



# Planning & Implementing Effective Collaboration in Construction

A Handbook



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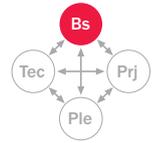
## Key Performance Indicators and Collaborative Working

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## Foreword

I am delighted to be able to provide the foreword to this brochure.

Collaboration is now a prerequisite for success in so much of what we do in our industry yet in most cases we develop and implement it on a case-by-case basis. As a consequence we get a mixed set of outcomes with teams and individuals left wondering, 'where did we go wrong?'.

My role within Taylor Woodrow Construction is essentially to identify, develop and promote new and better ways of satisfying customers needs. Many of the ways in which I deliver against this expectation rely heavily on collaboration, with academia, companies and individuals. Many of the actors in these efforts have had mixed experiences of collaborative working, whilst others have no experience at all.

As a consequence, much of the effort in any improvement or change project is directed towards achieving a consistent approach and convincing the team of its merits. This is self evidently an inefficient use of valuable resources. Therefore, any assistance that we can gain in improving the quality and consistency of our collaborative working is highly valuable.

The PIECC work has identified what we all know to be required and documented it at varying levels of detail from concept framework through to details of case studies of individual aspects of the process.

I believe that this will provide us, and the industry in general, with:

- A frame of reference to check what we are already doing
- Inform what we plan to do in the future
- Inform those we wish to work with
- Improve the success of our collaborative efforts

I believe that the authors of the PIECC model are to be congratulated for delivering a comprehensive approach in a simple, easy to use, format. The challenge is now for industry to utilise the model and improve our performance as a consequence.



**Rennie Chadwick**  
Technical Director



## The Aim of the Handbook

This handbook provides an overview of the “*Planning and Implementation of Effective Collaboration in Construction*” – the PIECC project. The project has developed a decision-making framework to aid project team members to plan and implement collaborative working into their projects.

The framework guides teams to work through four key areas by helping them to:

- develop a joint **Business strategy**
- develop a **Collaboration Brief** for the project
- guide the team to **Plan the Solution** to be introduced
- provide guidance to **Implement the Solution** into the project

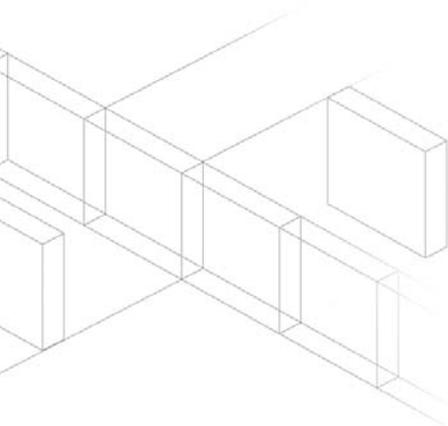
This enables the development of an agreed collaboration strategy.

### Who should read this?

The handbook has been written for strategy makers and managers of construction projects who wish to take advantage of the benefits that collaborative working provide using their existing information and communication technologies (ICTs), people and business processes.

### What can PIECC achieve?

- Improve project performance through effective allocation of resources for the effective planning and implementation of collaborative working
- Provide tools and techniques to measure the success of your collaborative working activities
- Educate and inform your people to work collaboratively in your organisation, and other organisations in your projects
- Improve collaboration and communication across your projects lifecycles and their associated supply chains
- Provide a better product to the client through efficiency savings by working collaboratively
- ...



# Executive Summary

“...collaborative working is a creative process undertaken by two or more individuals, sharing their collective skills, expertise, understanding and knowledge (information) in an atmosphere of openness, honesty, trust and mutual respect, to jointly deliver the best solution that meets their common goal...” Paul Wilkinson – BIW Technologies

It is assumed that your decision to pick up and begin reading this handbook has been prompted by an interest in collaborative working. It may be that you and your organisation are already practising a form of what has come to be known as collaborative working. Perhaps you have been aware of the concept for some time but for whatever reason have not felt the need to adopt it. You may even feel that it carries too much risk. Or it may simply be that you have not had an opportunity to do so. For others the concept will be entirely new.

You are probably also reading this because you have an interest in improving your own and your organisation’s performance, from both a financial and a technical perspective, in executing construction projects. Owner companies have to live with the consequences of their projects for many years after they have been brought into operation. So they have a direct interest in the efficiency with which projects are conceived, defined and executed, as this will inevitably, and often significantly, impact on business results over a long period.

The handbook is intended primarily for those who wish to embrace, fully the concept of collaborative working. The authors hope and believe that all readers will find something of direct and useful application in improving business performance in a significant way.

So the handbook is the result of a two year research project conducted at Loughborough University with industrial input from: the AVANTI Programme; Arup; Buro Happold; Capita Symonds; Mott McDonald and Taylor Woodrow. It describes a framework that enables participants in a construction project to effectively plan and implement collaborative working into their day-to-day activities.

The handbook is split into three distinct sections:

- Section 1. PIECC Project description
- Section 2. How to use the Framework to formulate your Collaboration Strategy
- Section 3. The Framework, including the effect that the PIECC framework has on the KPI’s for the construction sector

## PIECC Project description

Information is provided to the reader on the ‘aims and objectives’ of the project and how these were achieved using the described research methodology. The remainder of this section provides information as to the key findings of the literature survey, questionnaires and interviews conducted in the project.

## How to use the Framework

The PIECC framework has been designed to be used in a workshop environment. Thus, this section provides the reader with information on how such a workshop should be organised and run. To enable the success of this workshop a facilitator needs to be appointed. This section of the handbook lists key skills and attributes needed by the facilitator to enable the successful running of a workshop.

## The Framework

The final section shows the framework that is used to develop your collaboration strategy. You will work through four separate sections before collating all your information into a coherent strategy to enable collaborative working to be effectively used in your projects. The figure shows the four stages.

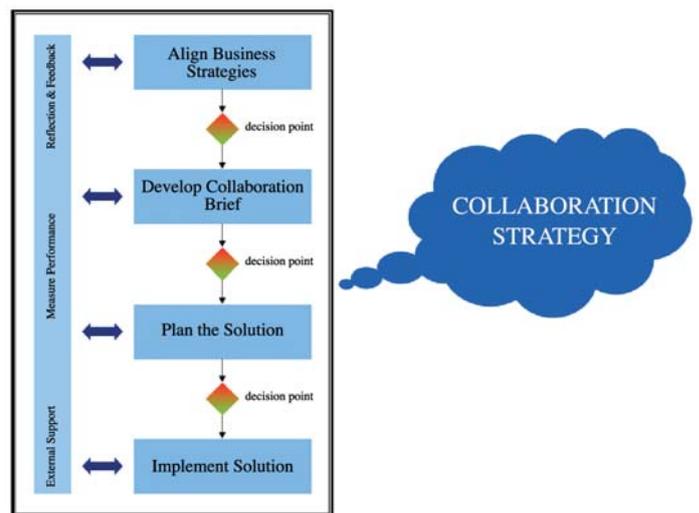


figure 1; The four stages of developing a collaboration strategy

Finally as part of this section the research team and the industrial steering group have tried to determine how the results of more effective collaborative working - achieved by using the PIECC framework - affect the KPI’s published for the construction sector.

We have taken the description provided by Paul Wilkinson as our definition of collaborative working.

The PIECC project describes “effective collaboration” as the bringing together of three distinct strategic areas:

1. the **BUSINESS**
2. its **PEOPLE**, and
3. the **TECHNOLOGY** it uses.

To achieve effective collaboration the venture needs careful planning and implementation of the chosen solution, we believe that this handbook provides you with the tools to achieve this.

# Background to the PIECC project

There is widespread recognition that the UK construction industry must embrace new and better ways of working if it is to remain competitive and meet the needs of its ever demanding clients. Project delivery in construction is highly dependent on the effectiveness of the team put together to execute the project. In many cases this is a function of how well members of the team work collaboratively and how effective the communications infrastructure used by the team is. Significant efforts have been invested in recent years to develop tools and techniques that enable distributed teams of professionals to work collaboratively. Some of these systems were able to improve some aspects of collaborative working but did not address the dynamics of construction organisations - and their people, projects, and processes sufficiently enough. The business and cultural environments within which collaboration takes place still remained an important issue to be investigated.

The work conducted in this research focussed on high level strategic decision making to identify areas where collaborative working can be improved taking into account organisational, project and users needs. The organisational priorities for collaborative working were considered together with project needs, users' requirements and technologies to develop a decision making framework that facilitates the strategic planning and implementation of effective collaborative working policies and practices. When carefully planned and if based on informed decisions, the project team believe that these policies and practices will help organisations improve their collaborative working, achieve full benefits from it, and maximise the use of existing tools and techniques available. Particular attention has been given to the challenging requirements of distributed, heterogeneous and transient construction project teams together with the need to facilitate ubiquitous and serendipitous collaboration between team members and across all stages in the project delivery process.

The project team have determined that there has been a growth in the development of collaborative systems and tools in recent years especially in the areas of communication, visualisation, and information and knowledge management. However the uptake and setting up of these tools has been rather slow and have had a mixed level of success. In the absence of well defined strategies that take into account the organisational, project and user requirements, choosing and setting up collaborative systems within the construction industry has traditionally happened in a confused manner. The project partners and industry representatives strongly believe that the developed framework and its associated set of methods for collaborative working will maximise the use of and benefits from Information and Communication Technology (ICT) based collaborative systems.

## Aims and Objectives

The main aim of the research was to develop a strategic decision making methodology that guides organisations in the planning for effective collaborative working practices and the implementation of suitable tools and techniques. The associated objectives were to:

- review the state of the art collaborative working with a focus on both practices and technologies
- conduct a requirements capture survey for collaborative working in construction at three different levels; organisational, project and end users, and identify key areas for improvements in collaborative working
- develop a methodology and tool for the planning and implementation of effective collaborative working taking into account both the organisational business process and the project lifecycle
- test and validate the methodology and tool within the industrial context.

## Research Methodology

In order to achieve the objectives of the research the following strategies and research methods were adopted:

1. Use of published sources: through an extensive literature review the current 'state-of-the-art' practice on collaborative working was established, both in the construction and other industries;
2. Field studies: these were conducted to establish current practice for collaborative working within collaborating organisations. These field studies included questionnaires, semi-structured interviews and detailed case studies within the collaborating organisations to identify the requirements for collaborative working and the most important issues to be considered at the organisational, project and users levels;
3. Using a 'develop-test-refine' strategy (action research): to perfect the methodology and appropriate tools for effective collaboration. This was essential as the PIECC project is concerned both with developing real-life solutions and furthering the goals of 'science'.

The methodology for effective collaboration considered the organisational culture, project process and users' requirements for the implementation of collaborative tools and techniques - see figure. Thus, both 'soft' (i.e. organisational and cultural) and 'hard' (i.e. technological) concepts and tools, were adapted and combined to achieve the objectives of the research. This approach was chosen because of its relevance to the objectives of the research and current developments in the field of collaborative working in construction. Lessons from past research initiatives also suggested that the combined approach of 'soft' and 'hard' was the most sensible approach to be adopted.

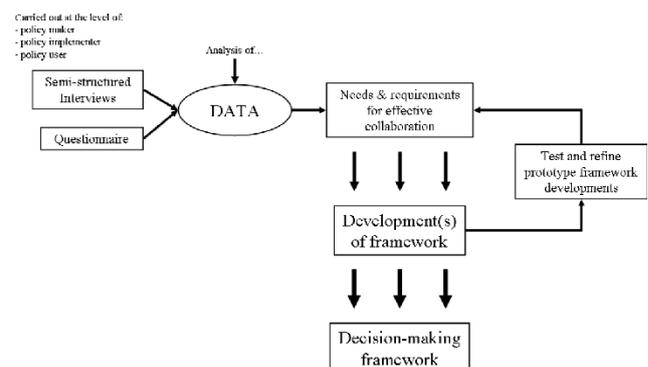


figure 2: PIECC Project Methodology

## Key Findings

Participants usually come together to collaborate to build capacity to complete a set of tasks that one sole organisation would find difficult to achieve. The collaboration eliminates fragmentation, duplication and distrust. This is achieved by intelligently using available resources wisely, sharing the multiple project risk factors across multiple domains, and enhancing staff and organisational motivation. This can only be achieved 'effectively' by bringing together and aligning the three strategic areas of: business, people and technology.



figure 3: The three strategic areas for effective collaboration

There are many factors that are likely to influence the success or failure of working collaboratively. It is important to realise that no two collaborations will progress in exactly the same way or within the same time frame. The PIECC results enable each collaboration to find a way to proceed that is consistent with its unique circumstances and composition. Important to this are six key areas recognised as being critical aspects in each of the three strategies.

The areas are:

- **Vision** – all members of the collaboration agree on its scope, aims and objectives, etc
- (Stakeholder) **Engagement** – collaboration leaders need to ensure that all key participants are consulted as to the practices to be employed during the collaboration
- **Trust** – time and resources are needed to enable all participants to build trusting relationships
- **Communication** – a common means of communication is decided by all key participants in the collaboration
- **Processes** – both business and project, that describe to all key participants how the collaboration is to work on a day-to-day basis
- **Technologies** – an agreement on those to be used to ensure the collaboration is easily implemented and maintained.

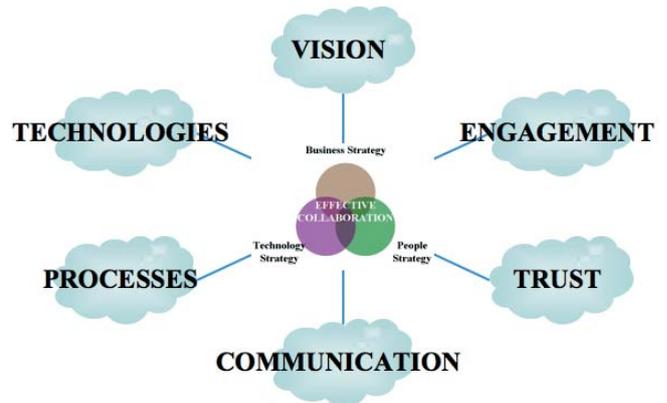


figure 4: Six key aspects of each strategic area for effective collaboration

All six areas need to be addressed in the three strategic areas described to have "effective collaboration" in the organisation/project context. However, the strategies may be different depending on the context of the proposed collaboration. Differences exist in effective collaboration at the project and organisational level.

Perhaps the most important overarching aspect of effective collaboration is that working collaboratively often means 'new ways of working' for many/all (at least initially) of the participants involved in the collaboration. Effective collaboration is only achievable through the innovative design and development of a more balanced 'collaboration strategy', that does not rely solely on sophisticated ICTs. The project results show that there is little evidence of such a 'strategy' existing that prescribes to managers effective ways of implementing and managing collaborative projects/environments. The decision-making framework described in this handbook defines what this strategy should consist of to take advantage of the benefits provided by a more targeted use of ICT, that is better aligned to an organisations people and business processes.

It is important to realise that personal interactions across the collaborating stakeholder organisations that are attempting to nurture trusting relationships will encounter the growing pains naturally associated with systemic change associated with the new ways of working. Therefore, it is essential to allow stakeholders to take the necessary time from routine responsibilities to meet and interact with one another so that trust and respect on an individual level can be generated.

## How to use the Handbook

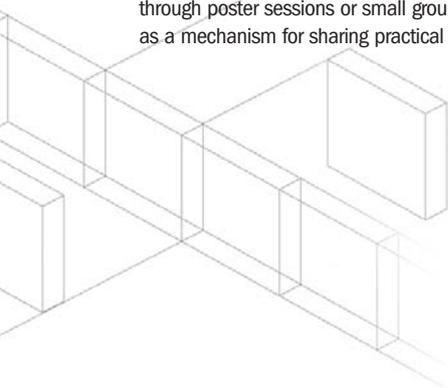
The PIECC decision-making framework is designed to help project participants to develop a collaboration strategy for their project. With this in mind, the research advocates using the framework in a workshop environment, gathering key personnel around the table to develop the strategy.

This section of the handbook provides key points to consider when managing this workshop, and the skills needed by the person(s) facilitating the workshop.

### Organising and Hosting a Workshop

The following list provides a number of key points to consider when organising and hosting a workshop.

- **Active engagement of participants during the workshop** – Nothing is less effective than a workshop where participants do not participate. It is therefore essential to give people an opportunity to participate actively in every session using a variety of techniques: small group discussion, large group discussion, short problem-solving tasks, involvement of participants in trying out activities, individual or paired work at the computer, and scheduled thinking and writing time.
- **Model effective teaching approaches** – Previous experience of the most successful workshop sessions are those taught with good teaching practices in mind, and that the least successful sessions are those where a presenter simply stands up and talks.
- **Allow time to interact and share experience/knowledge** – Participants bring valuable experience and ideas to workshops. Structured mechanisms for sharing experiences and expertise must be an integral part of every workshop program.
- **Emphasizing practical applications** – An emphasis on practical applications and strategies is an important aspect of conducting effective workshops. Participants frequently comment on the value of having examples of what works and what doesn't when conducting workshops.
- **Allow participants time to make progress on specific tasks** – Time to work individually during the workshop allows participants to reflect and to make progress on adapting workshop content to their own needs. This can be effectively supported during the workshop by providing opportunities for participants to work one-on-one or in small groups with workshop leaders. Workshop programs should include scheduled work and reflection time for participants.
- **All participants leave with specific plans for future action** – Workshops can produce a wide variety of results. In all cases, workshop time devoted to planning next steps is critical. Posters and oral presentation of plans can be important in motivating participants to develop realistic plans and in encouraging follow through. Feedback from other participants facilitated through poster sessions or small group discussion are also extremely valuable as a mechanism for sharing practical experience.
- **Requiring preparation in advance of the workshop** – Coming prepared is important for a workshop. A variety of approaches should be used to prepare participants for the workshop including reflection on their goals for the workshop, development of the venture's ideas for completion at the workshop, assembling materials for sharing, pre-workshop discussion, and participating in surveys of participant needs.
- **Include presenters from all organisations in the venture** – Participants from the different (potential) organisations to be involved in the venture will greatly enrich any workshop experience by providing multiple viewpoints and approaches.
- **Thorough planning of workshop sessions** – Good workshops that appear to flow spontaneously reflect extensive planning by leaders and a common understanding of the program and its objectives. In the time before each workshop, if possible, leaders must flesh-out the workshop schedule through a series of email discussions, phone conversations, conference calls, and, when possible, a meeting.



## Key Skills needed by the Workshop Facilitator(s)

Successful workshops require a facilitator who can help focus and structure the discussion and, at the same time, encourage ownership of the workshop. The facilitator's main task is to create an atmosphere for democratic deliberation, one in which each participant feels at ease in expressing ideas and responding to those of others.

The workshop facilitator does not “teach” but instead is there to guide the participant's process. He or she does not have to be an expert in the subject being discussed, but must know enough about it to be able to ask probing questions and raise views that have not been considered by the participants.

Above all, staying neutral and helping the workshop to do its own work are central to good workshop facilitation. This takes practice and attention to one's own behaviours. Make sure to ask for the participants help in making this work well for everyone.

Below is a summary of the key skills needed by the facilitator:

- **Reflecting** – feeding back the content and feeling of the message, i.e. “...let me see if I'm hearing you correctly...”
- **Clarifying** – restating an idea or thought to make it more clear, i.e. “...what I believe you are saying is...”
- **Summarising** – stating concisely the main thoughts, i.e. “...it sounds to me as if we have been talking about a few major themes...”
- **Shifting focus** – moving from one speaker or topic to another, i.e. “...thank you, Peter. Do you have anything to add, Megan?...” or “...we've been focusing on views 1 and 2. Does anyone have strong feelings about the other views?...”
- **Using silence** – allowing time and space for reflection by pausing between comments.
- **Using non-verbal and verbal signals** – combining body language and speech to communicate – e.g., using eye contact to encourage or discourage behaviours in the group. Be aware of cultural differences.

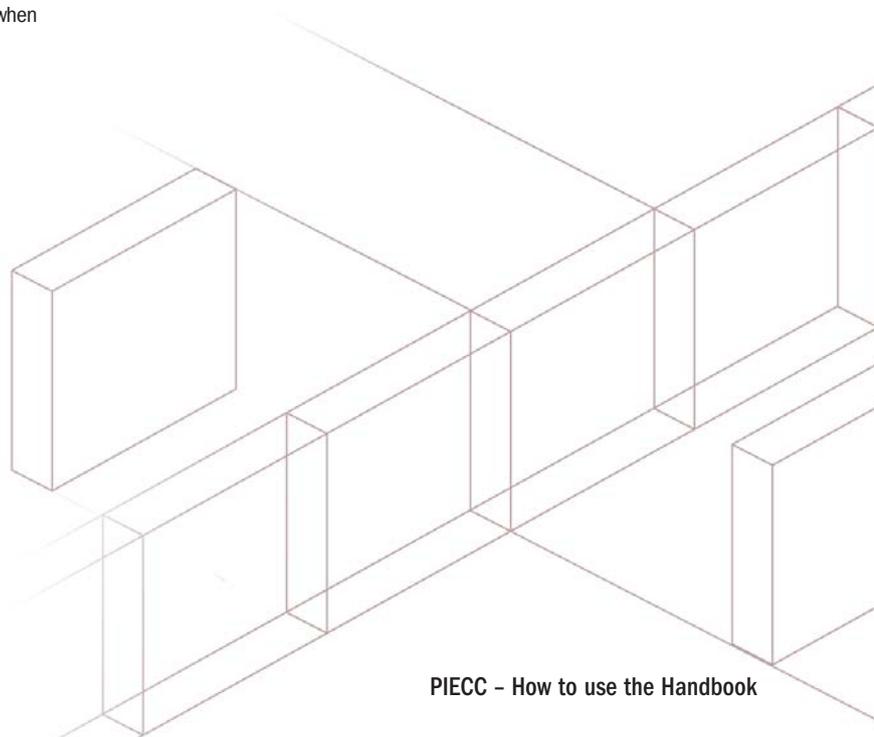
Neutrality is important here, people should be encouraged to participate when they are not, and vice-versa.

Good workshop facilitators:

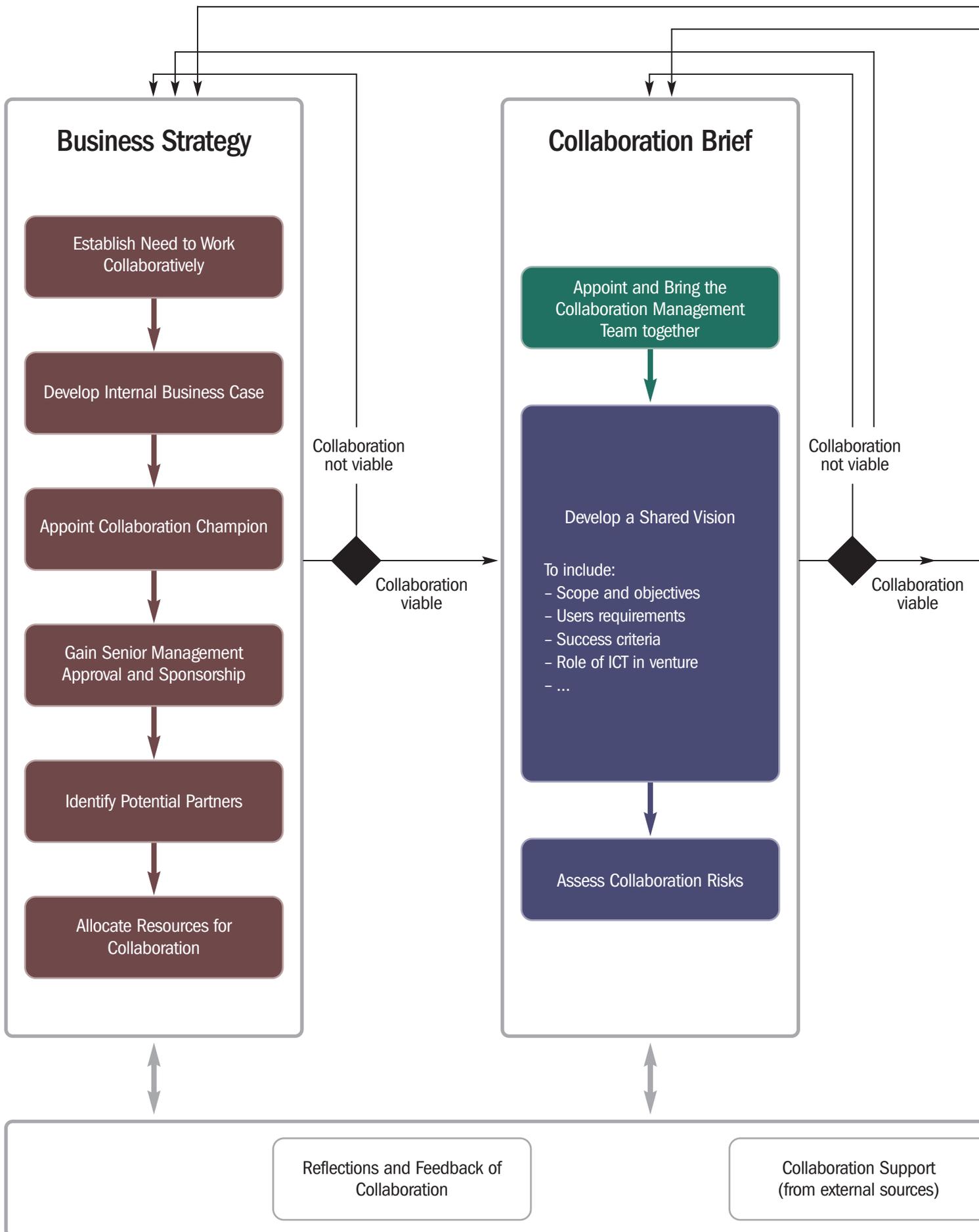
- are neutral; the facilitator's opinions are not part of the discussion;
- help the group set its ground rules, and keep to them;
- help group members grapple with the content by asking probing questions;
- help group members identify areas of agreement and disagreement;
- bring in points of view that haven't been talked about;
- create opportunities for everyone to participate;
- focus and help to clarify the discussion
- summarize key points in the discussion, or ask others to do so.

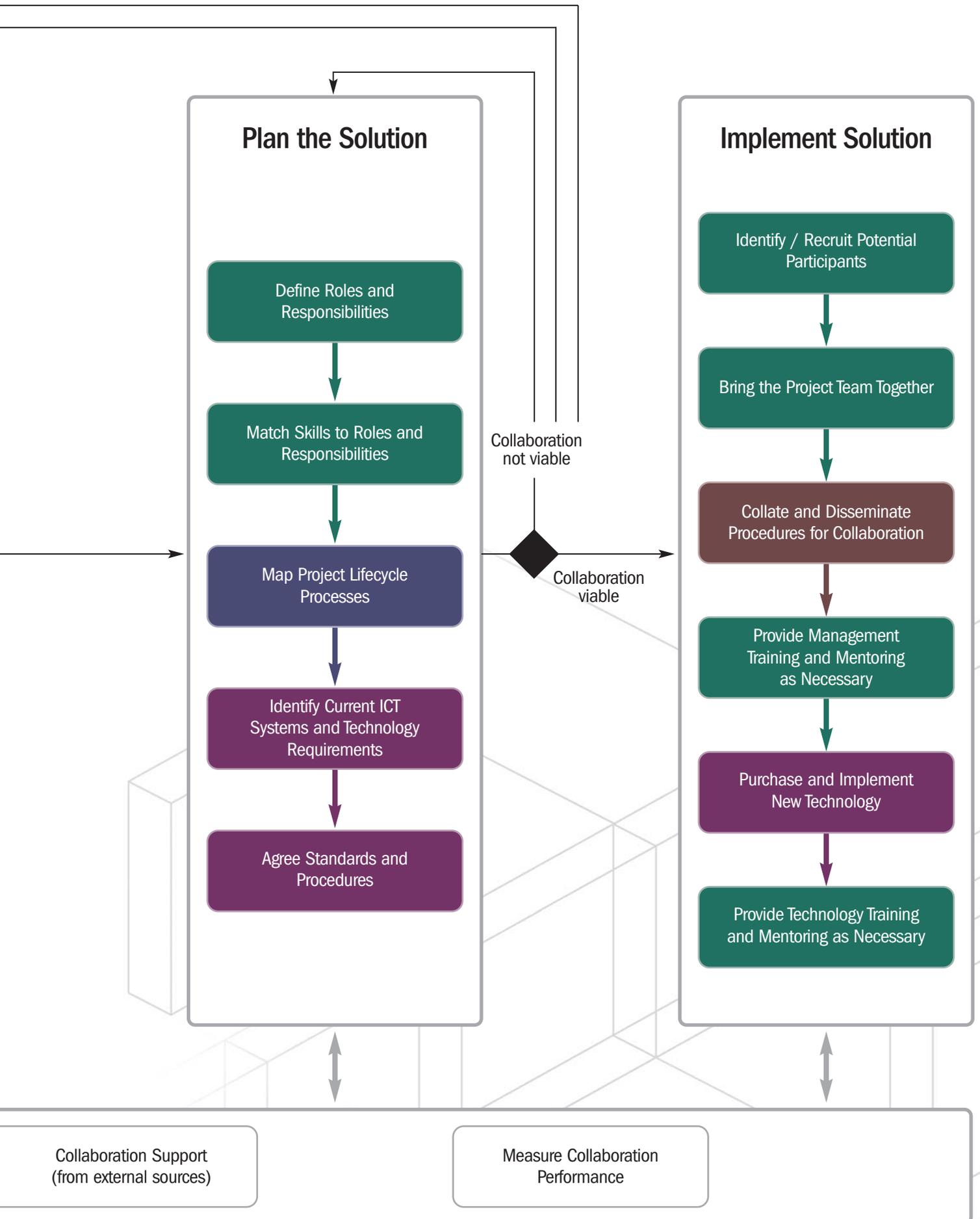
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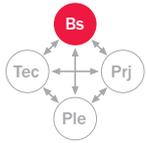
- are self-aware; good facilitators know their own strengths, weaknesses, “hooks,” biases, and values;
- are able to put the group first;
- have a passion for group process with its never-ending variety;
- appreciate all kinds of people;
- are committed to democratic principles.



# The PIECC Decision Making Framework







# Establish Need to Work Collaboratively

## Why?

A common reason for unsuccessful collaboration is that they do not have sufficient senior management backing and sponsorship. To establish the need for strategic planning of ICT and people, large companies may wish to conduct a feasibility study, whilst smaller companies might make a cost estimate of the process. In either case, it is advisable to find a senior manager to support and sponsor the whole collaborative experience from its inception to implementation.

In certain circumstances the client will specify requirements that dictate to individual organisations or an established project team that they must work collaboratively on a project. In these cases it is vitally important to satisfy these requirements.

## Who?

The person who is proposing to the organisation that working collaboratively is beneficial should lead the development of data and information to highlight the need to work collaboratively. They may be able to do this as an individual or as part of a team. External support from consultants may be needed if the proposed collaboration is large enough.

## How?

To enable the clear establishment of the need to work collaboratively, the project leader in each organisation may conduct a feasibility study to make a clear case to senior management. Feasibility studies are designed to provide an overview of the 'make or break' issues related to a business idea, i.e. working more collaboratively, and whether or not it makes sense for your business. The list below highlights some of the questions to consider in the four key aspects of conducting a feasibility study.

### Market Issues

- Can we afford not to adopt collaborative working procedures?
- Is there a (current or projected) demand for adopting collaborative working procedures?
- What competition exists in the market?
- Are there any products/procedures available to meet the requirements – and what is their cost?
- How easy are these products to use?
- What is the availability in the locations necessary (e.g. performance issues, etc)

### Organisational Issues

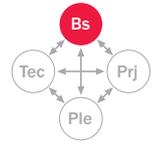
- How do the different company cultures, ethos, mindset and policies affect the collaboration?
- Who will serve as senior personnel on the collaboration board?
- What qualifications are needed to manage the collaboration?
- Who will manage the collaboration?
- What other staffing needs does the collaboration have? How will these needs change over the next 2-3 years?
- What key experience does the organisation have that can be built on?
- What areas where skills and experience are lacking, need addressing?
- What are the key processes that will be needed to ensure success of the collaboration (both own organisation and others involved)?
- What are the potential user training requirements?
- What are the controls that need to be in place?
- How will performance/compliance be dealt with?

### Technical Issues

- What are the technology needs for the proposed collaboration?
- What other equipment does the proposed collaboration need?
- Where will you obtain this technology and equipment?
- When can you get the necessary equipment?
- How much will the technology and equipment cost?
- What are the implications of ownership of technology and equipment – including maintenance and on-going support)?
- Integration with existing systems – is it needed, how will it be achieved, what will it cost, what is the business case for integration?
- How does the technology fit with existing technology – compatibility?

### Financial Issues

- Start up costs – these are the costs incurred in starting up a new collaboration? – training course preparation and attendance, preparation of literature material and printing costs, meeting and travelling expenses as necessary
- Operating costs – such as rent, utilities, support and maintenance of technology and systems, on-going training, and wages that are incurred in the everyday operation of the collaboration.
- Revenue projections – how will you price the collaboration service? Assess what the estimated monthly revenue may be
- Sources of financing – research potential sources of borrowing to finance the proposed collaboration
- Profitability analysis – the 'bottom-line' for the collaboration. Will the collaboration bring enough money to cover operating expenses. Will it break even. Is there anything you can do to improve the bottom line?
- What is the total cost of ownership, including pay-back period, whole lifecycle costs, sunk costs, opportunity costs etc?



# Develop Internal Business Case

## Why?

The business case is a document that presents a view of the collaboration venture to senior management in the individual (potential) partner organisations. It should provide the basis for financial justification and return on investment information. It should be seen as a critical component to 'win' support for the venture, and provide a base from which to 'make the case' for changing the way the organisation will work.

The case should be used to:

- Communicate the details of the venture to others
- Establish a method for measuring success – also see 'Set Success Criteria' in the Collaboration Brief section
- Receive funding approval for the collaborative venture

## Who?

The person(s) suggesting a move towards a collaborative venture should lead the development of the business case. They should highlight key personnel to include as part of the case to show support.

## How?

The business case should tell the collaborative ventures 'story' in a straightforward, easy to understand language. If done correctly, the business case will provide compelling justification for a change in working practices in the organisation (i.e. collaborative working) by outlining, at a high level in the organisation, what is wrong with the current situation, a potential solution, and its possible impacts.

The business case answers questions like:

- Why are we doing this venture?
- What is the venture about?
- What is our solution to the business problem?
- How does this solution address the key (individual) business issues?
- How much will it cost?
- How will the business benefit?
- What is the return on investment and pay back period?
- What are the risks of doing the venture?
- What are the risks of not doing the venture?
- How will success be measured? – see 'Measure Collaboration Performance' process
- Are there any other alternatives?

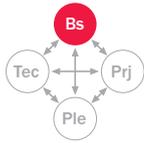
## Tools and techniques

An example of a toolkit to aid in the development of a business case may be found at: <http://www.prosci.com/t3.htm>. Below is a summary of key headings to include in the business case taken from the toolkit.

- Executive summary
- Situational assessment and problem statement
- Solution overview
- Solution detail
- Solution alternatives
- Costs
- Benefits
- Implementation timeline
- Critical assumptions and risk assessment
- SWOT Analysis
- Conclusions and recommendations

## Case Studies

An excellent example of a successful collaboration may be found in: Chapter 7 The Extended Enterprise Concept, in Score! – A better way to do business\$. Thomas Stallkamp. ISBN 0-13-143526-4



# Appoint Collaboration Champion

## Why?

Organisations that have successfully planned and implemented effective collaboration use a key employee, or 'champion', who drives the process with their energy and commitment. This person must have an understanding of the potential of ICT systems, along with a knowledge of their organisations processes and practices. This champion is often also the project manager of the collaborative effort. In smaller firms, the champion and the sponsor could be the same person.

## Who?

Senior management in each organisation must appoint a suitable champion to represent their organisation in the collaborative venture.

## How?

The champion should be appointed with a proven track record as an effective leader. This person must demonstrate knowledge and experience in the collaborative working arena, as they will be looked upon for guidance. They should demonstrate that they have authority and most definitely have experience with collaborative working.

As the leader they must be engaged in the collaboration process – actively, visibly, and continuously. The role the champion plays and the behaviours they demonstrate can often build up, or tear down the collaboration.

To ensure successful collaboration in your project, how you go about your work is equally important as what you do

To enable successful collaboration the leader must balance the 'what' and the 'how' of their job (and project responsibilities/requirements) so that each task gets done well and positive relationships with their colleagues are preserved. One executive said: "...we want the bottom line result to be good and the journey to be pleasant too...".

If the champion is to be an effective leader in the collaborative venture, they will have to ensure that:

- The vision (for the collaboration) is large enough to include both 'what' is to be accomplished and 'how' they and their colleagues are to be involved
- Colleagues have the same vision of success as the champion
- All members of the collaboration understand and are competent to perform their roles in the venture
- The efforts of all in the venture are coordinated
- All participants are encouraged and supported appropriately
- Obstacles are removed along the way
- The collaborative processes and systems add tangible value to the team
- They know how to utilise and apply current best practice procedures

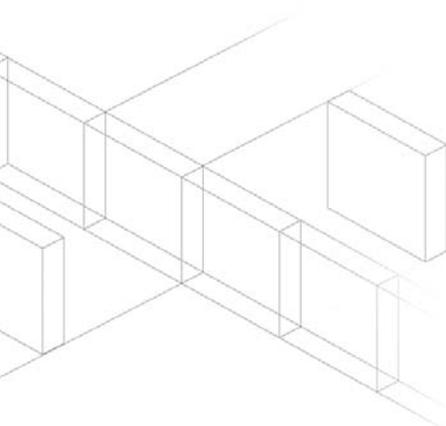
Moment by moment during the collaboration the champion must be able to determine when and how to:

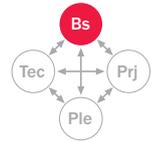
- Accommodate the needs and desires of colleagues, even if they disagree
- Negotiate with colleagues to affect a workable compromise, finding enough common ground to move forward
- Co-develop a creative solution with colleagues, incorporating thoughts and ideas from everyone involved
- Continuously modify and improve the processes as appropriate

## Key points to remember

Regardless of the champions position, as they influence others they are a leader. To be effective:

- They must know themselves – their strengths, weaknesses and preferred leadership style
- Know their colleagues – their strengths, weaknesses and preferred behavioural styles so that the champion can make their strengths effective and their weaknesses irrelevant for the venture
- Enhance their personal leadership behaviour to include the full range of instilling, instructing, inspiring and trusting others, so that they can lead their colleagues from where they are
- Be a role model for collaborative behaviours
- Facilitate the process so that all contribute appropriately
- For any collaborative venture find appropriate balances between:
  - Tasks and relationships
  - Results and efforts
  - Control and freedom





# Gain Senior Management Approval and Sponsorship

## Why?

The gaining of support from managers or directors of the organisation is crucial to enable the collaboration to move forward. The managers or directors must have the power to influence strategic decisions regarding the business direction of the organisation. Their role in the planning and implementation process for collaboration can be summarised as:

- Ensuring that any collaboration activity is integrated with the business decision-making process of the organisation
- Providing sufficient resources to plan and implement the collaboration
- Maintaining an overview of the collaboration and ensuring that changing business processes are incorporated into the organisation

## Who?

The 'Collaboration Champion' (and when necessary, the project team) need to present the 'need to work collaboratively' to their respective organisations 'senior management'. In certain situations the 'presentation' will also need to be made to the client of the project to ensure their support is gained for the collaboration.

## How?

A clear and coherent business case has already been put together. It is now vitally important to present the business case to senior managers of the organisation and/or the client, whichever is the potential sponsor of the project.

A meeting should be scheduled to present the case for collaboration. Typically this will probably centre around an oral presentation. Below is information that will aid in the preparation of such a presentation.

It is important to remember that human attention is very limited. Do not try and cram too much information, either in each slide, or in the whole talk. Avoid providing too much detail (unless asked for) as much of it will not be remembered anyway. Figure 1, shows a suitable model to follow in designing and developing a presentation.

## Organisation

There are a number of key issues to consider in the organisation of any presentation. They are: have a clear introduction; refer back to the business case document (see 'establish the need' process); try to make the talk as short as possible, less is better.

## Mechanics

Key aspects to remember include: the more the talk is rehearsed and critiqued the better it will be; listen to any questions very carefully.

## Text

Ensure that very little text is placed on each slide, and that a single idea is presented on each slide. Avoid using graphics that do not add value to the slide, logos, grids etc

## Illustrations

Key points to remember in this aspect include: try and use suggestive graphics to intrigue the audience; screenshots from potential software and systems should be included, and use strong colours for important stuff, and lighter colours for unimportant stuff.

## Results

Explain the most unobvious results, and ensure that all the advantages of working collaboratively are made clear to the audience.

## Tools and Techniques

The model shows a method that you can use to develop your presentation to gain support for the collaborative venture.

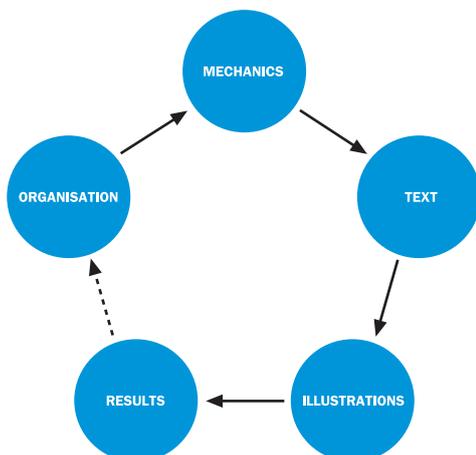
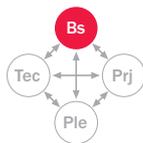


figure 5: Key aspects of developing an oral presentation





## Identify Potential Partners

### Why?

Some organisations will have well defined policies, procedures, and practices while others have not. Some organisations identify people from within while others hire expertise and experience from the outside. In some organisations people are valued for their competence, expertise or creativity while in others people are valued for their seniority. Some organisations behave in a hierarchical way, with clear regard for title, seniority and/or authority, while others prefer democracy or anarchy as the primary form of governance.

You need to be aware that potential partners and their associated personnel will carry to the collaborative venture these constructs of the organisation they represent. If you don't deal explicitly with these issues and reconcile the differences, individuals and organisations will rely on their own experiences to determine for themselves how the venture will operate.

### Who?

It is the role of senior management to provide 'preferred' partners to approach to join the collaboration venture.

It may also be specified by the client that certain organisations will have to work together in a potential collaboration venture.

### How?

Within this process you should consider:

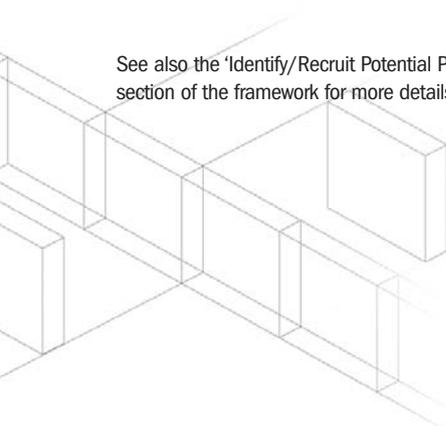
- What you are looking for in another collaborating organisation
- What criteria do you use to decide that 'this organisation is perfect' for the venture

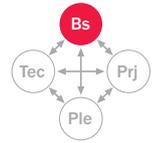
Many organisations looking for potential partners look for technical or functional expertise first and foremost. Many also look for the 'best' to be part of their team, they consider knowledge, skill, reputation, accomplishments, interest and passion all around particular content.

Some organisations will have well defined policies, procedures, and practices while others have flexible or non-existent policies, procedures and practices. It is important to consider these differences in highlighting potential partners for the venture. Also, regardless of the type of collaborative venture you are planning, you must concern yourself with having the right people involved. 'Right' in terms of:

- The abilities of the individuals to perform the required **functions**;
- The way (**form**) in which the individuals do their work; and
- Whether and how each individual **fits** as part of the venture.

See also the 'Identify/Recruit Potential Participants' in the implement solution section of the framework for more details.





# Allocate Resources for Collaboration

## Why?

The performance of every business is largely dependent on how effectively senior managers plan for and allocate finite resources to meet their strategic and tactical objectives. A company that can allocate resources where and when they're needed most and quickly re-allocate resources to address changing business conditions, can successfully capitalize on emerging opportunities that collaborative working provides.

The allocation of resources typically reflects, intentionally or not, an organization's priorities. Therefore providing appropriate resources for the collaboration effort will purvey the right message, to the other collaborating organisations in the venture, of your commitment towards ensuring a successful venture.

## Who?

The senior members of the collaborating organisations must have the power to allocate the appropriate amount of resources to the collaborative venture. Where and how this resource is allocated must be determined by the collaboration team under the guidance of the collaboration champion.

## How?

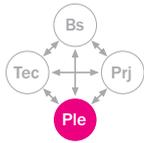
Organisations will need to plan to ensure that the necessary resources are in place to support the delivery and management of tasks to be completed in the collaborative venture. This will include allocating a budget for:

- engaging the stakeholders who will be involved in the project
- the purchase of hardware and software licences for the development and delivery of tasks
- the professional development of staff involved in the collaborative venture
- training (systems and processes) and development of collaboration procedures and processes

## Tools and Techniques

A number of tools have been highlighted that may help in this process:

1. The ITCBP Best Practice Explorer – see [http://ce.idnet.net/resourcecentre/selfassessment/intro\\_one.jsp?level=2](http://ce.idnet.net/resourcecentre/selfassessment/intro_one.jsp?level=2) for more information
2. The CRC's Critical Success Factors for Organisations in Information and Communication Technology – Mediated Supply Chains is a useful tool that will aid you in this process. It is available from the CRC website: <http://www.construction-innovation.info/index.php?id=379>



# Appoint and Bring the Collaboration Management Team together

## Why?

Appoint a management team that represents a cross section of the collaboration participants expertise. These people need to be experienced personnel in each of the participating organisations and have a particularly clear understanding of the principles of collaborative working and the potential of ICT and its effect on collaboration.

In most collaborative relationships you will not be able to have every participant involved directly in every decision. Size and complexity of the venture dictate that you must create some form of government. The government is represented here as a management team. This team should comprise of a manageable number of key representatives of the principal organisations involved in the venture, ensuring some organisational or contractual relationship with every participant in the venture. Key responsibilities for the management team include: direction setting, operational coordination; problem escalation. In short, the management team provides leadership for the venture.

## Who?

The collaboration champion must bring together each of the respective representatives from each collaborating organisation.

## How?

Whether a collaborative venture is large or small, local or global, whatever can be done to help participants get familiar and comfortable with each other will serve to develop trust and respect among them. Depending on whether any have worked together before, and how colleagues develop trust and respect with each other, there are a number of methods that can help along the way. They include:

- A review of professional resumés
- Facilitated discussions
- Personality profiling and self discovery tools such as Myers-Briggs Type Indicator (see: <http://www.cpp.com/products/mbti/index.asp>) and Strengths Deployment Inventory (see: [http://www.personalstrengths.com/catalog\\_sdi.htm#top](http://www.personalstrengths.com/catalog_sdi.htm#top))
- Social events
- Teambuilding sessions
- Informal conversations
- Having lunch together

## Tools and Techniques

- Personality profiling and self discovery tools such as Myers-Briggs Type Indicator (see: <http://www.cpp.com/products/mbti/index.asp>);
- Strengths Deployment Inventory (see: [http://www.personalstrengths.com/catalog\\_sdi.htm#top](http://www.personalstrengths.com/catalog_sdi.htm#top))
- Selecting the Team publication from the Construction Industry Council (see: <http://www.cic.org.uk/services/publications.shtml>)
- Managing People on Construction Projects publication from the European Construction Institute (see: <http://www.eci-online.org/pages/publications-new.html>)

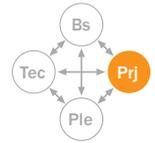
## Case study

In one health care organisation significant barriers existed among medical staff, administrators and technicians. Obvious boundaries and barriers had been created by three independent organisational entities involved. The individuals had erected even greater barriers by their own words and deeds on a daily basis.

Members of each group reported that the others did not respect or trust them. Physicians highlighted that their authority and expertise were being questioned and undermined. Administrators expressed concerns that they had no authority or power to manage according to their stated responsibilities. Medical technicians reported being questioned as to their competency and behaviour, and being micromanaged by both administrators and physicians.

The turning point in this collaborative venture came when representatives from all three organisations worked together to define success for the venture as a whole, and to establish some ground rules for their daily interactions. Through facilitated discussion, all had a voice in creating the desired future for the venture. Their work included:

- Reaffirmation of vision and mission for the venture
- Validation of key roles, responsibilities, authorities for all involved
- Development of a code of conduct for personal behaviour
- Revitalisation of performance standards for all functions and personnel involved in the venture.



# Develop a Shared Vision

## Why?

One of the most important stages in the planning for a successful/effective collaboration should be the development of a shared vision. Experience shows that when a shared vision is agreed, other factors fall in place more easily. Such a vision should include the 'scope and objectives'; 'clearly defined requirements of all users/stakeholders'; 'agreed success criteria'; and a perspective on the 'role of ICT' in the venture. Vision regarding the desired outcome:

- Defines the playing field and the rules of the game at a high level; and
- Enables all stakeholders/participants to align their own activities and behaviours to preserve core beliefs and values and make progress towards the overall goal.

A shared vision provides: meaning; direction; focus; freedoms; boundaries and guidance to all those in the collaborative venture. This vision should become a basis for a 'collaboration brief' to be developed for the collaborative venture.

## For Collaboration to succeed, you must offer enough detailed guidance so that all involved can stay focused, productive and on course

Setting objectives and establishing clear priorities helps to solidify purpose and manage everyone's expectations regarding, for example - what will be accomplished? By whom? By when?

However big or small, measurable or fuzzy, long-term or immediate, the more stakeholders/participants can develop a common understanding of the criteria for a successful collaborative venture, the more likely that it is that this will achieve true collaboration. The criteria must be: finite, sharp, vibrant, crisp, concise and compelling.

All participants need to have a shared 'vision' in their minds for the intended collaborative working venture. The collaboration champion (or team) need to know how the individual activities contribute to reaching the required target, and when and whether progress is being completed towards this target. The success criteria should be:

- Well-defined
- Measurable - (relate to measure collaboration performance process)
- Related to individual activities - (relate to define roles and responsibilities, and match skills to roles and responsibilities processes)

## Who?

The collaboration champion - with the help of their management team where appropriate - must lead the development of the vision for the collaboration. They must invite as many of the stakeholders from the supply chain to participate in the developments.

## How?

The vision for success must encapsulate: fundamental reason for being; guiding principles; values and beliefs; the overall goal for the venture; all users requirements and expectations; a high level measure of success; and initial decisions on what role ICT will play in the venture.

A vision is comprised of two parts: philosophy and picture. Both are necessary; neither is sufficient on its own.

VISION = Philosophy + Picture

Philosophy includes guiding principles, values and beliefs that are held dear by the group, along with an expression of the group's fundamental motivation or primary reason for being. These capture participants' hearts and provide a level of moral guidance for participants' plans, activities and behaviours.

Picture includes a clear and compelling overall goal along with a vibrant, tangible measure of success. When it is cogent, concise and compelling this picture serves as a unifying focal point for the effort.

A Memorandum of Understanding (MoU) is a useful way of documenting the shared vision, and in establishing the basis for the sense of seriousness of partner organisations and their intentions. The MoU creates a non-legal bonding to a particular course of action to help focus negotiators' minds on the issues and to record the 'meeting of minds' to that point. It can also:

- establish a framework for future negotiations,
- record oral understandings so as to help prevent misunderstandings occurring later,
- serve as a memory aid for the draftsperson when later drawing up any contractual documents
- use as evidence to a third party, such as the client, that a contemplated venture is viable, or to
- use for publicity purposes to indicate a particular course of action is underway.

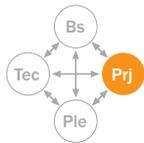
The management team also needs to include in the vision its perspective how ICTs are to be used in the venture. To gain support this needs to reflect understanding and recognition of the varied requirements of the relevant stakeholders. It is vitally important to show at this early stage a coherent agreement (at a high level) of how such technology is to be used in the collaborative venture to meet their needs.

Whilst developing the shared vision it is important to establish the role of ICT in delivering the objectives. The role of ICT cannot simply be decided after setting the collaboration strategy since it may be that subsequent activities of establishing current systems and technology needs mean that the shared vision cannot be delivered.

A common understanding of how ICT should run alongside the collaboration strategy is needed as technology may be necessary to support the project's collaborative processes (such as video conferencing to support 'face-to-face' communication and team-building among disparately located teams) as well as supporting general functions of the project team. At the time the role of ICT is decided it is also important to determine the skills within the project team individuals and organisations.

It is recommended that the project scope and objectives, project team roles and skills, users requirements, and the role of ICT in delivering the project are established in parallel. Each must be linked back to the project vision and scope, for example if the project vision covers long-term whole-life objectives then the roles of project team members and the role of ICT in the project may be different to a traditional design and build project.

Collaboration Brief



## ...continued

### Tools and Techniques

There have been a number of ways published to develop a shared vision, with many of them in business management publications. The PIECC project advocates getting all participants around the table in a workshop environment. In particular it enables the following to be achieved:

- Agreement on purpose, priorities, and principles
- Agreement on the modus operandi for participants to work together
- Definition of the success criteria of the venture and how these will be measured

This should be achieved by:

- Engaging in dialogue with all participants early and often to ensure common meanings and expectations
- Recording arrangements so that there is a documented reference point when memories fade or recall things differently
- Acknowledging and building on the personal and organisational frames of reference for all involved in the collaboration
- Articulating the context in which the collaborative venture exists
- Establishing and documenting guiding principles by which those involved will live
- Ensuring that there is a clear, concise and compelling vision of the desired outcome
- Documenting specific objectives and priorities as a form of agreement
- Creating a forum to coordinate efforts and check for alignment on a regular basis

The list below shows a number of key elements in designing effective workshops.

#### *Active engagement of participants during the workshop*

Nothing is less effective than a workshop where participants do not participate. It is therefore essential to give people an opportunity to participate actively in every session using a variety of techniques: small group discussion, large group discussion, short problem-solving tasks, involvement of participants in trying out activities, individual or paired work at the computer, and scheduled thinking and writing time.

#### *Model effective teaching approaches*

Previous experience of the most successful workshop sessions are those taught with good teaching practices in mind, and that the least successful sessions are those where a presenter simply stands up and talks.

#### *Allow time to interact and share experience/knowledge*

Participants bring valuable experience and ideas to workshops. Structured mechanisms for sharing experiences and expertise must be an integral part of every workshop program.

#### *Emphasizing practical applications*

An emphasis on practical applications and strategies is an important aspect of conducting effective workshops. Participants frequently comment on the value of having examples of what works and what doesn't when conducting workshops.

#### *Allow participants time to make progress on specific tasks*

Time to work individually during the workshop allows participants to reflect and to make progress on adapting workshop content to their own needs. This can be effectively supported during the workshop by providing opportunities for participants to work one-on-one or in small groups with workshop leaders. Workshop programs should include scheduled work and reflection time for participants.

#### *All participants leave with specific plans for future action*

Workshops can produce a wide variety of results. In all cases, workshop time devoted to planning next steps is critical. Posters and oral presentation of plans can be important in motivating participants to develop realistic plans and in encouraging follow through. Feedback from other participants facilitated through poster sessions or small group discussion are also extremely valuable as a mechanism for sharing practical experience.

#### *Requiring preparation in advance of the workshop*

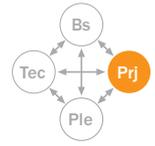
Coming prepared is important for a workshop. A variety of approaches should be used to prepare participants for the workshop including reflection on their goals for the workshop, development of the venture's ideas for completion at the workshop, assembling materials for sharing, pre-workshop discussion, and participating in surveys of participant needs.

#### *Include presenters all organisations in the venture*

Participants from the different (potential) organisations to be involved in the venture will greatly enrich any workshop experience by providing multiple viewpoints and approaches.

#### *Thorough planning of workshop sessions*

Good workshops that appear to flow spontaneously reflect extensive planning by leaders and a common understanding of the program and its objectives. In the time before each workshop, if possible, leaders must flesh-out the workshop schedule through a series of email discussions, phone conversations, conference calls, and, when possible, a meeting.



# Assess Collaboration Risks

## Why?

Risk Assessment is the method of identifying, analyzing, communicating and controlling risks associated with any activity, function or process in the collaboration. Assessments can take different approaches depending on the purpose and scope of the available information or data used. Some assessments look back to try to assess effects after an event, such as an accident on site. Other assessments, as in this case before a (new) collaboration begins, look ahead and try to predict what the effects will be.

## Who?

A suitably qualified member of the management team should be identified to be responsible for the organisation of a team (if necessary) and management of the risk assessment process. This person must have a proven track record of conducting such assessments as well as fully understanding the new ways of working associated with working collaboratively.

If no such person is available then external support should be sought.

## How?

Using the following model (adapted from: <http://www.cfsan.fda.gov/~dms/rafw-toc.html>) shows how a detailed risk assessment can be conducted for many of the processes and procedures to be employed during the lifecycle of a collaboration. The model is made up of four stages – see figure 6.

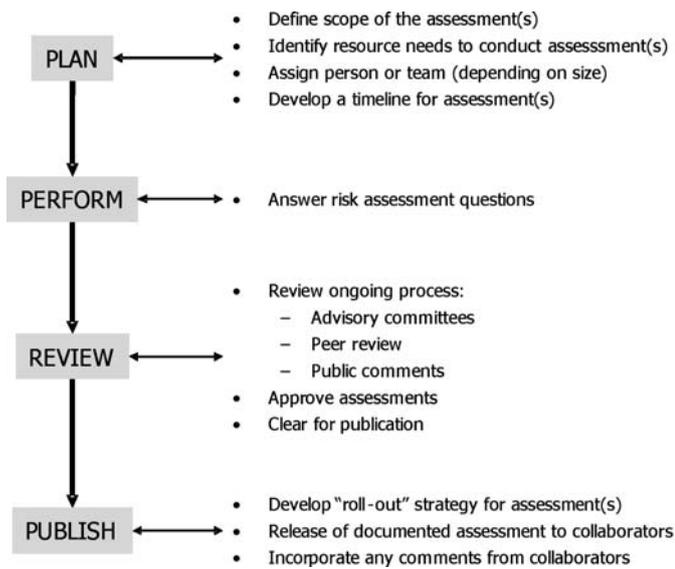


figure 6: Four stage process for conducting risk assessments

## Tools and Techniques

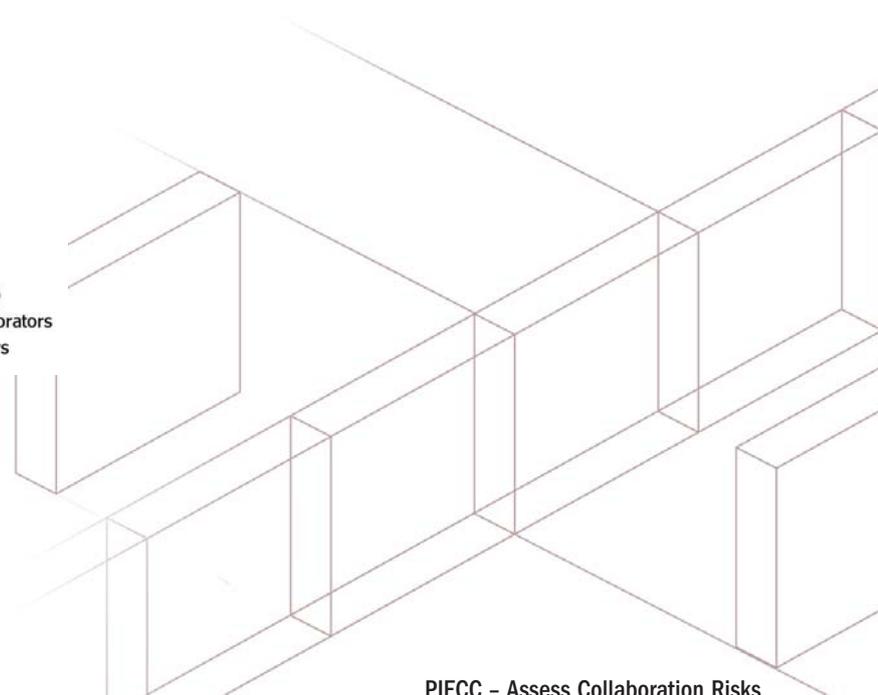
To aid the risk assessor (and their team) to determine risks for the collaboration, a useful matrix (shown in figure 7) may be used. The matrix matches the 'probability' of a risk occurring against the 'severity' of the risk. This matrix provides a useful tool in determining risk factors for the processes and procedures to be used in the collaborative venture.

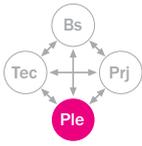
PROBABILITY	HIGH			
	MEDIUM			
	LOW			
		HIGH	MEDIUM	LOW
		SEVERITY		

figure 7: A matrix for assessing risks

The 'Be Collaborative Contract' has a whole section dedicated to determining risk. It can be found at: [http://www.bcc.beonline.co.uk/risk/risk\\_1.html](http://www.bcc.beonline.co.uk/risk/risk_1.html)

Collaboration Brief





# Define Roles and Responsibilities

## Why?

Consistent with good business practice, it is well established that people perform better when they know what is expected of them. In addition, in a collaborative venture it is important for all to know what they can and should expect from each other.

This provides an opportunity to match responsibilities with authority, something that can be lacking within organisations never mind in cross-functional, or multi-company teams.

Trust between team players is enhanced if there is transparency, and particularly if they can understand what someone is supposed to be doing and that they have the authority to deal with it, i.e. what they can expect as a result.

Efficiency and economy of effort is a clear winner for all members of a collaborative team, and by relating the clarity of roles and responsibilities to the collaborative team's processes one can eliminate 'gaps' and avoid duplication.

## Who?

It is the responsibility of the collaboration champion with help from the management team to define the roles and give appropriate responsibility to the participating individuals from the different organisations within the collaboration. They are also charged with the monitoring of progress against those given.

## How?

Many techniques are effective in clarifying roles, responsibilities and accountabilities for participants in a collaborative venture. These include:

- Abbreviated forms of standard job description for each participant
- Ongoing dialogue among participants
- Documented minutes from working meetings articulating who is doing what
- Roles and responsibilities matrix, indicating for key deliverables and activities who:
  - Is accountable for the outcome/drives the process
  - Contributes to the work/supports the effort
  - Must be kept informed along the way
  - Has decision-making authority/approval authority

The responsibilities matrix (shown on page 21) is a basic requirement, even if this is not supported by job descriptions, skills/competency profiles and assessments, and the like.

## Tools and techniques

This section provides a typical 'management' structure for a collaborative venture. The structure is by no means a definitive answer to how your collaboration should be structured, rather it should be seen as an example guide.

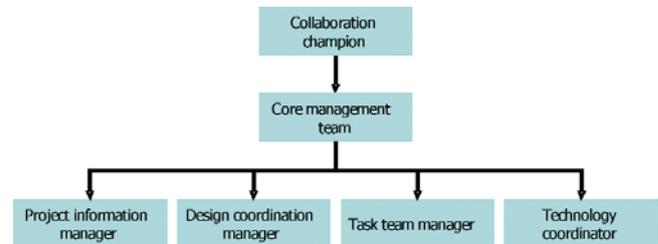
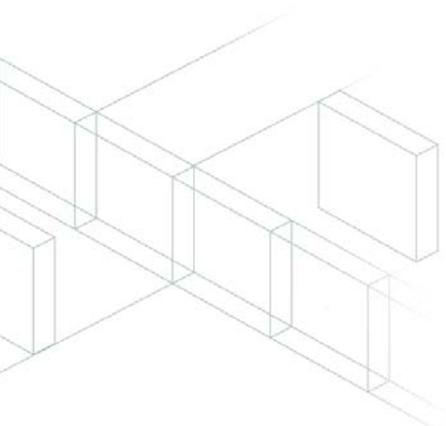
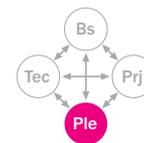


figure 8: typical management structure for a collaborative venture

Plan the Solution





To aid in the development of the roles and responsibilities for your collaborative venture, a definition of the key roles is shown here.

Role	Description	Responsible for...
Collaboration Champion	The leader of the collaborative venture	The decision making and smooth running of the collaboration Solving problems and difficulties as they arise in the day to day activities of the venture
Core management team member	A member of the core team that manages the collaborative venture	Aiding the collaboration champion in managing the collaborative venture
Project information manager	Manages all documentation in the project	Ensuring that all data and information used in the project is in the correct form, and the most up-to-date is being used
Design coordination manager	Organises all the design led personnel in the project	Ensuring the design and construction teams are working effectively throughout the lifetime project
Task team manager	Manages the different tasks in the venture	Ensuring all production of outputs relates to a specific task
Technology coordinator	Manages all technology in the venture	Ensures that the technology used in the venture is compatible, and that all users are up-to-speed on its use
Collaboration member	Any person who is to be a part of the collaborative venture	Ensuring that they follow the standards and procedures agreed for the collaboration

One popular method of defining roles and responsibilities is to use RACI charts, or sometimes called RASCI charts. RASCI is an abbreviation for:

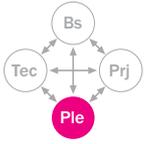
- R = **Responsible** – owns the problem / project
- A = to whom 'R' is **Accountable** – who must sign off (Approve) on work before it is effective
- (S = can be **Supportive**) – can provide resources or can play a supporting role in implementation
- C = to be **Consulted** – has information and/or capability necessary to complete the work
- I = to be **Informed** – must be notified of results, but need not be consulted

An example of a RACI / RASCI chart is shown below.

	Collaboration champion	Project information manager	Design coordination manager	Task team manager	Technology coordinator
ACTIVITY 1	R		A		
ACTIVITY 2	A	R		R	C
ACTIVITY 3			I		I
ACTIVITY 4	RA			C	
ACTIVITY 5	A	R			S

The AVANTI programme provides more details on roles and responsibilities as part of their toolkit suite (see: <http://www.avanti-construction.org/products.shtml>). See also:

- Selecting the Team publication from the Construction Industry Council (see: <http://www.cic.org.uk/services/publications.shtml>)
- Managing People on Construction Projects publication from the European Construction Institute (see: <http://www.eci-online.org/pages/publications-new.html>)



# Match Skills to Roles and Responsibilities

## Why?

Having determined the roles and responsibilities required for the collaborative venture the next stage is to break these roles down further into individual tasks. These tasks will then be used to match the skills needed to complete that task. This is important as the right people need to be identified with the relevant skills to complete the tasks. This process will describe how this can be achieved.

A supporting consideration to take note of here is the role of ICT is to take in the collaborative venture. Consideration of the skills of the people and the technology to be implemented is required in tandem, since there is no point having highly skilled individuals to use basic tools, or highly sophisticated tools for use by unskilled users.

## Who?

A person should be identified that has a clear understanding of the tasks required to complete the vision for the venture. This means that the identified person must be able to breakdown the tasks sufficiently to be able to identify the requisite skills needed to complete that task.

## How?

Before any matching of skills can take place, detailed job and people specifications need to be developed.

A job description should be carefully prepared to identify the key duties and responsibilities to be undertaken. It should be written in clear, straightforward and gender-free language and should avoid gender stereotyping of jobs.

A person specification identifies the critical attributes required in a candidate if he/she is to be capable of carrying out those duties and responsibilities to a satisfactory standard. The criteria contained in the person specification should be strictly relevant to the requirements of the job and must be clearly justifiable in terms of the ability to perform the duties of that job.

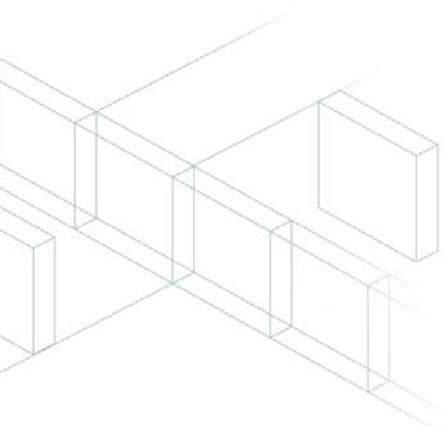
These can be done using the templates shown in the tools and techniques section.

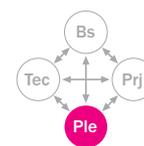
## Tools and techniques

There are a number of different tools that are needed to complete the matching of skills to the defined roles and responsibilities. Examples of templates and techniques are shown and described on page 23. They include a template to define a job and person specification.

Other places to seek guidance from include:

- Selecting the Team publication from the Construction Industry Council (see: <http://www.cic.org.uk/services/publications.shtml>)
- Managing People on Construction Projects publication from the European Construction Institute (see: <http://www.eci-online.org/pages/publications-new.html>)





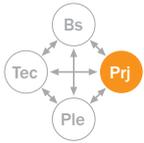
<b>Job Title</b>	
<b>Job Purpose</b>	To accurately reflect the nature of the job
<b>Job Duties</b>	This should not merely list tasks, but should emphasise the objectives of the job. The purpose of each duty should be clearly defined and specific terms should be used. Vague expressions such as ‘administration’ should be avoided. Whilst the duties section should be specific it should not be too prescriptive or restrictive. The nature of the duties will vary over time without affecting the overall job purpose, therefore the job description should allow for flexibility of approach. The job description should not emphasise aspects of the job which may discourage certain groups of applicants when, in reality, such aspects are of minor importance nor should it contain words that imply that most of the people currently doing the job are predominantly of one particular gender.
• Sub-set listed here	
<b>Special Conditions</b>	This section should be used to identify aspects of the job which can be regarded as unusual, such as non-standard working hours, restrictions on holiday, call-out liability, etc
<b>Organisational Responsibility</b>	This section identifies the functional relationship of the post showing who the member of the venture is responsible to and what level, as well as the number and type of staff that they in turn will supervise (if required).

To develop a person specification the following template may be used.

	<b>Essential</b>	<b>Desirable</b>
	Those criteria that an applicant must possess to be able to the job. If someone applies for a job, but doesn't have one of the essential criteria on the spec, they should not be offered the position. This demonstrates how important getting the spec accurate is.	Those criteria which would be advantageous, but are not critical to the post.

<b>Experience</b>	Define the work experience that is necessary for a person to have before the job in question can be performed. Avoid specifying an arbitrary number of years experience as essential, as it is the quality and range of experience which is more important than the length of experience.
<b>Skills and Abilities</b>	Define the practical skills and abilities that are required to perform the job. Be as specific as you can. For example, ‘Good computer skills’ does not really define what actual skills are required, whereas ‘computer skills sufficient to be able to produce complex documents and statistics’ is much easier to define and measure.
<b>Qualifications</b>	State the minimum educational or vocational qualifications required.
<b>Training</b>	Outline the practical training which the post holder will have to complete in order to undertake the job satisfactorily.
<b>Other</b>	This section will indicate particular characteristics the post holder should possess to carry out the duties of the position. For some jobs there will be specific requirements, these should be listed.

Plan the Solution



# Map Project Lifecycle Processes

## Why?

As working collaboratively often involves a substantial financial outlay that is not covered in 'normal' project finances, there is little benefit in searching, maybe developing, and implementing ICT systems that simply automate inefficient, conflicting and unnecessary business activities.

If participating organisations aren't explicit about the processes and systems to be used in the collaboration, you can bet that you will end up with individuals using different systems to communicate (voice mail, e-mail, face-to-face meetings, etc) with the potential for some or many of them becoming redundant, inefficient and costly, as individuals use their own preference.

For some, definition of process is the most important part of developing and maintaining effective collaboration. To them a purpose is only academic until the 'how to' is determined. Similarly, whether and how they establish trust and confidence in colleagues is dependent on seeing and experiencing how things are going to work in the venture. Who is doing what to whom, when, and where, is critical for them to be productive, positive contributors to the collaborative venture. They want, and even need, to know the rules in order to proceed.

## Who?

The collaboration champion and management team must administer the decision making process of how the mapping of rules and procedures to the scope and objectives of the collaborative venture. They must do this by involving key representatives from all collaborating organisations and seeking their views of how they wish to work.

## How?

As the old saying goes, success is in the details. Whether participants create and maintain effective collaboration depends in part on how they work together. It depends on how well processes are articulated and adhered to throughout the venture - the systematic series of actions participants use to achieve some end - the 'rules' by which they work.

However, it is best not to model the business in too much detail, but just sufficiently well to capture the key activities of each organisation. Once each organisation has been modelled how they work currently, create a new model that incorporates shared processes that already exist and use this as an example and the starting point to merge other areas where shared processes are needed.

To ensure effective collaboration participants must take time to articulate how specific collaborative relationships will operate. Successful collaborators in many different industries and situations repeatedly point to the following as fundamental to their success:

- How to get along with each other
- How to solve problems and resolve conflicts
- How to stay focused on the important things
- How to run meetings well
- How to make and follow through on decisions
- How to divide up the work

The collaboration champion must organise a meeting to fully understand how each organisation functions, by modelling each organisation in a graphical form. A small-to-medium sized organisation can create a 'hierarchy of activities' diagram, as shown in figure 9. Larger organisations can use more sophisticated modelling techniques such as data flow diagrams and workflow diagrams.

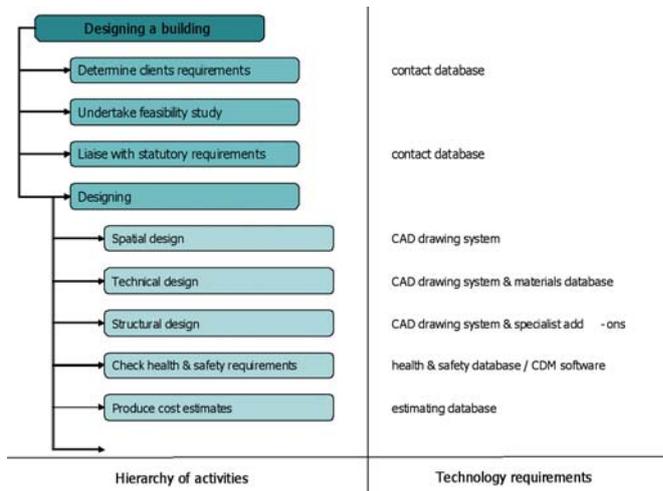


figure 9: A hierarchy of activities diagram with associated systems

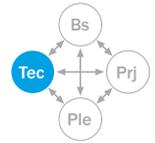
## Tools and techniques

For smaller organisations who are participating in the collaboration the model shown in figure 9 is ideal for mapping processes. In larger organisations more sophisticated tools are needed. Two examples of these are listed below:

- Data flow diagrams – show how data enters and leaves a system, the processes that act upon the data, and what data must be stored.
- Workflow diagrams – provide organisations with a general overview of any business process. They are usually not as detailed as flowcharts but they will allow collaborators to look at the bigger picture. Where do the inputs come from? Who are the suppliers of the process? etc

More information on data flow diagrams can be found in *Data Modelling for Information Systems*, Carrie de Carteret & Richard Vidgen. Pitman Publishing, ISBN 0-273-60262-4.

More information on workflow diagrams can be found in *Business Process Change: A Manager's Guide to Improving, Redesigning, and Automating Processes*, Gary A. Rummier (Foreword), Paul Harmon. Morgan Kaufmann, ISBN 155860758



# Identify Current ICT Systems and Technology Requirements

## Why?

Having established the principles of the role that ICT's will play in the collaborative venture in the development of the 'Shared Vision', it is important to establish what technology is currently in place among the team members. This is because within the existing technologies there may be a bias towards a particular type of system supplier which may make it sensible to standardise around that system. Alternatively, it may be that the gap between existing technology and technology needs is significant and the cost to upgrade existing technologies, or purchase new technology, is prohibitively high.

Remembering that the aim is to enable collaboration around agreed standards and procedures, it is necessary to establish what the results of a project team technology audit mean. It may not be as simple as just saying that two compatible systems or tools will enable collaboration if, for example, the two companies using those systems have staff of varying skill levels.

Having established what ICT systems (software and hardware) are currently in place, it should be straight-forward to establish what is required in order to deliver the project objectives. However, there are a number of considerations which must be made, each of which could affect the overall ICT and project strategies.

When considering the role of ICT in the project, and related technology needs, it is also useful to think about the characteristics of the project

## Who?

The collaboration champion and management team conduct the survey to determine current ICT systems and technologies. Analysis of this survey will reveal the needs for systems and technology upgrades and purchases needed for the collaborative venture.

If the champion or team feel that they are not able to do this then there are organisations under the AVANTI programme (see: <http://www.avanti-construction.org/index.shtml>) that can carry such services, but at a cost.

## How?

There are alternative ways of establishing what ICT systems and technologies are in place within project team member companies. When undertaking any audit it is important to realise that many companies will have multiple versions of any software systems operating across projects and that a single system may be in use in any number of ways. So, in establishing what is in place it is also important to ask to what extent it is being used, and how is its use compatible with usage of other systems among project partners.

It is important to consider again the role of ICT in the collaborative venture. This will inform decisions over the use and requirements of technology, for example whether an extranet system is desirable to share information, whether 3-D graphical design or object modelling is needed to represent information, or whether fully compatible (or interoperable) design tools are necessary to facilitate information re-use.

Of course, it is also important to consider the implications of adopting any new technology. Implications range from the cost of purchasing new technology, to impacts on maintenance where multiple systems are introduced into a single organisation, through to the need for training. Taking just one of those here; if the cost of ICT systems required to deliver the project objectives are so high as to be unaffordable, then the objectives themselves will be affected.

## Tools and techniques

A number of tools exist to enable assessments of existing technology to be undertaken, along with the compatibility of the technologies. These include:

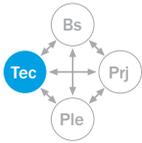
- Construct IT's IT self-assessment tool ([www.construct-it.org.uk](http://www.construct-it.org.uk))
- CPIC documentation (available from the RIBA bookshop)
- Avanti toolkits ([www.avanti-construction.org/products/](http://www.avanti-construction.org/products/))

Each tool employs a combination of questionnaire and survey, and can be complemented by interviews and audits within the project team offices.

Advice on new technology provision can be sought from technology vendors. However, the vendors do, of course, have an interest in promoting their own products and so it is not always easy to make clear judgements when comparing two competing products. This is especially the case where competing products have very similar core functionality, and only in the rarely used, detailed functionality is the benefit of one tool over another observed.

It is also possible to gain advice from consultant organisations, although some of these are also associated with a particular product or product range. However, even among those, there is reliable advice on offer.

Other sources of advice include: Constructing Excellence's IT Construction Forum – see [www.itconstructionforum.org.uk](http://www.itconstructionforum.org.uk), and The Network for Construction Collaboration Technology Providers (ncctp) – see [www.ncctp.com](http://www.ncctp.com)



# Agree Standards and Procedures

## Why?

The basis of collaboration is communication. It is vital to lay down ground rules for communication so that mechanisms and the need for communication are understood by project participants, and that the communication occurs in a structured and consistent manner.

These ground rules take the form of information exchange and communication procedures, and standards for structuring and representing project information. Most companies, and certainly any company which has internal Quality Assurance procedures, will have their own procedures and standards. However it would be a mistake to assume that project participants can work together and collaborate simply because they each have procedures and standards in place. In reality, the presence of multiple, varying procedures and standards can lead to confusion and inefficiency during the project. Therefore it is vital that information standards and exchange procedures are aligned at the outset of the project.

Information standards and procedures should cover the production of information within ICT systems, the formatting and structuring of that information, the exchange of information, and critically the re-use of information.

Often information re-use is not thought about in the selection and implementation of ICT: rather team members only consider their own role in generating and exchanging information. The re-use of information is one of the major efficiency savings provided by collaborative working, however it does require a level of trust about the quality of the information being provided and the ways in which it will be reused. This trust is a function of both the project contract arrangements and of the working relationships between team members.

## Who?

The collaboration champion and representatives from the participating organisations in the venture must agree on the standards and procedures.

## How?

It is always useful to establish what standards and procedures the project team members already have in place. There is usually a good deal of commonality between such standards and procedures since they are usually written in the first place to achieve similar objectives. This will make agreement on some of the core principles of the standards and procedures reasonably simple. However, in the detail it will provide more difficult to agree as some team members are convinced by the benefit of their own processes, inflexible to change, or hamstrung by their internal QA procedures. It is important to get team members to see that some compromise is vital to the agreement of a common set of standards and procedures.

The development and/or implementation of standards and procedures is best undertaken as a robust, facilitated process: ad hoc processes do not attain the buy-in of team members that is desirable. It is also best undertaken as part of the design of wider project processes, such as project management processes, and not as a discrete ICT-related activity. This is because, just as the ICT strategy supports the project strategy, the information procedures and standards support project processes.

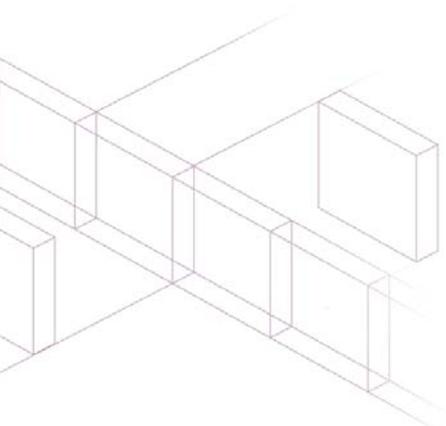
The need to format and structure information applies to raw data, applied information and to project documentation. Within design information this means standards covering scale, origin, orientation, and so on.

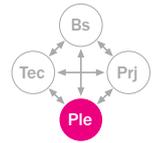
## Tools and techniques

Avanti is an approach to collaboration, enabled by the use of ICT. The Avanti information standard and procedure is at the heart of the approach. It provides a common standard and procedure for usage by project teams, and covers principles of varying degrees of collaboration sophistication. The standards and procedures are available at: [www.avanti-construction.org/products](http://www.avanti-construction.org/products)

The Avanti approach is underpinned by long-standing procedures and guidance developed by the Co-ordinated Project Information Committee (CPIC), and published by the RIBA. The guidance and procedures cover Production Information and Information Classification (Uniclass), and themselves build upon earlier standards such as Common Arrangement of Work Sections (CAWS) and CI/SfB.

Plan the Solution





# Identify / Recruit Potential Participants

## Why?

Think about how you select participants for a collaborative venture. What do you look for? What criteria do you use to decide that, individuals are appropriate for the venture? Many look for technical or functional expertise first and foremost when embarking on a collaborative venture. They look for the 'best' to be part of their team. They look for knowledge, skill, reputation, accomplishments, interest and passion all around particular content. As previously described in the 'Identify Potential Partners' activity, it is vitally important that the 'right' people are involved in the collaborative venture. 'Right' in terms of:

- The abilities of the individuals to perform the required **functions**;
- The way (**form**) in which the individuals do their work; and
- Whether and how each individual **fits** as part of the collaborative venture.

One major factor that makes a difference in successful collaborative ventures is the participants' abilities to both accomplish tasks and manage relationships with others

## Who?

The collaboration champion and the core management team must be responsible for choosing the members of the collaboration. They need to create the 'right mix' of people for the venture.

## How?

We all recognise that individuals have different personalities. Different in terms of their qualities, characteristics, attributes, strengths and weaknesses. These individual personalities show up in collaborative ventures. When personalities among the parties are found to be compatible or similar, not much time is spent on the subject. However, when disagreements or discomfort surface among individuals, personality differences are often blamed for many of the difficulties. Individuals may be classed in a variety of ways. See figure 10 below.

These various qualities, characteristics and attributes, commonly described as personality traits are not good or bad in their own rights. What makes them good or bad, and effective or ineffective, is how all these traits of a given individual behave both: as a complete package in the specific business situation, and/or in relation to those of the other parties to the collaboration. How all the personality traits interact with each other makes them effective or not. Whether and how you honour the different personalities of individuals and organisations and work well with them impacts on the collaborative venture.

## Tools and techniques

Using the information generated in the 'define roles and responsibilities' and 'match skills to roles and responsibilities' processes, you must now begin to choose people to be associated with the venture. This should be done by examining the skills of existing personnel in the organisations. If the right individuals are not part of the organisation then consider advertising for them externally. To help examine skills and behaviours, the following checklist can be useful in searching for individuals that may be effective in a collaborative venture:

- Functional competence – appropriate level for the work to be done
- Fluency in the 'language' of the venture – proficiency with jargon, acronyms, colloquialisms unique to the venture
- Clear role to play on the team – specific accountabilities and deliverables
- Personal passion for the work – how much a person like their work and its impact on others
- Service mentality – the level to which a person wants to support and collaborate with others
- Cultural fit
- 'Welcome' factor – how well a person is accepted by others in a group

These should be used in conjunction with the job and person specifications developed earlier in planning the solution activities. However, the best way to recruit people is to do as little recruiting as possible. This means keeping as much of the talent that you already have. Turnover of staff has real costs that can be as high as 1.5 times the departing person's salary, not to mention the effects on workload and the morale of the collaboration.

Other publications to consider reading include:

- Selecting the Team publication from the Construction Industry Council (see: <http://www.cic.org.uk/services/publications.shtml>)
- Managing People on Construction Projects publication from the European Construction Institute (see: <http://www.eci-online.org/pages/publications-new.html>)

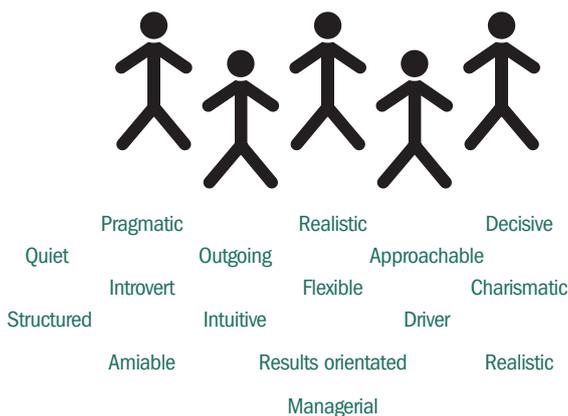
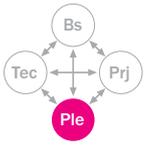


figure 10: Personality traits of individuals

Implement Solution



# Bring The Project Team Together

## Why?

As we will see in this activity, the ingredients for successful collaboration are interrelated. The team that is brought together to undertake the 'shared project' must be able to work together in a trustworthy manner by building competence, developing their interpersonal skills, and the realising their ability to perform, will increase the level of trust and respect in the collaboration. As trustworthiness of information and effective communication are ensured, the level of trust and respect increases. As the possibility of hidden agendas is removed – through the development of a 'shared vision' (see activity in 'Collaboration Brief' section), the level of trust and respect is once again increased. As attention is paid to systems and processes, the level of trust and respect is increased again.

The importance of building mutual trust and respect in a collaborative venture:

- Enhances productivity by focusing attention on the work
- Encourages both individual and group interaction
- Minimises costs for monitoring
- Maximises individual and group energy and enthusiasm for the venture

Conversely, a lack of trust and respect in a collaborative venture:

- Diverts attention
- Stifles innovation
- Increases costs
- Drains energy

In collaborative ventures some groups prefer to focus explicitly on building trust and respect as part of setting ground rules for collaborating. Others prefer to deal implicitly with trust and respect among participants – allowing trust and respect to evolve naturally as they work together. Both approaches may be effective, but have to be based on participants' preferences.

## Who?

The collaboration management team must bring individuals from their respective organisations to the venture. It is up to them to ensure that the 'right mix' from their organisation is achieved.

## How?

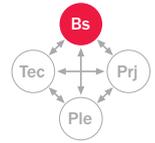
The same processes should be used here as in the 'Bring the Management Team Together' activity. For ease of use the information is repeated below.

Whether a collaborative venture is large or small, local or global, whatever can be done to help participants get familiar and comfortable with each other will serve to develop trust and respect among them. Depending on whether any have worked together before, and how colleagues develop trust and respect with each other, there are a number of tools that can help along the way. Those techniques already used in the 'identify/recruit potential participants' may be complemented by those listed below:

- A review of professional resumé
- Facilitated discussions
- Personality profiling and self discovery tools such as Myers-Briggs Type Indicator (see: <http://www.cpp.com/products/mbti/index.asp>) and Strengths Deployment Inventory (see: [http://www.personalstrengths.com/catalog\\_sdi.htm#top](http://www.personalstrengths.com/catalog_sdi.htm#top))
- Social events
- Teambuilding sessions
- Informal conversations
- Having lunch together

## Tools and techniques

- Personality profiling and self discovery tools such as Myers-Briggs Type Indicator (see: <http://www.cpp.com/products/mbti/index.asp>) and
- Strengths Deployment Inventory (see: [http://www.personalstrengths.com/catalog\\_sdi.htm#top](http://www.personalstrengths.com/catalog_sdi.htm#top))
- Selecting the Team publication from the Construction Industry Council (see: <http://www.cic.org.uk/services/publications.shtml>)
- Managing People on Construction Projects publication from the European Construction Institute (see: <http://www.eci-online.org/pages/publications-new.html>)



# Collate and Disseminate Procedures for Collaboration

## Why?

It is vitally important that all members of the collaborative venture understand how they are expected to work and behave during the lifecycle of the venture. Much work has been conducted to agree how people are to work in the venture up to this point. Not getting that message across to the members will have a detrimental effect on the success of the collaboration.

## Who?

The collaboration champion and the members of the management team are responsible for providing all members of their organisation with the procedures to be used in the venture. They are also responsible for ensuring that the procedures are adhered to.

## How?

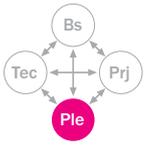
Using simple document producing software a guidebook for the collaborative venture should be developed. Once this document has been agreed upon, it then has to be disseminated to all members of the collaborative venture. This can be achieved by:

- Posting the document on the project extranet system
- Printed and given to all members
- Organising workshops to promote the procedures

## Tools and techniques

The following list will give you an idea on how to disseminate the procedures:

- Project extranet system
- An organisations Intranet system
- Internal organisation newsletters
- Company workshops
- Training sessions
- ...



# Provide Management Training and Mentoring as Necessary

## Why?

Training is seen by many as the most important activity, or plays an important role in the development of employees in an organisation. To put the right person at the right place has now become essential when working collaboratively. No collaborative venture or organisation has a choice of whether or not to develop employees. Therefore training has become an important and required factor for maintaining and improving interpersonal and intergroup collaboration.

There are many reasons why training is important. The list below summarises some of the key points...

- Growth, expansion and modernisation cannot take place without trained manpower
- It increases productivity and profitability, reduces cost and finally enhances skills and knowledge of the employee
- Prevents obsolescence
- Helps in developing a problem solving attitude
- Gives people awareness of rules and procedures

## Who?

The management training has to be provided by other experienced (collaboration) members of the management team. If this is not possible then external support/consultation should be sought.

## How?

There are two recognised methods of training:

- On the job training
- Off the job training

In 'on the job' training the worker is trained under the guidance of a supervisor, whereas 'off the job' training is usually through lectures, conferences, case studies, audio visual etc.

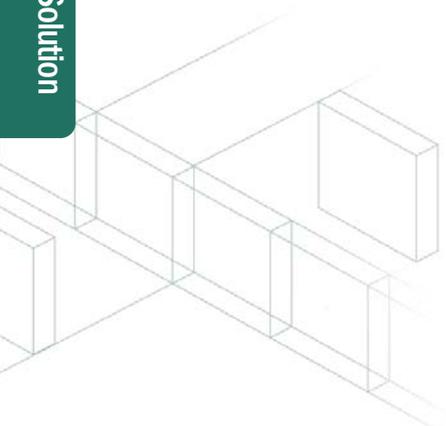
Training requirements for all participants in any collaboration should be carefully planned by carrying out a skills audit of existing skills and abilities. This should then be matched against the training requirements of any proposed technologies to be used in the collaboration.

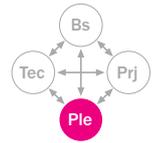
It is vital that the cost and time involved in training participants to a level that will allow them to use the technology for the collaboration is not underestimated. The training costs for many systems and ICT used in collaborative environments can be a substantial part of the overall cost of working collaboratively. In some circumstances training can cost more than the purchase costs of the software. To determine realistic training requirements, it may be helpful to talk to users and ICT managers from previous collaborations.

This is also a good time to plan the on-going training requirements for other corporate systems and for the rest of the employees in participating organisations.

## Tools and techniques

A skills audit is a process where the skills held by employees are identified. These can be compared with the skills required for the collaboration both now and in the future so that any skill shortfall or surplus can be pinpointed.





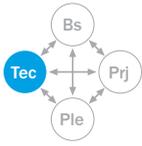
**Management Skill Set Assessment** Name \_\_\_\_\_

	Skills (add skills or attributes relevant to your role as applicable)	score/10		
		self-assess	2nd view	importance (A/B/C)
1	Planning, prioritising and organising tasks and activities, time management, self and team.			
2	Motivation and leadership of team and individual team members.			
3	Communication skills, questioning and active listening, building trust, empathy and mutual understanding.			
4	Performance appraisals planning, conducting, and follow-up, for team, and self.			
5	One-to-one counselling, handling grievances, discipline, helping and enabling others with their challenges.			
6	Training and developing others, coaching and mentoring, assessing training needs.			
7	Delegation, identifying and agreeing tasks, measuring, follow-up, management by objectives (MBO's).			
8	Effective use of IT and equipment, esp. communication, planning and reporting systems.			
9	Financial and commercial understanding (eg, budgets, profit & loss, cashflow, etc)			
10	Managing relationships, inter-department, peers, upwards, obtaining approval for projects, changes etc.			
11	Planning and running meetings, effective follow-up.			
12	Business writing, eg, letters, reports, plans, project plans.			
13	Recruitment interviewing and selection, and effective induction of new people.			
14	Administration, reporting performance and financials, monitoring, maintaining and developing reporting systems.			
15	Creating and giving effective presentations to groups.			
16	Innovation, creativity, taking initiative, problem-solving and decision-making.			
17	Quality awareness and managing, according to quality standards and procedures.			
18	Employment and HR policy awareness and managing, according to policies (equality, disability, harassment, etc)			
19	Environmental and duty of care awareness and managing according to standards and procedures.			
20	Customer care and customer service management - external and internal.			
21	Self-development, self-control, compassion and humanity, seeking responsibility and personal growth.			
22	Appreciation/application of social responsibility, sustainability, humanity and ethical considerations.			
23				
24				
25				
26				
27				

Use this to assess your competence in your current job, or for your next job. Initially score yourself out of 10 for each skill in the self-assess column for the job concerned. Then validate or revise your scores in discussion with your boss or someone who knows you. Put these scores in the '2nd view' column - this is your actual assessment. At the same time confirm with the other person the importance of each skill (A, B or C, A = most important) for the job concerned. Your development priorities are therefore the lowest scores in the most important skills. This is an ideal tool for workshops, team meetings and group training needs analysis. For further information and guidance visit [www.businessballs.com](http://www.businessballs.com)

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Implement Solution



# Purchase and Implement New Technology

## Why?

Having established technology needs, it may be that new technology is required for use by one or more members of the project team. This new technology may be entirely new systems or software for the whole project team or for one member of the project team, but would more typically mean upgrades or additions to hardware and software. This is because many companies cannot be persuaded to take on entirely new systems to serve a single project as the cost often outweighs the long term benefit they would gain. For this reason, framework partnerships and similar arrangements which secure long-term work can be a good way of overcoming reluctance to purchase new systems.

## Who?

The technology coordinator is the person who is responsible for the purchasing and implementation of any new technology to the venture.

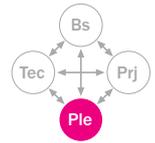
## How?

At the time the project team's ICT needs are identified, it is useful to also establish the potential costs and long-term benefits associated with the ICT. Then decisions can be made about how the cost of any new technology is divided among the team members. It should not necessarily be the participant who utilises any piece of technology that pays for it, since its adoption will enable collaboration and benefit the entire project team. Justification for ICT costs and payment must be made very clear, along with decisions about what happens to any piece of technology after the project has ended. For example, if a piece of design software is paid for by the contractor in a project but used exclusively by one member of the design team, then it should be clear from the outset who retains the software and under what terms at the end of the project.

Implementation of any new ICT system, whether it be hardware or software, will require the physical implementation (installation) of the system along with user training and mentoring. This should cover training in system maintenance and usage. Of course, training needs will, in part, be dictated by the exiting skills and experience of the project team individuals.

Often, training in software systems can focus on the way the software is piloted but less on the way the data within the system is controlled across interfaces with other systems. In a collaborative environment it is critical that training covers these aspects, and remains focused on the objectives of the collaboration. Therefore, the information standards and procedures which are put in place in the project should form part of the ICT training material (see process 'Provide Technology Training and Mentoring as Necessary' for more details on training for collaboration).

It may be necessary to maintain the levels of skill within the project team as the project occur: it may be a mistake to expect that skills gained in training sessions at the beginning of the project will be retained. Therefore, programmes of training are often useful to put in place.



# Provide Technology Training and Mentoring as Necessary

## Why?

Training is seen by many as the most important activity, or plays an important role in the development of employees in an organisation. To put the right person at the right place has now become essential when working collaboratively. No collaborative venture or organisation has a choice of whether or not to develop employees. Therefore training has become an important and required factor for maintaining and improving interpersonal and intergroup collaboration.

There are many reasons why training is important. The list below summarises some of the key points...

- Growth, expansion and modernisation cannot take place without trained manpower
- It increases productivity and profitability, reduces cost and finally enhances skills and knowledge of the employee
- Prevents obsolescence
- Helps in developing a problem solving attitude
- Gives people awareness of rules and procedures

## Who?

Technology training needs to be provided by the vendor of the technology, or if competent members of the collaboration team are able, and qualified to do so, then they can provide the training.

## How?

There are two recognised methods of training:

- On the job training
- Off the job training

In 'on the job' training the worker is trained under the guidance of a supervisor, whereas 'off the job' training is usually through lectures, conferences, case studies audio visual etc.

Training requirements for all participants in any collaboration should be carefully planned by carrying out a skills audit of existing skills and abilities. This should then be matched against the training requirements of any proposed technologies to be used in the collaboration.

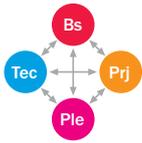
It is vital that the cost and time involved in training participants to a level that will allow them to use the technology for the collaboration is not underestimated. The training costs for many systems and ICT used in collaborative environments can be a substantial part of the overall cost of working collaboratively. In some circumstances training can cost more than the purchase costs of the software. To determine realistic training requirements, it may be helpful to talk to users and ICT managers from previous collaborations.

This is also a good time to plan the on-going training requirements for other corporate systems and for the rest of the employees in participating organisations.

## Tools and Techniques

A skills audit is a process where the skills held by employees are identified. These can be compared with the skills required by the company both now and in the future so that any skill shortfall or surplus can be pinpointed.

To enable the identification of participants training needs, you can use the management skill set assessment matrix on page 31.



# Reflections and Feedback of Collaboration

## Why?

Learning lessons from each collaborative venture, whether they are positive or negative, is just an important feature as any other aspect of the collaboration. As working collaboratively often changes the processes of an organisations employees, employees should be encouraged to tell the truth about their experiences of working in the venture.

## Who?

The collaboration champion should be the person to conduct the post venture review to determine and suggest areas for improvement for the procedures and workings of the next collaborative venture.

## How?

The mechanisms for encouraging feedback must continue throughout the life of the venture. Working practices, and so the procedures for the collaboration may well change over this time. The members of the venture who experience the procedures should be visited as many times as possible to gain their feedback. The experiences should be gained by using such techniques as: observation, interviewing or conducting workshops on an ongoing basis.

The model shown in figure 11 is a typical method of conducting a review to gain experiences of the ventures users.

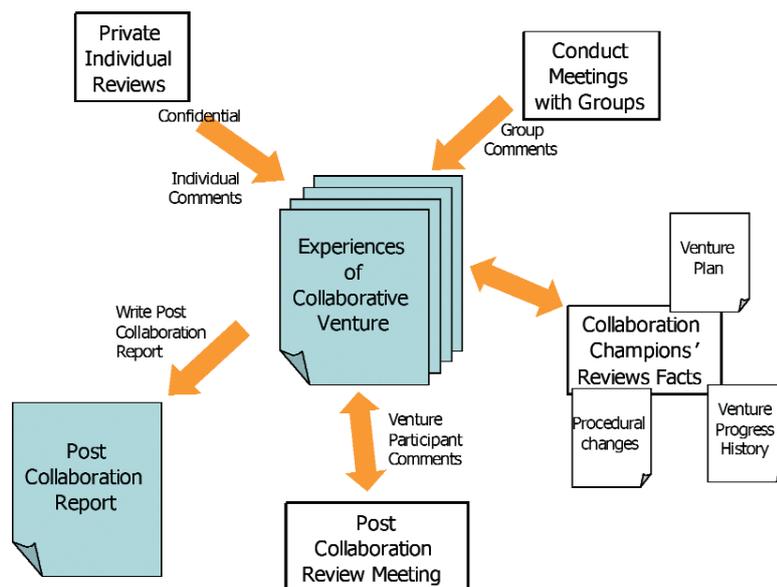
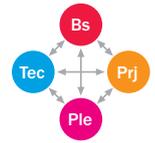


figure 11: Typical model to use when conducting a review of the collaborative venture



# Collaboration Support (from external sources)

## Why?

It is more than likely that sometime during the lifetime of the collaboration, there will be a need for expertise that may not be present within the venture, or its associated organisations. When this arises external support should be sought from consultants etc. Typical reasons include:

- To supplement staff time
- To supplement staff expertise
- To ensure objectivity
- To ensure credibility
- To obtain a variety of skills
- To deal with legal requirements

Hiring outside consultants to do short-term projects is common in business. If you are hiring a consultant for the first time there a number of issues to consider. This sheet should help you address these issues.

## Who?

The collaboration champion should be the person to liaise with external parties when they are needed in the venture.

## How?

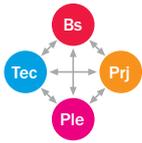
If you have to hire a consultant for the venture then a list of them should be identified. To create such a list you can search through a number of sources:

- Personal referrals
- Professional directories
- Award winners identified through professional organisations
- News items in newsletters, newspapers, and magazines
- Consultant calling cards
- Brochures mailed by the consulting firms
- The telephone directory

## Tools and techniques

The list below shows ways of finding consultants:

- Ask around - word of mouth across the venture is still the best way to get information on many things, including which consultants have done good work in the past
- Rehire a known consultant who has done a similar or equally difficult job or ask a consultant you trust for a referral
- Use lists of qualified experts - you can get these from professional organisations, colleges and universities, government agencies and volunteer groups
- Advertise in local or regional newspapers - briefly outline the job you want done, and ask consultants to reply if they are interested
- Keep a file of resumes from people who have expressed interest in working with the venture. You never know when another situation may arise that finds you looking again.



# Measure Collaboration Performance

## Why?

The aim of the monitoring process is to ensure that the objectives set out in the 'Collaboration Procedures' document remain on track, that the success criteria agreed in the planning and implementing stage are met.

Items that can be chosen and weighted include:

- Safety
- Quality
- Commitment
- Issue resolution
- Dispute avoidance
- Co-operation
- Communication
- Budget control
- Programme control
- Public relations
- Timely reporting

## Who?

The collaboration champion should either conduct or appoint a specific person to measure the performance of the collaboration.

## How?

### Complete periodic performance evaluation

Evaluation reports are to be made monthly by the collaboration champion. A standard method for reporting should be used. A typical example is included here. The reports should be discussed at monthly meetings with representatives from all involved in the collaboration.

### Investigate significant variances

Performance evaluation reports may show results that depart significantly from the standard set out in the 'set success criteria' stage. Where this is the case, the results should be examined and discussed and reasons for them sought. The reports may also indicate opportunities for improvement that should be followed up.

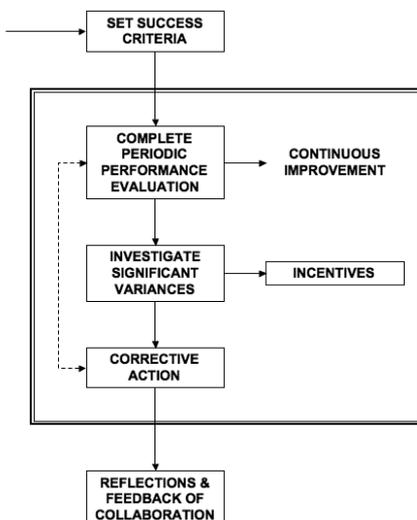


figure 12: Typical model used to measure performance

## Incentives

Incentives should be considered for both organisations and individuals. In respect of individuals, performance reporting and issue identification should involve incentives. These are designed to stimulate a continuous interest and a measure of constructive competition. However, care must be taken to ensure the benefits are fairly shared by all contributors. Benefits may be non-monetary.

Significant savings in cost that result from improvement in performance should be shared in agreed proportions between the collaborating organisations. The arrangement should be included in the 'collaboration contract' documentation. This procedure should be based on calculations that can be audited.

## Corrective action

If the results are unacceptably below the norm, they have to be investigated and corrective action plans drawn up by the management responsible for the operation. These plans should be detailed and allocate specific responsibility.

## Tools and techniques

The table below provides an example of how to measure the performance of the collaboration.

	Score (low) 0 – 100 (high)
<b>Alignment of purpose</b> How well aligned are participants around the business context; overall visions and mission; goals and objectives; and priorities for the venture?	
<b>Ability to perform</b> How effective are participants at getting the job done; contributing their best; focusing on excellence; making a difference; ensuring individual and shared accountability for outcomes	
<b>Attention to process</b> How effective are meeting management; progress monitoring and reporting; decision-making problem solving; conflict resolution; governance; and the internal/external measurement systems for your venture?	
<b>Acuity of communication</b> How well does the group exhibit openness/candor; use discipline and skill to provide and receive information; and ensure timely and accurate feedback in all aspects of the venture?	
<b>Attitude of mutual trust and respect</b> How well does the group share risk and reward; blend autonomy and interdependence; acknowledge and support each other	
<b>Adaptability to learn and change</b> How much attention is paid to continuous learning for all individuals; after action briefings; institutional memory; continuous improvement?	
<b>Total score (0-600)</b>	

# Key Performance Indicators (KPIs) and Collaborative Working

This section of the handbook summarises the work completed in the PIECC project by showing how KPIs developed for the industry may be enhanced by collaborative working.

The table below shows the KPIs for the construction industry and the 'Respect for People' with information in the right hand column describing how the PIECC work can benefit them.

## Industry KPIs

Client satisfaction - product	Improved processes will enable the client to receive an improved product
Client satisfaction - service	Improved planning and implementation will enhance the business process
Defects	Process defects may be eliminated
Safety	Communication is an important aspect of safety and risk management, and is a key output from PIECC
Construction cost Construction time Predictability - design cost Predictability - design time Predictability - construction cost Predictability - construction time	Improved planning and implementation will enhance the business process
Profitability Productivity	Elimination of waste will improve efficiency

## Respect for People KPIs

Employee satisfaction	Three of the four sub-measures - Influence, Achievement and Respect - can be improved through application of PIECC
Staff turnover	-
Sickness Absence	-
Safety	Communication is an important aspect of safety and risk management, and is a key output from PIECC
Working hours	More efficient planning may reduce time, or at least eliminate some of the waste
Travelling time	More efficient planning may reduce time, or at least eliminate some of the waste
Diversity	Collaborating with more organisations creates a diverse working environment
Training	Training is one of the key areas considered by PIECC
Pay	Improved planning and implementation improves employee performance
Investors in People	Training is one of the key areas considered by PIECC

The PIECC research team kindly thank the input and support from the industrial organisations listed below:



**Avanti** is an approach to collaborative working that enables construction project partners to work together effectively. The principles of collaborative working the Avanti way are early access to all project information by all partners, early involvement of the supply chain, and sharing of information, drawings and schedules, in an agreed and consistent manner. The Avanti approach is supported by handbooks, toolkits and on-site mentoring.

Avanti focuses on people and processes, mobilising existing enabling technologies. Team working and access to a common information model are at the heart of the Avanti approach to a project's whole life cycle. Using the Avanti approach improves business performance, by increasing quality of information and predictability of outcomes and by reducing risk and waste. Development of the Avanti approach has been managed by a team of industry practitioners and a construction industry consortium.



**Arup** is a global firm of planners, designers, engineers and business consultants providing a diverse range of professional services to clients around the world. The firm is the creative force behind many of the world's most innovative and sustainable buildings, transport and civil engineering projects. Established 60 years ago, the firm exerts a significant influence on the built environment and has more than 7000 employees, based in 75 offices more than 33 countries, working on up to 10,000 projects at any one time. Arup has three global business areas - buildings, infrastructure and consulting - and our multi-disciplinary approach means that any given project may involve people from any or all of the sectors or regions in which we operate. Our fundamental aim is to achieve excellence in all we do by bringing together the best professionals in the world to meet our clients' needs.



**Buro Happold** is a multi-disciplinary consulting engineering practice which employs 1,300 people in 13 countries. Formed in 1976, it specializes in innovative, sustainable building projects and offers expertise in civil and structural engineering, building services, infrastructure and traffic engineering, ground, façade and fire engineering, computational fluid dynamics analysis, disability design consultancy and project management services.



**Capita Symonds** is one of the largest construction consultancies in the UK providing a full range of design and management services. The company employs over 3,300 staff and is the result of a merger between Capita Property Consultancy and the Symonds Group.

Capita Symonds (Project Management) concentrates on providing project management services, and our role varies from project to project but essentially covers Development Management, Project Management and Coordination, Development and Fund Monitoring, Employers Agent, and PFI related services.

Capita Symonds (Project Management) employs multi-discipline staff with the range of skills and backgrounds necessary to effectively manage and control a wide spectrum of projects from inception to completion. The emphasis is on a team approach, where relevant expertise can be applied at particular stages in projects to provide a cost effective service for the Client.



**Mott MacDonald** is a world-class consultancy delivering solutions that add value to many areas of everyday life - from transport, energy, building, water and the environment to health and education, industry and communications. We're a wholly independent, employee-owned company with a turnover of £515 million, more than 9000 staff and work in over 100 countries.

Around the world we serve national and local governments, health and education authorities, transport operators, industry, utilities, developers, contractors, commercial companies, banks, funding agencies and non government-mental organisations. We stay closely attuned to all our customers' varying needs and aspirations, working in partnership to help transform their vision into reality.



**Taylor Woodrow** Construction's core business areas are construction, facilities management and engineering carried out nationally in the UK predominantly for repeat order 'Blue chip' clients. As a progressive organisation TWC is committed to investing in research and development to enhance their customers' satisfaction and improve their own business, and they have retained an in-house testing and consultancy arm, TW Technology, to facilitate much of this work. One of TW Technology's key activities is the introduction and implementation of improved Collaborative Working undertaken for TWC and external clients.