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# THE JOURNEY TO DELIVERED VALUE IN AUSTRALIAN PROCUREMENT

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## ABSTRACT

In line with developments overseas Australian clients are turning to considerations of value in project procurement. Until the 1980s the industry operated in a largely traditional manner however the extremely adversarial behaviour exhibited during towards the end of the decade led to a number of significant events and initiatives including the publication of “No Dispute”, the Gyles Royal Commission into the Building Industry, the Construction Industry Development Agency (CIDA) and the work of the Australian Procurement and Construction Council (APCC). A number of research projects in progress in the CRC for Construction Innovation (CRC CI) are focussing on the assessment of value and methodologies to support the delivery of value in the procurement and management of engineering and construction projects. This paper charts the emergence of several key drivers in the process and illustrates how they can be integrated into a comprehensive Decision Support System that balances value to stakeholders with project imperatives and incorporates a lessons learned data base which enriches the decision making process to optimise delivery method design and selection.

**KEYWORDS** : Construction Value, procurement, project delivery, decision support tool

## INTRODUCTION

In 1997 the Concept of Best Value was introduced by the UK Government to replace Compulsory Competitive Tendering (CCT). The government’s intention is for councils to become more enthusiastic, flexible and creative in their approach to service delivery by eradicating the rigid guidelines in place through CCT. By offering a concept of Best Value that may be interpreted, developed and applied, local authorities are able to demonstrate a continuous improvement process across service provision. A measurement system of performance indicators allows auditors to determine the authority’s position in relation to achieving Best Value and demonstrating continuous improvement, (Kelly & Hunter 2003). The CRC CI has a number of projects which focus on the attainment of better value from the project delivery process. These include the alignment of values in procurement, investigation of project culture, project diagnostics and assessment best value and benchmarking. At a national level there may be interesting new developments, according to Priest (2004) one possible implication of the new free trade agreement with the US includes the requirement to hold more public and open tenders for government contracts, in order to allow US bidders to take part.

There have been innumerable reports and enquiries into the organisation, operation and efficiency of the construction industry; much of analysis has been focussed on the fragmented organisational structure of the industry, and the lack of investment in

research and training. However in Australia we can point to a number of inquiries that have proved influential on the way the industry operates.

One of the first was an overseas study tour in 1988 conducted by directors of a number of public works agencies (NPWC) and the Australian Federation of Construction Contractors (AFCC) which released a report on a comparison of international practice against those in Australia. This report led to the publication by the Joint Working Party titled “No Dispute” in 1990 which made far reaching recommendations on changes in industry practice. The objective was to develop proposals for changes in the practices of the building and construction industry which would lead to improved practices, and better quality work, with the over-riding aim of achieving a reduction in claims and disputes. The Joint Working Party identified that the factors which promote efficient performance of projects are also the factors which eliminate or minimise the incidence of claims and disputes, and made recommendations in the following areas: equitable allocation of obligations and/or risks, selection of contractors and sub-contractors, quality of documentation, clearly defined roles of the parties, early involvement of contractors and specialist sub-contractors to ensure buildability, responsibility for industrial relations, cost management, realistic time frames, effective communication between parties, management of variations, dispute resolution, claims administration, quality assurance, alternative contract strategies, and training of industry professionals involved in project delivery.

Other inquiries which have been conducted into the efficiency of the building and construction industry include the Gyles Royal Commission, (Gyles 1992) and high profile UK reviews such as *Constructing the Team* (Latham 1994) and *Rethinking Construction* (Egan 1998). Their findings have resonance here in Australia because the processes and organisation of the Australian industry and the cultural attitude to the industry is similar. Latham challenged the industry to increase productivity by reducing costs by 30% and adopting non-adversarial arrangements and dispute resolution methods. Generally these inquiries have concluded that the characteristics of the industry which inhibit its effectiveness are:

- functional fragmentation, where a project organisation is typically made up of disparate groups.
- Lack of co-ordination and communication between the key parties,
- Adversarial contractual relationships,
- Focus on price rather than value,
- Reduction in skills,
- Industrial relations and
- Lack of focus on the industry’s customers.

The Gyles Royal Commission into Productivity in the Building Industry in New South Wales sought to encourage a cultural shift in the New South Wales construction industry by carrying out a pilot study on partnering. Gyles recommended that since the success of projects depends far more on co-operation between contracting parties than the terms of the contract, the construction industry ought to investigate the USA’s experience of partnering as a way of addressing that market’s own tendency towards litigation. The NSW public works department embraced the concept, trailing it on many projects. Another significant outcome of

the Gyles Royal Commission was the recommendation that all the public agencies in NSW group together to develop common procurement and standards. This has been successfully implemented by the Construction Procurement Steering Committee (CPSC).

In recent decades the industry has developed a range of contract strategies to overcome the perceived inefficiencies resulting from inherent fragmentation and differentiation in the traditional process. Construction management was developed in the 1960s by the US construction industry to try to fast track the process, and was very popular on the North Sea Oil projects during periods of high inflation in the 1970s, recently superseded by the CRINE initiative. Management contracting was a hybrid of construction management first developed by Arup Associates for the John Player factory in the UK in 1968. This strategy, which took advantage of the contractor's management ability while retaining competitive bidding for sub-contractors, was widely adopted. Design and Construct (D&C) places the accountability for the entire process firmly in the hands of one party, usually the contractor. Novation was introduced to provide considerably more design control for the client, whilst keeping both the design and construction risk with the contractor (RAIA, 2001). Most of these initiatives were not widely used in Australia until the 1980s. In Queensland the Department of Public Works has pioneered a hybrid of these procurement paths called Managing Contractor which combines the benefits of construction management with novation and construction input to design. They cite continued successful application of this method on major projects since the 1980s (Giles 2002).

The Egan Report's (1998) advocacy of lean production is in effect a plea for the methods developed in Japanese car manufacturing to be applied in the UK construction industry. The report recognises that the construction delivery process needs fundamental change and so the report is called "Rethinking Construction." The practical actions recommended by Egan encompass the features of partnering in the UK and USA. However, a major turning point was Egan's framework for the industry to do things "differently" rather than simply "better". The report made specific recommendations in areas such as supply chain development, product development, customer focus, processes, management skills, quality and the need to develop long-term relationships. Again Australia has determinedly embraced such new ideas with the Australian Contractors Association developing guidelines for relationship contracting, the federal government experimenting with alliancing on the new National Museum in Canberra, and recent forays into Public Private Partnerships. However Ireland's (1994) T40 theoretical study modelling the building process which has been one of the most radical and insightful has not been taken up in any meaningful way, which is a pity since the study identified potential savings of 40% of the overall time duration of construction projects.

Two federal government initiatives that have had far reaching influences on the industry are the Construction Industry Development Agency 1990-1993, which produced many excellent outcomes, the most pervasive being the development and refinement of prequalification schemes which are now widely adopted in the industry. The second was the NatBACC review which, amongst its 35 recommendations encouraged the federal government to establish a CRC to research construction issues – the genesis of the present CRC for Construction Innovation.

Thus the Australian construction industry has not only been inquisitive and self critical, but has demonstrated the courage and commitment to experiment with new ideas on live projects. These have in the main been experiments in procedural and relationship issues. As a progression from this situation the CRC CI is developing tools and products that will enhance the efficiency and effectiveness of the industry with a focus on achievement of value in project delivery.

## **CONSIDERATIONS OF VALUE IN PROJECT DELIVERY**

Several researchers in the Australian market have also identified the factors that are critical to achieving project success. Crow and Barda (2001) used case studies of twenty-eight projects which all achieved more than the client expected at the outset, based on the industry's normal performance, to identify the key driver of project success. The twenty-eight projects researched were all one-off projects for experienced clients. Crow and Barda provide a list of clients' business related needs, including reduced operating costs, increased revenues, increased functionality and improved morale of operating staff. In relation to client expectations, their findings were that "clients understand that successful projects depend on construction firms making better than normal profits. Clients want to involve the local community and the people who will use the new facility. They expect risks to be designed and managed out of projects so they deliver what was promised." (Crow and Barda, 2001)

The keys to excellence Crow and Barda identify are:

- a cooperative, non-confrontational environment,
- teamworking,
- a clear project strategy and
- a focus on users' needs.

They found that the main driver of project excellence was client leadership in creating a trusting and motivating team environment. Client leadership has been another recurrent theme in these inquiries. This parallels findings of an investigation by the Business Council of Australia (BCA 1993) which identified 7 fundamental elements that contribute to project success

- the extent of involvement of key participants at the initiating stage
- ensuring responsibility and accountability
- using and developing quality people
- establishing contract responsibilities with a contracting strategy most appropriate to particular client delivery requirements
- planning and managing industrial relations
- managing safety
- delivering quality assurance programs including their extension to suppliers.

Construction Queensland also sees the client as central to an equitable project delivery system. It says clients need an organisational culture which is focussed on quality and value for money, clients need to lead the process, need to share risks

equitably, and need to align their understanding of the project with the main construction firms involved. If these client characteristics do not exist, or cannot be implemented, the opportunities to increase project success will be limited. (CQ 2001)

The Australian Constructors' Association (ACA 1998) surveyed thirty-four of the industry's major private/public sector clients on utilising project delivery strategies based on closer alignment of client and contractor goals and a better understanding of risk-sharing. The survey identified the project delivery issues which clients agree must contribute to successful project outcomes:

- Clear project goals,
- Clear definition and understanding of the project scope,
- Clear understanding and appropriate allocation of risks,
- Agreed risk/reward arrangement,
- Appropriately skilled project staff, and
- Well-defined communications through all levels of the contracting parties with proper empowerment for decision making.

The Property Council of Australia (Crow and Barda 2001) estimate that about 10% of projects achieve excellence in terms of end user satisfaction with the main drivers being issues like client leadership, trusting relationships equitable risk sharing etc. As Roger Gyles said in the Royal Commission – 'it is the relationships that make projects successful rather than the contractual arrangements'.

In the United States the CII research project "Exceptional Projects and Methods of Improving Project Performance" (CII 1999) looked at thirty projects in the USA which were executed with exceptional results in terms of time objectives, to determine what made them different from projects of the same scope and complexity which were procured by traditional methods. Commonly it was found that a united focus, a common goal, and an atmosphere which supported the need to get the project underway, existed on exceptional projects.

Generally these projects were driven by a crisis situation such as rebuilds caused by catastrophic events, or market conditions that mandated a significant reduction in project duration. It was found that strategies that were designed to speed the project time frame had beneficial impacts on the project cost and quality as well. The type of contract was primarily negotiated, and there was a mix of cost plus (66%) and lump sum projects (33%). The following organisational factors were found to have established the environment for success on these projects:

- Team environment was supportive and positive,
- Team members were empowered to get the job done,
- Team members were relieved of their normal organisational role,
- Strong commitment by owners to achieving a successful project,
- Experienced personnel were selected to carry out roles,
- Rules were allowed to be broken, changed, or removed,
- Process was allowed to be changed,
- Amnesty (team members were allowed to move "outside the square").

These factors required owners, managers and companies to change their business processes, and work processes by relinquishing some amount of control, and being

dedicated to approaching the process in a lateral manner (CII, 1999), through aligning their objectives. Latham (1994) confirmed the value of teamwork, based on the commitment and proactive attitudes of all project participants, in boosting performance levels.

The foregoing research findings suggest a degree of concurrence amongst industry groups and client groups that key drivers of project excellence and the attainment of value in project delivery include:

- clear focus on owner's business needs, rather than lowest contract price,
- strong commitment by owners to equitable risk allocation, attention to risk assessment, analysis and management,
- co-operative and motivated teams, with experimentation in partnering, relationship contracting, alliancing and other forms,
- introduction of pre-qualification and other measures focussing on experienced or appropriately skilled key personnel and organisations

In 1998-2001 the Construction Industry, Australia (CIIA) and ARC SPIRT funded a study at QUT to explore re-engineering the project delivery process. The previous research and enquiries have clearly indicated that the focus on process and the fragmentation of the structure of the industry is of secondary importance to the motivations and leadership issues. The study developed a new model of the process and investigated a number of significant case studies. Identification of the key drivers was finalised at a major industry workshop. Thus the elements of successful project delivery are viewed in terms of alignment of objectives and agreement of value. The Decision Matrix developed by Sidwell et al (2002) described a set of generic actions which should be applied by project teams in the pursuit of these drivers of excellent project outcomes. The generic actions, to be applied throughout the project development process are listed as:

1. Value to parties.  
Seek high levels of value for all the project participants and stakeholders.
2. Alignment of objectives.  
Break the cycle of mistrust currently at work in the industry. Adopt relationship management techniques to eliminate manufactured, institutional or psychological causes of conflict.
3. Holistic process-lifecycle.  
Adopt a whole of life approach to project outcomes, including a long-term approach to shareholder value if applicable.
4. Value driven selection.  
Use a value driven selection process for all service providers rather than a purely price-driven process.
5. Eliminate duplicated effort.  
Eliminate ambiguity or confusion about roles or responsibilities, particularly about responsibility for the coordination of documentation.
6. Process not contractual arrangement.  
Achieve high standards in key performance measures by using fundamental processes rather than through existing contractual arrangements.

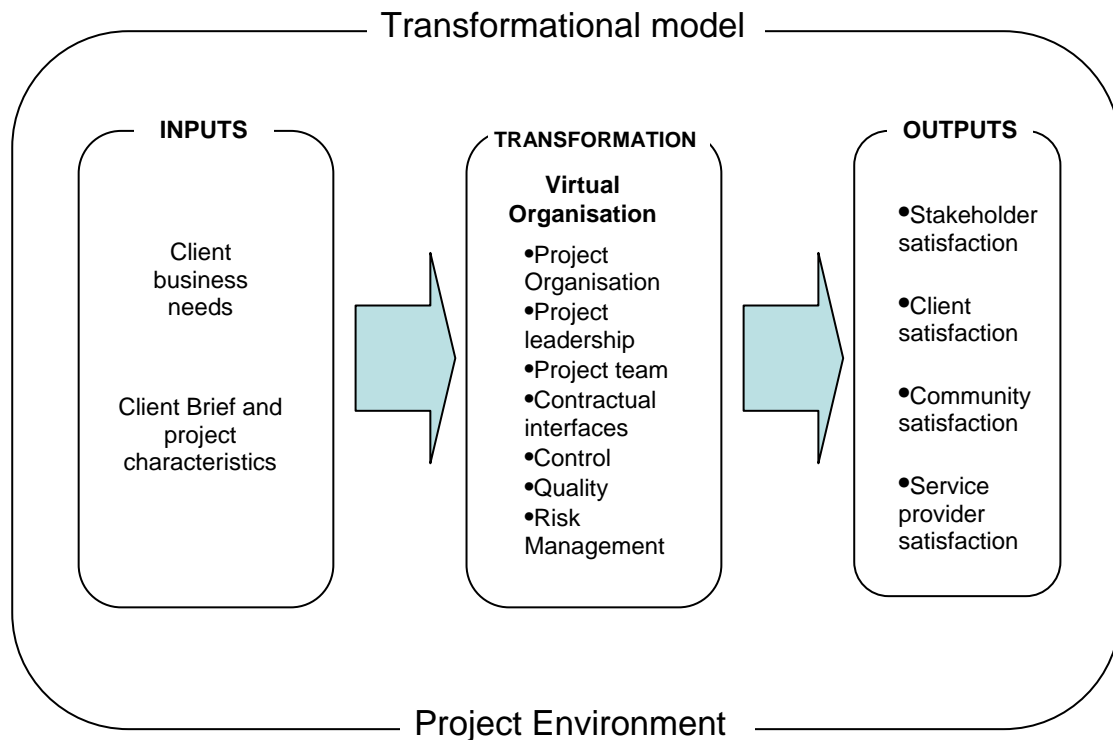
## **RESEARCH METHODOLOGY**

The outcomes of the CIIA research became the starting point for a major project on Value Alignment in Program C of the CRC CI. The research is essentially a synthesis of recent project delivery initiatives into a system of Project Delivery Decision Support Systems and resources which can be used by owners to systematically consider the relationship between their project objectives and various procurement variables in the process of selecting a project delivery strategy. The project methodology encompassed the two phases of problem solving in research: a fact finding phase and an evaluation phase. The phases actually overlapped and were iterative. The fact finding phase dealt with the generation of data about the problem, namely, the value of alignment, and the alignment of values in the construction project delivery process and about different proposed solutions. This included the review of literature about the problem and related subject areas and collection of relevant data, as well as a critical review of the previous CIIA research. The evaluation phase was concerned with the synthesis of information and system design for the fundamentals of a tool to assist in decision making with regard to procurement options, choosing among strategic elements or component elements of alternative solutions. The reference group of experts and the workshop were techniques used to translate the key drivers into the set of generic actions which deliver value throughout the process. A prototype of the tool was constructed in Excel, and then validated over a number of case data, this was then reviewed by the reference team and modified. The tool has gone through a number of testing regimes, and is now being upgraded onto a more powerful platform. Then the Project Delivery Decision Support System will be populated by a case study data base of 40 projects and thoroughly piloted on live projects by project partners in the CRC.

## **OPERATION OF THE PROJECT DELIVERY DECISION SUPPORT SYSTEM**

Figure 1 shows the original research model which expresses the transformational nature of project procurement between the inputs of client and project characteristics transforming these into desired delivery output. This model is similar to that used by Kumaraswamy and Dissanayaka (1998), and Alhazmi and McCaffer (2000). However the concept of the Project Delivery Decision Support System departs from their quantitative and predictive systems approach towards a tool which captures project data in a taxonomy oriented around the linkage between interpreted values and project outcomes. In fact the Project Delivery Decision Support System has a major component of text capturing the “lessons learned” from project participants.

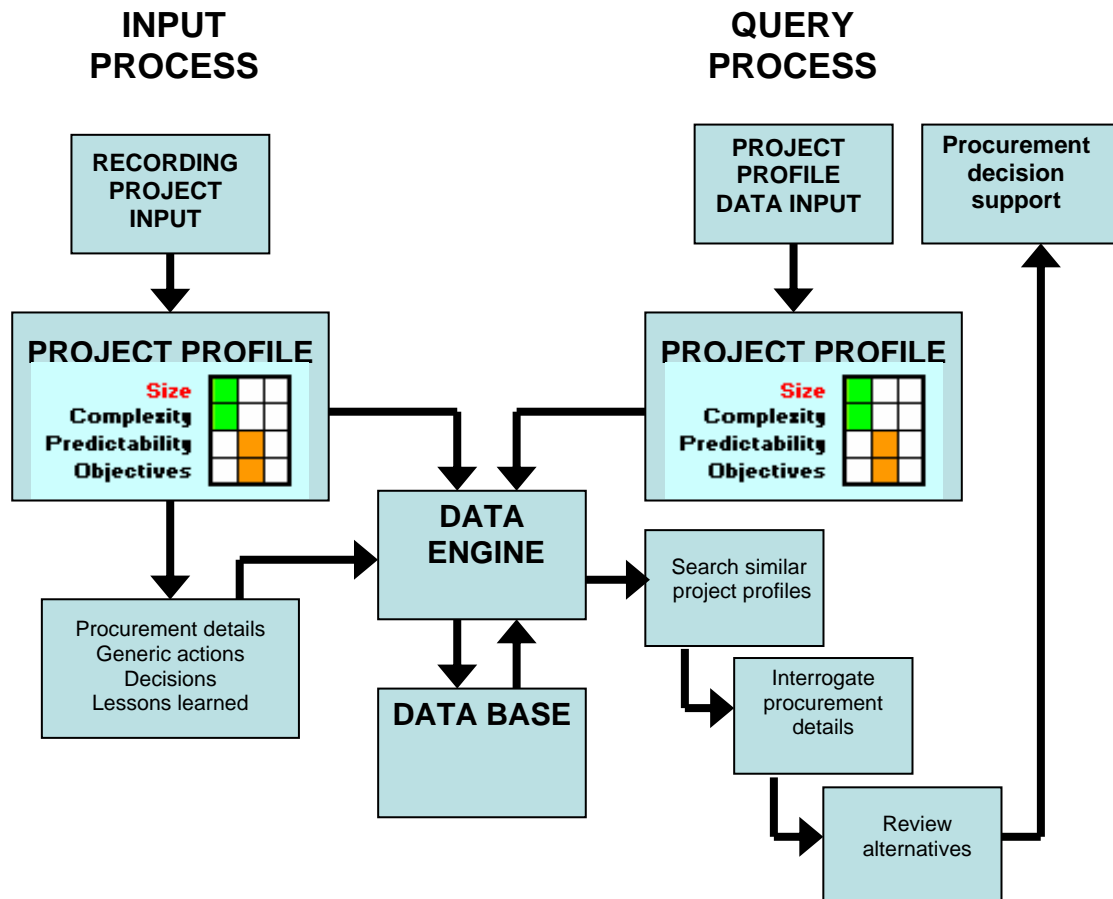




**Figure 1** – original research model

Figure 2 is a schematic of the data base and system operation. Ideally once a project is completed the project manager and the project team enter project data into the system to arrive a project profile for the project. Then data are entered in accordance with the generic actions, the procurement path, decisions taken and lessons learned at various stages in the process. The recording against the generic actions is one mechanism for expressing value in the process. At the same time there is the opportunity to enter lessons learned in relation to any aspect of the project profile.

The converse is the query activity when for a new project the enquirer enters the profile of the intended project and the Project Delivery Decision Support System facilitates the interrogation of the data base around any of the parameters. Analysis of qualitative data established that tailor-made delivery systems can be developed and these can have sufficient probity and procedural integrity to appeal to industry, private sector clients, and government clients. The Project Delivery Decision Support System tool provides both the encouragement and the means for owners and project teams to work cooperatively rather than confrontationally towards common goals.



**Figure 2** – Data entry and Inquiry schematic

## CONCLUSIONS

Australia has proved to be open to new ideas for the more effective delivery of construction projects, with ideas coming from a variety of sources - Royal Commissions, professional associations, government agencies and private industry. State and federal governments have shown a willingness to experiment, and are establishing key performance indicators and benchmarks. The research described in this paper utilised qualitative techniques to gain insights to how construction delivery process could be improved to the benefit of all stakeholders. Input to the study was provided by over fifty individuals with extensive experience in the planning and execution of public and private infrastructure projects. The CRC CI Value Alignment research has developed a Project Delivery Decision Support System which logs existing projects and then provides advice for new projects with the opportunity to record lessons learned. Not only will organisations be able to build a data base of past decisions and results, but will also be able to capture the domain expertise of staff and make this available to future teams to record project experiences to ensure lessons are learned from success, or failure.

The Project Delivery Decision Support System developed in this CRC CI project should be used by decision-makers to:

- Identify and focus on project objectives and other critical success factors early in project development.

- Consider important decision variables systematically in order to plan appropriate project delivery and procurement strategies.

If industry adopts these precepts the benefits of the research will be readily apparent in a more cohesive industry enabling more reasoned and empowered procurement decision making.

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