SELECTION MATTERS - IN ASSEMBLING TEAMS FOR SUCCESSFUL PPPS

M.M. Kumaraswamy[1], F.Y.Y. Ling[2], A.M. Anvuur[1], M.M. Rahman[3]
mohan@hkucc.hku.hk
Dept. of Civil Engineering, The University of Hong Kong, Hong Kong SAR, China[1]
University of Glamorgan, United Kingdom[2], National University of Singapore, Singapore [3]

ABSTRACT

This paper integrates two research streams in addressing an increasingly important, but still complex question confronting both developing and developed countries: on how best to mobilise suitable and sustainable teams for long term PPPs (Public Private Partnerships) in delivering valuable infrastructure. Research outcomes from an investigation into constructing 'relationally integrated teams' for better construction project performance, are fed into a framework that is conceptualised for generating and sustaining win-win relationships in a necessarily longer-term PPP scenario. While initiated from Hong Kong, the investigations yielded (1) positive outcomes from a multi-country survey on the potential for developing relational contracting regimes and integrated teamworking scenarios, and (2) encouraging feedback on the conceptual framework, from internationally experienced PPP experts. The foregoing outcomes are synergised, in formulating pointers towards improved team selection for more successful PPPs. The proposed framework targets envisaged synergies that should feed-forward into more sustainable infrastructure, and thereby into more sustainable development.

Keywords: Public Private Partnerships, Sustainability, Team selection, Teamworking.

1. INTRODUCTION

Historically, many countries have experimented with the extremes of entrusting socio-economic development, either entirely to the government/ public sector, or totally to market forces/ private sector. Some such excursions have led to disasters, and even complete reversals following violent upheavals. A 'middle road' of Public Private Partnerships (PPPs) has been available for centuries e.g. going back to the ten year concession of commercial exploration of the Guinea Gulf awarded to a sailor Fernao Gomes by the King of Portugal in 1469 in exchange for the 'discovery of new lands' (Branco et al., 2006). However, the popularity of PPPs has ebbed and flowed with the varying needs of the times and levels of success achieved e.g. as governments play a bigger role during crises, such as wars and in times of economic depression.

The recent resurgence of interest in PPPs in the last two decades has moved from an initial phase of essentially seeking private funds to finance urgent infrastructure development in developing countries; to a search for flexible efficiencies in both developed and developing economies. The efficiencies are expected to result in superior performance levels in creating and managing (not just 'maintaining') assets that include not only physical infrastructure such as roads, bridges and power stations, but also schools, hospitals and prisons. This 'second generation' of PPPs thus calls for

a wider conceptualisation of these partnerships, with an emphasis on 'value for money' (Anvuur and Kumaraswamy, 2006). However, the 'middle road' is not a clear path. Also, those pursuing PPPs must cross dangerous mine fields in any case (Ogunlana, 2005), given the many more variables, uncertainties and lack of experience in dealing with such complex scenarios. Furthermore, the long time frames of most concessions impose an extra dimension, demanding that PPPs should not just be 'successful' but sustainably so.

Meanwhile, it is increasingly evident that high performance levels in infrastructure development and management depend not just on streamlined structures and systems, but also on integrated teamworking (Construction 21 1999; CIRC, 2001; Constructing Excellence, 2004). Taken together with the needs for sustainable performance levels in PPPs as above, these highlight the imperative for assembling excellent teams who can work together into the long term future in infrastructure development and management. This paper therefore applies and extrapolates research findings on factors facilitating relationally integrated project teams, to present a conceptual framework aimed at developing and sustaining good relationships and performance levels throughout the PPP time frame. Feedback from a group of international PPP experts is summarised to indicate the suitability of the framework and its proposed further development.

The timeliness of the above applications and developments are further justified by recent research elsewhere. For example, (1) Zhang and AbouRizk (2006) aim 'to develop a relational concession framework' for PPPs in infrastructure development; and (2) Chen et al. (2006) proposed a decision support model to evaluate (a) the 'sustainable performance potential of partner candidates' in terms of environmental consciousness and sustainable performance, as well as (b) the sustainability of such construction partnerships, for construction projects in general. The latter can thus be usefully applied to PPPs where sustainability is seen to be more significant, given the much longer time frames.

2. TEAM-BUILDING

Teams, Teamworking and Integration

Teams are more than just working groups. Indeed they are groups of people with complementary skills, a common purpose and mutually accountable for its achievements, with members being mutually supportive in working together towards their goal (Constructing Excellence, 2004). Many models have been developed to understand and promote higher performance levels in teams in general (e.g. Rippin, 2002; Belbin, 2004). However, in the construction industry, specialisation over the centuries has led to fragmented project teams. More recently, this has been deplored as unproductive (e.g. Latham 1994), because the advantages of specialisation have been overwhelmed by the difficulties of co-ordinating inputs and integrating outputs.

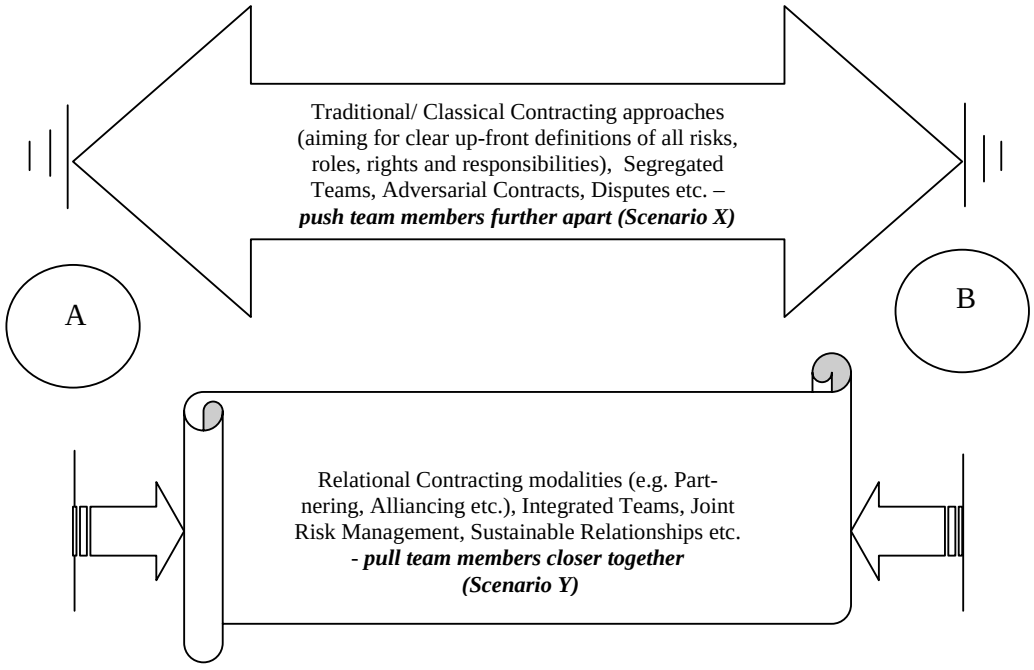
To counteract this problem, clarion calls for integrated teams have echoed across the globe in the last two decades (e.g. Egan, 1998; ISR, 1999; CIRC, 2001; Constructing Excellence, 2004). However, the calls for integrated teams in Singapore, focused more on organisational or 'structural' integration, in terms of linking the functions of design and construction in design & build contracts. On the other hand, the UK, Australia and

Hong Kong Reports recognised the need for what has recently been termed 'relationally integrated teams (Kumaraswamy et al., 2005a), that require more than just organisational or functional integration of structures or even systems.

Constructing Relationally Integrated Project Teams (RIPTs)

Appropriate team selection by itself has been recognised as critical to the success of construction projects in general. To achieve this, there has been a significant shift from the previous 'lowest price wins' paradigm to incorporating non-price criteria in selecting contractors (Kumaraswamy and Walker, 1999) and other supply chain partners (Palaneeswaran et al., 2001) and indeed even more so in PPPs e.g. in selecting BOT concessionaires (Zhang et al., 2002). However, given the above noted recent emphasis on 'relational integration' in teams, it was felt useful to explore this particular non-price criterion in greater depth.

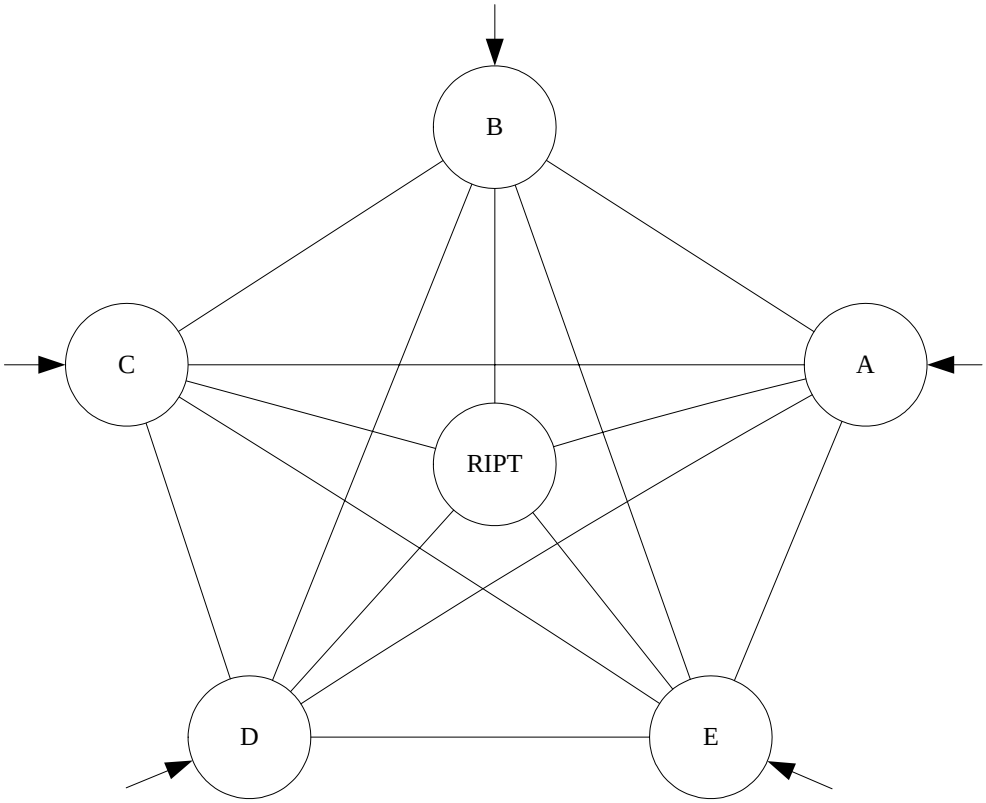
Growing recommendations for 'relational' approaches are justified (a) in practice, by successful partnering and alliancing arrangements (Bennett and Jayes, 1998; Hauck et al., 2004); and (b) in theory, by the benefits of superseding rigid dispute-generating traditional contracts with relational contracting (Macneil, 1974) that can empower joint risk management between partners (Rahman and Kumaraswamy, 2002). Relational contracting reduces reliance on contract documents, hence decreasing the numbers and complexities of formal transactions, as well as friction and disputes. It enables a focus on common objectives, including value for money and could generate the co-operation that is needed for project success (Phua and Rowlinson, 2004). Relational contracting approaches could thus counteract the 'push apart' force fields of the classical contracting approaches by pulling together each pair of team members as in Figure 1. They could work closer together and co-operate better, if the relational forces are stronger than the traditional contracting forces pushing them apart.



NOTE: The above compares two potential scenarios X and Y

Figure 1: Potential Push and Pull forces between any two Team-members A and B

This concept could be extrapolated for pulling together the many organisations now found in most construction projects into a relationally integrated project team as in Figure 2. Multiple participants in PPP projects could particularly benefit from such improved relationships and teamworking, given the long term nature of their 'multiple marriage'. Furthermore, the stakes are much higher in such necessarily multi-objective projects that would involve operation, maintenance and other aspects of asset management, and hence multiple performance criteria.



A, B, C, D, E are stakeholders
RIPT - Relationally Integrated Project Team
NOTE: lines between stakeholders indicate 'relationships', and become shorter as they become 'closer'

Figure 2: Relationally Integrating larger PPP Teams

For example, Kumaraswamy et al. (2005b) described how the time dimension could transform JRM (Joint Risk Management) concerns and efforts into JSRM (Joint Sustainability Risk Management) in order to jointly address the sustainability of the assets. This could feed into more durable designs including specifications for materials, constructability, environmentally friendly construction methods, better maintainability and operatability. Apart from this sustainability of the physical infrastructure assets, the sustainability of the team relationships themselves is the other crucial aspect to be considered in PPPs. This will be explored further in the next section on Sustainable Relationally Integrated Teams (SRITs).

Meanwhile, a multi-country survey of cross-sections of Australian, Hong Kong, Dutch, Singaporean and UK construction practitioners, revealed a readiness to incorporate relational contracting and integrated team working into their projects, with a view to

enhance performance levels (Rahman et al., 2005). Interestingly, there was clear evidence of a deep appreciation of the need for constructing relationally integrated project teams (RIPTs) in Singapore as well (Kumaraswamy et al., 2005a), although the C21 (1999) Report had previously focused on structural (functional) integration unlike the Australian, UK and Hong Kong Reports that had stressed integrated relationships already. For example in Singapore, 27 factors facilitating integrated project teams and 26 factors deterring integrated project teams were found to be significant out of 28 and 31 hypothesised factors respectively (Kumaraswamy et al., 2005a). Such knowledge could aid the construction of RIPTs in different countries or regions.

3. SUSTAINABLE RELATIONALLY INTEGRATED PROJECT TEAMS (SRITs)

Developing an overall Framework and a SRIT shortlisting/ prequalification Model

Moving from RIPTs in shorter term projects, to the longer term PPP scenario, would superimpose additional needs, such as for sustainable relationships and JSRM as noted in the penultimate paragraph in the above section, for what may be termed SRITs as above. These further imperatives call for additional selection criteria in the choice of PPP teams e.g. in assessing the potential for sustainable relationships. An example of a possible approach to select SRITs for PPPs was conceptualised and used in a survey of experts in 2005. Summarised extracts from a detailed 10 page description issued along with the questionnaire are presented below:

The conceptualised PPP team selection approach focuses on short-listing/ prequalification, and ties performance on (1) 'hard/technical' (2) 'relational' and (3) 'sustainability' factors into an integrated framework, along with tools for evaluating such performance. It is suggested that such an integrated approach offers great synergies and better assurance of sustainable infrastructure. While many short-listing/ prequalification systems have been developed to evaluate against hard/ technical criteria, only a few provide for useful assessments of relational criteria, and even fewer consider sustainability factors.

What is presented here is for the shortlisting/ prequalification only. It therefore focuses on team capacities and potential, based on track record etc, and not (at this stage) on other criteria needed for evaluating PPP proposals, e.g., the financial and technical packages actually offered for a given project. The proposed shortlisting system would provide for: (a) scoring against important factors under all three categories in the above paragraph, and (b) combining the resulting scores appropriately in a given scenario. The 'relational capability' and 'sustainability potential' scores, in addition to performance against hard/ technical criteria, can be stored in continuously updated databanks of public or large private clients to provide information on a viable supply network. The threshold performance scores defined by the client organisation can determine membership of this network. Tendering consortia with members belonging to these supply networks who respond to an Expression of Interest (EOI), may then be assessed for their eligibility e.g. at prequalification stage (or even post-qualification stage), by comparing their (1)

technical competence, (2) relational capacity and (3) 'sustainsivity' (conceptualised here to mean 'sensitivity to key sustainability issues').

The combined score for the past performance of each tenderer is the sum of the weighted scores in the technical, relational and sustainability assessments. Then the Past Performance Score of the i^{th} applicant consortium can be computed as:

Past Performance Score$_i$ = $W_T T_i + W_R R_i + W_S S_i$

where, W_T , W_R and W_S are the chosen weightings applied to the technical, relational and sustainsivity (see above) scores respectively, where $W_T + W_R + W_S = 1$; and T_i, R_i and S_i, are the respective technical, relational and sustainsivity scores for the i^{th} consortium expressing an interest to tender. The weightings would depend on the relative importance of the T, R and S priorities on any given project. Therefore they should be assigned by the project decision-makers. The scores are based on the assessments of each of the applicants. Furthermore, each applicant is assumed to be a consortium of companies including designers, constructors and operators. The T_i, R_i and S_i referred to above are therefore, the averages of the technical, relational and sustainsivity scores respectively of the individual companies constituting the respective applicant consortium. For example, the technical competence score, T_i of the i^{th} consortium can be given by:

$T_i = \frac{1}{n}\sum_{j=1}^{n} t_j$ where, t_j is the technical competence score for the j^{th} member of the i^{th} consortium, which incorporates n companies.

Alternatively, these t_j scores may also be weighted before summation, by the relative importance of their expected contribution. If no performance records exist for a particular member of a consortium, the scores can be assumed to be the average of those of the other companies in that consortium. However, if no performance record exists for any member of a consortium, the past performance score can be the average of the past performance scores attained by the other applicant consortia. While this adds to the client risks, it is a way to incorporate new progressive companies and thereby invigorate existing supply chains. A deliberate policy may be formulated to short-list only one such 'completely new' consortium in any major prequalification.

These Past Performance Scores can then be used as the basis for short-listing (pre-qualifying) companies to respond to a formal Request for Proposals (RFP). Since each short-listed tendering consortium should have the minimal relational capacities, their proposals at this stage should be assessed based on how well they respond to the project specific criteria outlined in the RFP, the price tendered for the range of services required and their value contributions to the development and management of the asset. After the selection of the preferred bidders, structured team building workshops can be organised to promote cooperative interaction between the contracting parties and align their respective project objectives as in Figure 3. During these workshops contractual adjustment mechanisms, issue resolution protocols, incentive mechanisms and team interaction protocols can be negotiated. Agreed project objectives comprising technical (e.g. schedule and quality/ performance levels as well as financial and socio-economic), relational (e.g. teamwork and openness) and sustainability (e.g. reducing environmental impact) targets can then be set out in a Partnering Charter or Alliance Agreement.

The assembled PPP project team will then be able to effectively mobilise their various individual relational qualities to synergistically interact, collaborate and deliver the

'sustainable' product/ service. The joint problem solving initiatives can then be extended to cover both risk and sustainability issues. This integrated approach contributes directly to sustainable infrastructure and indirectly through the longer-term and wider contributions via 'sustainable relationships' through relationship building and 'knowledge-building' for example, of critical success factors that will then be incorporated in the 'knowledge base' as in Figure 3. Through this approach, it is expected to focus more attention on increasingly important considerations such as efficient use of resources, supporting desirable natural environments, improving value for money, providing customer satisfaction, facilitating flexibility for user changes and enhancing the quality of life. A focus on these considerations will clearly contribute to more sustainable infrastructure and ultimately, sustainable development as also shown in the overarching broad framework in Figure 3.

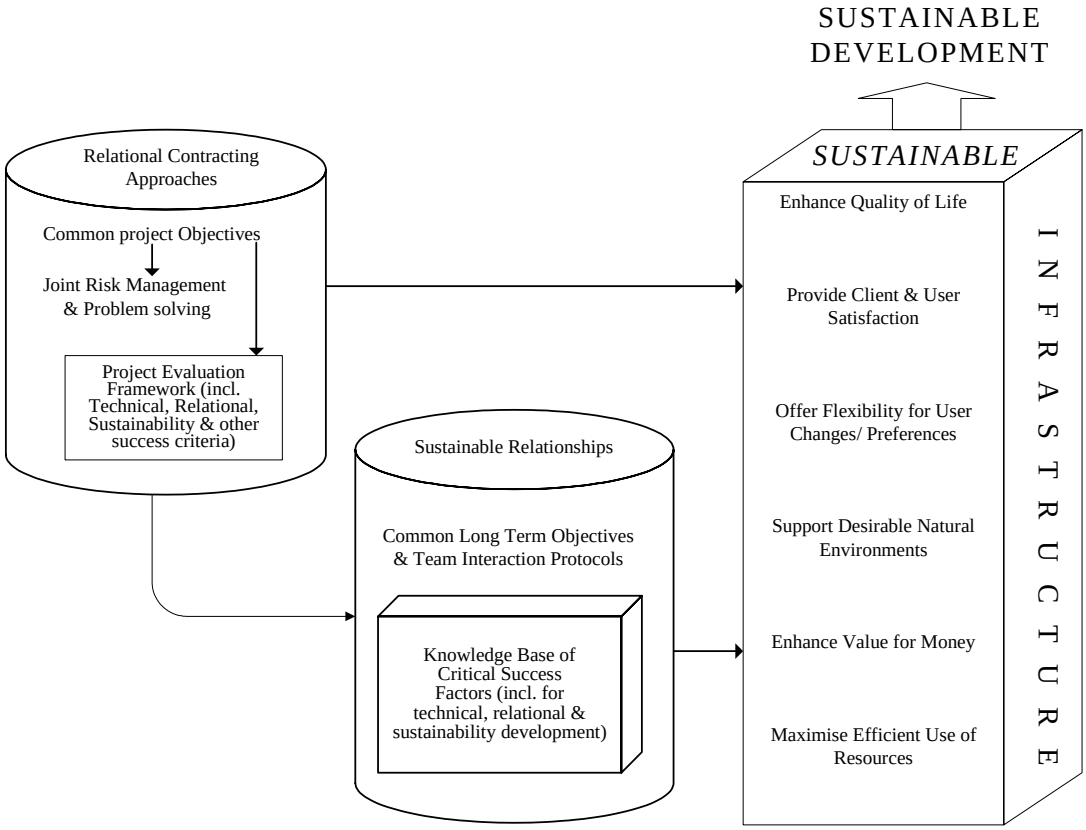


Figure 3: Framework for mobilising Relational Contracting and Sustainable Relationships for Sustainable Infrastructure Development

Assessing the Framework and proposed SRIT shortlisting/ prequalification model

An example of the proposed operationalisation of the above framework was indicated in another Figure (included herein as an Appendix, due to space limitations) with examples of relational factors and sub-factors. These details, with further descriptions, were included in the 10 page document issued for the survey of experts in 2005.

The proposed model uses a set of relational criteria or factors e.g. (1) values, (2) attitudes; each of which links to a number of independent key relational sub-factors e.g. (1) consistency, openness, fairness; and (2) receptivity, commitment, care, readiness for joint decision-making etc. The relational factors may be weighted to

reflect different priorities of the project and/or client. Each relational sub-factor is then assigned a score of 0, 1, 2, 3 or 4 representing 'unacceptable', 'below average', 'acceptable', 'good' and 'excellent' respectively. Guidance notes will provide information for scoring at each point of the Likert scale. The relational score is then the sum of the weighted scores earned for each relational sub-factor. This will allow a less subjective comparison of the relational qualities of various potential team players based on measurements of their 'relational capability' on previous projects. A rating system classifies the relational scores into bands/intervals of 'relational capabilities' defining 'excellent', 'good', 'acceptable', 'below average' or 'unacceptable'. Decision rules, formulated on the basis of a suitable multi-attribute decision-making model, would be established and define the minimum 'relational capability' required for shortlisting. This will then enable for example, a shortlisting of only potential team players with 'good' relational qualities.

Table 1 summarises the consolidated scores given by the 11 expert respondents in what is planned to be the first step of a Delphi-type survey, which can be continued in the planned research after further development of the framework. The respondents were internationally well experienced in PPPs; with two based in Australia, three in Hong Kong, one in Singapore, one in Thailand and four in the UK; and include engineering, financial, legal and construction experts. The high average scores and broad consensus of the experts encourage further development of the overall conceptual framework and basic evaluation model.

Criterion Number	Description	Average score*	Standard deviation
Assessment of overall framework that incorporates relational, technical and sustainability factors for sustainable infrastructure			
01	Clarity	3.77	0.88
02	Validity in reflecting real needs	3.64	0.92
03	General coverage of macro-level critical performance factors	3.41	0.66
04	Applicability	3.32	1.19
05	Adaptability to different scenarios	3.59	0.86
06	Potential reliability after expansion	3.06	1.01
07	Suitability for further development	4.20	0.79
Assessment of basic model for evaluating relational performance [#]			
08	Coverage of relational factors	3.68	0.72
09	Coverage of relational sub-factors	3.77	0.61
10	Potential reliability after expansion	3.06	0.94
11	Suitability for further development	4.00	1.00

Notes:

* Average (Arithmetic Mean) of scores assigned by 11 experts on a scale of 1 to 5, with 1 being 'poor' and 5 being 'excellent'

[#] The Figure and further explanations conveying the basic Model are excluded from this paper due to space constraints.

Table 1: Average assessment scores of experts

4. CONCLUDING OBSERVATIONS

Improved team selection is clearly more critical for sustainable PPPs and the basic model outlined here indicates an initiative for incorporating relational factors into the shortlisting process. Furthermore, the overall framework indicates a need to integrate this relationship dimension with considerations of technical competence and sustainsivity (sensitivity to sustainability issues). While KPIs (Key Performance Indicators) and related assessment tools for evaluating technical competence have been developed over many decades, sustainability KPIs are being focused upon in many regions in the last few years (e.g. Ugwu et al., 2006). 'Relationally integrating' factors for construction project teams have been identified from the literature and the reported multi-country survey. Applying and adapting selected relational factors along a PPP timeline, as attempted in the proposed model, was seen to be useful by the surveyed experts. Further development of this shortlisting model is envisaged in the relational, as well as sustainability dimensions. It can later be integrated with the overall PPP team selection system that will also include the next stage - for the evaluation of proposals from shortlisted consortia.

Meanwhile, the overall framework presented in this paper provides an overview of how relational contracting approaches and sustainable relationships can contribute to more sustainable infrastructure, and in turn to suitably integrated long term development. While PPPs can provide useful vehicles for mobilising and synergising such forces, it is of course noted that PPPs are certainly not appropriate for all scenarios. Parallel research initiatives (e.g. Anvuur and Kumaraswamy, 2006) are directed at developing decision support for differentiating between scenarios that are either more, or less suited for PPPs, and indeed for different types of PPPs. Together these will help answer the complex questions of how best to launch appropriate PPPs where useful, and to select suitable and sustainable PPP teams, in both developed and developing countries.

5. ACKNOWLEDGMENTS

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APPENDIX

As indicated in the main text (just below Figure 3), the following Figure A is indicative of the proposed operationalisation of one part of the proposed framework (as presented in Figure 3). Figure A also conveys examples of relational factors and sub-factors that can be used in the relational assessments, that would contribute to the combined score for past performance of each tenderer as discussed in the text (above Figure 3). Of course 'default' recommended factors and sub-factors may be replaced or modified before applications in different scenarios.

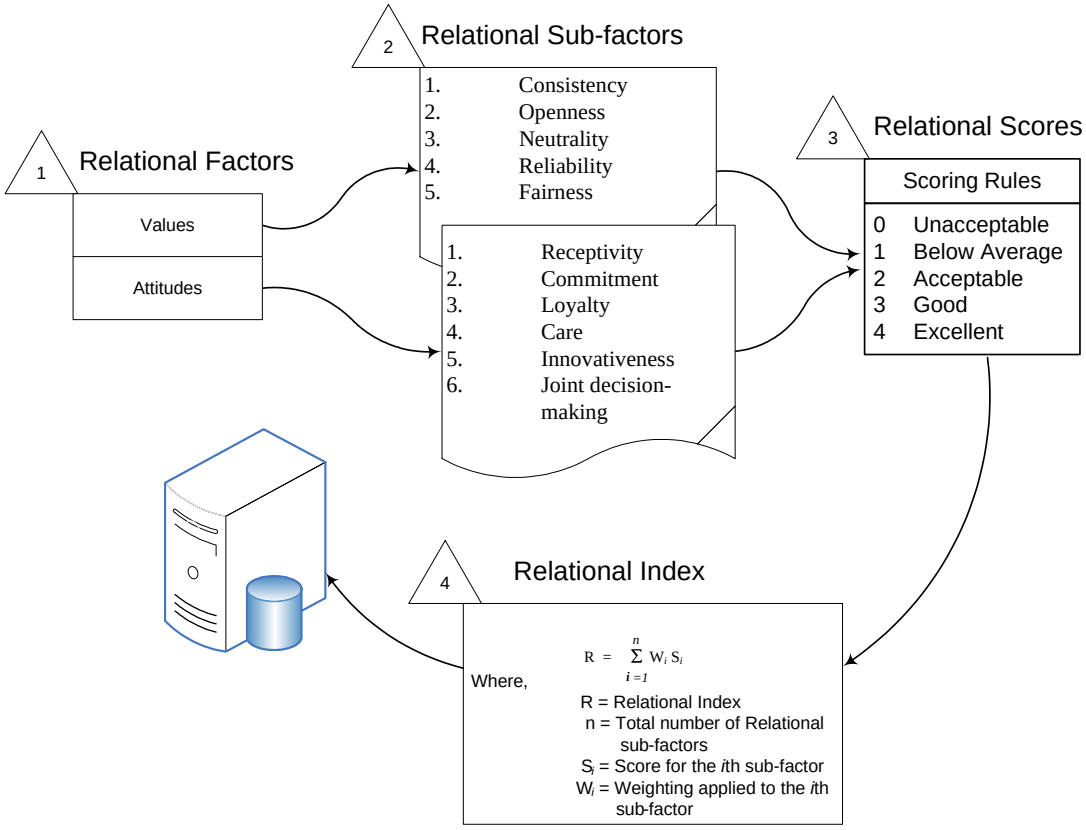

Fig. A: Example of a basic framework for Evaluating Relationships