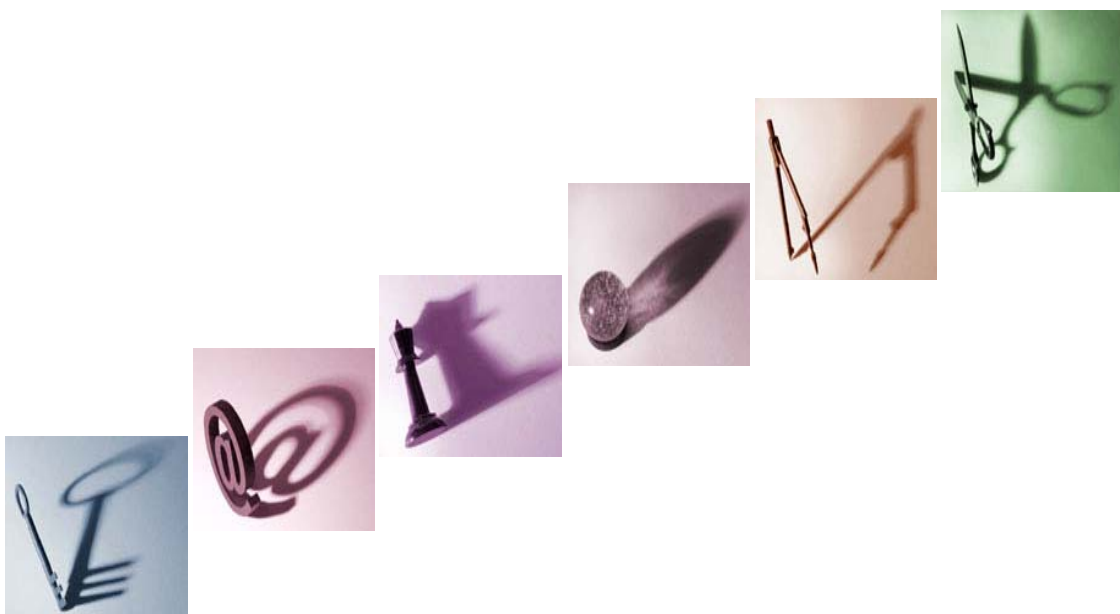# White Paper

Managing Programmes

ServQ Limited

November 2002

Achieve

strategy formulation

Exceptional

organisational alignment

Sustainable

partnering & alliancing

Performance

implementation

White Paper

Managing Programmes

A D Crossley – BSc, MBA, CEng, MICE, MCIM, MIAM – Managing Director ServQ Ltd

This paper examines the differences between project management and the management of major programmes. The additional skills and competencies required of the programme manager need to be supported by advanced process metrics, asset systems and frameworks in order to succeed. Putting the Client's Value System (needs and wants) right at the heart of the programme and working in a collaborative learning culture also differentiate the programme manager from his project management colleagues.

1   Introduction

This paper looks at the impact of programme management, dealing with multi-projects, on traditional project management approaches. It recommends some enhancements needed to succeed in a high performance business environment, especially in the two key areas of:

- Collaboration and learning; and
- Soft project management skills in the Client arena.

The paper also examines:

- The impact of programmes on projects;
- New types of procurement practices and tools;
- The effects on project management styles and processes; and
- Contractual considerations relevant to programmes.

2   Impact of Programmes on Projects

There is a distinctive shift visible amongst major public and private sector Clients towards packaging work into programmes rather than assembling teams for discreet projects. Why is this the case?

Firstly, there are **fewer Client employed resources** to handle asset-based investment. This creates significant pressures on these key individuals to deliver more projects per person, of better value, with less physical resources available in-house to help. They want to spend less time on procurement and more time on delivery.

Secondly, **programme managers are being up-skilled** through training and development or even recruited into the Client organisations to build a body of knowledge and experience that is repeatable and captured. Network Rail is bringing the core programme management skills back in-house, for example.

Thirdly, given the high cost of sourcing and employing good project managers (reflecting their high wages and even higher overhead recovery requirements), **assembling groupings of projects into programmes saves money**. This also forms part of the decision criteria to employ directly or source from outside. It is generally considered better value to employ directly in a project intensive and/or asset based environment.

2.1   Asset Based Investment

There are some differences between asset-based programmes and other types of projects. IT projects tend to be based on designing and implementing new business systems as part of process reform (de-staffing, increasing productivity, speeding up information flows). Re-locations are logistical based projects of relatively short duration and a large degree of standardisation.

Asset based programmes tend to:
- Be very high value;
- Be technically complex;
- Involve multiple parties;
- Be designed for very long lifecycles;
- Account for whole life costs including maintenance;
- Be subject to many planning and legislative constraints; and
- Be either the core business asset (water schemes for example) or strongly facilitate the core business (buildings for businesses, hospitals and schools for example).

Therefore asset based programme management requires:
1. High levels of specialist skills and technical understanding;
2. Excellent collaboration;
3. An understanding of the Client's core business and his future requirements;
4. An understanding of value for money expressed in terms of function and cost (Value Management); and
5. Financial awareness, beyond the normal project parameters into the field of asset management and renewal planning systems.

Of these 5 areas only the first falls into the zone of traditional project management - the assembly, planning and management of specialist design and construction skills. In his book The New Project Management (ref 1) Davidson Frame states that traditional project management based around time, cost, scope constraints and PERT tools is "broken". He argues that Client focus is lacking and the traditional PERT based tools inflexible. More attention needs to be paid to managing and satisfying Client needs and wants (Value Management and Client Satisfaction Measurement), motivating teams (leadership) and acquiring 'political skills' (understanding the context of the project, who it influences, who benefits and who loses from its completion).

Superimposing these additional skills onto 1 to 5 above identifies the need for a new type of 'super' project manager - the Programme Manager. The chances are he/she is not a traditional QS or technical consultant but an experienced business person bringing a wide range of management skills and knowledge over and above the technical skill sets. They are rare, expensive, hugely influential and therefore most likely to be desired by the Client as in-house employees. If not available directly, their availability will be an important part of the decision criteria for choosing an external company.

2.1.1   Asset Based Decision Tools

As the ability to plan and manage programmes has developed, along with advances in IT and management skills, new tool has appeared - Asset Management Systems. These have been developed with practitioners and managers to help with operational maintenance decisions as well as helping plan larger asset creation and renewal projects. The key benefits of these systems to programmes are:

- The ability to standardise on project decision criteria and priorities;
- The ability to compare information and carry out 'what if' scenarios;
- Balancing investment vs. performance decisions;
- Audit ability and transparency of decisions;
- Data management on time, cost and scope for future use; and
- Portfolio analysis to establish the total budget (bottom up) or what can be achieved as best value from a given budget (top down)

The asset management teams come from a variety of backgrounds - in-house teams, consultants, project management houses, IT companies or specialist asset management organisations. None of these are to be confused with Asset Management Houses - that deal with finances and pensions, as fiscal managers.

2.1.2   Outsourcing

As greater maturity over the issue of control has developed, many asset based decisions and the asset management processes are being outsourced to preferred partners. The bases for such decisions relate to budget constraints, resource constraints, de-manning, single point responsibility and the desire to embrace a more comprehensive (all inclusive) service. These are often known as framework contracts and include for asset maintenance, renewal and sometimes operations (the case of Welsh Water outsourcing operational and asset management to United Utilities being documented (ref 2)). As the outsourced service provider, operating to a performance contract, gains more and more Client trust, it starts to play a more pro-active role in future investment decisions.

2.1.3   DBFO

The ultimate outsourcing decision is the project-financed asset. This is also known as non-recourse financing, where the income stream from the asset usage is used as collateral for the capital expenditure, maintenance and operation (design, build finance and operate being one variant). For example the London Underground PPP has a whole series of investment projects syndicated to a team of operators, who are responsible for planning the works, funding them and operating the asset based infrastructure for 30 years. Here the management skill sets of the Programme Manager need to include finance, performance measurement, whole life costing and managing the critical interfaces between the system operators LUL and the Asset Managers (Tubelines and Metronet).

2.1.4   Whole Life Costing

Asset based investment should be based around Whole Life Costing (WLC). DBFO contractually ensures this. Maintenance and end user inputs help the programme manager appraise the best value options. More and more UK clients are making WLC a programme requirement.

2.1.5 Programme Compression and Virtual Teams

As the need to understand and deliver high value asset based decisions develops, so does the need to improve communication between the relevant parties. One advantage of using stable, well-chosen teams is the ability to deliver timesavings from conception to completion. Evidence from the best practice groups such as the CBBP and M4i indicates that the closer the team works together, as if part of the Client's own in-house team, the better the communications and the better the delivery. Focus is on the Client's value system (needs and wants) rather than those of the individual project parties. This is the real emphasis of partnering - joining up relevant and complementary resources with an agreed vision for the programme to deliver high degrees of Client satisfaction and value.

2.2 Client not task focus

A major change in programme management over traditional project management is the degree of Client Focus. In the 1980s Barnes (ref 3), was carving out a niche for the Project Manager to be the prime communicator of the Client's value system to all the other parties. Indeed one of his diagrams illustrates this (Figure 1). The reality of team working with better Client understanding, advanced collaboration tools and new frameworks is that the communication requirement has developed. Now most of the supply side needs to understand the Client's requirements as soon as possible, especially the sub-contractors and material suppliers. The role of the Programme Manager is to facilitate this rather than direct the team.
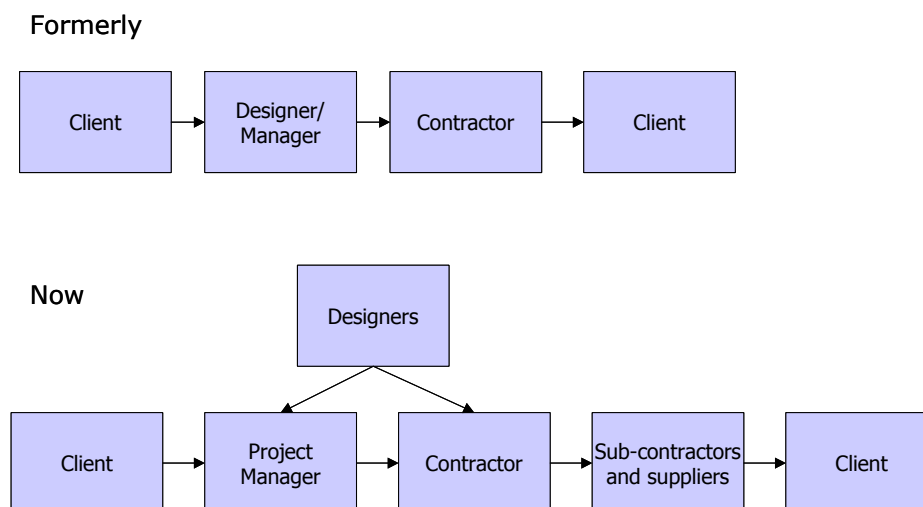
Formerly

```
Client → Designer/Manager → Contractor → Client
```

Now

```
                    Designers
                   ↙         ↘
Client → Project Manager → Contractor → Sub-contractors and suppliers → Client
```

Figure 1 – Roles contributing to the project (Barnes 1988 – ref 3)

2.2.1 Client Needs and Wants

It is important that Client needs and wants are identified, scoped, agreed and communicated way down into the supply side to ensure that they are comprehensive, well understood and become the key drivers for the project delivery. There are several tools in the Value Management Framework (ref 4) that help in capturing these - from the Client Value Matrix to the Functional Analysis Diagramming. With programme based collaborative working methods, results improve, Clients are happy with the asset outcome (satisfying an operational need) and better value results. The Programme Manager is a key communicator and needs to measure (benchmark) Client satisfaction throughout the programme period.

2.2.2 Partnering

Several groundbreaking reports have been produced on the concept of partnering in infrastructure. Most refer to concepts and aspirations. Very few deal with the real tools needed to create partnerships based on trust and mutually successful outcomes. What is apparent is that the soft issues are increasingly important. According to Dent (ref 5) - 'organisations don't create partnerships, people do'.

The impetus has moved from single point Project Management responsibility, carving out unagreed contingencies with high degrees of command and control, towards collaborative working with highly aligned targets and gain sharing for more complex programmes.

2.2.2.1 Need for Collaboration

Why is there a new emphasis on programme-based collaboration? Firstly, good preparation involving all the relevant parties pays off. Everyone starts to understand and believe in the Client's values. Secondly, people start to work together as trusted colleagues, even from different organisations. They look after each other's interests as much as their own. The combination of:

- Advanced partnering frameworks;
- Fast and accurate communication tools; and
- A greater degree of Client understanding;

all contribute to delivering more successful outcomes.

2.2.2.2 Facilitation Over Dictation

In the new report Accelerating Change (ref 6), the authors emphasised the value of independent facilitation over command and control to help chose the team, bed them in and assess their performance. This is radically different to traditional project management, since the independent facilitator does not have any conflict of interest by maintaining a project-based role.

2.3 Need for Change

Many of the drivers of change between Programme Management and traditional Project Management have been identified in Section 2. In summary they are:

- The need to improve over traditional TQC based command and control in the 21st century;
- Putting the Client at the heart of the project; and
- Understanding the Clients' business goals (the mission).

3 New Procurement Tools

In his book (ref 1) Davidson Frame proposes that the New Project Manager:

- Must become more Client focused;
- Must explore and use new management tools and frameworks; and
- Should have a redefined (higher level) role.

The need for greater Client focus was discussed in Section 2. Section 3 looks at some advanced procurement tools and comments on their potential for delivering better programme performance. Sections 4 and 5 then deal with the role of the new Programme Manager and some contractual considerations of operating programmes.

3.1 Transfer of Client Value System

In Section 2.2.1 the paper referred to the Client's Value System (CVS) and the need to transfer and communicate this to the supply side. Note - the 'supply side' is the preferred term over the often abused and over-used 'supply chain'. The latter term implies that the CVS is transferred via contract and therefore often diluted and interpreted by the 'supply chain' - couched in the suppliers' terms. Advanced Clients, such as the UK Highways Agency (ref 7) want the sub-contractors and suppliers involved at the earliest stages of the programme to capture their skills and knowledge and ensure that the CVS is well understood (the concept of early design and build being a key approach).

Good tools for the Programme Manager to capture the CVS are:

- Programme checklists (after Morris and Hough - ref 8);
- Client Value System Comparison Matrix (ref 4 - used to determine hierarchy of priorities);
- Customer FAST - functional analysis used at the strategic level (ref 4); and
- The Holistic Organization Model (ref 9).

This paper does not deal with these tools in details but serves as an aide-memoir for future reference.

3.2 Advanced Collaborative Tools

Advanced collaborative tools are very rare, given the relatively new theme of alliancing within the infrastructure sector. From the author's research in 2000 and 2001, there appears to be a deficiency of strategic metricated frameworks in the UK marketplace. Attempts to fill this, looking at teams and group dynamics or using VM based tools (out of context) at the strategic level, only give partial solutions.

One of the most successful frameworks for collaborative working has emerged from the USA - the Partnering Continuum^{TM} (ref 5). This combines the task-based approach with partnership metrication to create successful alliances. Evidence is that the degree of success using this approach is significantly higher (circa 90%) than other partial solutions.

Although a partnering framework tool has been identified, it is important to assess the baseline for team collaboration skills and then measure improvements over the programme. Research at Loughborough University (ref 10) has identified an extended form of Concurrent Engineering (CE) to be a major step forward. The framework is a process metric called BEACON. Traditionally, CE looks at the two elements of Technology and Process for improving collaborative working. BEACON brings CE into the programme environment by including two critical elements for infrastructure - Project and People. Again this reinforces Davidson Frame's requirements that Programme Managers deal with Clients Satisfaction measures and People skills in addition to technical aspects under PERT.

The author has recently presented a paper at Loughborough University (June 2002) (ref 11) that illustrates how BEACON can help with the early assessment and evaluation of programme teams - starting with the project manager. A second paper (ref 12) comments on using Frameworks for Improvement - in particular the need of the programme manager to use forward facing process metrics over historic Key Performance Indicators (KPIs are results metrics) to drive team collaboration and change.

Appendix A has a brief overview of the BEACON approach to illustrate its relevance to programme management.

4   Project Management Styles And Processes

Section 4 deals with the implications of multi-projects (programmes) on project management. It looks at the following:

- Command and Control;
- Accountability;
- Flexibility;
- Value Management;
- Cost Management; and
- Use of Incentives.

4.1   Command and Control

One significant cultural change since the 1980s and Barnes paper is the move away from the straight command and control approach (Project Manager is all powerful) based around tasks, time and cost. Advanced IT tools such as web based collaboration systems, e-mail, e-procurement, high end project management systems and the advanced frameworks covered in Section 3 all contribute towards faster more effective team working.

Command and control does have its uses on a project specific basis where the teams are at odds and time short. The Programme Manager may well need to take control to bring the project back on course but this is a fallback position taking up his/her time and energies. In general the Programme Manager is managing several projects at once, therefore focusing on one problem project dilutes his/her overall effectiveness.

4.2   Accountability

Accountability is an interesting issue. Under command and control the Project Manager is all powerful, issues the instructions, drives the project plan and therefore has accountability for performance. If we are moving towards a more empowered, trust based model for programmes, with the Client Value System, project goals and performance all agreed with the supply side - who is accountable for delivery?

As far as the Client is concerned the answer is still likely to be the Programme Manager - otherwise why have one? However, there should be enough of a team culture with aligned pain/gain incentives to create peer pressure to perform. The Barnes model creates pressure points early on in the project cycle to assert the Project Manager's position rather than improve performance. The Davidson Frame model prefers a more proactive and politically astute operator who can predict and deal diplomatically with the pressure points before they arrive - dealing with items on their real priority rather than their perceived urgency.

4.3   Flexibility

Programme Managers need to be very flexible. The technical and business skills sets were covered in Section 2. Flexibility is important in handling stakeholder interests and inputs, especially from those who are affected but not directly involved in programme management. For example, in the UK water industry the regulator OFWAT wishes to dictate performance criteria for the assets (outputs) and influence capital investment expenditure levels (inputs) for the water company's Asset Management Plan (AMP). This is why the Asset tools discussed in 2.1 are such an important part of programme management.

4.4 Value Management and Change

If the funding for programmes is top down - the team needs to use Value Management and Value Engineering processes to ensure that each project is performing to its requirements. One challenge often seen in programmes is the balancing of project specific budgets against the total budget. Clients do sometimes have a tendency, part way through programmes, to change their priorities or the performance specifications of the works. Therefore it is essential to keep a baseline model for each project and discuss the impact of change not only on the project but also on the programme.

Some programme managers use portfolio analysis tools to assess the total risk to the programme on time, cost and performance. This aggregation of risk does have some advantages - over a number of projects the risk premium is statistically more readily calculated.

4.5 Cost Management

Running a programme is different to running a project. Client's want to see:
- The programme delivering best value (not necessarily the details for each project);
- A learning culture where mistakes made on earlier projects are put into the collective knowledge bank to help prevent further occurrence;
- Benchmarks on performance based on experience gains;
- Savings being calculated and communicated as part of the programme management (they may have a use for the money saved); and
- Clear evidence of team working.

Costing data needs to be cross-compared both within the programme on an elemental basis and between programmes for benchmarking purposes. Some clients want and expect to see standardisation of components to eliminate waste, make procurement savings and make asset maintenance easier. They expect to see data migration between project management systems and asset management systems - the latter being their operational management tool for infrastructure.

4.6 Use of Incentives

There has been some research into the use of incentives (ref 13) within programme management. Incentive systems, that reward savings and success, align the supply side with the CVS more readily than claims based/penalty approaches. Hence the more enlightened tendency towards using target costs with the pain/gain equations highly visible.

One question often asked in the programme environment is 'should the Pain/Gain be programme or project based?' The author and most Clients prefer programme-based incentives - since that is the basis of awarding the contracts in the first instance. The supply side likes project-based incentives - they can take the upside payments far earlier in the programme, offset gain on some projects to pain on others (this means they also focus on the problem projects) and minimise their risk.

5 Contractual Considerations For Programmes

So are their differences in contract approaches between Programmes and Projects? Technically not - for most standard forms of contract. The New Engineering Contract (NEC) and PPC2000 try and embrace partnering into their format (industry practitioners believe the NEC model to be the more robust). There are some recommendations on what needs to be considered to assist in Programme Management, especially with Partnering.

5.1 Maintenance

DBFO and PFI tend to include maintenance requirements as part of each contract. Procure 21 for the NHS (programme based) takes account of early maintenance requirements and PRIME (for the Defence Estates) looks for single point accountability for Design and Construct from the Contractor. In the latter form of contract the Project Team has members drawn for the end user (the armed services), the Prime Contractor, Defence Estates and a third party project advisor (PSP role). Interestingly, it is the PSP who evaluates/benchmarks the contractor's performance.

Maintenance is an important element in assessing programme performance - it may even be the prime driver. Therefore it is important to include some form of maintenance contract as part of the performance specification.

5.2 Reward Systems

As discussed in 4.6 reward systems for programme management are potentially complex but important incentives. They need to be contractually tied to soft as well as hard measures (i.e. client satisfaction, team working skills) if any industry is to improve working practices.

5.3 Risk Management

Risk management was discussed in section 4.4. This is a specialist activity in its own right. The portfolio approach to managing risk is preferable to the random percentage based 'contingency' approach often used in the single project environment and promoted by traditionalists. Pooling risk and running risk workshops makes the financial and business implications overt and more importantly 'owned' by the programme team.

It is often said that the party most experienced at managing a risk handles it best. Clients need to recognise that trying to offset all risks to the supply side doesn't make economic sense - the Client side holds all the purse strings and therefore ultimately ends up paying. It is preferable to identify and quantify agreed risks on a register and to have the Client or his Programme Manager hold the portfolio budget.

5.4 Use of Open book

An approach that is important to both partnering and (according to Barnes) variation payment is the use of open book for procurement. Although it is culturally alien to many on the supply side, it does help promote trust and de-duplication of unnecessary overheads and services. It is the programme costs that need to be collectively managed with a fair/balanced mark up being applied across the supply side. If rewards are partially linked to costs, then cost reduction becomes a common challenge across the team and everyone helps to eliminate unnecessary expense.

6   Conclusions

In conclusion, programme management is a far more complex environment than traditional project management. The paper has demonstrated:

- The need for even higher skill levels from the project management industry;
- The requirement for advanced asset based systems to prioritise and deliver programmes;
- That advanced collaborative skills and tools ensure the right team selection and that some of these are relatively new to the UK industry;
- Clients want a high degree of satisfaction, not only with the finished works but also during the programme's implementation;
- With programmes and collaborative working, major savings can be made, lasting relationships developed and a body of knowledge created and maintained; and
- That teamwork needs to be collectively rewarded.

This is some way ahead of the more traditional project management approach described by Barnes and his colleagues in the 1980s. One aspect that is still relevant - looking forward to what needs to be done, not backwards at what should have been done - **avoid the blame culture**.

In the Partnering Continuum^{TM} Framework this is called 'future orientation' and it is essential to both good programme management and successful partnerships.

References

1. The New Project Management – 2nd Edition 2002, J Davidson Frame, Josey-Bass Publishing
2. Developing And Marketing Alliances, A Crossley, Construction Marketer Vol 1 Issue 3, August 2002
3. Construction Project Management, M Barnes, Project Management Vol 6 No 2 1988
4. The Value Management Benchmark: A good practice framework for Clients and Practitioners, S Male et al, Thomas Telford 1998
5. Partnering Intelligence – Creating Value for Your Business By Building Strong Alliances, S M Dent, Davies Black 1999
6. Accelerating Change – Rethinking Construction (Strategic Forum for Construction) September 2002
7. Delivering Best Value Solutions and Services – Highways Agency Procurement Strategy, November 2001
8. The Anatomy of Major Projects: The Reality of Project Management, P Morris and G Hough, Wiley 1987
9. The Partnering Intelligence Fieldbook: Tools and Techniques for Building Strong Alliances for Your Business, S M Dent and S M Naiman, Davies Black 2002
10. An Investigation of the Readiness of the Construction Industry for Concurrent Engineering, 2002 - M Khalfan, C Anumba & P Carrillo
11. The Need for BEACON – A Crossley Presentation at Conference at Loughborough University June 2002
12. Frameworks for Improvement, A Crossley Construction Marketer Vol 1, Issue 5 November 2002
13. Incentive Mechanisms for Project Success, Bower D et al, Journal of Management in Engineering, ASCE, Vol 18, No 1, January 2002

Appendix A – The BEACON FRAMEWORK

'*Definition - a person or thing that serves as a guide, inspiration or warning*'

The Benchmarking and Readiness Assessment for Concurrent Engineering in Construction methodology measures the readiness and subsequent performance of the participants in the infrastructure and construction supply chain. It is built on the principles of Concurrent Engineering (CE), used so successfully in major manufacturing and technology businesses.

BEACON targets and measures optimisation of the programme and project from conception through design, procurement and construction to achieve reduced lead times and better integration of activities by maximising concurrency and collaboration in working practices. Full implementation of the methodology has the potential to make construction projects less fragmented, improve procurement assessment, team-working, project quality, reduce construction time and lower project costs.

In other industries, such as manufacturing and software engineering, the introduction of a CE based approach has brought about significant improvements in many aspects of production. Assessing the extent, to which organisations in an industry are ready for the adoption of CE before implementation, helps facilitate the production process. This establishes the level of CE maturity of different participants in the supply-chain to target required improvements.

BEACON has been devised as both a readiness assessment and performance enhancement process for the global infrastructure industry. The technology emerged from over 4 years of research and development by the Centre for Innovative Construction Engineering (CICE) at Loughborough University in the UK, latterly in partnership with ServQ. The process will assist in identifying the critical risks involved in programme and project implementation for the management team and supply chain.
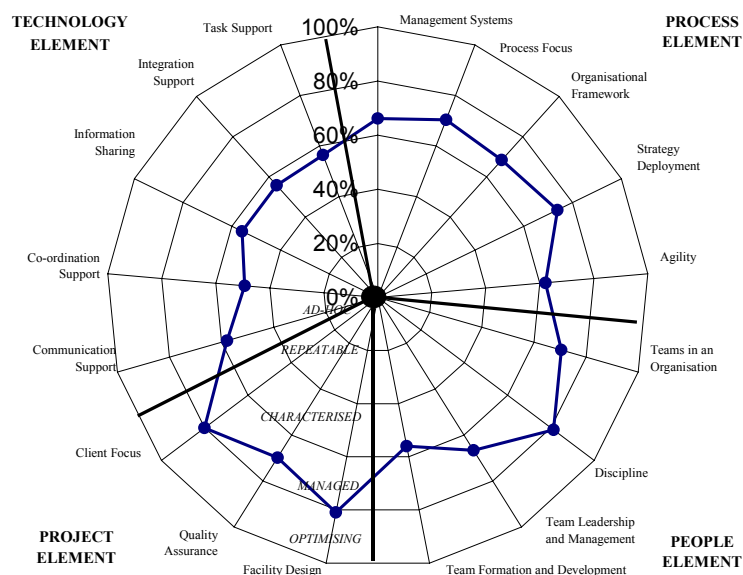
CE readiness of Clients from case study results demonstrated on BEACON.

The key to BEACON is that it incorporates the Process and Technology elements of other CE assessment tools with the additional critical elements of People and Project present in major infrastructure developments.

Measurement of these four elements targets the following:

Process: factors to assess the *process maturity level* of a construction organisation - Management Systems, Process Focus, Organisational Framework, Strategy Deployment, Agility.

People: factors to assess the *team level issues* within the organisation-Teams in an Organisation, Discipline, Team Leadership and Management, Team Formation and Development.

Project: factors to assess the *client's requirements* and design related issues Facility Design, Quality Assurance, Client Focus.

Technology: factors to characterise the introduction and *utilisation of advanced tools and technology* within the organisation - Communication Support, Coordination Support, Information Sharing, Integration Support, Task Support.

For these four elements and their relevant critical factors, five different levels of performance indicators assess the level of project planning and performance within the project team and supply chain, from *ad-hoc* at the most basic level to *optimising* at the highest level.

BEACON objectively measures CE readiness and performance in the infrastructure industry. Relevant research was undertaken in five segments of the industry: clients, consultants, contractors, sub-contractors and suppliers. In general, the results show that the construction industry still needs to deliver: improvement in most of the critical areas, better team-working and business integration. Segments that appear ready for CE adoption are those which: are client-focused, monitor and control the project development process and target continual improvement of their processes and operations. The research indicated that the better performers are likely to be major contractors and specialist sub-contractors, whereas clients, consultants, suppliers and manufacturers needed to improve their position.

The construction industry needs appropriate guidelines for improvements in the weaker critical factors, as well as standards for the implementation of CE within the industry. The BEACON process is an objective tool for assessing project and programme performance before and during construction. It also assesses the readiness of the construction supply chain to best support the project mission and the management team.

The benefits to the infrastructure industry of CE can only be achieved through effective assessment, planning and action based improvement. The focus is on delivering best value level of performance throughout the supply chain, with respect to the critical success factors. BEACON enables industry participants to evaluate and benchmark their project delivery processes, identify areas requiring improvement or change and work together in an active business partnership to deliver real, measurable success.

Achieve

strategy formulation

Exceptional

organisational alignment

Sustainable

partnering & alliancing

Performance

implementation

ServQ

ServQ Limited
Regus House
Malthouse Avenue
Cardiff Gate Business Park
Cardiff UK
CF23 8RU

Tel +44(0)2920 263633
Fax +44(0)2920 263707
www.servq.com
email:info@servq.com