Pursuing 'Relational Integration' and 'Overall Value' Through 'RIVANS'[1]

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Abstract

Purpose – The paper considers relational integration across a network of organisational members. To this end, 'Relationally Integrated Value Networks' (RIVANS) are conceptualised to engage and empower network members towards well-focused collaboration that adds value. The aim is to identify the routes towards achieving the desirable integration together with the desired 'overall value' that includes the hitherto often neglected 'whole life' and end-user priorities.

Design/methodology/approach – Two case studies of enlightened team working are used to examine the power of RIVANS to add value. Deliberations at two subsequent Workshops identified the potential for furthering the RIVANS approach and operationalising the value propositions.

Findings – Relational integration in networks adds considerable value to projects. Cross-fertilisation benefits accrue when RIVANS members also participate in other value networks that also include other facilities managers.

Research limitations/implications – Relational agendas have grown steadily over the last fifteen years. There is scope for further development for benefits of clients and the supply network. This is despite an apparent retreat from a focus on differentiation to a re-emerging cost focus.

Practical implications – Each network can benefit from healthy inputs from, and benchmarking against other networks. The strengths of each network will be enhanced by the steady development of each of its members, mutual feedback and collaborative learning opportunities.

Originality/value – The need for, and potential impact of RIVANS are heightened in the present major economic downturn. Relationally integrated networks can be more resilient, while adding value and building market share through collaborative efficiencies throughout the life cycles of built assets.

Keywords: relational integration, RIVANS, teamworking, value networks.

Article type: Research paper

1 BACKGROUND AND INTRODUCTION

Initiatives towards deeper collaboration have played a central role in complex projects over the last fifteen years. Improvements have been made, yet practice has fallen short of expectations, for example the 30% overall project savings targeted by Egan (1998) have yet to materialise and initiatives have tended to be project-specific (Smyth and Olayinka, 2010). Within projects, the shortfall can be traced to fundamental shortcomings in achieving targets

in ‘integrated teams’ and in ‘delivering value’. Davis (2009) has reinforced and up-dated the related ‘business case’ for integration. The purpose of this paper is to further examine and expand the business case for deeper and well-focused integration of supply chains and networks that design, construct, operate and maintain all types of facilities.

The paper presents the case for developing ‘Relationally Integrated Value Networks’ (RIVANS), based upon (i) identifying common best value objectives of the entire team/network (including the client, consultants, contractors and SMEs in the supply chain), and (ii) building better relationships – mostly by jointly focusing on, and working towards such common shared value. RIVANS envisions an ensuing spiral of improving value and strengthening relationships that continue to mutually reinforce and ‘feed’ one another. It draws on relevant success factors, while avoiding common barriers to partnering and alliancing, and aims to boost project performance in the long term. These success factors and barriers are admittedly different in Hong Kong, Australia and different parts of Europe, e.g. due to institutional and cultural differences, but the RIVANS framework anticipates and accommodates such differences, since each network is expected to identify and define its own target value system. The paper makes the above case from evidence in practice and conceptual propositions that are refined with inputs from expert actors.

The process and discipline of articulating and consolidating hitherto ill-defined and conflicting goals and objectives, would itself promote integration, when for example, identifying shared values of enhancing reputation/recognition, mutual benefits in finishing faster and reducing disputes and waste, as well as in targeting the sustainability-linked triple bottom line of economic, environmental and social goals (or ‘profit, planet and people’). Even if the priorities (between these ‘3P’ targets) are different, increasingly strident stakeholders of each organisation ask for assurances, if not evidence, on how these targets are being addressed.

The benefits of collaborative working in general, have been identified and extolled for some time, e.g. in UK industry reports by Latham (1994) and Egan (1998). However, despite various initiatives, the benefits have not materialised as expected, e.g. as noted in a review (Constructing Excellence, 2006; Smyth and Olayinka, 2010). Specific approaches to address these shortfalls in improving beneficial collaboration, have been proposed, e.g. in Smyth and Pryke (2008) by developing collaborative frameworks and networks; by Rahman and Kumaraswamy (2005) for selecting project teams with a view towards collaborative working; and by Kumaraswamy (2009) for accelerating collaboration through soft system improvement imperatives.

RIVANS incorporates the above approaches and envisages benefits beyond those expected from current longer-term arrangements such as in the ‘framework agreements’ of the UK National Health Service (NHS, 2009) where principal supply chain partners will be entrusted to deliver hospital projects; or the ‘premier league’ of the Hong Kong Housing Authority, where a small group of better performing contractors can be allotted enhanced entitlements, for example to tender for more and bigger contracts than other registered contractors. The evidence in practice comes from two case studies of partnered projects in Hong Kong (Kumaraswamy and Rahman, 2006; and Kumaraswamy *et al.*, 2008) that helped unveil critical components of teamworking and contributed to the conceptualisation of RIVANS frameworks. These conceptualisations of RIVANS were subsequently discussed, debated and refined at two Workshops by experts from practice and academe (CICID, 2007, 2008).

This paper builds upon recent work (Kumaraswamy *et al.,* 2009), signposting further potential benefits to industry, when networks benefit from cross-linkages to each other. For example, benefits can accrue from faster knowledge diffusion and 'virtual' or informal inter-network 'benchmarking'. This can also counteract any tendencies towards lowered inputs and raised expectations in some members who may become over-confident about an 'assured' place in their network. This could also demotivate others and reduce overall network competitiveness, especially if the networks were smaller and self-contained. On the other hand, more extensive and cross-linked networks can foster continuous improvements.

2 SHORTFALLS IN SUPPLY CHAIN INTEGRATION

2.1 Shortfalls in Integrating Sub-contractors, Supplier and Consultants

The government sponsored Latham and Egan Reports of the 1990's in the UK have been influential in many countries. However, Langford (2007) found that although a few clients in the UK have benefited from 'framework agreements' and 'Egan-compliant contractors'. 'smaller firms further down the supply chain were still expected to behave according to the old model and compete on price'. Also, Smyth and Olayinka (2010) found that contractors were failing to transfer lessons from the UK Demonstration Projects to support "continuous improvement". Langford (2007) also saw the UK influenced Singaporean, Australian and Hong Kong models falling short too.

Specific shortfalls in failing to integrate key supply chain members such as sub-contractors and consultants in even basic project 'partnering' exercises have been highlighted in Hong Kong (Kumaraswamy and Dissanayaka, 1997; Sze *et al.,* 2003), based on case studies of hospital and housing projects. A generic problem with specific/narrow and 'linear' supply chains is that they are usually only as strong as their weakest link, for example time over-runs or quality shortfalls by one member not being contained/absorbed. This is more evident in longer supply chains that extend from conceptual design, through construction to operation and maintenance of built assets.

2.2 Shortfalls in Structural Integration and the more elusive Relational Integration

Integrating functions such as 'design' and 'construction' are not easy but have been achieved in Design-Build ventures; while 'finance' and 'operation and maintenance' functions are also being embedded in one entity in Build-Operate-Transfer and other PPP-type procurement. Even these generate interface management problems, although less visible within 'single-points' of responsibility where mismatches and poor organisational/functional integration arises. However, such structural integration falls well short of achieving the deeper synergies of collaborative partnership envisaged by clients and industry in the reforms advocated over the last fifteen years.

A tension is emerging. On the one hand, the continuance of PPP-type projects worldwide and the revision of targets in the UK, which arises from the 2012 Olympics procurement programme (Strategic Forum, 2009), is keeping a focus upon a range of collaborative practices. These fall into the category of differentiation (cf. Porter, 1985). On the other hand, many clients, which were amongst the strongest advocates of reform, have shifted focus in recession, as after the recent financial turmoil, to using market power to drive prices down, hence reverting to a cost focus (cf. Porter, 1985). Reforms need to address and overcome difficulties and in so doing meet the agendas for continuous improvement. Testing the possibilities both in practice and conceptually as in this paper, helps identify the logical limits set by clients and the industry. This enables the maintenance, if not growth of added value for

clients, market share for contracting organisations, and overall value for the network, including the owners and operators of the built facilities, as well as end-users. It is also recognised that such a strategy may be sustained, yet no longer be the only dominant agenda in the coming years.

2.3 Shortfalls in defining and agreeing desired 'Value'

Identifying the important 'individual' value objectives within each organisation, and conveying these across organisational functions has proved difficult. So conveying and negotiating these across organisations themselves, to identify common network value elements is even more demanding. This is one explanation of the shortfalls, and why special strategies and efforts are needed to unveil, unravel and translate win-win 'network value' into viable overall value elements; and thereafter design delivery systems that appropriately allocate the risks, roles and rewards.

A recent major thrust of the CIB was for 'revaluing construction', specifically 'the maximization of the value jointly created by the stakeholders to construction and the equitable distribution of the resulting rewards" (Barrett, 2005). Risks and rewards cannot be precisely identified when negotiating original contracts; hence, the need for truly integrated teams that trust each other to undertake joint management of certain types of risks and share the ensuing rewards (Smyth et al, 2010), for example in a pre-determined gain-share/pain-share for certain quantifiable components (Kumaraswamy and Rahman, 2006) or for intangible components, such as knowledge and reputation (Allee, 2008).

3 DOUBLE-BARRELLED TARGETING OF THE TRIPLE-BOTTOM-LINE

3.1 Conceptualisation and Development of RIVANS

The shortfalls and their perceived causes reinforce the need for a combined assault on the twin-targets of best value and deep integration, since neither can be achieved without the other. A progressively stepped-up 'attack' via a series of double-barrelled salvos seems necessary for advancing towards the broader value targets that must now incorporate elements of the increasingly important triple bottom line of economic, environmental and social goals, given widespread demands to take responsibility for human inputs, materials and methods used in production, and direct and indirect outputs generated. Value objectives also need to be broadened to accommodate these growing multiple 'dimensions of value'. It is clearly difficult to articulate and agree on common value objectives, despite evidence of integrated team structures being increasingly used in recent years (Smyth and Olayinka, 2010). This is even more critical when applied to 'whole life' value of the built assets.

Integrated structures are necessary, but not the only condition of successful integration. This led to the conceptualisation of RIVANS as a platform for 'relational' integration of hitherto mutually suspicious project participants into cross-linked 'value networks'. The development of RIVANS draws upon relevant components from various theories (e.g. from organisational, psychological and other social sciences), diverse disciplines (e.g. of project management and system dynamics) and related thrusts (e.g. in supply chain management, value management, knowledge management and motivation), and key concepts (e.g. of social identity, economic exchange and organisational justice) in order to empower superior governance, value exchange, procurement and delivery through value-focused and relationally integrated teams. While the theoretical underpinnings are beyond the scope of this paper, the following highlights the core building blocks.

3.2 Networks and Value Streams

A growing body of relevant research on networks has emerged:

a) from the perspective that 'construction projects can be viewed as a networks of relationships that make up the project coalition' (Pryke, 2006), leading to findings on 'legal, contractual, communications and financial aspects of project governance';

b) from the 'project network' and 'social network model of construction' that 'integrates classic project management with social sciences variables' to 'enhance knowledge-sharing' for 'high performance teams' (Chinowsky *et al.*, 2008); and

c) from wider (programme and pan-project management) 'value network approaches to value creation and analysis', that 'model organisations and business relationships as living networks of tangible and intangible value exchanges' (Allee, 2002).

Normann and Ramirez (2000) said that successful companies increasingly do not just add value, but reinvent it; mainly by reconfiguring roles and relationships among a constellation of supplier, partners and customers. The development of value network analysis since 1993 (Allee, 2008) provide some examples and tools that may be adapted for RIVANS, for example in assessing and negotiating the conversion of intangible assets such as knowledge, reputation and relationships into exchangeable value components. Arbulu *et al.* (2003) modelled value stream maps that spanned organisational disciplines and straddled company boundaries in a case study of pipe supports in power plants that addressed the convergence and synergising of a series of 'value streams' flowing in from various specialist suppliers and sub-sub-contractors in infrastructure projects, as well as from the facilities managers during operations.

4 PRECURSORS AND PROSPECTS OF RIVANS

4.1 Progressive Precedents

In the UK, the 'framework agreements' of the British Airports Authority set out in the 1990's, to keep 'on call' carefully selected supply chain partners such as consultants and contractors. These agreements aimed to reap mutual benefits from transactional efficiencies, economies of scale and higher quality assurances, special (client-specific) competencies development and resource rationalisations, including those based on confidence in continuity of work. The National Health Service, ProCure21 provides a partnering approach where an NHS Trust can select a 'Principal Supply Chain Partner' (PSCP) from the ProCure21 framework without having to go through a standard tendering process (NHS, 2009). The PSCP offers a range of services that helps Health Trusts plan, design, approve, and construct schemes. Once a final design is agreed parties agree a 'Guaranteed Maximum Price' before construction starts. This enables rapid mobilisation of supply-chains with relevant experience, in joint incentives, for long-term relationships, and subject to performance measurement. Reportedly (NHS, 2009), over 200 NHS schemes were delivered through ProCure21's £2.4bn programme. In 2006, 94% of schemes were delivered on time and 89% on budget, with no litigation.

4.2 Case Studies in Hong Kong

A loosely structured approach in the previously quasi-Government and now 'privatised' MTRC (Mass Transit Railway Corporation) established deep relationships. The approach mobilised valuable contractor expertise for value engineering and risk mitigation inputs in the early stages of complex designs, and also identified players who may have developed special competencies and maturities that are needed to 'partner' effectively in 'target cost' contracts.

This first case study is reported more fully by Kumaraswamy and Rahman (2006). The project was for major improvements and new connections to an existing underground railway station of the MTRC in one the busiest commercial spots in Hong Kong, if not worldwide. Complexities of the risk-intensive underground works were heightened by critical operational needs of the current station. A 'beyond partnering' relational approach was aimed at by the MTRC, having already benefited from savings in the then recently completed partnered project for the Tseung-Kwan-O extension. This led to a target cost contract tied to 'gain-share pain-share' formula. However, the relational approach reaped many pre-contract benefits as well: multi-stage tendering, early involvement of contractor and thereby enhanced multi-stage value engineering and joint risk management. Risks were divided into three groups of client, contractor and shared risk, the resulting risk register being part of the bidding documents. The two tenderers who were finally chosen for the final stage conducted independent risk mitigation and value engineering exercises with independent client representatives that led to a reduction of more than one third of the client's previous estimate.

Many post-award devices continued to enhance 'best value' and 'deeper integration', such as co-location (with shared offices and resources e.g. in draughtspersons and measurement teams), open book accounting and a common project bank account, back to back 'gain-share pain-share' arrangements with principal sub-contractors that incentivised key supply chain members, and periodic value engineering exercises. The project was completed ahead of schedule and with cost savings, leading this client to initiate similar arrangements on the more risk-intensive of their forthcoming projects. It reportedly would not use these across the board on all projects, given perceived limitations in numbers of potential supply chain partners with adequate competencies and mind-sets to make the most of target cost type arrangements. While flexibility is thus maintained, the need to upgrade industry competencies in general is noted, given the overall benefits that can accrue.

The second case study was reported more fully by Kumaraswamy *et al.* (2008), while key components and relevant findings are summarised below. The project was for redeveloping a commercial complex by a major private developer in Hong Kong. A 'Guaranteed Maximum Price' procurement mode encouraged a search for savings and joint risk mitigation during the project. The deep relationship was perhaps easier, since the contractor had to demonstrate competitiveness at each stage – pre-contract, as well as in sourcing and sharing savings from sub-contracts. This goal was vigorously and professionally pursued, although the client and contractor had a common parent company. Apart from the fact that both organisations had built up experience in partnering on previous projects, this contractor championed/promoted partnering and better relationships with other clients as well, on the premise/promise of being able to deliver better value through cooperation.

However, Kumaraswamy *et al.* (2008) report how the formal mechanisms of traditional partnering, such as the partnering charter, workshops and periodic evaluations against stated partnering goals, were not important in this case. Instead, a dominant client culture drove the risk management and problem-solving through a strong in-house project management team. This also drew heavily on the perceived fairness of the client's decision-making processes and outcomes, evoking the importance of elements of 'organisational justice' that elicit more than can be explained by 'transaction cost' perspectives. Furthermore, many of the supply chain members had worked on previous projects of this client, demonstrating the enhanced value that can be harnessed by such short-cuts in usually long 'learning curves'/slower

development of 'trust' for 'relational integration', thereby releasing network energies earlier to focus on common value elements.

4.3 RIVANS Workshops I and II

Following conceptualisation and discussions on RIVANS frameworks and mechanisms as planned in a Hong Kong based research project, two Workshops on 1st December 2007 and 31st May 2008 proved valuable in enabling intense discussions and refinements of RIVANS following feedback received. Fuller detailed descriptions are available in CICID (2007; 2008); hence enabling the following focus on key outcomes relevant to this paper. In terms of general format both Workshops were similar, starting with introductory presentations by the Hong Kong-based RIVANS research team and an Overseas Collaborator (Prof. Ron McCaffer and Prof Derek Walker, in the 1st and 2nd Workshops respectively), general discussions, brainstorming in four groups (each time) of experts under specified themes and recommended sub-themes, followed by group presentations and a consolidation session. Attendees were experienced practitioners and experts from academia, with over 30 active participants in each Workshop.

Having recognised 'value' as a 'difficult' but critical component of RIVANS, the first group theme in the 1st Workshop was 'Defining & Pursuing Value' while this was developed in the 2nd Workshop under a group theme that sought brainstorming on 'Value Objectives (Network Values)'. Initial outputs identified 'stakeholder values' differed from one to the other at the level of abstraction, concerning value for money, return on investment and reputation. Developing 'network value', therefore, entails aligning the stakeholder value dimensions. In practical terms, this requires aligning their 'image elements' in each specific project. These 'image elements' may include cost, time, safety and security, governance (transparency, probity, accountability, diversity and inclusion), environmental impact, quality and function, legacy, profit, contribution margin, and enhanced business opportunities. The deliberations at the 2nd Workshop noted that the concept of value changes with power structures, and differs between an individual and organisational perspectives. A public organisation sets out to 'serve the community' whereas a private organisation expects to 'survive and prosper'. However, secondary level objectives of these apparently different missions are reasonably similar: corporate image, public support and acceptance, accountability to shareholders, effectiveness/efficiency, safety, environment and employee wellbeing, thus, invoking images of the 'triple bottom line'.

'Network management', 'network learning' and 'network evaluation' were the three other themes developed in the 2nd Workshop. A focus upon 'Building RIVANS' from the groundwork of the 1st Workshop (having dealt with 'Defining System Structures for RIVANS', 'Selecting and Sustaining RIVANS', and 'Motivating RIVANS') produced outputs concerning 'Network Sourcing and Strategic Alliances', 'Client Leadership' and 'Empowerment' (CICID, 2007). The resultant 'network management' builds upon earlier networks discussions (Pryke, 2006; Chinowsky et al, 2008; Allee, 2008) that promote greater integration, as well as drawing and generating strong synergistic value streams from all network members. Trust was seen as key to a sustainable network, with client attitude and contractor performance being prerequisites to building trust (cf. Smyth et al, 2010). Other success factors such as competencies, profit margins for all; and features such as optimum network sizing and limited multilayer subcontracting were also signposted (CICID, 2008). In developing RIVANS further, such outputs are seen to be in line with lessons from international practice, for example subcontractors business relationships being sources of

risks in project networks (Artto *et al.*, 2007); whereas RIVANS would seek to drill into and draw from these well-springs of value as well.

Similarly, the 'network learning' group deliberations at the 2nd Workshop benefited form Prof. Derek Walker's key-note presentation on 'Developing human capital value from relational procurement strategies – projects as learning organisations', which in turn drew upon previous findings (Maqsood *et al.*, 2007). Specific outputs on 'network learning' included 'knowledge sharing' and 'network evaluation' covering hard and soft indicators expanded upon in CICID (2008).

4.4 Basic RIVANS Frameworks

Figure 1 visualises a basic RIVAN initiated by a large construction client, who has a portfolio of ongoing projects. At the 1st RIVANS Workshop, the above scenario was extended to consider cases of 'one-off' clients such as a medium-sized private company that wants to build their own office building, and the cases of 'on-off' clients such as those that periodically build a new factory building or a factory extension. One-off and on-off clients would clearly have neither the need nor capacity to develop RIVANS for themselves. It was therefore proposed that they may mobilise the RIVAN of a large consultant or reputed contractor for each project. An example of how such a client may tap into a contractor's RIVAN is shown in Figure 2.

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Figure 1 about here

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Figure 2 about here

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Figure 3 visualises the synergistic convergence of 'Value Streams' towards a desired 'Value Focus' and ultimate delivery to end-users, hence the post-occupancy stage. The 'visible' arrows signify contributions to 'overall value' in terms of project objectives; while these contributions, together with other cross-network interactions also contribute to the 'value growth' of each partner organisation.

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Figure 3 about here

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5 DISCUSSION

This paper merged relevant outputs from two case studies and two Workshops; and confirmed the value of pursuing the further development of RIVANS. RIVANS was seen as a viable vehicle to mobilise for addressing persisting shortfalls in achieving overall value and integrated teams despite previous construction industry improvement initiatives. While the methodologies and details of the case studies and Workshops have been previously documented and referenced, the convergence of the findings, along with those from relevant literature point to ways for revisiting, re-engineering and re-invigorating traditional supply chains, by transforming them into relationally integrated value networks (RIVANS).

The case study projects confirmed capacities to add value through relational integration in practice, which can not only be articulated conceptually, but was of demonstrable value for the clients, especially on complex projects. Further, the workshops demonstrated the potential to boost overall value through the RIVANS concept developed from the cases.

It is recognised that under recessive conditions, traditional client cost imperatives to drive down prices are re-emerging in many markets, including construction. Yet there are some client companies and organisations that need to protect, even enhance, value in recession for two reasons: (i) value benefits are key to securing competitive advantage in their markets, (ii) value helps them to protect and build market share in intensely competitive markets where cost drivers are insufficient by themselves. For contractors, the strategic options are (a) to protect and develop capacity as far as possible by maintaining relational contracting approaches, (b) build market share, especially in the upturn through better performance and reputation derived from such relational contracting. For both clients and contracting supply chains, the respective options are interlinked. This is a path that may only be suited to the few, but arguably those likely to be most successful in the long term. The choice of network members are likely to be smaller and perhaps more difficult to build and maintain in the current period, for example within particular segments.

Therefore, looking further in terms of continuous improvements, namely overall productivity levels, the imperatives for sustaining competitiveness alongside cooperation were presented and developed at both Workshops. These included concepts of (a) ‘co-opetition’ within networks, as even possible between a few contractors who have basic ‘framework agreements’ with a client and (b) an analogy with ‘symbiosis’, or specifically ‘mutualism’, where close and long-term interactions between dissimilar members lead to mutual benefits; as opposed to short-term ‘commensalism’ or worse ‘parasitism’, where one member benefits, while the other does not, or benefit is at the other’s expense.

Looking wider, Figure 4 illustrates how the above approaches and concepts can be logically extended to market segments, or even the broader industry, as different RIVANS would benefit from cross-links to each other, either between clients in joint ventures of developers, or through members who are common to each network, such as sub-contractors and facilities managers. The ‘learning’ and knowledge thus diffuses faster, along inter-RIVANS as well as intra-RIVANS paths. Furthermore, even informal benchmarking can incentivise competitiveness and heighten over-arching overall value at segment or industry level. Informal benchmarking is suggested, because of industry reluctance to share sensitive data widely, in small groups of members in similar networks, who may trust each other enough to compare some data for mutual benefits. This may build up in the long term, to a centralised databank maintained by a group of large clients, or even an independent central body, to

gradually increase shared information and performance benchmarking over the whole life cycle of the facilities.

If current economic conditions in some countries militate against greater collaboration and reliance in relationships, industry-wide RIVANS would appear unrealistic in those scenarios at present. However, they remain conceptually possible, and segments where client and contracting parties see advantages for survival and growth could develop RIVANS in stages, pending overall economic upturns when the best practices and benefits could then be extrapolated and expanded faster and easier.

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Figure 4 about here

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6 CONCLUSIONS

The RIVANS research exercise was initiated, as reported herein, by establishing the premise that client and construction industry agendas should improve continuously through integrated teams with a meaningful overall value focus. As described, these ideas were rigorously tested in the 'market' (industry/field), as well as conceptually. The testing has acknowledged (i) overall industry improvements have fallen short of expectations over the last fifteen years; (ii) some organisations are reconsidering, if not withdrawing from general reform agendas in the current economic climate; but (iii) the specific dual thrusts developed via RIVANS can provide a business case for integrated teamworking in the pursuit of clearly identified mutual benefits over the whole life cycle of the built assets.

Within that context, evidence from cases and workshops support the potential for realising untapped overall value as well as specific organisational benefits from relational integration via RIVANS. This is further supported by an initial conceptualisation of forward-looking strategies in the midst of recession, where certain segments and configurations in the market still require a continued focus upon differentiation rather than cost per se; while being parts of larger networks could substantially enhance their resilience.

The primary recommendation to clients and industry members that continue to require continuously increasing overall value service delivery is to keep exploring the potential, for viable strategies, such as in RIVANS. The primary recommendation to academe is to continue to monitor the implementation and outcomes of industry reform and improvement initiatives, even if it is on the wane at certain times or in significant segments of the industry. Timely remedial inputs can help regain course even when (or indeed, especially when) the 'targets keep moving' along with changing priorities.

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FIGURES

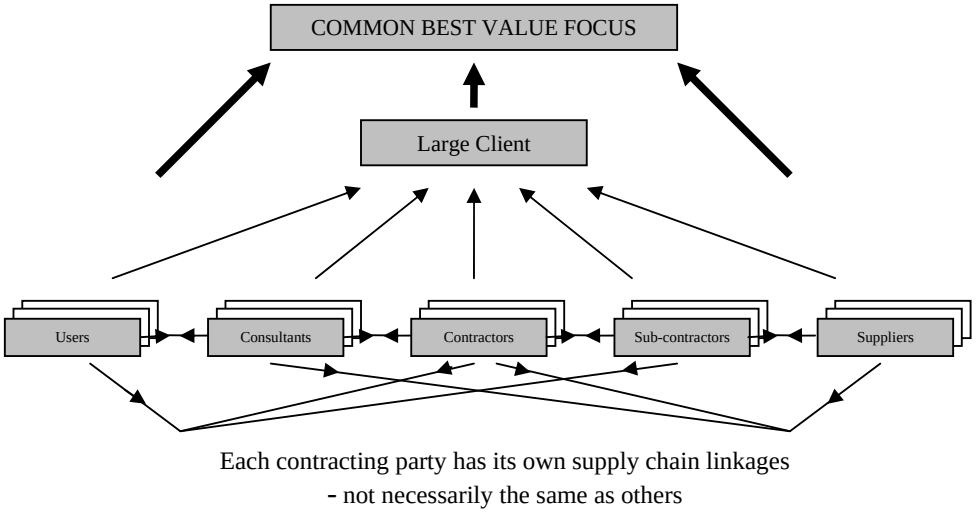

Figure 1: Conceptualising a ‘large’ (ongoing) client’s RIVAN

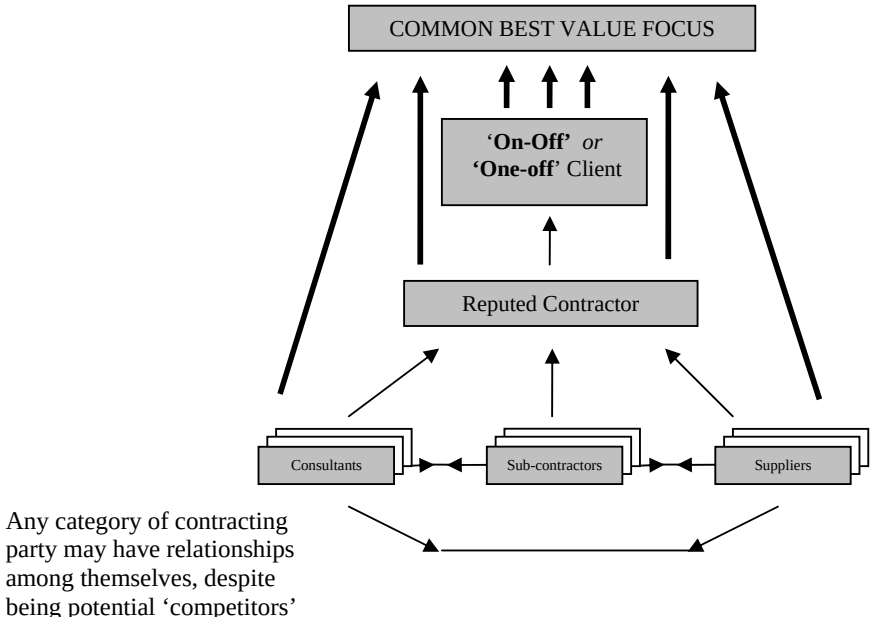

Figure 2: Mobilising a large contractor's RIVAN for an 'on-off' or 'one-off' client

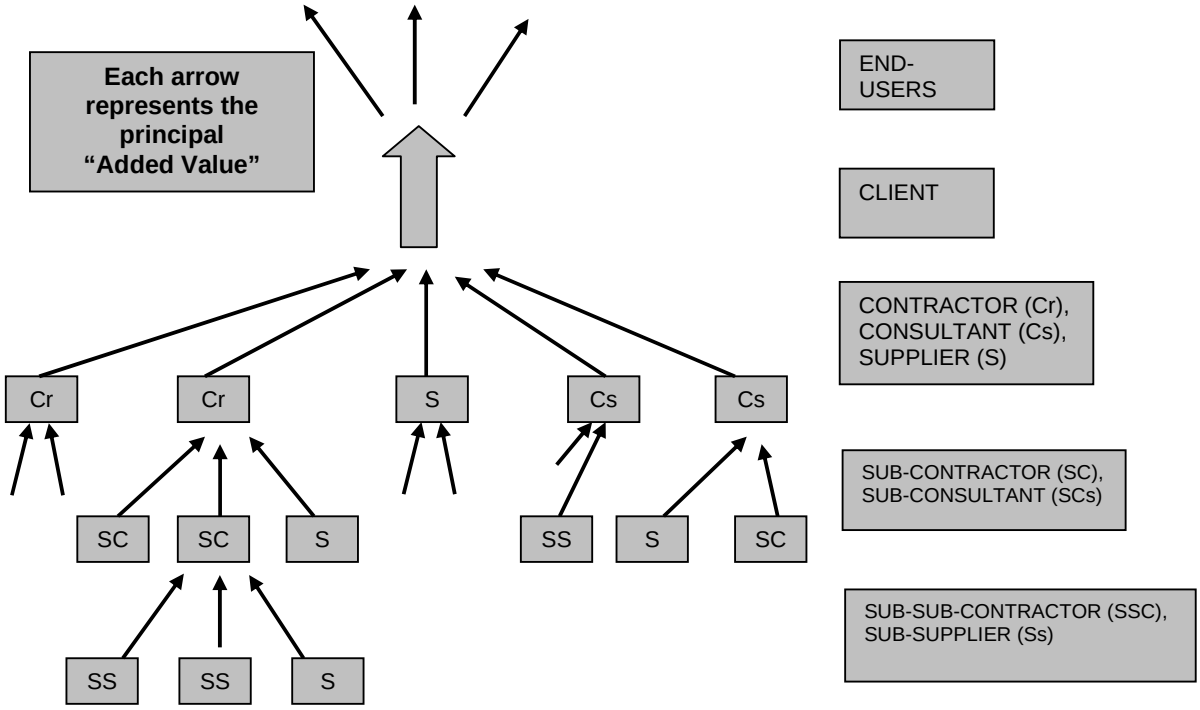

Figure 3: Focusing and synergising value streams in a RIVAN

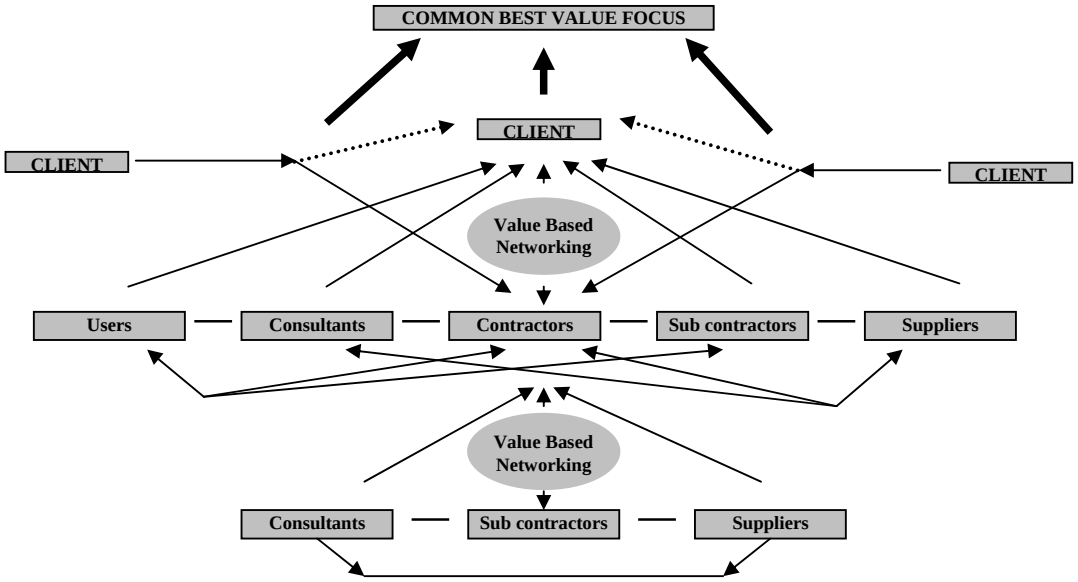

Figure 4: Extensions to segment and industry-wide RIVANS