

Main Roads Western Australia - Integrated Services Arrangements: an innovative approach to manage Western Australia's state road network.

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ABSTRACT

This paper focuses on Main Roads Western Australia (Main Roads) experience of procuring integrated operational asset management, network operations and road maintenance services with the goal of achieving value for money by utilising principles of relationship-based contracting.

The approach adopted had regard to Main Roads' corporate strategic direction and was based on an extensive review consisting of lessons learned from the current arrangements and extensive industry consultation on how future service delivery should be undertaken. Given the key features of the replacement Integrated Services Arrangements (ISAs), Main Roads determined that an important component of the procurement process would include an assessment of the likelihood of combined Main Roads and proponent teams experiencing positive team communication, relationships and compatible cultures.

The procurement process developed was a new and innovative approach to securing a relationship-based contract. The assessment of non-cost elements of proponents' proposals was significant in the overall process. Psychometric principles were incorporated into the assessment process to enable the evaluation of the character and climate of team performance (eg. team participation, conflict, respect, frustration) in addition to the capacity of the team to deliver the contract. It is possible that this renewed process could be applied to a range of industries where clients wish to quantify the assessment of otherwise subjective concepts such as relationships, culture and team climate.

1. INTRODUCTION

Main Roads Western Australia (Main Roads) took the opportunity to learn from experience, with a view to improving capability and performance, when the existing road network maintenance arrangements approached the end of their contract durations. Commencing in 2007 an extensive review was performed that investigated: lessons learned from previous maintenance arrangements; industry consultation; and Main Roads' corporate strategic direction. An internal report [1] highlighted that "current National and International experience shows a significant increase in focus on relationships as a key element of the successful delivery of long-term maintenance arrangements". Main Roads' proposed direction was to move away from inviting tenders for a contract with comprehensive specification because, given the dynamic nature of the services required, this approach could lead to adversarial relationships. Given Main Roads' strategic objectives [2], supported by industry feedback, relationship-based contracting was identified as the preferred contract strategy.

Relationship-based contracting is a delivery method that focuses on relationships between the parties in a contract in addition to the project requirements. Alliancing, is a form of relationship-based contracting where an owner enters into a legal and commercial

agreement with one or more service providers for the delivery, operation and/or maintenance of a project or asset [3]. Main Roads' Integrated Services Arrangements (ISAs) are a form of relationship-based contract that, while founded on an alliancing model, feature a number of significant differences.

Contractor procurement methods for relationship-based contracts differ from most conventional contractor procurement in many instances [4]. Proponent (the bidding Contractor) suitability for the contract is highly dependent on the skills, character and commitment of organisations and their employees [5]. Main Roads' challenge was to ensure that any relationship-focused assessment of potential contract partners would demonstrate adherence to strict public procurement regulation.

Main Roads enlisted consulting Industrial Organisational Psychologists, PsyOpus Pty Ltd, to establish a 'relationship evaluation' process to be used in conjunction with other standard Main Roads procurement processes that include commercial and desktop evaluation of written proposals. The Methods and processes developed allowed Main Roads to employ the application of cutting edge and classical test theory processes available in organisational psychology. With the consultants' assistance a set of selection methodologies were constructed and validated to ensure they were not only rigorous but also met the stringent requirements of sound psychometric principles.

The ISA procurement process was broken down into 'cost' and 'non-cost' evaluations, with the non-cost evaluation carried out before any commercial information was considered.

The procurement process adopted by Main Roads was a new and innovative method to assess past behavior as a way of predicting future behavior and assess the internal team dynamics using a method of scoring from multiple perspectives. Using this approach, Main Roads could select the contractor with the highest likelihood of working collaboratively with Main Roads under a complex and long term relationship-based contract.

2. MAIN ROADS

Main Roads is responsible for the stewardship of the Western Australia's A\$37 billion road network of highways and main roads, including asset management, network expansion, traffic management and road user management. With a network of over 18 000 kilometres of state roads in a state of approximately 2.5 million square kilometers, it is one of the largest geographically spread road agencies in the world [6].

2.1. Strategic Direction

Main Roads' corporate strategic direction is guided by strategic planning [7]. Main Roads Strategic Plan to 2007 (2K7) was implemented in 2003 and set Main Roads' strategic direction over the years 2004 to 2007 [8,9]. When successes from 2K7 resulted in a new 'business as usual' [10] a new guiding document, Main Roads Strategic Plan 2008-2012 (2k12), was developed to cover the next four years. This plan comprises of a framework supported by five strategic areas of focus: inspiring leadership; enhancing relationships; providing the right roads for Western Australia; making roads work for the community; and creating our workforce of the future [11].

2.2. Term Network Contracts

In August 1998 Main Roads developed the Ten Year Contracting Strategy – Road Maintenance (the 1998 Strategy) that was a contracting approach to the provision of Asset Management services and Long Term Road Maintenance and Rehabilitation services [12]. This outsourcing approach was aimed to meet Main Roads' reform objectives of becoming a network manager. This outsourcing approach included eight Term Network Contracts (TNCs) (road asset management and associated maintenance and rehabilitation) and one state-wide Traffic Control Infrastructure Contract (TCIC) (maintenance and rehabilitation of electrical assets).

2.3. Integrated Services Arrangements (ISAs)

Main Roads developed a set of ISAs to replace the TNCs & TCIC on their expiry. The ISAs have the following key features [13]:

- Main Roads and the Integrated Service Providers (ISPs) will have shared objectives and collectively provide strategic leadership;
- Main Roads will have influence and control over long term asset management decision making;
- ISAs will drive needs-based asset management planning and decision making;
- ISAs will be tailored to address the specific requirements of the ISA Networks;
- ISAs will include an outcome-focused, performance specified approach to maintenance delivery similar to the TNCs;
- ISAs will operate on a 'best for network' approach, combining the best systems and people from both the public and private sector;
- ISAs will develop a culture and introduce processes to drive high levels of performance;
- ISAs will provide opportunities for the development and retention of core knowledge and skills in Main Roads, assisting Main Roads in remaining an informed purchaser;
- ISAs will provide flexibility to manage uncertainty and readily adjust to change;
- ISAs will incorporate improved risk allocation, pricing and management;
- ISAs will deliver value for money (not just lowest price) and will be structured to deliver the right asset and service outcomes at the right price;
- ISAs will not be adversarial or focused on contractual issues, but will operate within a culture of open communication and collaborative decision making;
- ISAs will use an open-book approach for transparency in pricing, payment to the ISPs and decision making; and
- ISAs will provide a culture and flexibility to invest in research and innovation.

3. SELECTION OF A PROCUREMENT APPROACH

3.1. Lessons learned

In 2007 as the TNCs were approaching the expiry of their contract durations, a 'lessons learnt' process was undertaken. The resulting internal report (the 2007 report) provided an evaluation of the first six to eight years of the TNCs, and presented the lessons learnt and opportunities for improvement [14]. In general terms the 2007 report concluded that there were opportunities for improvements that must be taken into account when developing and implementing the replacement strategy for the next generation of maintenance delivery contracts. It also recommended that a number of valuable components of TNCs be carried forward and used in future road asset management and associated maintenance delivery.

3.2. Industry consultation

Main Roads conducted further consultation with Australian and International road authorities as well as other infrastructure organisations before finalizing its proposed strategy [15] to develop ISAs. Further engagement activities were undertaken using targeted presentations and workshops with Main Roads' stakeholders to inform the development of the scope, structure and procurement of ISAs [16]. Output from this extensive consultation process was then checked for alignment with Main Roads' strategic direction, which further aided the development of the key assumptions and critical success factors underpinning the development of ISAs [17].

3.3. Form of contract

Main Roads identified that choosing the correct form of contract would be critical to the success of any new arrangement. Based on the TNC lessons learned, it was identified that the flexibility, benefits and opportunities expected from the outcome-based TNCs were not fully realized for a number of reasons [18]. One of those reasons was the adversarial nature of the form of contract used for the TNCs & TCIC. The 2007 report highlighted that "current National and International experience shows a significant increase in focus on relationships as a key element of the successful delivery of long-term maintenance arrangements" (p9) [19]. The need to maintain good relationships with ISA partners is also evident in the ISA Critical Success Factors reproduced in Table 1.

Fortunately, relationship-based contracting was a delivery method that had been utilized in the past by Main Roads with favourable outcomes [20].

The State road network of Western Australia, managed from ten Main Roads regional offices, was grouped into seven ISA Networks. An illustration of these networks is included in Figure 1.

A three-phase procurement process was used for selecting our partners for each of the seven ISA networks.

Table 1- Critical Success factors for road maintenance delivery.

Critical Success Factor	Description
Model Evaluation	
Strategic alignment	<ul style="list-style-type: none"> • Align with Government and Main Roads objectives, policies and procedures • Align interests and objectives of Main Roads, stakeholders and contractors • Form of Contract (if used) must deliver intent and objectives of chosen delivery model
Risk	<ul style="list-style-type: none"> • Allocated to party best able to manage • Pricing of risk must be transparent
Operational Asset Management	<ul style="list-style-type: none"> • Must provide best practice • Consistent achievement of required levels of service • Main Roads must retain influence over rehabilitation and resealing • Must integrate with Network Management and Road Network Operations • Requirements must be translated into drivers and measures • Planning timeframe must remain constant
Management	<ul style="list-style-type: none"> • Must incorporate strategic leadership and management support • Consistent, singular understanding of objectives and targets • Must incorporate transparency
People	<ul style="list-style-type: none"> • Must facilitate open and effective communication and relationships at all levels
Regional development	<ul style="list-style-type: none"> • Regional based delivery • Local Government involvement
Sustainability	<ul style="list-style-type: none"> • Payment to contractor must be sustainable to deliver services and return a profit • Contribute to building and maintaining capability and capacity of Main Roads, Local Government and industry • Main Roads must retain informed purchaser position
Performance	<ul style="list-style-type: none"> • Must drive innovation, ongoing improvement and outstanding performance • Performance measures must primarily focus on outcome measures • Performance measurement and reporting must be an integral part of doing business
Certainty	<ul style="list-style-type: none"> • Must maximize the certainty of funding • Must provide value for money • Appropriate balance between payment and risk/reward framework
Flexibility	<ul style="list-style-type: none"> • Must provide flexibility to readily accept change
Processes and systems	<ul style="list-style-type: none"> • Processes must be aligned and integrated • Single systems specified by Main Roads
Procurement Process	
Procurement	<ul style="list-style-type: none"> • Full life cycle procurement plan • Must not be too onerous on industry and Main Roads assessment must be based on demonstrable evidence and open book basis to ensure value for money • Packaging and agreements must be commercially attractive and viable • Form of Contract (if used) must deliver intent and objectives of chosen delivery model

Transition

- Consider extension to some TNCs
- Close out plan for TNCs and implementation plan for next generation arrangements
- Must incorporate change management

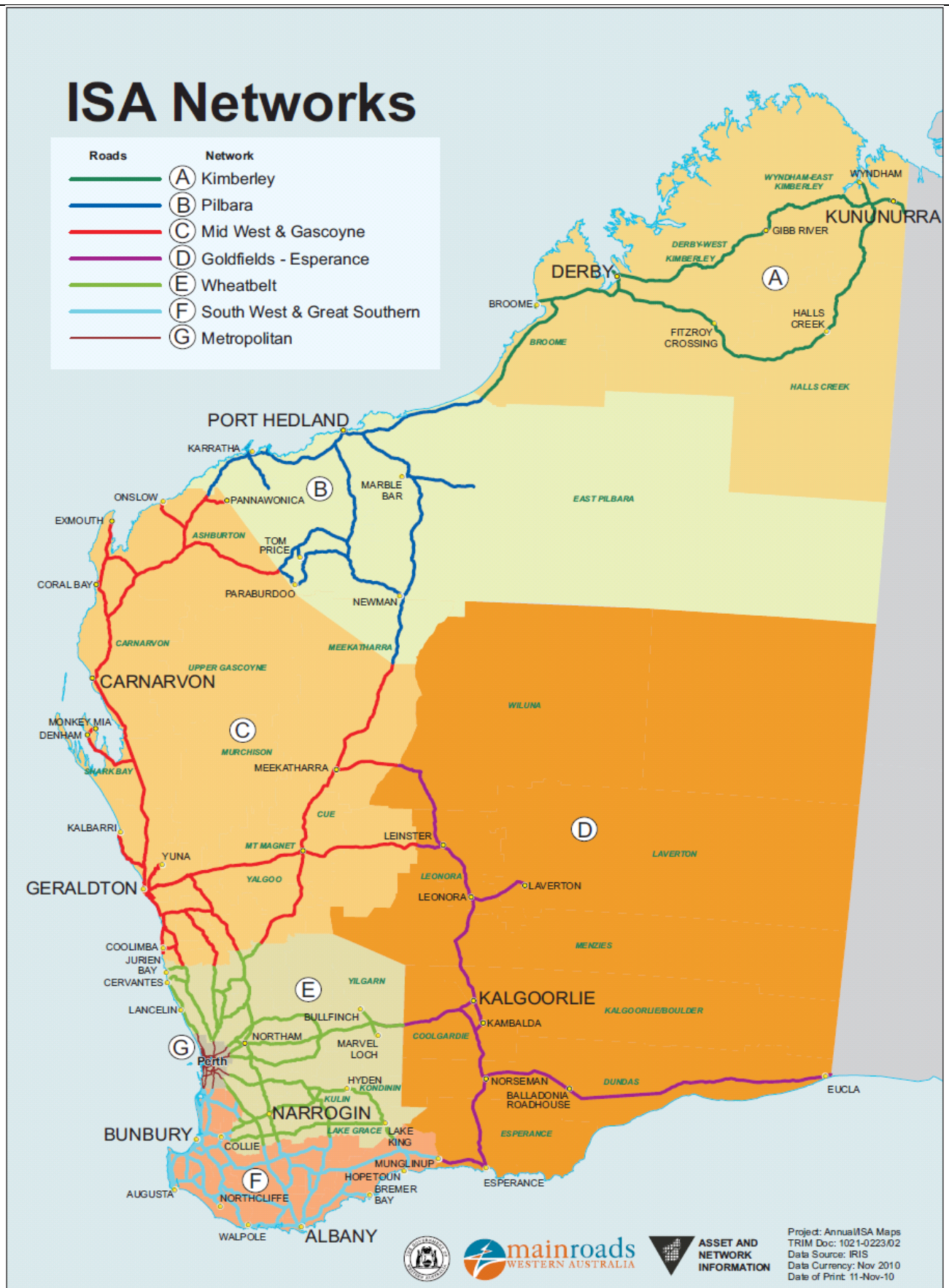


Figure 1 – ISA Network map

4. ISA PROCUREMENT PROCESS

ISA procurement was staged in three phases with different evaluation processes occurring within each phase.

The phases were broadly aligned with the typical procurement process for a large government agency contract, but elements of the non-cost relationship evaluation were modified to suit ISA requirements.

Phase 1

- ❖ Prequalification (following an Expressions of Interest process)

Phase 2

- ❖ Selection of Preferred ISP and Second Preferred ISP
 - Request for Proposals
 - Proposal Evaluation
 - ◆ Mandatory criteria and completeness check
 - ◆ Non-cost Evaluation
 - Desktop evaluation
 - Relationship evaluation
 - ◆ Presentation
 - ◆ Behavioural interview
 - ◆ Simulation exercise
 - ◆ Commercial Evaluation
 - ◆ Supplementary (legal) consideration

Phase 3

- ❖ Interim ISA Phase
 - Interim ISA Report

In phase one Main Roads called for Expressions of Interest (EOI) from Industry. The EOIs enabled Main Roads to obtain preliminary information from Respondents sufficient to select a number of Respondents from each ISA Network to participate in the Proposals phase.

Phase two involved the issue of Request for Proposals for each ISA network, and an evaluation of the Proposals received. Mandatory criteria, desktop and commercial evaluation relied on 'tried and tested' techniques common in current alliance procurement

processes. The relationship evaluation process was also based on typical procurement practice [21] but re-engineered to take into account specific project objectives that included the need for strong collaborative relationships.

Phase three was an interim ISA stage where the Preferred Proponent and Main Roads built a report (Report) that contained details on the team's position relevant to the ISA successfully meeting the ISA objectives and delivering the ISA services. In this manner the Report set out how the ISA intended to go about its business. An Evaluation Panel considered the Report and advised Main Roads on whether it should be accepted. If the Report was accepted, Main Roads and the Preferred ISP executed the ISA Agreement and began preparations for mobilisation of services. If negotiations with the Preferred ISP were unsuccessful Main Roads could call upon the Second Preferred Proponent to offer their alternative services.

5. RELATIONSHIP EVALUATION

In Australia, since the early 1990s, there has been an increasing emphasis placed on selecting project partners using non-cost competition processes and shifting focus towards the principles of good faith and trust. By 2006, collaboration and trust remained strong themes, accompanied by new principles such as: a best for project focus; unanimous decision making; best in class resource; participants are committed to developing a culture that promotes and drives outstanding outcomes; and communication is open, straight and honest [22]. Although selection methods have been evolving over the past twenty years, it is still apparent that non-price evaluation is still a subjective field. In their 2009 benchmarking study [23] the Victorian Department of Treasury and Finance stated “Selecting proponents... is difficult and arguably highly subjective when combined with extensive preparation effort by proponent teams (which include... coaching, team building events and workshop rehearsals) to present themselves to best advantage” (p 63).

Because of Main Roads’ strategic direction and the lessons learned from previous contracts, high emphasis was placed on selecting partners likely to engage in effective communication and build positive collaborative relationships with Main Roads. In order to maintain a competitive but fair and defensible selection process, efforts were made to introduce quantitative measures into all non-cost assessments (including relationship evaluation) in the ISA procurement process.

The three elements of relationship evaluation in the ISA procurement process were:

- Presentation,
- Behavioural Interview; and
- Simulation Exercise.

The presentation offered each proponent the opportunity to ‘sell’ aspects of its proposal and an opportunity to impress the evaluation panel. The behavioural interview moved the relationship evaluation from ‘sell’ to ‘tell’, allowing the panel to assess aspects of the proponent’s organisational character, behavior and values. Finally, the simulation exercise was designed to simulate an ISA working environment and measure the character of the team (both Main Roads and contractor) including underlying attitudes, character and behaviours [24].

Interviews are a common element in partner selection [25] and research indicates that the best predictor of future performance is past behavior [26]. For this reason ISA behavioural interview questions focused on proponents relaying how they reacted to a challenging situation in the past and what they had learned from that experience. The interviews were conducted by a panel of Main Roads personnel who assessed each proponent’s responses using a seven-point scoring band. Consensus scoring was not used in order to prevent regression to the mean and to avoid ‘group think’. Performance in the behavioural interview was calculated as the sum score of all items assessed in the interview divided by the total number of items, which was then converted into a percentage score expressed as the Behavioural Interview Total Score (BITS).

The simulation exercise was a critical element of relationship evaluation. Efforts were made to ensure that the simulation exercise appeared relevant and closely aligned to real-life Main Roads activities and a scoring instrument was developed to ensure that the team's performance was assessed in a quantitative, statistically valid manner.

6. SIMULATION EXERCISE VALIDITY

When using scientific methods to quantify psychological ideas (constructs) it is critical that the method is deemed valid. Validity is the extent to which a psychometric instrument measures what it claims to measure. This is done by statistical inference. It is not strictly subjective but made objective by using statistical reasoning via the measurement of psychological constructs [27,28].

6.1. Construct Validity

If a measure has construct validity, it is believed to measure what it is supposed to measure. Construct validity is an assessment of the quality of an instrument or experimental design [29]. Construct validity may be measured by its convergent validity (where measures of constructs that are expected to correlate do so), and by discriminant validity (where constructs that are expected not to relate do not relate) [30]. Construct validity is often examined using the multitrait-multimethod matrix developed by Campbell and Fiske (1959). Criterion validity is another aspect of construct validity, which is the relationship between the measure being used and other independent measures [31].

6.2. Ecological Validity

Ecological validity is a form of validity that was especially pertinent to the method of assessment used by Main Roads. For a study to possess ecological validity, the methods, materials and setting of the study must approximate the real-life situation that is under investigation [32]. For example, mock-jury research is designed to study how people might act if they were jurors during a trial, but many mock-jury studies simply provide written transcripts or summaries of trials, and do so in classroom or office settings. Such experiments do not approximate the actual look, feel and procedure of a real courtroom trial, and therefore lack ecological validity. However, the more important concern is that of external validity - if the results from such mock-jury studies generalize to *real* trials, then the research is valid as a whole, despite its ecological shortcomings. Nonetheless, improving the ecological validity of an experiment typically improves the external validity as well.

In the ISA procurement, a series of challenging tasks were assigned to the simulation exercise team members. The constructs measured examined team climate – how the team got along together (eg. team participation, conflict, respect, frustration). In order to ensure ecological validity, the tasks allocated were a mix of regular Main Roads planning processes, such as budget management/forecasting, combined with team culture building, asset management planning and emergency responses to incidents on the road network. It was important for simulation exercise team members to get lost in the moment, immerse themselves in and fully experience the simulation team dynamics.

7. THE THIRD QUADRANT

It was recognised that, prior to entering the simulation exercise, proponent team members would have been coached to behave and interact with each other in an unrealistically positive way (learned behavior) [33]. The simulation exercise was accordingly structured to place team members in a challenging environment where they were presented with 'complex problems that required reasoning and deliberation instead of straightforward

correct or incorrect responses. Teams were placed under added pressure with the imposition of challenging time constraints and conflicting task priorities.

Psychologists Robert M. Yerkes and John D. Dodson developed the Yerkes–Dodson law [34] in 1908 which has since been adapted to illustrate the empirical relationship between arousal (stress) and performance. The law demonstrates how performance increases with physiological or mental arousal, but only up to a point. When levels of arousal become too high, performance decreases. The process is often illustrated graphically as a curvilinear, inverted U-shaped curve (Figure 2). The upward part of the inverted U can be thought of as the energizing effect of arousal. The downward part is caused by negative effects of arousal on cognitive processes like attention (e.g. "tunnel vision"), memory, and problem-solving [35].

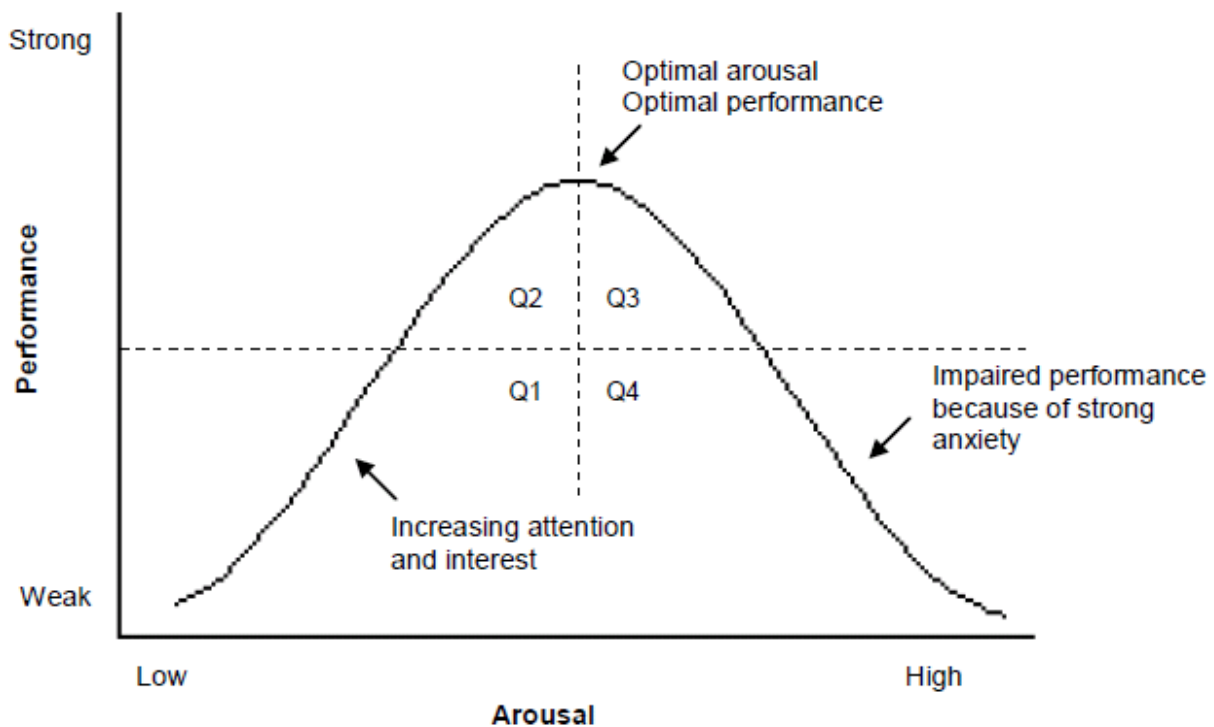


Figure 2– Hebbian version of the Yerkes Dodson Law, overlaid with four quadrants of stress.

Stress can be a result of psychological arousal, but it is important to differentiate between good (motivational) stress and harmful distress. Eustress or 'good stress' is a term first used and defined by Seyle [36]. It was differentiated from distress with eustress being an inevitable consequence of living, where distress is where demands placed on the person exceed its physiological and psychological capacity [37].

In order to expose non-learned behavior, simulation exercise tasks were calculated (using a combination of task complexity, time pressure and priority) to arouse participants and bring them to a point just beyond optimal performance, where they become too busy or mentally occupied to recall earlier coaching. When reacting to task pressures in an environment that has been ramped to just *beyond* optimal performance team members were more likely to revert to type, forgetting learned behaviours, and fall back on core behaviours and beliefs. The assigned tasks were designed with the intent of maintaining team activity in the third quadrant (see Figure 2) of arousal/stress, while care was taken to ensure that team members did not enter into the fourth quadrant (distress).

8. TEAM SYNERGY SCALE - MULTIPLE METHOD OF SCORING FROM MULTIPLE PERSPECTIVES

Immediately after conclusion of the simulation exercise, and without conferring (in order to reduce 'group think'), raters were asked to rate the performance of the leader and the team from their perspective of rating using the Team Synergy Scale (TSS).

Participants in the simulation exercise were either members of the Proponent team participating in the exercise tasks (proponent raters), Main Roads WA personnel participating in the exercise tasks (embedded raters) of Main Roads WA personnel observing the exercise (observational raters).

8.1. Multiple method

The TSS is an observational and self-reported psychometric instrument. The TSS measures three domains of team performance, these being the foundational, relational, and transformational aspects of team performance. In addition the TSS also measures seven aspects of Team Leadership performance, although leadership performance was not used in ISA assessment. Synergy is measured by the degree of agreement each team member perceives the performance of the team. High synergy equates to high team cohesion and shared understanding, low synergy indicates fragmentation and difference of perception. Sixteen constructs of team climate, listed in Table 2, were used to determine indices applied to the ISA evaluation process.

Constructs are inferred psychological states based on either behaviours observed (by observational raters) or subjective experience (of proponent and embedded raters) that are measured on a standardised psychometric scale, the TSS.

Table 2- Constructs of Team Climate

Constructs of Team Climate	
Team Stressors/Disablers	Team Resources/Enablers
Team Interpersonal Conflict	Participation Safety
Process Conflict	Support for Innovation
Task Conflict	Team Member Influence
Goal Clarity	Team Adaptation
Role Clarity	Team Resilience
Respect for Decisions	Team Efficacy – Generalised
Team Loafing	
Experiential Outcomes	
Team Mood: General Positive	Team Affect: Enthusiastic-Depressed*
Flow State	Team Affect: Calm – Anxious*
Frustration State	<i>*not included in indices</i>

Other constructs of team leadership that were measured within the TSS but not applied to the selection process are listed in Table 3.

Table 3- Constructs of Team Leadership

Constructs of Leadership
Team Leadership
Adaptive Leadership
Transactional Leadership
Transformational Leadership
Selfless Leadership
Passive/Avoidant Leadership
Directorial Leadership
Leadership Effectiveness

Ratings of team leadership, scored in the TSS, were not included in calculation of the evaluation indices because the team leader in the simulation exercises was not the same person who would lead the ISA teams after the award of Contract.

8.2. Multiple perspectives

By measuring a number of different constructs within the same test, and by evaluating performance from the viewpoints, of different groups of raters, PsyOpus were able to ensure that the TSS was measuring what it is supposed to measure - how well the team as a whole could work together.

Assessing holistic team performance draws upon Gestalt principles. Gestalt is a German word for which we have no immediate English translation and means 'whole', 'complete', or 'pattern' [38]. Early Gestalt psychologists studied perception and concluded that people are hard-wired to see the whole pattern rather than the constituting parts [39]. We make sense of a vast array of data and stimuli by learning to clump them together and giving them meaningful labels. For example, when talking to a friend we do not see eyes, nose, mouth, cheeks - we see a face.

In the case of the ISA procurement process, instead of focusing on how well individuals or proponent teams performed, raters were asked questions relating to how the combined (Main Roads and proponent) team performed as a whole. In this sense we were measuring the team gestalt and not the individual or sum of the parts. In other words the unit of measurement was the whole team and not individuals or the proponent sub-set of the team.

9. DETECTING THE BEHAVIOUR OF 'FAKING GOOD'

Aside from utilising simulation exercise tasks that were calculated to draw out 'real' behavior, statistical methods were also employed to moderate performance scores. The TSS was designed to take into account proponents' tendency to 'fake good' (exhibiting learned behaviours that may not necessarily be an individual's natural reaction to a situation or environment) in an attempt to artificially raise their performance score.

Individual scores recorded in the Team Synergy Scale (TSS) instrument were used to create two key indicies:

- the Team Performance Index (TPI); and

- the Team Synergy Index (TSI).

These were later combined to generate a final score - the Overall Performance and Synergy Index (OPSI), a final global percentage score of team performance on the simulation exercise that factors in proponents' over or under rating their team performance.

9.1. Team Performance Index.

The TPI is a measure of the overall team performance calculated from the total of sixteen core constructs, listed in Table 2, measured within the TSS. The TPI takes the mean of all the sixteen team climate constructs, and this score is expressed as a percentage of the maximum possible score. The TPI is a composite score that is calculated on the ratings made by the embedded and observational raters only. This performance index provided information on how well or poorly the team had performed in the simulation exercise.

9.2. Team Synergy Index.

Based, again, on recognition that proponent team members would have received coaching to appear more agreeable; polite; cooperative; etc. and this behaviour will correspond to ratings of their own performance, a statistical measure of this tendency was created.

The Team Synergy Index (TSI) measures the similarity in the scores of individuals' perceptions of the team's climate. This score allowed comparison of how close the perceptions of the team's performance are between the two perspectives by comparing scores of observational and embedded raters against proponent raters. In simpler terms, synergy can be thought of as the level of agreement between the two parties.

Where a large difference exists between the proponents' ratings of their team's performance and those ratings made by observers and embedded raters this will produce a low synergy score because there is poor agreement between the two perspectives. Performance assessment where there is a tight agreement between the scores this will produce a high synergy score. Synergy is different to performance because it measures not the 'extent' of the team's performance (accounted for in the TPI), but the 'degree' to which different perspectives observe the same level of performance. For ease of interpretation this index is expressed as a percentage of the maximum possible score.

Apart from detecting 'faking good' behavior, the TSI also allows for accurate scoring of peak performing teams.

Although rare, a team can achieve outstanding performance when there is high team efficacy, a high internal locus of control (belief in their collective ability to control events within the workshop) and a strong internal (team) belief that all challenges can be met. Teams that perform well are usually honestly critical of their performance, are less likely to over-rate performance and are therefore able to achieve a high synergy score.

9.3. Overall Performance and Synergy Index

The OPSI was a new and innovative scoring method because it used a calculation of score inflation (TSI), to moderate the scoring of team performance (TPI). In this manner the TSI reduces the effects of social desirability or inflating performance scores particularly by proponent raters. The interaction between Synergy and Performance for each of the sixteen TSS constructs is estimated, and the OPSI represents the average (expressed as a percentage of the maximum possible score) of these sixteen interactions when added to estimates of performance.

10. CONCLUSION

Main Roads WA has used a new and innovative approach to procure the Integrated Services Agreements to secure effective and efficient management of road systems.

Following consultation, implementation of lessons learnt and alignment to 2k12 there was a strategic level consideration of whether the model would meet Main Roads' future needs, particularly in terms of Main Roads maintaining capability and capacity skills in Operational Asset Management and maintenance delivery.

On the whole, many providers had the capacity to deliver the core services required, but proponent character, and the likelihood of them working collaboratively with Main Roads, was determined as critical to predicting the likelihood of success and the potential ability to deliver great outcomes.

In order to ensure that relationship objectives were included in the ISA assessment process, a tailored approach to procurement was used that focused on relationship evaluation. The use of social science, including psychometrics, is a statistically derived, legally defensible method of measuring and comparing relationships and character. Psychometric principles were incorporated into the assessment process to ensure that ISA assessment was a transparent and quantitative process. By using these methods it became possible to calculate the probabilities of teams having the same character.

The use of a synergy index to score the simulation exercise component of relationship evaluation is innovative in its application to performance assessment.

Along with measuring perceived team performance from a range of individual perspectives, the TSS measures how honestly the proponent is able to assess their performance, based on the pressures of social desirability and the tendency to 'fake good'. If scores are exaggerated in an attempt to impress (by providing responses that are over-rated when compared to others), this will reduce the synergy and result in the proponent scoring poorly. If the raters were honestly critical of their performance and had a closely aligned perception of team performance it was possible to achieve high synergy.

Although a quantitative procurement method was used to select ISA partners, it is only possible to draw qualitative conclusions when assessing whether Main Roads' selection process was successful. Assessing a new selection process using quantitative methods can be time consuming and would generally require a sample population greater than 100. Rigorous assessment of a new selection processes is typically undertaken by large employers with high recruitment, such as large retailers and international service providers, who are able to test their selection process on several hundred employees. The process used to assess a new selection process is to apply both old and new selection processes to a single intake. Results of the new selection process are recorded, but selection is based on the original (old) process. If Main Roads were to have used this process they, as client (employer) would then track contractor (employee) success and, after a period of time, review whether contractors' (employees') success could have been better predicted using the new method. An assessment would then have been made as to which selection process should be used in the future. Unfortunately Main Roads did not have the time or ability to undertake this assessment because their TNC contracts were expiring and there was a need to find new service providers in a relatively short timeframe.

Main Roads also had a sample population of seven when a desirable sample would be greater than 100 to improve statistical significance. Many other organisations may find themselves in the same situation where they are unable to undertake in-house research before committing to a new selection method. Consider weather forecasting as an analogy: We know that a weather forecast may not be 100% accurate but, since most households lack knowledge and equipment to run their own meteorological station, many will place their trust in weather forecasters as the most reliable source of weather information. In a similar manner, many innovative organisations must defer to subject matter experts when utilising a new or novel approach.

Key practices used in ISA procurement, including the relationship evaluation process and utilising psychometric principles in team and individual performance selection, could be applied to wider use in different industries, especially where it is important to defend procurement based on subjective properties such as relationship compatibility.

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