blow outs, time delays, the high volume of litigation and the creation of untrusting interpersonal relationships between the participants in the traditional competitive tender processes. There is a belief that any problems that arise can be resolved by simply relying on the terms of the black letter contract and the threat of litigation or bankruptcy. The threat of being a loser or a winner in any subsequent litigation was seen as the glue to hold these relationships together.

Litigation is a classic example of the Nash Trap in which equilibrium is quickly reached between mutual losses for all parties in legal fees, lost output and profits and soured relationships.

Goodhart's Law

Competitive price tendering also breaches Goodhart's law. British Economist Charles Goodhart first advanced the idea in a 1975 paper, which later was used to criticize the Thatcher government for trying to conduct monetary policy on the basis of targets for broad and narrow money. His original formulation was:

"Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes."

- When a measure becomes a target, it ceases to be a good measure.
- This follows from individuals trying to anticipate the effect of a policy. This anticipation leads to actions which alters its outcome.
- When a feature of the economy is picked as an indicator of the economy, then it inexorably ceases to function as that indicator because people start to game it.

Setting up a competitive price as the target for an outcome of a project immediately opens the door for parties to game it. Price competition forces each tender into factoring two calculations into the makeup of their final tendered price. One will be a strategic reduction in their profit margin in order to beat off rival bidders. The other will be a calculation of the amount they believe they can claw back using time honoured variations and renegotiation strategies. This form of gambling can create an unstable foundation which often flows through to unstable commercial relationships. It effectively establishes a negative equilibrium drawing all parties into a classic Nash trap.

The consequences of this misalignment and the illusionary nature of the winning tendered price is highlighted by the fact that many projects using the traditional competitive price tender process overrun the winning tendered price by an average of between 17% and 30% (McLennan)

Project Alliancing is the application of the Nash equilibrium and Goodhart's law. The elimination of the win/lose scenario is at the heart of Project Alliancing. The process architecture of this approach is based on a shared risk based on equitable principles with all parties either winning together or all parties losing together. It has its foundations totally in the relationship sector (McLennan).

Developing and maintaining trusting relationships is the glue that binds the parties in this form of contracting. It elevates the importance of selecting people who have the ability to relate, to engage in robust and no blame communications and to jointly solve all disputes unanimously on a best for project basis. It incorporates the best aspects of human relationships into a contractual setting

The Concept of a Fair Exchange and Good Faith

Project Alliancing, at its heart, is the embodiment of the concept of a “Fair Exchange”. A fair exchange, as its name implies, is a value which achieves a mutually acceptable and sustainable commercial balance between the parties. It is the foundation for establishing trust.

For a simple purchase of goods or services the fair exchange amount is fixed at a point in time relatively close to the completion of the transaction. Haggling over the price of a carpet for example.

For complex infrastructure projects there is a greater time gap between setting the fair exchange amount and the completion of the transaction. This time gap exposes the parties to the vagaries of unforeseen and uncontrollable events that can over the period of the project tip this balance. Forcing parties to reduce their profit margins in order to win a contract creates an out of balance fair exchange can adversely affect the commercial and personal relationships and lead to a misalignment of interests and a catastrophic loss of trust.

“In recent years a considerable number of projects have not been finished, nor will they be finished. This disorder, Sir, is caused by the depressed prices frequently obtained for your works:...these cut prices are illusionary, especially as a contractor who is working at a loss is like a drowning man who clutches at straw. In the case of the contractor this means he does not pay his suppliers, cheats everyone he can, underpays his men, getting the worst, not only using the most inferior materials, but quibbling over everything and always begging forgiveness over this and that. Abandon [this type of competitive tendering] Re-establish good faith, give the estimation of the work and not refuse a reasonable payment to a contractor who will fulfil his obligations. That will always be the best transaction you will be able to find.”

Marshal Vauban, (1633 – 1707), Chief of Fortifications for Louis XIV – a letter from Sébastien Le Prestre de Vauban, Maréchal de France written 17th July 1685 from the island Belle-Isle-en-Mer (Bretagne) to Louvois (Superintendent of Buildings of France)

(Vauban 1685, Green 1991, Construction Queensland, 2001)

PART 2

THE PROJECT ALLIANCING APPROACH

Project Alliancing seeks to aim the parties towards the highest common denominator with respect to performance as opposed to forcing the parties towards the lowest common denominator on price. In the end the success of any major infrastructure project depends on performance, not the starting price.

The primary focus of the project allianceing approach falls on people and relationships. This goes well beyond improvements in inter-personal areas, such as communication, co-operation and group processes (as were the limits with “Partnering”). The whole structure of the alliance is built around an alignment of goals and risks where team selection and team work is deemed more important than competitive pricing. This occurs at all points along the supply chain, from the concept planners, through project developers to the project constructors (McLennan).

It requires the owner or government body to dispense with the notion that they are somehow not part of the project delivery phase and that they can sit back without involvement simply using the threat of litigation and so-called watertight binding contracts to protect their position. It also requires governments to develop and maintain some public service expertise sufficient to allow it to play an equal role with the non owner parties in progressing the alliance’s objectives and outcomes.

Some authorities suggest that an improvement in the project delivery environment of up to 30% is possible just through improved relationships (McLennan). The results are challenging the presumed benefits of competitive behaviours and the adversarial approach to resolving disputes.

The Core Principles of Project Allianceing

The following are examples of the core principles incorporated into most project alliances and relationship contracts:

- a change in culture from a ‘master-servant’ to a peer relationship.
- all risks and rewards are shared on an agreed equitable basis- sharing the pain and the gain.
- outcomes where all parties either win or lose.
- a collective responsibility for the project.

- all parties have an equal say and all decisions must be ones that are the best for the project.
- a 'no-blame' integrated team culture.
- full access to the resources, skills and expertise of all parties.
- a philosophy of delivering optimum commercial benefits and outstanding outcomes to all parties.
- a high performance culture with encouragement for innovative thinking.
- open and honest communication with no hidden agendas.
- support rather than blame and the honouring of all commitments made.
- an express commitment to resolve all issues within the alliance without recourse to litigation except in the case of wilful default.
- all transactions to be fully open book.
- unconditional and visible support from the top level of the participating organisations.

(Ross, 2000)

This paper looks at the successful rise of Project Alliancing in the Oil and Gas and Construction Industries in Australia over the last two decades and how the lessons can be applied to the economic imperatives of the 21st century global environment

The Birth of Project Alliancing - the Andrew Project

Project Alliancing drew its origins from the Andrew Project undertaken in the early 1990's by British Petroleum (BP) in the North Sea. BP was investigating a possible exploration site that had many difficulties and the prospects for success were at best marginal. The cost of constructing a traditional oil well in the North Sea at the time was £450 million. The Andrew site would not have been economically viable at that price. BP had to find a way of tapping this oil supply that was cost-effective. It realised that it could not use the same commercial approach it had used for the more viable sites. The process had to be sufficiently attractive to induce high quality contractors to take part this risky project.

The first step was the realisation that it had to abandon the traditional competitive tender process and the resulting standard commercial contract in which all the risks associated with the performance would fall on the contractors. BP started by selecting eight quality alliance partners with BP taking a leadership

role. The selection process was critical as BP realised technology alone would not be sufficient to achieve the outstanding results needed to make the project viable.

It was agreed by all parties that the key ingredient for success had to rest totally on the quality and robustness of relationships built up during the scoping stage going right through to construction and completion. The team had to be united in their task to bring the project in on time and within the financial constraints. Petty disputes, rivalries and blaming had to be eliminated. This was achieved by the agreement to equitably share all risks between the parties including BP and guaranteeing all parties would receive 100% of their project outgoings and agreed profit. In addition the alliance built in rewards for bettering key performance indicators and penalties for falling below a benchmarked standard.

A key ingredient was the contractual requirement that no party including BP could commence litigation against another party for mistake or negligence. This in effect bound the relationship in law and created an alignment between the core collaborative principles and the written legal documents. A contractually based entity was created where all eight parties either succeeded together or fail together. The option of some parties winning and some parties losing was expressly eliminated. This was the glue that bound the parties together.

The result for BP was the satisfactory completion of the project with savings in development capital costs of between 20%-30% on a project worth over AUD\$600m. (Gallagher and Hutchinson). The project came in at 40% below what was the standard £450 million cost for similar sites (Winch) These savings were achieved in part by all parties agreeing that the structure had to build onshore rather than at sea as was the usual approach. This allowed the structure to be completed within the short weather window and to allow the weight to be reduced by 300 tonnes. Substantial savings were also created by a leaner management team that did not have to manage and scrutinise the contract or the usual game of playing suppliers off against each other. Approximately £9 million was saved by the team generating opportunities and improvement suggestions. The motto of the project team became; "Have fun - work smart".

The most remarkable feature of this approach was the removal of competitive price tendering as a criterion for selection. It was felt that a selection process based solely on the traditional competitive tendering approach would not have worked. The parties had to be selected on their relationship building capacity alone focusing on their ability to work in a no blame collaborative team.

The lessons drawn from BP's experiences with the Andrew Project have been applied to a significant number of major infrastructure projects in Australia and

have formed the basis of what is now known as Project Alliancing and Relationship Contracting.

Overview of the Process

There are three main elements that provide the foundations for a successful Project Alliance.

- The first is a willingness by all parties, including the government or corporate owner, to commit to an understanding of the principles and philosophy of Project Alliancing. It is sometimes the case that corporate owners desire the benefits of Project Alliancing but still want to avoid any liability for risks and losses. It is better not to enter into a Project Alliance if there is a lack of understanding and acceptance of the basic principles by any party or a lack of willingness to abide by them.
- This leads to the second element. Team selection is at the heart of Project Alliancing. There are many highly qualified and experienced individuals capable of performing to a high standard who are not able to work in an integrated, no blame culture with no hidden agendas. While they have many admirable qualities, when things go wrong they have a tendency to fall back on their own devices and to resolve problems by direct intervention separate from the team. They lack an insight into the benefits of collective responsibility and the potential benefits of using the team to try and turn problems and difficulties into opportunities. When things are going well they are collaborative but when things go wrong they revert to blaming and being the boss. It is essential that this type of person is eliminated during the selection process.
- The third element is the presence of an Alliance facilitator to guide the parties during the course of the project. The facilitator's primary role is not to resolve disputes between the parties in the pure mediation sense although on occasions they might assist in that regard. The true role is to mediate between all the parties as a group and the processes that underpin the Project Alliancing cultural philosophy. When parties stray from this philosophy and fall back on their old competitive and adversarial ways then it is the facilitator's role to bring their focus back to the guiding principles. They are like a football coach who encourages the players to work together as a team while advising them on the principles of the game. The facilitator is there to keep all parties working collaboratively, resolving all conflict between themselves, focusing on bettering their key performance indicators and pushing the parties to look for savings and innovations.

A Change of Culture

Project Alliancing is still a relatively new approach to project delivery. Many of the players in the construction industry have spent decades working in the traditional competitive and adversarial environment. It is often difficult for them to make the cultural change to a more collaborative approach. They can often make the changes intellectually but strike problems when faced with day-to-day issues. It is for this reason that parties will generally need guidance as they progress through the project.

There are currently a number of individuals and organisations who offer their support for Project Alliances. They are often referred to by different names including: alliance support, alliance coach, high-performance coach, team development consultant, relationship manager, relationship adviser and cultural adviser/manager. Some use a behavioural science model concentrating on workshops while others are more hands-on working through a particular on site difficulty as a model for future behaviour.

The more long term approach is for the alliance facilitator to be imbedded with the alliance team and, through the use of regular meetings and workshops, focus on stretch goals, breakthrough opportunities, alignment development and leadership team development. The alliance facilitator also provides ongoing support for the alliance including testing that the board and the leadership team meetings are held regularly, that appropriate issues are dealt with effectively, that there are processes in place to check the health of the alliance and that the progress towards the alliance objectives and towards the stretch goals are being monitored.

Often clients will choose behavioural scientists to run workshops on teambuilding and conflict resolution. While these workshops are beneficial in teambuilding and bonding their benefits often do not last beyond the session. This was the experience of "Partnering" which found favour during the 1980s. Often when parties returned to the workplace and were faced with live conflict the relationship building lessons were quickly abandoned in favour of the traditional positional blame game.

Beyond the Concept of Partnering

Project Alliancing is one step further on from Partnering because it does not have Partnerings inbuilt misalignment between the collaborative relationship philosophy and the written contract. Partnering was still built on the foundations of the standard win/lose black letter commercial contract (AS2124 Australian Standards Contract) while Project Alliancing established a direct

alignment with its collaborative philosophy by expressly excluding the win/lose option from the written contract. This is partly why Partnering faded away as a concept and why Project Alliancing has been successfully employed in Australia over the last 16 years. For example, the total value of Alliance projects in the road, rail and water sectors in the Australian states of New South Wales, Victoria, Queensland and Western Australia over the period 2004 to 2009 was \$32 billion AUD (Department of Treasury and Finances Victoria Australia 2009 p7).

Ultimately the best way to learn and understand the Project Alliancing approach is to experience it first hand. Freud made the point that you really only know and understand what has happened in an event after you experience it. Learning or evolving arises out of experiencing that experience (Rooney). Accordingly once parties have had the experience of working through a Project Alliance project they are often better placed to fully understand and accept the culture of a collaborative no blame environment. While teambuilding and conflict resolution workshops can be beneficial they cannot replicate the experience of working through real difficulties and overcoming them using alliance principles.

PART 3

THE PROCESS ARCHITECTURE OF PROJECT ALLIANCEING

The Tender Stage

There are a number of steps in the formation of a pure or non-price competitive Project Alliance. The first is at the tender stage where the potential contractors are required, often in no more than 40 pages, to nominate how they will manage their relationships with all other parties involved in the project (Queensland Motorways). The tender documents make no mention of money nor do they seek a competitive price as part of the tender bid. Parties are required, in their documentation, to demonstrate the quality of their personnel and how they propose to work in a high performance team culture.

Usually the three best tenders are chosen for initial interviews. These interviews are often conducted in a workshop format where the interviewees work with the owner to examine the project and discuss options for achieving breakthrough performances and stretch goals. This gives the owner an opportunity to

experience working with the personnel of each group and to help it determine which would be the best relationship fit for the project. The group that is chosen becomes the preferred alliance partner and enters into an interim Project allianceing agreement.

The exclusion of money from the initial stage of the project Alliancing process is deliberate. The aim is to remove the need to undercut rival bidders on price in order to win the tender. These bids do not reflect the true costs of the project and set up an artificial and inherently false and unstable commercial relationship. Once the tender is won then the focus more often tends to move to re-examining the contract in the search for variations.

Contractors involved in the black letter fixed price contracts have, over the years, developed many strategies and tricks to claw back potential profits abandoned in order to win the tender. As a result the competitive tendering process continues to be played out by way of these renegotiations well into the project delivery phase. This situation is not conducive to establishing a stable commercial and personal relationship between the parties and has the potential to introduce even more uncertainty into the project. It embeds an adversarial culture and creates a misalignment of interests between the owner and contractors.

The Interim Project Allianceing Period

Once the preferred alliance partner is selected the parties enter into an interim project alliance period in which all parties work to critically examine the proposed scope of the project and develop the Target Cost Estimate (TCE) and the Target Outturn Cost (TOC). The TOC is an engineered cost estimate that the integrated delivery team, independently reviewed, believes will be required to deliver the defined scope of works. All variables, including the weather, have to be factored into the total cost, as once the figure is set it generally cannot be changed.

Once a final cost is established, the payments for the non-owner parties are based on a '3-limb' compensation model: reimbursement of 100% project costs on an open book basis (Limb 1); an agreed fee to cover corporate overheads and normal profit (Limb 2); and a gainshare/painshare regime (Limb 3) where the rewards for outstanding performance and the pain for poor performance are shared as to 50% by the owner and 50% on a pro-rata basis between the non-owner parties (Ross 2000). It is at this point that the owner can introduce key performance indicators for pre-agreed targets designed to add additional value to the project.

The work done by all parties during the interim alliance period is crucial to the success of the project alliance. From the owner's perspective it brings some commercial reality into the costing process. This interim project alliance period is a very challenging part of the process as it tests the capacity of the parties to engage in robust debate, to resolve differences and to develop a sense of collective responsibility for the project. If things fall apart at this stage then any party can withdraw.

Benchmarking 'Business as Usual'

One of the main tasks undertaken in Interim Project Alliance Period is for all parties to agree to a set of standard benchmarks for performance in various categories. The term "business as usual" is used to define what would be considered as the normal industry standard for completing a category of work. However, in Project Alliancing "business as usual" is only a starting benchmark. Parties are chosen primarily because they have demonstrated an ability to perform to a standard better than "business as usual". The Project Alliancing approach is based on selecting people who can work within a team framework and are able to identify and deliver what is often referred to as 'stretched' goals.

Some of these key performance areas include bringing the project in under the agreed cost, completing by a certain date, causing minimal environmental damage, deaths or injury, creating good public relations, overcoming difficult site conditions and any category that the owners deem important. These are referred to as stretched goals or key performance indicators (KPI's). All parties agree on these KPI's and agree that *all* will receive an extra reward if they better them or *all* will lose some of their profit if they do not. The KPI's are benchmarked in this interim stage to assess the level of performance that would meet the business as usual level with percentages either above or below that level that would invoke the gain or pain share provisions.

What makes this process unique is that the owner will accept half of the risk of meeting or not meeting the KPI's. The owner will generally take 50% of this risk with the remaining 50% being shared on a pro-rata basis by the contractors, designers and in some cases sub-contractors. This division aims at achieving an equitable sharing of the risks and rewards. It also reduces the opportunity of any one party gaining an advantage by threatening litigation against another party. It supports the principle that parties either all win together or all lose together.

At the successful completion of the interim project alliance period the parties sign the formal project alliance agreement. The result is the creation of a virtual

company (it is not a separate legal entity, partnership or joint venture) involving the owner and all the project participants. All decisions thereafter are required to be unanimous with no abstentions. This is a practical way of forcing the parties to focus on identifying and resolving problems and disputes immediately and on resolutions that leverage opportunities to maintain or better the KPI's.

Aligning Commercial Interests

Project Alliancing is based on a full alignment of commercial interests. This means the risks are totally shared. For instance, if the risk actually occurs then the costs is simply part of the overall project costs. This triggers the pain/gain mechanism which means that any costs over or under the TOC are shared 50-50 by the parties.

This is managed during the interim period when the TOC is being developed jointly by all parties. This includes:

- identifying all risks and opportunities
- developing ways to mitigate risks and capture opportunities
- value the risks and opportunities that remain after the mitigation step as if they actually occur. When estimating the total outturn costs (TOC) or tender there is a way of calculating allowances to be included in the estimate to cover risks (to be added to the estimate) and to allow for opportunities (savings from the estimate)
- then, based on the probability model used by estimators, arrive at an allowance for both risk and opportunity
- then build these allowances into the TOC in that they become part of the overall cost estimate
- the risk/reward mechanism then shares the overall unders and overs between the parties.

This is a risk embracing strategy. Risks can be better managed if they are identified and embraced. It is also relatively quick to establish up to the point of selecting the preferred tender. However there is more intense (and more expensive) front end loaded work undertaken in the interim Project Alliancing period. The collective expertise of the participants is tapped at this early stage to identify and anticipate problems and difficulties.

Significant time and cost savings can be achieved by not having to introduce changes and rectify defects that might otherwise have come to light once the project has commenced. It is much easier to rectify a problem in the planning

stage than when the structure is half built. As a result a number of project alliances have been able to produce outcomes that exceed a 20% reduction in the Target Cost Estimate (McLennan).

Dispute Resolution Clauses

A unique aspect of project alliances is that there is no specific alternate dispute resolution clause written into the project alliance contract. This is not a rejection of the need for dispute resolution. It is instead an acknowledgement that resolving disputes is an integral part of normal day-to-day management. It is dealt with 'in house' by the parties and not in legal offices, mediation rooms, arbitration rooms or court houses as is the case with standard win/lose commercial contracts.

Dispute resolution therefore sits directly within the sphere of the day to day management of the Alliance thereby making it a fundamental a term of the Project Alliancing contract. It is something that is incapable of being severed from the rest of the contract.

The following is an example of a clause limiting the right of parties to an alliance to make a civil claim against each other.

“A failure by any alliance participant to perform any obligation or to discharge any duty under or arising out of this agreement will not give rise to any enforceable obligation at law or in equity whatsoever save and except to the extent that the failure also constitutes wilful default”

WILFUL DEFAULT is defined as:

“An intentional act or omission by an Alliance Participant carried out with utter disregard for the harmful consequences for another Alliance Participant, but does not include any error of judgment mistake act or omission made in good faith whether negligent or not by an Alliance Participant.”

(Ross, 2000)

This is a key element of the Project Alliancing approach. It contractually removes the winners and losers option that is at the heart of traditional commercial contracts. It forces all parties to adopt a collective approach to resolving problems caused by mistakes, negligence or acts of God. Any losses are shared with no opportunity for recovery from an alliance party through litigation. Recovery can only be achieved by collectively working to make up the losses through innovation. This marks the true alignment between the

The Alliance Board and Governance Issues

Unresolved disputes and conflicts are referred to an Alliance Board made up of representatives of the owner and from each non owner participants. There are usually two off-site senior executives representing each party because there are no substitutes in the case of absentees. All decisions by the board are required to be unanimous with no abstentions.

This board has a critical governance role. The board is made up of an Alliance Manager, an Alliance Board (or Alliance Leadership Team [ALT]) and an Alliance Management Team (AMT). These are defined in the Alliance Agreement.

The governance agreement is critical in ensuring:

- the collaborative Alliance culture always prevails
- that there is effective decision-making in that difficult matters are referred from the Alliance Management Team to the board for unanimous decisions before any delay or costs are incurred.
- That the strategies of high performance and key result area (KRA) targets are met. In an Alliance the intention is to produce better than business as usual in specific areas that are important for the owner. These are referred to as KRA's

An Example of How Not to Conduct a Project Alliance

In 2007 the state of Queensland faced a severe drought with water levels in the major dams in the southeast corner of the state at record lows (less than 20% capacity). The Queensland Government was faced with the real possibility that the capital of Brisbane could run out of water. The government, for political reasons as much as anything, had to be seen to be taking urgent action. A plan was devised to create a water grid to shift water through pipelines linking the major regional dams with the city as well as the construction of two new dams. To complicate matters many of the states coal-fired power stations required vast amounts of water for cooling purposes so a second set of pipes were required to recycle used water back to the power stations. The urgency was so great that there was no time to develop and test a business case or pre-determine value for money principles.

The Premier announced that work was to commence immediately. However the only way that construction could start within a reasonably short time, without any preparatory planning or design, costings or site testing was to adopt the Project Alliancing project delivery system. The Queensland Water Commission

through its subsidiary Queensland Water Infrastructure quickly selected a number of parties using the Project Alliancing model. It issued dozens of individual project alliances for water pipelines, recycle upgrading, waste water treatment plants and for the construction of two dams.

It was accepted, even by Queensland's Treasury and Department of Finance officials, that there was no time for the traditional method of scoping the work, preparing formal documentation and submitting them to a formal competitive tender process and selection. One of the clear advantages of Project Alliances is that a well formed Project Alliance can be put together within a period of two months. To complicate matters the work was so urgent that the contractors had to start building at one end of the grid before the planning and design work had been completed at the other end.

As a consequence the initial estimates of costs calculated before the completion of the investigations and planning stages increased by \$2.4 billion. However it should be pointed out that while the principles of Project Alliancing were used to initiate this project it did involve artificial elements foreign to pure project alliances.

The most significant artificial element was that the principal body set up by the government to manage the project on its behalf was a “shell” with a few bureaucrats who had no knowledge or experience in project development, project management, design or construction. Thus they had little or no capacity to bring to the table and to perform as a real effective partner in the Alliance. The size and scope of this project required knowledge, understanding and experience from all partners.

By definition, an Alliance is an organisation of two or more partners who have vital contributions to make in that each party must be able to earn its share of the rewards or bear its share of the risks. The government side in this project did not have this capability. This particular suite of alliances were dominated by the contractors with little moderation, guidance or contribution from the principal. Just as there must be alignment with outputs there must also be an alignment with inputs.

This project demonstrated that failure can occur when one party of the Alliance is inadequately resourced in numbers and capability to perform as an effective partner. The result was that the contractors were left to their own devices. Decision-making was not balanced and administration and strategic thinking was lacking. This led to cost blowouts and an extended construction period.

An example of this passive role played by the principal body representing the government was when the Alliance team met to discuss the alternative ways of constructing pipelines over the many rivers it had to forge. When questioned as to which method should be used the response from the bureaucrats was that the contractors were the experts. It is therefore unsurprising that there were significant cost blowouts.

This project demonstrated the failure of many bureaucrats and treasury officials to understand the principal and key drivers behind the success of Project Allianceing. The blame for the blowout in costs was instead directed at Project Allianceing as a process. As a result the Queensland Government has effectively banned the use of Project Allianceing for government contracts.

However Project Alliances are still taking place in Queensland but they are now disguised as Relationship Contracting. Ignorance of the process can work both ways.

PART 4

USING THE PROJECT ALLIANCING MODEL TO REBIRTH DISTRESSED PROJECTS

There have been a number of examples of distressed infrastructure projects which have sought, by agreement, to reconstitute their commercial relationship using the Project Alliancing model. This rebirthing approach was used successfully by the Queensland Department of Main Roads on the then failing one billion dollar Gold Coast Motorway Project. Six sections of the new highway were contracted to different construction companies using the traditional price competitive tender process. A number were behind schedule and were mired in high conflict and with numerous claims against the original contract. The Department of Main Roads commissioned its chief engineer Alan McLennan to recommend a strategy to resolve the problems. He investigated the Project Alliancing approach that had been successfully trialled in the oil and gas industry and applied the principles to two distressed sections of the project. He advised the two construction groups that their current contract would be parked on a certain date and replaced with a relationship-based contract based on the Project Alliancing model.

The Department paid all legitimate claims on the original contract up to the appointed transfer date. The 1,500 disputed claims were warehoused for the duration of the new contract. The parties then started afresh focusing on

completing the project using the principles of Project Alliancing. The climate of blame and counter-blame ended immediately. All parties were so relieved to be out of a no-win situation that they embraced the core principles of Project Alliancing. The relief was harnessed into a new collective drive to complete the works within agreed costing and time limits. This was achieved.

The advantage of this approach is that it shifts the focus away from defending a particular version of the black letter agreement and back onto the ultimate goal of all parties profiting from the successful completion of the project. It is a process aimed at directing the focus away from the past and onto the future. The good relationships that were built up during the Project Alliancing period were invaluable in developing a culture of compromise that allowed the 1,500 claims made against the original hard dollar contract to be resolved out of court using the "Senior Executive Appraisal" model of in-house conflict resolution.

This template can be applied to any complex project that is at or near distress. It provides a creative alternative that can help the construction industry and their legal advisors extricate themselves from potential lose/lose situations.

CONCLUSION

Project Alliancing is something more than just a new approach to delivering complex infrastructure projects. It is a reflection of our changing society and the need to find drivers and processes that are compatible with the complexity of life in the 21st Century.

It is also recognition that technology alone will not be sufficient, of itself, to guide, commerce, politics and society through the challenges and complexities of modern commercial activity.

The distinguishing feature of the project Alliancing model is that its drivers are based totally in the relationship sector both in terms of how people are selected, how they are rewarded and how they relate to each other and resolve conflict. Project outcomes can be maximised when all parties, including the owner, create a true alignment between the project purpose, the people, their relationships, their behaviour, the delivery system and the project structure (McLennan). Project Alliancing is at its most effective when there are no gaps or breaks in that alignment. These drivers are, in a legal sense, locked into that alignment through the no-fault, no-litigation legal contract.

Project Alliancing also challenges the 20th century approach to competition. It is not a rejection of competition per se but a re-direction of the power of competition. It removes it from between the owner and the non-owner parties and places it between the Alliance as a whole and whatever the key performance indicators, including price and timing, that the owner believes will add value to the project.

There are now a significant number of individuals and contractors who have been exposed to the Project Alliancing experience and who are comfortable working in a relationship based collaborative model. The experience of working in a no blame integrated team culture often makes it difficult and professionally unpleasant to return to the hard dollar adversarial culture. Once the collaborative genie has been let out of the bottle is hard to put it back.

Like the modern Mediation movement Project Alliancing has evolved out of the need to find fresh ways of dealing with the complexities of modern commercial life. Both Mediation and Project Alliancing continue to evolve and are concrete examples of practices that trend away from the traditional hardnosed competitive and adversarial culture towards more inclusive and collaborative practices that are compatible with our modern integrated existence.

Greg Rooney is a practising mediator and arbitrator in Australia. His professional background is in law. www.gregrooney.com.au

This paper was first presented at the 1st Asian Mediation Association conference in Singapore, June 2009 – Selected as ‘Best Original Paper’.

Citation: Rooney, Greg, Incorporating a Human Systems Approach into Complex Infrastructure Projects –The Project Alliancing Experience (July 11, 2018). Available at SSRN: <https://ssrn.com/abstract=3211751>

APPENDIX 1

AUSTRALIAN PROJECT ALLIANCES 1994-2008

1994-96 Wandoo B Oil Platform WA \$377m -

\$13m under budget – completed 7.5 months less than industry standard. Winner of two national awards.

1994-97 East Spar Project WA \$250m–

Winner of Aust. Institute of Engineers highest award

1996-99 Hot Briquetted Iron WA (BHP) –

Three separate fabrication/ construction alliances

1997-00 Northside Storage Tunnel Project (Sydney Water) \$465m-

The project was fast tracked with cost over runs and unpredicted construction problems limited by cost saving initiatives. A number of design enhancements were made during the course of the project.

1998-01 National Museum of Australia ACT \$155m–

World first Project Alliance for a Building Construction Project. Achieved target opening date within tight time and budget constraints

1999-02 Woodman Point Wastewater Treatment Plant Amplification WA
\$140m

1999 Clean Fuels Project Qld \$350m

1998-1999 Penola West Project SA \$6m –

Completed ahead of schedule despite numerous externally imposed delays – 13% cost overrun

1999-00 Pelican Point Project SA \$22m –

Completed months earlier than worlds best practice. 6% under budget

1999 Norman River Bridge QLD \$5m -

Completed weeks earlier than tight target date - under budget

2000 Inner Northern Busway Sect 1 QLD \$70m –

Alliance terminated due to outside budget and political factors however alliance performed well and responded to external factors without suffering undue commercial loss.

2000 Pacific Motorway QLD \$1 billion – Package 4. A distressed project was converted in mid-stream, to a Project Alliance to overcome severe scheduling difficulties and regular scope changes. The Alliance completed work to the value of \$62 M ahead of the target schedule and near to the target cost. 1,500 claims against the distressed contract were resolved without litigation by means of a senior executive appraisal process based on the goodwill created by the alliance.

2000-02 Awoonga Dam Rising Project \$150m-

2001 Department of Defence, Project DJIMINDI Alliance -
The Anti- Submarine Warfare Lightweight Torpedo project

2001 Department of Defence, ANZAC Ship Generation Alliance > \$1 billion–
An alliance to deliver change to ANZAC Class ships to improve capacity of missile systems.

2000 Port of Brisbane Motorway Qld \$100m–

Completed 6 months ahead of schedule plus adding an extra overpass while still coming in aprox 10% under its construction budget. It achieved excellent performance on a number of non financial objects related to the environment, the community, quality and traffic. No disputes to resolve nor claims for variation.

2001-04 Sydney Water, Sewer Fix Pumping Station Program \$358m–

Completed upgrading of 250 pumping stations. Overall savings rate of 15% against target cost estimates, a saving of almost \$30m plus \$3m worth of program savings in the form of station improvements.

2003 Burnett River Dam Alliance \$150m –

Half way through the Burnett Water Dam project, the foreign parent company of the construction alliance partner went bankrupt. An alliance partner met construction obligations and the project continued without loss of production days. This was made possible due to the strength of the alliance contracts.

2003 North Queensland Gas Pipeline \$140m –
Pure alliancing model helped deliver the project on time, under budget, with stakeholder satisfaction, and no disputation.

2008 Tugan Bypass - Qld Main Roads,\$540m
competitive alliance completed 6 months in advance on budget

2002-08

- Inner Northern Busway Qld \$35m,
- Brisbane Water Enviro Alliance \$140m,
- Wivenhoe Dam Spillage Upgrade Qld \$70m,
- Burnett River Dam Alliance Qld \$150m,
- Lawrence Hargrave Drive Alliance NSW \$45m,
- Travailyn Upgrade Project Tas \$35m,
- Roe Highway Stage 7 WA \$70m,
- Northern Gateway Alliance NZ \$200m,
- New Perth Bunbury Highway WA \$370m
- Great Eastern Highway Alliance WA \$30m
- Grafton Gully Free/Flow Alliance NZ \$100m
- Ipswich Motorway Upgrade (Dinmore to Goodna section) Qld \$1.4billion

References:

Alchimie Pty Ltd June 2004, Demonstrating and Ensuring Value for Money

<http://www.alchimie.com.au/downloads/Ensuring%20Value%20for%20Money%20through%20TOC%20Process.pdf>

Construction Queensland. Wealth Creation through Equitable Asset Delivery – Final Report and Implementation Guide a report to the Queensland Government dated March 2001

Cowan, B and Davis, J Development of the ‘Competitive TOC’ Alliance – A Client Initiative

<http://esvc000907.wic056u.serverweb.com/pdfs/Paper%20on%20Competitive%20Alliances%20Ver%204.pdf>

Department of Treasury and Finances, Victoria. Project Alliancing Practitioners Guide, April 2006

<http://www.exner.com.au/News/images/Complete%20Project%20Alliance%20Guide.pdf>

Department of Treasury and Finances, Victoria. Project Alliancing Practitioners Guide, October 2010

[http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/ThePractitioners'GuidetoAllianceContracting/\\$File/The%20Practitioners'%20Guide%20to%20Alliance%20Contracting.pdf](http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/ThePractitioners'GuidetoAllianceContracting/$File/The%20Practitioners'%20Guide%20to%20Alliance%20Contracting.pdf)

Evans & Peck and The University of Melbourne . (Department of Treasury and Finances, Victoria) In Pursuit of Additional Value. A benchmarking study into alliancing in the Australian Public Sector
[http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/InPursuitofAdditionalValue/\\$File/InPursuitofAdditionalValue.pdf](http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/InPursuitofAdditionalValue/$File/InPursuitofAdditionalValue.pdf)

Fisher, L. Rock, Paper, Scissors – Game Theory in Everyday Life. Basic Books, New York.

Gallagher, John and Hutchinson, Andrew, Project Alliancing – Some Answers Department of Infrastructure, State of Victoria 2001

Green R, Macdonald D, Mitchell W and Mitchell C (1991) 'Rise and Fall and Cost Reimbursement Clauses', Department of Industrial Relations Research Series No 1, April, DIR, Canberra

McLennan. Alan, Scott. Graham, Relationships in Project Delivery - Civil Contractors Federation 2002 Annual Conference Hamilton Island 5th October 2002

http://esvc000907.wic056u.server-web.com/pdfs/Relationships_in_Project_Delivery_Paper.pdf

Queensland Motorways, Request for Proposals to Prospective Alliance Participants to join in the Port of Brisbane Motorway Alliance. Queensland Government, Department of Main Roads, 2000

Queensland Water Commission <http://www.qwc.qld.gov.au/SEQ+water+reform>

Relationship Contracting- Optimising Project Outcomes. Australian Constructors Association, 1999 <http://www.constructors.com.au/relationship-contracting/content.htm>

Rooney, Greg . The Use of Intuition in Mediation. Conflict Resolution Quarterly Vol 25 Number 2 Winter 2007, Jossey- Bass

Ross, Jim Introduction to Project Alliancing, a presentation to the Institute of Engineers 17th August 2000 Brisbane Australia.
<http://www.alliancingassociation.org/Content/Attachment/Introduction%20to%20Project%20Alliancing%20-%20Jim%20Ross%202000.pdf>

Ross, Jim Price Competition in the Alliance Selection Process. Infrastructure Delivery Alliance Forum 9th April 2008 Perth Australia
http://www.alliancingassociation.org/Content/Attachment/FOM%20June%209-reasons-for-single-DCT_C-J.%20Ross%202008.pdf

Vauban, Marshal (1633 – 1707), Chief of Fortifications for Louis XIV – a letter from *Sébastien Le Prestre de Vauban, Maréchal de France* written 17th July 1685 from the island Belle-Isle-en-Mer (Bretagne) to Louvois (Superintendent of Buildings of France) *Archives nationales de Paris*. PUBLIÉ PAR WWW.TSB-INFORMATIQUE.COM À L'ADRESSE [19:08](http://WWW.TSB-INFORMATIQUE.COM)

Winch, Graham Managing Construction Projects. Wiley-Blackwell, 2002