

# GAINING VALUE THROUGH REVIEW AND LEARNING

## A Construction Industry Users' Guide to the Cross Organisational Learning Approach

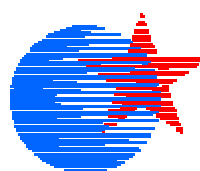


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# 1 What is COLA

This guide introduces the **Cross Organisational Learning Approach, COLA**, a method and a set of tools which add value by improving the quality of feedback and increasing organisational knowledge as well as by resolving immediate concerns. COLA achieves this by organising and managing learning-focussed, value-enhancing reviews of construction projects, so providing a means for addressing issues raised in the Latham and Egan reports on the industry. This guide will explain when and how to conduct reviews, give examples from actual reviews, describe the rationale behind the methods and provide signposts to places where you can explore these ideas further.

A web site describes the B-Hive Project, which developed COLA, and provides additional material on using COLA and sample materials that can be downloaded. The web site can be found at <http://is.lse.ac.uk/B-Hive/>.

## 1.1 Who should read this guide

This guide is aimed at:

- Senior managers of construction clients, construction consultancies, construction companies and suppliers engaged in, or considering, partnering arrangements;
- Managers responsible for review, shared learning and continuous improvement;
- Members of project teams, throughout the supply chain, that are committed to developing programmes of review and feedback;
- People engaged in construction industry focused research and development from industry, higher education institutions and government agencies;
- Those providing facilitation services to the construction industry.
- People in other industries and services who are involved in or contemplating partnering arrangements and who wish to learn from the experience of the construction industry.

## 1.2 Who is involved in COLA?

Change is not just something that other people have to do, it involves everybody. It must be accepted as a continuous process, not a one off event. Successful change requires a significant commitment by senior management who must establish a clear vision and delivery strategy that is shared by the whole team and lead by example. The processes described here need to be championed at senior levels if everybody is to play their part.

COLA can and should involve companies throughout the supply chain, with the pressure for learning-focussed reviews coming from any part of the chain. Clients, however, play a key role in establishing continuing processes that deliver sustainable change. The body commissioning the project should not just be seen as the only client; for example, a construction company is the client to their suppliers and can take the lead in establishing learning focussed review as the

### Partnerships

*Partnerships take many forms and go under many names: partnership; partnering arrangements; strategic alliances, value sharing agreements and so on. In this guide where we refer to 'Partnerships' for simplicity and clarity, we do not take a view on the best terminology for partners to use for each of the large and growing number and variety of arrangements in the UK.*

normal way of working with its regular suppliers.

## 2 The Need for COLA review

### 2.1 The need to capture learning

The need for improved processes of feedback, review and sharing of knowledge has been recognised in many recent reports on the construction industry.

It is the common experience of all construction industry professionals that problems are resolved in one project or a new solution developed, but that these lessons are not learned. Too often the same problem recurs in another project because nothing has been done to eliminate the cause of the problem and, because the team is different, the issue is again dealt with from scratch. A commitment to a continuous improvement process should mean, at best, that the problem does not occur more than once, but at least that the lessons learned from overcoming it the first time are available to be applied in future. Similarly it means that successes and innovations that are developed in one environment need to be available to be used on other projects.

*“The Construction Industry has many innovative ideas that get lost because there is little systematic feedback. Lessons should be captured so they are applied on future projects ... Feedback is also vital in ensuring that problems and defects do not re-occur. In these ways feedback provides the control loop for the virtual organisations formed by firms undertaking Second Generation Partnering”*

Seven Pillars of Partnering

This commitment to continuous improvement requires processes for

- collecting information on the history of a project;
- analysing the information;
- reflecting on the analysis;
- agreeing on action to improve the situation on the basis of the analysis;
- ensuring that the agreed action is taken; and
- evaluating the effect of the action taken.

All this is common sense but it requires both commitment from all parties to make sure it happens, and an agreed process to support that commitment.

### 2.2 The value of COLA?

COLA is a *Cross Organisational Learning Approach* for project teams in the construction industry. COLA consists of innovative processes for review, evaluation, feedback and organisational learning – supported by information systems. The COLA process focuses on developing commitment to actions that add value; building a coalition that can achieve significant beneficial change; and ensuring that the gain in value is shared by all the organisations in the team – client, consultants, contractors and suppliers throughout the supply chain network.

The way in which value is gained in a partnership will vary from project to project but will be in such areas as:

- organisational profitability
- operational efficiency
- client’s perception of quality
- time to trading

- prime cost
- through life cost
- environmental impact
- quality of the built environment

Each company and each partnership will also be attempting to maximise value for the future by maximising their competencies, confidence and competitiveness. COLA operates by developing the process of project review. COLA recognises that many different events in the life of a project, from inception to demolition, may trigger a review. However, without an explicit process, especially in less formal reviews, valuable opportunities for learning and process improvement are frequently lost outside, and even inside, the current project. There is often a focus on solving immediate problems, ignoring opportunities to embed lessons learned into the continuing practice of organisations and partnerships.

*“The project sponsor should systematically evaluate feedback from the project, both during its development and when the completed facility is in use. The client project manager should assist the project sponsor to:*

*put feedback mechanisms in place*

*appraise the results fed back*

*reach a balanced view.*

*In-project evaluation should take place at significant project milestones. For it to be effective in anticipating and avoiding problems, and achieving good value for money, it should:*

*monitor the effectiveness of procedures*

*review the performance of all involved; individual team members should be involved in evaluating their own performance*

*result in prompt decisions for Improvement.*

*Post-project evaluation should be undertaken particularly by clients who construct more than once. Its objective is to improve the outcome of future projects for all concerned. The project sponsor should seek, and take full account of, the views of the users.”*

Constructing Success

COLA is a process for developing the *transparency* of the system: the component of Lean Thinking that requires that each participating organisation can see, comment on, change and learn from all the partners’ activities. Transparency is the key spur to perfection and added value.

## 2.3 COLA and partnering

The full value of COLA is gained within a partnering environment because COLA is designed to help organisations both learn from each other and work together more productively in future. A

*“Alliances offer the co-operation and continuity needed to enable the team to learn and take a stake in improving the product”*

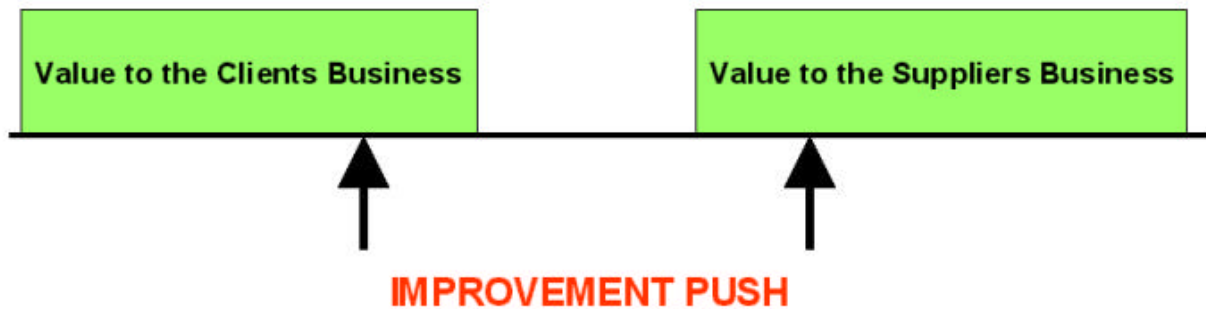
Egan

*“Competitive performance is linked to a firm’s ability to adapt to its changing environment ... partnering – as a potentially radical shift in approaches to business strategy – may well stimulate a more questioning and learning environment”*

Towards Positive Partnering

partnering environment provides strong incentives to share information that allows mutual learning. Co-operation will continue when all parties recognise that each participant needs to benefit. Sustainable improvement will come from changes that provide added value for each partner rather than from a competitive game of shifting benefit from one firm to another. Partnering recognises this; COLA provides a way of delivering the benefits that can flow from partnering by focussing on the longer term and larger gains that can build up from co-operation rather than on short-term

gains from beggar-my-neighbour attitudes. COLA encourages the identification of the improvements that deliver benefit for all (Figure 2.1).



**Figure 2.1: A balanced drive for improvement**

COLA can also be used in a non-partnering environment to gain feedback within and across organisations, driving improvements in individual organisations' practice. The experience with COLA has been that key improvements often require the future co-operation of organisations – co-operation that is only easily possible within partnering or other long term supply arrangements which have a commitment to continuous improvement targets. Beneficial change is often based in mutually supportive actions in more than one organisation. Without partnering, the changes prompted by the review process are limited to what each firm can do on its own. This is not a reason for failing to undertake cross-organisational reviews.

COLA can play a role in the development of partnering arrangements. Partnering, although becoming more widespread, is not the familiar and normal way of working for most people. Construction professionals have developed their skills in a confrontational and contract bound culture, low on trust and high on blame focussed correspondence. Shared review processes play a part in enabling construction managers and professionals to learn to be partners; they nourish the notion of partnership and enhance the solidity of shared purposes.

COLA is about adding value to and sharing value across partnering arrangements and across the whole supply chain, but value is an ambiguous term. In the course of reviews it is used to refer to both monetary value in all the ways identified earlier (value gained or value added), and also to the sense of purpose of project members and their organisations (personal and corporate values). COLA reviews help to clarify notions of value in order to build a greater consensus that can help partnerships develop a sustainable approach to continuing success. It does this not by imposing a pre-described list of values, but by exposing and exploring the different views held by team members: looking both at tangible issues such as the elimination of waste of time and materials (*muda*<sup>1</sup>) and at intangible issues such as reputation.

## **2.4 COLA beyond construction**

Partnering is a concept that extends far beyond construction and is becoming a more and more common approach to the delivery of complex services in both the private and the public sectors. Partnerships are being set up without sufficient attention being given to the way in which learning can be shared between and across participating organisations. COLA offers a model for the development of review and feedback processes.

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<sup>1</sup> Muda is the Japanese term for waste popularised in the West by Womak and Jones in *Lean Thinking*. Womak and Jones define muda as “any human activity which absorbs resources but creates no *value*”. They identify muda as: mistakes requiring rectification; unwanted production; unnecessary processing steps; purposeless movement of people and goods; people waiting for an upstream activity to be completed; and goods and services that do not meet the needs of the customer.

COLA is compatible with Business Excellence Models that extend over a wide spectrum of industries and provides the key process for review focused on improvement feedback.

## **2.5 Exploiting and building key managers' understanding**

One of the particularly beneficial outcomes of applying the COLA process is the development of the sense of involvement and 'problem ownership'. Key members of the project team are given an opportunity to reflect on and share their experiences. In this way they can develop a stronger sense of understanding of the whole project process, their role within it, as well as an appreciation of the perspectives of others. The essential benefit is not, perhaps, the discovery of new or particularly earth shattering innovations; it is more that people are able to bring to the surface and share their tacit understanding of their work and project activities. This makes their understanding explicit and not only clearer to colleagues, but also to themselves. This has the effect of increasing both managers' effectiveness and the satisfaction they feel

## **2.6 Building the coalition for change**

Many of the improvements suggested in reviews are the common currency of conversation, but somehow never have achieved the critical mass, clarity, support or commitment that produces change. COLA offers an opportunity for such lessons learned in the life of projects both to be put into action by project members and to appear on the decision making agendas of individual companies and of partnership-wide bodies.

To bring this about, COLA reviews are structured to focus attention on a few high value changes rather than on an extensive list of minor improvement initiatives. Implementation is encouraged by ensuring that key representatives from firms in a partnership commit to change in areas that project experience has demonstrated to be important. Ownership of the change idea is shared because the commitment to change is made through a process involving all the relevant parties.

## **2.7 Structuring issues to identify problems**

COLA recognises that problems do not just sit out there waiting to be solved. Difficulties come from a lack of shared understanding. Different people will see different problems in the same situation. Indeed different people or organisations will *have* different problems in the same situation. If organisation A is in danger of delivering a service late it has a problem; so does organisation B that needs that service to be delivered on time. But staff in the two organisations will see the problem quite differently. Unless and until they can find a way of recognising and defining a problem that they share, finding a solution may well be a long, heated and unrewarding business. Worse still, this abrasive process will have costs for both sides – and the better way forward which could have been found in a more co-operative format may well have been missed.

If one party to a dispute can simply decide how to resolve it, and implement the solution whether the others like it or not – then the problem of there being different points of view on the problem becomes less intense. (Even so, this may not be the most sensible way to proceed.) But where organisations do business with each other, it is because they each bring something to the joint operation that the others cannot. They have different jobs to perform, and cannot perform each others'. It is precisely at those frontiers, where there can be friction, that difficulties – of communication, of interpretation, of interest – are most likely to arise. It is also true that organisations, as well as having complementary skills, also have overlapping skills. These overlaps may also be a major cause of friction, within construction projects they are often seen in



the allocation of design responsibility - COLA can transform such overlaps into a source of strength.

When a number of individuals or organisations see a problem differently it is not usually because one of them has got it right and the others are being foolish or obstructive. In most cases each has an equally legitimate perspective, perspectives which make sense from where they are standing. What COLA does is to help construction team members, from a range of organisations, to pool their understandings of the situation. This has benefits for the individual members, and for the group as a whole. It enables each member to make better sense of the problem's complexity, seeing how the different points of view mesh together. And it enables the group as a whole to work towards a definition of the problem which is shared between them – not 'his problem' versus 'my problem'. Once the structure of the problem which the group is going to deal with has been arrived at, what to do about it will often not be too difficult to agree. It may even appear obvious. Or alternatively there may be some more work required to agree the best way forward.

In order to help reach this common understanding of a problem area, and agreement on the actions which will enable progress to be made, COLA uses Problem Structuring Methods (PSMs). These have been developed specifically for situations of the kind we have been discussing. These are problems with multiple parties, each with their own viewpoint and experience; problems where many important factors are hard to measure; and problems where many key issues are interconnected and surrounded by uncertainty, or even by conflict. There is now a range of such methods, each with its own particular emphasis.

COLA is largely based on the Strategic Choice Approach, a PSM with a thirty year track record in applications round the world. Strategic Choice focuses on groups who need to make decisions where uncertainty is high, and the effects of those decisions are inter-connected. It helps them to identify a mix of commitments and of explorations (to reduce uncertainty) which is tailored to the particular circumstances. An outline of the Strategic Choice Approach and of two other PSMs used as part of the research which developed COLA is given in Appendix 4.

## **2.8 The B-Hive Project**

COLA was developed by the B-Hive Project (Building a Higher Value Construction Environment). B-Hive was a joint industry/university project sponsored and part funded by the Department of the Environment, Transport and the Regions (DETR) and the Engineering and Physical Sciences Research Council (EPSRC) as part of the LINK Programme on Integration in Design and Construction (IDAC): this guide is published with the sponsors' permission.

The organisations involved were:

- Taylor Woodrow Construction
- Thames Water Utilities
- Whitbread Hotel Company
- Davis Langdon Consultancy
- Ove Arup Partnership
- Leeds Metropolitan University
- London School of Economics

The members of the B-Hive Project team are listed in Appendix 3

The progress of B-Hive was monitored by a series of industry focus groups who provided valuable insights and feedback to the project. The project members acknowledge the support and encouragement given by focus group members.

## **2.9 How was COLA developed?**

COLA was developed through a process of action research. The research team consisted of both academic members and people drawn from the industrial partners. Action research involves joint activity by the research team and construction managers and professionals employed on projects. The work proceeded through many iterations: observing how things worked in real projects; collecting feedback from participants; reflecting on this experience; developing new ideas and trying them out in practice. At each stage it was important to deliver value to the members of the projects involved in the pilot reviews.

The action-research included nine project reviews; three before the concepts of COLA were formulated and six projects reviewed using the COLA process. Each workshop was evaluated by the review participants; analysed by the research team; and changes were implemented after each workshop. This enabled us to incorporate feedback from members of the construction projects reviewed and the observations of the wider B-Hive team.

Concurrently, a model of the information systems required to support COLA was developed and was used to support the information analysis for later reviews.

Over fifty representatives of construction clients, consultants and managers were involved in the reviews and their help in developing COLA is gratefully acknowledged.

### 3 Making the most of the knowledge from COLA

Construction needs to see itself as, and be seen as, a knowledge intensive industry. The linear nature of the briefing, design and construction process has created a history of fragmentation, conflict and stand-offs which has too often prevented it from embracing beneficial change and more knowledge intensive ways of working. There can be barriers between the detailed knowledge of the professionals and managers conceptualising and designing projects and the practice on the ground. Further barriers are created by the different languages, based upon different notions of value, of clients, designers and constructors. This is compounded by the way projects are delivered through transitory teams. A detailed knowledge of how another firm operates and of local conditions is difficult to apply when the next project is with a new set of organisations and people and in another part of the country or the world.

Against this background, COLA can help construction organisations and partnerships learn: learn about good practice within the partnership; learn how to embrace innovation; learn about how to embed this practice into the style and culture of the organisation to create better practice on the ground; learn about 'worst practice' and how to avoid it; and learn about each other. When they do so they build up a clear sense of what to do (and not to do), why and how. This is expressed at the individual, team and organisational level, as well as within the partnership. At each of these levels there is learning to do, learning which is possible within the continuing set of relationships established through partnerships.

When such learning takes place, many of the positive outcomes are manifested in the form of people having a better sense of what to do, how and when. If people have learned to behave in positively different ways, then beneficial change is achieved. Other benefits of COLA are seen in more formal knowledge, captured and stored in formal systems. The COLA information system, discussed in the previous section, provides a template for such knowledge in the form of data. It is certainly the case that the construction industry's failure to develop as a knowledge intensive industry is in part a consequence of its failure to develop such databases.

It should be clear though that it is not enough to simply create more and more data on computer systems. This data needs to be accessed and evaluated, critiqued and used. Knowledge intensive industries are identifiable by the way people develop their own skilful practices drawing on and sharing data and information resources. The success of COLA is seen when the data and information that it develops are used as a part of professional practice, and people positively want both to consult such knowledge resources and also to contribute to them. This is when knowledge becomes a common currency of practice.

An example of this is development of matrices of roles, responsibilities and accountabilities for a series of projects. The switch from conventional to partnering responsibilities had led to a lack of clarity about roles. By sharing data across projects it was possible to create a more consistent set of understandings about who was responsible and accountable for what and how decisions could be made and carried through. Conflict and waste was resulting from the lack of shared understanding and knowledge. Exploration of the issue through COLA enabled a solution through sharing that was not otherwise easily accessible.

COLA is an important catalyst to help move organisations and their members to greater appreciation of their knowledge assets, and provides a means to harness these assets.

COLA does not stand alone in this. COLA forms part of a drive for continuous improvement through a better appreciation and use of knowledge resources. In this it contributes to, and gains from, a clearly stated continuous improvement and best practice programme and acts as a driver

towards co-ordinated research and development programmes that meets the real needs of the partnership.

## 4 Where and when COLA

COLA must be actively supported by the top level of management in all the participating organisations if it is to be effective in promoting positive change. The review process must be embedded in a public commitment to rigorous and constructive evaluation and a culture that welcomes challenge. It is part of a process of recognising that waste and under-performance is less often the result of the failures of one person or organisation but is more often to be found in the way that the many contributors to construction projects relate to each other. The exercise of finding some one person to blame means that the aspects of others' performance that led to the problem are ignored; as a result the contributory factors are not addressed and are likely to recur. COLA is a way of moving beyond this blame culture.

The pilot reviews highlighted the role of the client in creating systems that deliver high performance. However they simultaneously highlighted the need for construction professionals to take joint responsibility with the client in setting up these systems echoing one of the main messages of the Egan report. For example, a recurring issue in reviews was the less than satisfactory way in which changes to brief and specification were managed. Changes by all parties were required in order to improve this situation. This is well known in principle, but the review process was effective in detailing the actions required by each party so that the actions of others would be effective. It is in this identification of interlocking actions that other procedures had proved ineffective.

### 4.1 Who is involved in reviews

The review process requires a **champion**, a senior manager who takes responsibility for setting the aims of the process. Unless there is effective championship difficult messages from COLA reviews will be ignored and buried. While the champion is a member of one organisation (e.g. the client if it is a client led partnership, the construction company if the reviews cover a contractor and their suppliers) ownership must be held by all participants. This is most clearly achieved by including a commitment to COLA style evaluative review in the partnering charter, but can be achieved through engagement over time in review activities.

Each review requires a **sponsor** who will take responsibility for ensuring that the appropriate people are involved and are committed to the review. They are also responsible for seeing that the review links to the business plans, the improvement processes and the shared objectives of the companies involved.

A specific review requires a **review co-ordinator**, who would typically be appointed by the project manager to:

- Make arrangements for the review
- See that the information required is at hand
- Ensure that questionnaires are issued, returned and analysed
- Adequately brief the facilitator
- Ensure that the commitments to actions are followed up

The workshop process described in this guide uses the skills of a **facilitator**. COLA requires that attention be focused upon issues rather than individuals, solutions rather than blame. In the case of major reviews this usually requires assistance from someone not involved in the issues on a day to day basis; this may be an external facilitator or an internal facilitator who has been drawn from a different part of the partnership to ensure impartiality. The issues of facilitation are described further in section 6.2.

Each review will have a number of **participants**, key personnel involved in the project, drawn from: project manager, quantity surveyor, architect, designer, client's representative, key suppliers etc. Who should be involved in a workshop is discussed in section 6.

## 4.2 Review triggers

COLA is a deliberate intervention that draws a number of people together. It is, therefore, important to understand when and by what means a COLA review will be initiated. In COLA this initiating process is described as a trigger: the events or circumstances that suggest the need for a learning-oriented review. In broad terms we can identify two types of trigger:

**Programmed Review:** a clear point within a project when a review is planned. There are three main types of programmed review:

- Stage Completion: scoped for a particular project stage (e.g. the phase ends of the Process Protocol)
- Time-based: e.g. period end, three-monthly
- Project Completion: a review which encompasses the construction project as a whole and early client feedback on the project in use.

**Non-programmed Review:** a review in response to some unplanned event or set of circumstances that seem to require further investigation. There are three main types of non-programmed review:

- Issue Resolution: required to address a particular high priority problem, for example running late or over budget, a technical difficulty or to manage a change in the brief.
- Innovation: where a team has been innovative either in process or use of materials, this experience should not be lost.
- Aspect: to explore the performance of a particular function or partner either in response to problems experienced or to draw lessons from within one project to improve performance across the partnership.

All reviews have a balance between reflection and action. At one end of the spectrum an issue resolution review will tend to focus on action to solve the current problem. At the other end of the spectrum the project completion review will give opportunity to reflect upon the outcomes of any in-project reviews and ensure that the lessons are identified and generalised and become knowledge available to other projects.

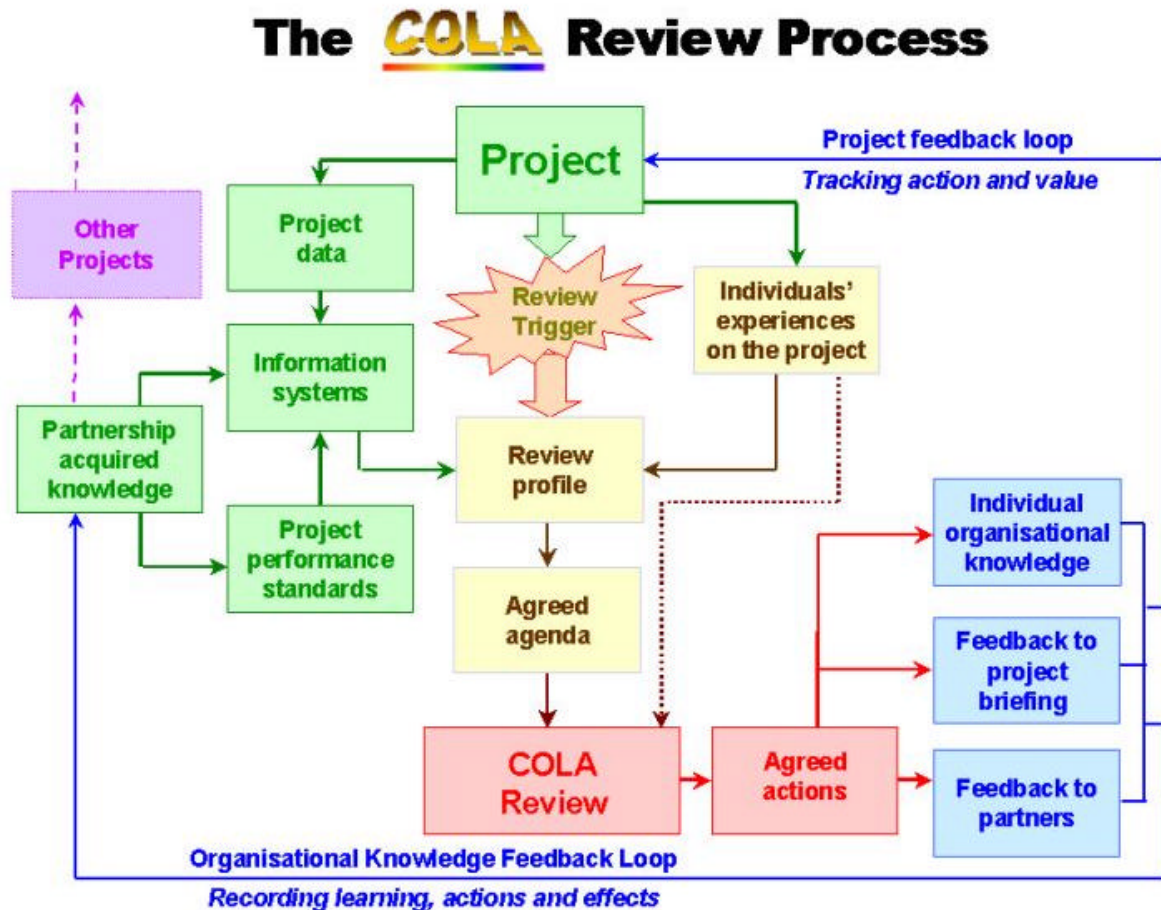
## 4.3 When to hold reviews

Most types of review will be held fairly soon after the trigger event. This is particularly true for issue resolution reviews where the immediate progress of the project may depend the outcome. There are rather different issues for project completion reviews. The quicker they are held the fresher are the issues in the minds of the participants, but if they are too soon after practical completion then crucial knowledge derived from the experience of people using the new facility will not have accumulated.

Three months after completion has proved to be the most suitable time, providing a balance of recall of the project and experience of use. This allows the client to contribute on issues relating to both the experience of delivery process as well as the performance of the end product in use.

## 5 An outline of the COLA review process

This section introduces the COLA review process in its organisational and partnership context. As this is a cyclical process there is no one starting point for a description. The previous section discussed the triggers that initiate a review. This description starts further back with the knowledge that partners already have about themselves and each other at the start of a project; knowledge gained through experiences of projects and from other reviews. This allows the context of the trigger to be discussed first.



### Partnership acquired knowledge

This is the knowledge built up within a partnering arrangement. Partnership acquired knowledge is in part written and formal and in part the accepted ways of working developed within a partnership. This knowledge resource draws on the knowledge resources of the individual firms in the partnership.

Even in a new partnering arrangement the members will already have their previous experience of working together on non-partnering contracts as well as the mutual knowledge gained during the process of forming the partnership and agreeing and signing up to the partnering charter.

The efficiency and value gains of partnering are the result of the development of this bank of knowledge. The strategic aim of COLA review is to augment this bank of knowledge. The written part of the knowledge bank will be in procedural agreements, notes on the effectiveness of different processes, materials and design solutions and so forth. Part of the knowledge will be recorded on paper and part held on computer.

The informal and unwritten knowledge, the tacit knowledge, is the knowledge that staff of the individual companies have of the other companies and of how the written knowledge can be applied in practice. Each COLA review process makes part of this tacit knowledge explicit so that it can be debated and shared.

This is the construction project under review. COLA is focussed around the review of individual projects, exploring the progress and incidents on the projects to learn lessons for the future from both successes and problems.

All projects produce large quantities of data: designs, programmes, records, conditions reports, incidents, performance information, details of people and organisations, business results etc. This data assists managers in identifying the issues that will be at the centre of the review.

### **Project performance standards**

These will be the criteria established for each aspect of the project: requirements, brief, benchmarks model costs, building regulations, etc. These criteria are informed by the experience of the participants on projects both within the partnership and outside. They are criteria that are about meeting both the demands of the client and the expectations of the contractors and consultants.

### **Information systems**

Project information systems may be paper based or computer based or, most often, some mix of these. B-Hive has developed, as part of COLA, a model for a system to collate, analyse and report on the comparison between the current project and past projects. The specification for the system includes the analysis of questionnaire returns and the prioritisation of issues as well as the monitoring of the effectiveness and value of actions.

The model for the information is described in section 7. An organisation adopting COLA will wish to consider providing some specific support. However, COLA does not require such a system to be in place. What it does require is that information on the project under consideration – project performance standards, project history, and project events – is available in some organised and retrievable form.

### **Review Trigger**

The event that sparks the review – this may be the end of a stage of the project or a critical event in the life of the project as described in section 4.2.

### **Individuals' experiences on the project**

Each individual will have a different view of the project depending on their role and experience. The COLA process values and uses such person-specific knowledge of, and perspectives on, the project and particular effort is made to collect people's views, experience and opinions.



### **Review profile**

The individual views of project participants are collected in the pre-review stage – through the use of questionnaires in the case of more formal reviews. These are set alongside the data and performance standards held in the information systems so as to develop the agenda and to provide a full picture before the review itself. The use of the questionnaire is described in section 6.1. A sample questionnaire is shown in Appendix 1.

### **Agreed agenda**

Prior to the review there will be individual discussion of the profile to determine key areas for discussion and decision so as to meet the participants' objectives.

### **COLA Review**

The review may take different forms. Depending upon the risk and value attached to the issues to be considered it may take the form of a day workshop or it may be part of a regular project meeting. A workshop for a high risk/value review should use an appropriate Problem Structuring Method or problem resolution technique and require an external facilitator. B-Hive has developed a workshop methodology for such reviews which is described in section 6.4. A COLA review leads to a set of owned and agreed actions.

### **Agreed actions**

It is crucial to the development of organisations and partnerships that actions are placed upon individuals who have the power and authority to see them through to completion. Commitment to an action also includes agreement of criteria for monitoring its implementation and measuring its effectiveness.

### **Individual organisational knowledge**

Each member organisation of a partnership will take the learning gained during the review process and may use it in other projects and to develop their competitive advantage. Some issues on the use of organisational knowledge are outlined in section 3.

### **Feedback to project briefing**

Agreed actions from the review are fed back to be used to improve current and future project briefs and also to contribute towards the setting of performance standards for future projects.

### **Feedback to partners**

Within the partnership it is critical that all organisations share the knowledge generated both from the agreed actions and the process of arriving at them. This adds to the Partnership Acquired Knowledge – allowing the benefits of partnering to be realised and shared between all members to put the partnership ahead of the competition, eliminating waste of time and materials and gaining value.

### **Feedback Loops.**

The COLA process is based upon feedback that supports the partnership by tracking the agreed actions; by tracking their value impact in the current and future projects; and recording the learning so as to make it available for future collaborative ventures.

## **6 The COLA review workshop approach**

At the heart of major COLA reviews is a workshop: COLA review workshops exist within the cycle of COLA activities. As for the whole COLA process, it is necessary to have the committed support of a sponsor with the authority to bring the team together and to ensure commitments arising from the workshop are carried through.

It is essential that a workshop is thoroughly planned. As described in the previous section, before a workshop takes place there needs to be a systematic process of collecting data, opinions and other information; both from project information systems and through questionnaires. This builds into a review profile and is used to establish the workshop agenda.

The workshop should include representatives of each of the partners involved in the aspects of the project to be reviewed and of other key participating companies, whether partners or not. In order for all members of the workshop to participate fully, the number should not grow beyond 10 to 12. This may mean that it is not possible for any individual workshop to cover the whole supply chain. A workshop may consist of the client organisation and the organisations in a direct contractual relationship with it; it may be a contractor and their key suppliers; it may be a supplier and their specialist trade contractors.

The individuals involved must include those with the management responsibility for the project at site level, as well as individuals with corporate responsibility and sufficient influence to champion and deliver the agreed actions that are generated by the review process. They will normally include representatives of both the design and the construction teams.

### **6.1 The COLA questionnaire.**

One of the main innovations of COLA is the way in which a questionnaire is used to discover what workshop participants see as requiring further exploration. It is used to collect perceptions and evaluation of a project and accounts of the critical incidents within it, from those who will be involved in the workshop.

The basic questionnaire used in COLA covers aspects of planning, team performance, handling of change and value issues. The questionnaire also provides scope for people to describe innovations, notable achievements and learning opportunities. The mixture of explicit rating and free comment is provided in order to balance focused and more open-ended contributions. The questionnaire has proved very effective in highlighting issues to be discussed at a review workshop and promoting the participants' sense of ownership of these issues from the start.

The model questionnaire shown in Appendix 1 has worked well in the pilot reviews, but it has always been adapted by the co-ordinator and the facilitator to meet the particular requirements of any given review.

The completed questionnaires are analysed by the review facilitator to establish an overview of the issues and to form a judgement as to the issues which should be included in the workshop agenda. The analysis of the rankings given on the questionnaires is best done using a spreadsheet to highlight areas that give particularly low or high scores, or where there is a divergence of opinion between project members. The comments from the questionnaires are grouped into themes and summarised.

The analysis is used to produce a series of flip chart sheets that gives an overview of the project and groups the significant issues that warrant workshop discussion into a limited number of Decision Areas. This presentation does not attribute comments to individuals, since to encourage openness confidentiality is guaranteed to respondents and it is important that this obligation is respected. However, wherever possible in drawing up the list of issues presented, at least one

comment from each participant should be included in order to develop a sense of involvement. (See Figure 6.1 to Figure 6.4 for examples of such a presentation.)

## **6.2 COLA and facilitation**

COLA workshops are facilitated. By that we mean one person is given an explicit role as the orchestrator of discussion. For non-programmed reviews this will usually be the review coordinator, but for programmed reviews or for non-programmed reviews with a high value impact, it is desirable to have a fully independent facilitator. In either case, the facilitator is there to see that the workshop members are able to participate fully, to shape the progress of the debate and to reach conclusions and actions that are understood and owned by all members. A facilitator is **not** required to be an expert in the areas under review, and is not responsible for the content of the discussion or the action points that emerge. Indeed it is important that they remain detached from the detail of the discussion so that they can take responsibility for the process of the event. In particular they have the responsibility of ensuring that everyone has the opportunity to contribute and be heard, especially if the participants are at very different levels of seniority.

Facilitation can be arranged in a number of ways. As noted earlier, it may be sensible at times to employ a specialist facilitator, or it may be that a particular person in one of the partner organisations has such skills. However, if COLA is to become a central part of a partnerships ways of working, then it probably will make sense to train professionals from amongst the staff of the partners. Training can develop the necessary personal skills in suitable people, but necessary skills are not universal and selection of potential facilitators requires careful attention. Through such a training programme, a member of one partnership project can be enabled to undertake the facilitation on a COLA review of another project.

The core skills underlying good facilitation are concerned with understanding the way people behave and helping them to remove the barriers to achieving consensus and building commitment to team success. These base skills are not exclusive to COLA, and are the prerequisites for facilitating the more familiar processes that are already being used successfully within the construction industry. For instance organisations that already employ skilled facilitators for such processes as Value and Risk Management could derive significant added value by using the same people to facilitate COLA workshops.

Because of the complex nature of the facilitation process there are advantages to using a pair of facilitators. This adds to the expense of the workshop but can be justified on high value reviews. The use of two facilitators allows for far better tracking and recording of the workshop; for one facilitator to be concerned with the process of involvement and debate while the other is able to observe the emerging trends and patterns in the discussion and provide feedback and commentary. A less expensive alternative is to use an assistant to record the discussion on a computer allowing full use of supporting software within the workshop and can deliver same day reports that may be printed, e-mailed or published on a company intranet or a partnership extranet. (see section 7).

## **6.3 The environment for a review workshop**

A review workshop needs adequate accommodation and facilities. Participants need to be able to concentrate on the workshop without the distraction of their many other urgent responsibilities. There are advantages to holding post project reviews on the site of the project, if accommodation is available. This has the merit of helping participants to recall the incidents and life of the project. Other reviews are probably better held away from the site, to allow distance from and reflection on the immediate concerns.

Wherever the review is held the room needs to be sufficiently large and comfortable for the participants to concentrate throughout intensive sessions. In order to reduce the barriers and emphasise the difference between a review workshop and other project meetings it is useful to arrange the space differently. In order to allow movement and interaction it is desirable to arrange chairs in a horseshoe without tables.

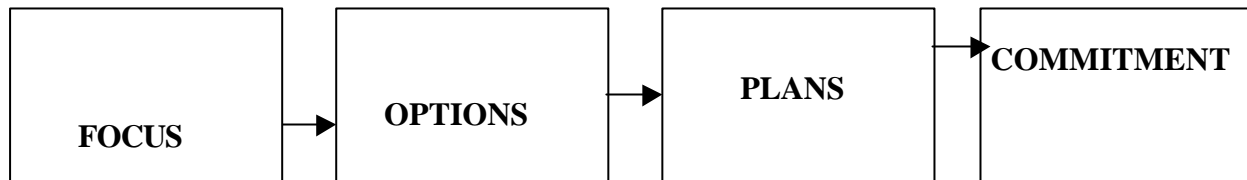
It is desirable to have at least two flip chart stands. It is essential to have a large space for displaying completed charts so that the development of ideas is visible to all and the logic of decisions can be checked at any time.

If a computer is being used for recording the workshop an LCD projector will also be required so participants can see what is being recorded and a printer is required so participants are able to leave with a single page summary of the agreed improvement plans and their commitments.

## 6.4 The review workshop step by step

The following section provides a facilitator's briefing for a COLA workshop, showing what goes on, and how the work is organised. In this illustration the workshop is a one day event, but COLA workshops can range from a morning up to two days for a review of a major project or programme. If a workshop is held on-site it is sensible to allow some time for a walk round to familiarise, or re-familiarise, everybody with the project and the issues that arose.

The activities of a COLA workshop can be split into 4 main stages:



1. **FOCUS - Agree decision areas and focus for the day**
2. **OPTIONS - Generate options for action and criteria for choice among them**
3. **PLANS - Develop co-ordinated plans and choose among them**
4. **COMMITMENT - Secure commitment to actions and plans**

The model process is designed to lead the participants towards a limited set of commitments to significant value adding actions in the form of improvement plans. Experience gained during the development of COLA clearly indicated that identifying a limited number of achievable actions is more likely to achieve worthwhile change. The more commonly used brain-storming approach tends to merely note everything that could possibly be done rather than leading to effective action.

The illustrations are photographs of actual flipcharts produced during a number of reviews facilitated by B-Hive project members. Recording of the events of the workshop can either be through flipcharts or through entry into a supporting software package (see section 7) and displayed on screen. Whilst it is desirable to use both methods, this does of course require the services of an assistant to do so. However, it does avoid the need for transferring the content of the flipcharts to the computer after the workshop and speeds the reporting process.

## 6.5 Facilitator's guide to COLA review workshops

### Session 1 FOCUS

The purpose of this session is to agree on the main decision areas and the focus for the rest of the day.

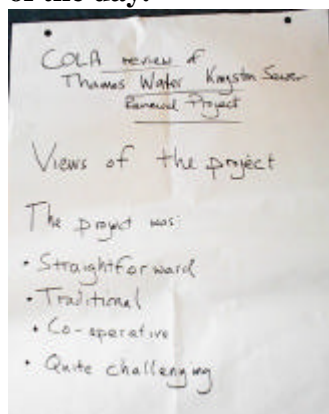


Figure 6.1: Views of the project

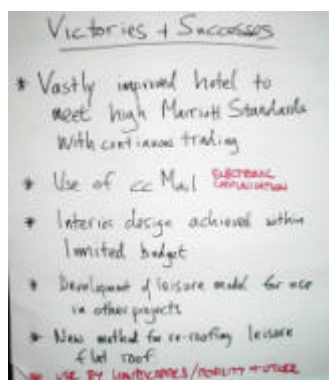


Figure 6.2: Victories and successes

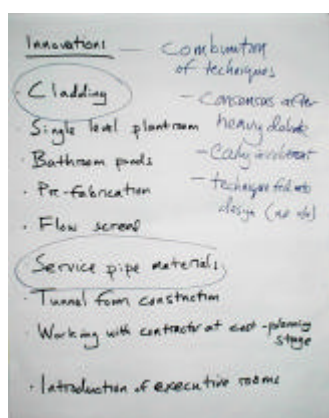


Figure 6.3: Innovations

#### Stage 1.1 Introduction

20 minutes

- Explain the workshop purpose and agenda and elicit the participants' individual aspirations for the day
- Present **overall view of project** (pre-prepared flipchart and handout) (Figure 6.1)
- Present **project successes, victories and innovations**. (pre-prepared flipchart and handout) Seek amendments and additions, check that the list is agreed by all – explore disagreements to build towards consensus (Figure 6.2 and Figure 6.3)

#### Stage 1.2 Present potential Decision Areas (opportunities for improvement)

40 minutes

- Present the proposed decision areas that will be the focus of the day. These will be grouped sets of key issues arising from the questionnaires. (Figure 6.4). Explain to participants what these are areas where there are, potential **opportunities for improvement**. Stress the need to generate **feasible actions** within those decision areas that could lead to improvement for future work and promote effective learning across project teams.
- Explain that they have been identified and selected as potential decision areas based on their responses to the questionnaire and that they are listed in no particular order of importance.
- Invite participants to confirm, expand or delete the decision areas presented. It is important that the decision areas are well-formulated. If necessary participants should spend a few minutes writing further decision areas they want to add for discussion on post-its.
- Refine and elaborate final list clearly understood decision areas, which may include clarifying definition labels

Decision Areas for improvement	
Change management	<ul style="list-style-type: none"> <li>Blocked issues</li> <li>Link: local authority planning change</li> <li>Link: F&amp;S changes</li> <li>Control - management of change</li> <li>Independent assessment of on-time completion of change reports</li> </ul>
Expectations	<ul style="list-style-type: none"> <li>Measurement of expectations by different parties</li> <li>Different views of value across client/supplier</li> </ul>
Design	<ul style="list-style-type: none"> <li>Management of design process</li> <li>Time schedule</li> </ul>
Time	<ul style="list-style-type: none"> <li>Re-allocation of time to new activities</li> <li>Allocation of time to design/development</li> <li>Management of on-time delivery</li> </ul>
Planning	<ul style="list-style-type: none"> <li>Consistency out of sync with design</li> <li>Briefing process delay</li> <li>Link: on-time delivery</li> </ul>
Client	<ul style="list-style-type: none"> <li>Involved in time on a new build</li> <li>Decision making time</li> </ul>

Figure 6.4: Decision Areas

**Hint:** when prompted to propose new decision areas, participants tend to think in terms of actions and not decision areas. For example, they might propose: “all limitations and site information should be available with initial brief” (action) rather than “how can we improve availability of information at initial brief stage?” (decision area). Put action post-its on a separate flip chart for possible later use as appropriate

**Hint:** participants might mention uncertainties (things that are beyond their control) during their interventions. For example: “ground conditions” or “changes due to planners”. Identify and record these concepts, they may be used later on to generate “exploratory” actions.

Criteria	Uncertainties
MARKET VOGUES FOR F&B?	HOTEL CONCEPT EXPECTATIONS? (3½? 4½?)
USEFUL FLEXIBILITY MAINTAINED	ACHIEVING/MAINTAINING GOOD TEAM SPIRIT
REQUIREMENTS FOR PLANNING PERMISSION?	

Figure 6.5: Uncertainties and potential criteria

**Hint:** Participants may also mention criteria by which they would measure the value of a particular improvement options within a decision area e.g. time, cost, flexibility, etc. Identify and record them on a separate flip chart. They may be used later to assess the relative worth of the proposed improvement actions. (Figure 6.5)

### Stage 1.3 Link Decision Areas

10 minutes

- Discuss with participants where the **links** (interconnections) between decision areas should be, using the rule: if two decision areas are interconnected, it means that a different outcome may result if the two decisions are considered together rather than separately. (Figure 6.6) **Interconnectivity** of decision areas helps define the focus for the workshop.

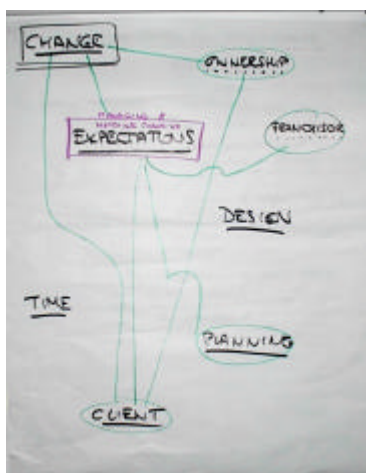


Figure 6.6: Linked decision areas

### Stage 1.4 Rank Decision Areas

15 minutes

- Participants **rank** the individual decision areas in terms of **importance** and **urgency**. If relevant, try to split them into decision areas concerning the current project and decision areas concerning future projects.
- Discuss the results of the ranking and give participants the chance to reconsider the rankings if necessary.

**Hint:** Get each participant to vote on the importance and urgency of each decision area (using the flip chart showing the links) by putting sticky coloured dots next to the decision area labels; each participant may be allowed, say, five dots to use - all on one area or spread around several as they wish.

**Stage 1.5 Select Focus for the workshop**

**5 minutes**

- Assist the participants to select three or (at most) four decision areas as an appropriate focus for the workshop bearing in mind importance, urgency and inter-connectedness. These areas will be the basis of the rest of the workshop activities.



## Session 2 OPTIONS

The purpose of this session is to generate options for improvement within the decision areas chosen as the focus in stage 1. Where options are self-evidently beneficial the blockages to action must be identified and initiatives to remove these blockages identified.

### Stage 2.1 Generate Options

45 minutes



Figure 6.7: Actions within decision areas



Figure 6.8: Grouped options for improvement

- Invite participants to generate options for improvement in each decision area, subject to the following:
  - Assume that only one option will be taken in each area.
  - Any participant can propose only one option for each area.
  - Any proposed action must be feasible (actionable) by the departments/units within the responsibility of those participating in the workshop or actionable by someone else who one or more participants can directly influence. (Avoid actions without an owner e.g. “improve communication channels”).
- Participants should spend some minutes in generating options. They should write down their proposals on post-its and place them on a flip chart under the appropriate decision area.(Figure 6.7)
- Often the first suggestions are aspirations (or criteria for judging the effectiveness of options). For example:
  - Improve design co-ordination
  - More effective meetings

Discussion is required to identify if options identified by other participants would meet this aspiration and to generate other suggestions.

- Group options to identify overlaps, similarities and potentially conflicting actions (Figure 6.8).
- Record options that were discussed but excluded from consideration, with reasons for their exclusions.

**Hint:** Use large post-its (102x105mm) and large felt tips to ensure ideas will be concisely expressed and readable by the whole group.

### Stage 2.2 Identify blockages to actions

45 minutes

- If proposed actions are self-evidently beneficial, ask the question why they have not already been implemented. Identify options that remove/reduce the barriers to beneficial change.
- Repeat this process until participants are satisfied that the improvements are achievable and the barriers to the change can be effectively addressed by at least one of the workshop participants.

**Hint:** List chains of options with original proposal at top and actions to confront barriers under each option

## Session 3 PLANS

The purpose of this session is to identify the value criteria needed for the comparison of options for improvement and to evaluate the options against these criteria..

*If the decision areas can be considered separately without significantly misjudging the effects of the chosen actions (because there likely to be fairly low cross impacts) each area should be considered in turn and the costs and value gained of each action estimated. A procedure for dealing with areas that are highly interconnected is given in Appendix 3.*

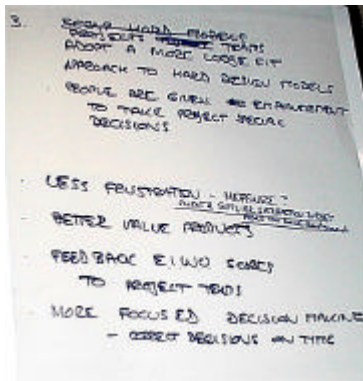


Figure 6.9: Actions and criteria

### Stage 3.1 Identify Criteria

20 minutes

- Generate a short list of objectives/criteria against which the added value of the proposed improvements may be evaluated.
- Some criteria will be quantitative: expected savings in time or anticipated reduction in waste. Often criteria that can be generated within a workshop will be more qualitative: better feedback mechanisms or increased clarity in the brief.

### Stage 3.2 Link criteria to options

20 minutes

- Identify which criteria are appropriate to each group of options for improvement (Figure 6.9).

### Stage 3.3 Evaluation of options

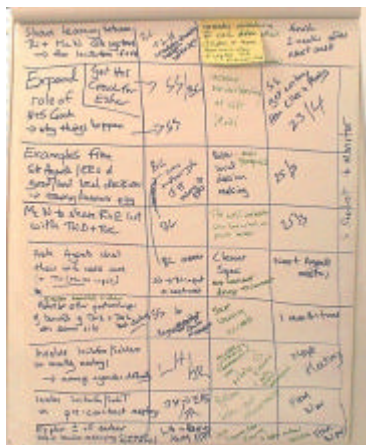
50 minutes

- Taking each decision area in turn, the options for improvement should be assessed against each of the criteria.
- From the options and value criteria develop a single **improvement plan** for each **decision area**.

**Hint:** *Throughout this session uncertainties will continue to arise and should be noted for consideration in the next stage*

## Session 4 COMMITMENT

**The purpose of this session is to secure commitment to actions and exploratory actions.**



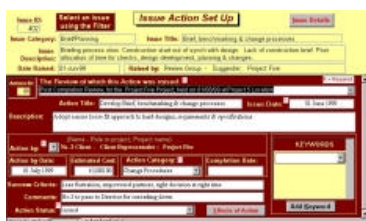
### Figure 6.10: Commitment Sheet

### Stage 4.1 Development of Exploratory Actions 45 minutes

Consider the uncertainties and risks that may threaten the success of implementing the improvement plans. List the uncertainties and agree how they should be addressed for each of the proposed improvements..

- Invite participants to identify exploratory actions that will reduce the uncertainties. Examples are:
  - carry out soil study in order to complete structural design
  - approach planners to get an idea of when we can expect approval
  - discuss with senior managers of client company their preferences between alternative design solutions
- Choose the best exploratory actions in terms of **confidence gained, cost in resources and delay caused**.

**Hint:** This will allow the refining of the risk profile for the current/future projects.



**Figure 6.11: Database commitment entry form (see also Figure 7.4)**

## Stage 4.2 Agree commitment package 30 minutes

- Record on a flip chart and/or in the supporting computer programme
  - actions and exploratory actions to be taken
  - who is to take each action
  - when is each action is to be completed
  - the criteria for establishing that the action has been implemented
  - the criteria by which the actions will evaluated (the anticipated gain) (Figure 6.10 and Figure 6.11)
- Print out and distribute a copy of the **commitment** flip chart (if computer and printing facilities are available)

### Stage 4.3 Review of Session 15 minutes

- Record participant feedback on the workshop; record for future action any areas mentioned as not having been covered.
- Distribute workshop evaluation questionnaires.

## Post workshop activities

- If digital camera is available, photograph key flipcharts and circulate to participants by e-mail no later than the following day.
- Circulate a record of key workshop points within 72 hours.
- If issues raised in workshop were not being recorded in the supporting information system during the workshop, enter issues, actions, criteria, uncertainties and decisions into database.
- Record action taken on commitments and evaluate the action taken.

- Review workshop evaluation questionnaires and incorporate feedback into the design of future workshops.

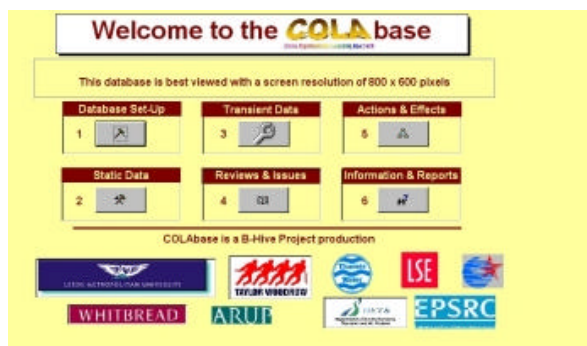
## 7 COLA and information systems

### 7.1 Information systems

The aim of an information system for COLA is to provide a facility for recording, storing, making available, disseminating and tracking lessons that have been learnt in previous projects as well as developing agendas for a review. Most organisations will have some substantial and rapidly evolving information systems which record information relevant to projects. Such systems may be capable of providing a large proportion of the data required for COLA. The COLA process can be used as an opportunity to develop these resources to support organisational learning and improvement strategies. The primary information systems issues are the integration of existing systems to support the review process rather than the development or purchase of new packages.

Information systems need not be computerised, but the utilisation of Information Technology (IT) in making information available has become a major part of all modern organisations and such systems can certainly support COLA.

In almost all cases an information system for COLA will be a collection of both new and existing systems brought together to support the review process. Within an individual organisation, such a system would provide the framework for staff to add to, utilise and allow reflection upon the collection of experiences, information and knowledge. *Thus a system for COLA will serve two purposes, it will both support the review process and provide the mechanism to store and disseminate learning.*



**Figure 7.1: COLAbase welcome screen**

B-Hive has developed a prototype database to support COLA (Figure 7.1). The database allows individuals' experiences, past situations, actions and effects to be recorded and then fed back into the organisation through a retrieval system based on keywords or phrases. Thus the database brings together a facility for experiences to be shared and lessons to be learned. This system is particularly intended to support the review co-ordinator in their role (see figure 7.6).

Where several organisations join together in a partnering environment a resource of Partnership

Acquired Knowledge can be created. Technologies such as extranets and Lotus Notes can be used to provide a seamless resource of information that is shared between organisations, allowing each to learn from the others. This sharing will strengthen the individual organisations and, consequently, allow value to be shared across a strengthened partnership.

### 7.2 Roles for the information system

An information system for COLA will have a number of roles and satisfy different people's information needs. For example it can enable users to:

- Understand the background or explain the context of issues
- Indicate potential problems



- Find solutions to existing problems
- Determine the effects of specific actions
- Find details of individuals involved in specific projects or situations
- Share their experiences, suggestions or expectations for future events

The recording of all types of reviews is an important process that the COLA Information System must support and there are three distinct phases where information is collected:

### 7.2.1 Prior to the review event.

Gathering and analysing project information is crucial to the successes of COLA. The more pertinent information that is known before a review, the more constructive the review will be. As discussed in section 6.1, details of the following are required to establish the review profile before a review is held:

- Background information concerning the project, the people and the organisations involved. This can be used to improve understanding of the circumstances surrounding issues and to find or follow individuals or roles across projects or organisations. (see Figure 7.2)
- The specific issue(s) to be raised, collected from the appropriate parties (see Figure 7.3)
- The perception of individuals' views of priority issues.

### 7.2.2 The review event

During the Review itself the following are recorded:

- Additional issues that arise.
- A record of the progress of the review, including the issues and improvement opportunities that were raised but not followed up during the review.
- The details of decisions and agreed actions arising from the review and assigned responsibilities (see Figure 7.4).

Attendee	Review Role	Date Attended
No. 1 Client	Review Participant	08 June 1999
No. 2 Client	Review Participant	08 June 1999
No. 3 Client	Review Participant	08 June 1999
No. 1 Project Manager	Review Participant	08 June 1999
No. 2 Project Manager	Review Participant	08 June 1999
No. 1 Designer	Review Participant	08 June 1999
No. 1 Architect	Review Participant	08 June 1999
No. 2 Designer	Review Participant	08 June 1999

Figure 7.2: Review set up form

Figure 7.3: Issue entry form

Figure 7.4: Commitment (issue action) entry form

Figure 7.5: Effect tracking form

### **7.2.3 After the review event**

The following information is recorded after the review event:

- The implementation of agreed actions (see Figure 7.5)
- The value impact of the improvements in practice.

## **7.3 The data**

The information system needs to hold data on issues and actions, as well as standard data about the project, the participating individuals and organisations, and their roles. In the prototype system this data is categorised as follows.

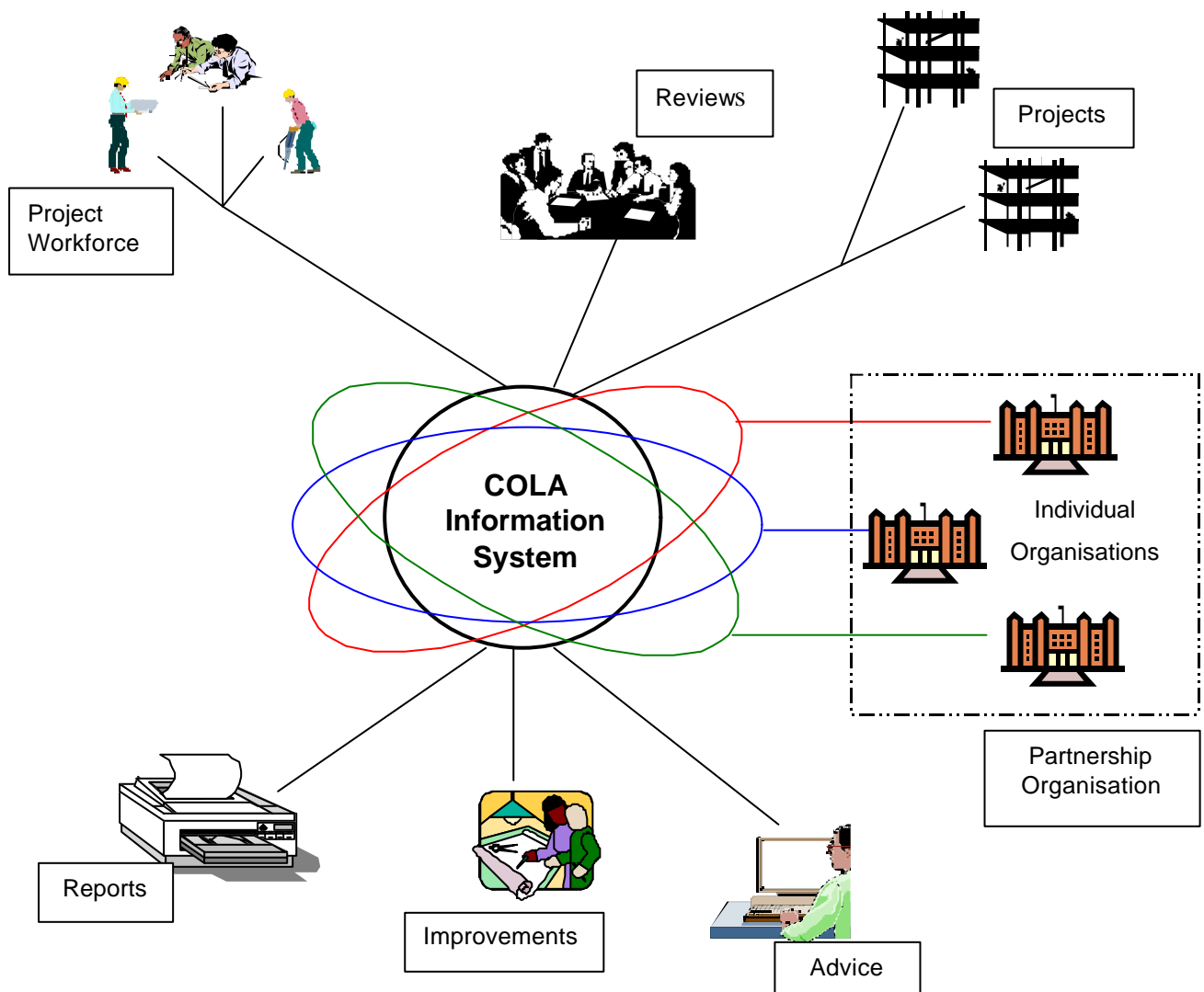
### **7.3.1 Issues**

- Project identification – the project(s) an issue is related to
- The originator – the author of the issue (though this may be optional within the system)
- Dates – such as the date when an issue was first raised, when it was discussed, when the improvement actions are agreed, and when the implementation was completed
- Review identification - the details of review(s) at which the issue has been raised
- Description – an explanation of the issue, in the originator's own words
- Title/ category – a brief description and a common phrase to enable classification
- Priority – the originator's view of the issues' relative importance

### **7.3.2 Actions**

- Issue – the issue to which specific actions have been determined
- Review – the review at which actions have been discussed
- Action – the task(s), procedure(s), or process(es) to be carried out
- Ownership – details of the person identified to complete an action
- Dates – as agreed at the review for the completion of an action
- Expected value – estimates of the impact and cost of the action, as agreed at the review
- Criteria – the measure of when an action has been completed or been successful
- Actual value – the actual effect and cost of the action
- Advice and comment – a message to the future, perhaps with advice concerning action to be taken under similar circumstances, or how to avoid such a situation?

Further information on the COLAware system, including documentation and a downloadable version of the database are available at <http://is.lse.ac.uk/b-hive/colaware/>



**Figure 7.6: Overview of the information system accessed across a network**

## **Appendix 1: Sample questionnaire**

# **COLA Stage Review**

## **Project Completion Reviews**

### **Pre-Workshop Questionnaire**

#### **Introduction**

Cross Organisation Learning Approach (COLA) has been devised and developed through Action Research undertaken by the B-HIVE Project Team.

COLA aims to provide organisations with simple modular tools for developing sustainable Continuous Improvement systems that are based on feedback learning from project experiences. The focus is on risk related value sharing and the ability of all stakeholders to profitably deliver demonstrable value to the client.

There are two basic components to COLA:

- Review, for extracting the value related learning from shared experiences
- Information Systems, for retaining and communicating the lessons being learned

The process of Review focuses on the issues relating to the critical events that affect the success of a project. It provides a structure for gathering information about the value of these issues and helps the participants move from a shared understanding to specific actions. Two basic review types are recognised:

- Programmed Reviews, which look back over completed work to extract the lessons to be learned from successful achievements and opportunities for improvement. The premise being that if we were starting again, knowing what we know now, how would we do it differently
- Non-programmed Reviews, which are concerned with unplanned and problematic issues that must be resolved as work progresses. The lessons learned at this time generally relate to patch fixing rather than radical change

#### **This Questionnaire**

The following questionnaire relates to stage reviews and is to be completed by the project team members attending the review workshop. The questionnaire may appear long, but it has been designed for ease of use and normally takes no more than an hour to complete. It will be used by the review facilitation team to prepare the workshop agenda and helps the facilitator to make the best use of the limited time available within the workshop environment.

The workshop will be used as forum for understanding the views and improvement aspirations of all the participants working together as an effective team. You need to be frank and support your views with related facts and figures. The workshop will focus specifically on those areas where significant value adding benefits are most likely to be realised.



Please tick the boxes that best reflects your view of the project and use the comment space to help describe your view of the project.

## A. Planning

<b>1. The quality of the Project Brief for your purposes was:</b>				
	a) Over-specified	b) Appropriate	c) Critical discrepancies	d) Inadequate

<b>2. What activities did you have direct responsibility for, and was there sufficient time allocated:</b>					
		<b>Time allowed</b>			
Activity	Responsibility	a) Plenty	b) Sufficient	c) Tight	d) Inadequate
<i>Design</i>					
<i>Costplanning</i>					
<i>Procurement</i>					
<i>Off-site manufacture</i>					
<i>Site Construction</i>					
<i>Commissioning</i>					
<i>Other (please specify)</i>					

<b>3. Given the time available for the project planning, how well was the time allocated between above activities?</b>				
	a) Optimal	b) Well balanced	c) Fair	d) Poorly prioritised

Comments on  
Planning:

## B. Team Performance

<b>4. How do you judge the performance of the other parties? Underline your own organisation and tick the other boxes as appropriate</b>				
<b>Organisation</b>	a) Excellent	b) Good	c) Fair	d) Poor
<i>Client</i>				
<i>Client Property Manager</i>				
<i>Project Management</i>				
<i>Architect</i>				
<i>Interior Designers</i>				
<i>Structural Engineers</i>				
<i>M&amp;E Engineers</i>				
<i>Quantity Surveyors</i>				
<i>Construction Management</i>				
<i>Services Management</i>				
<i>Local Authorities</i>				
...				
<b>Please list other Contractors / Service providers with whom you were involved, and indicate performance by ticking the boxes as above</b>				

*Comments on team performance*

## C. Handling change

**5. Changes during this project, e.g. changes in brief, operational requirements, project team membership, changes caused by events on-site, etc.**

	a) No changes	b) Some changes	c) Many changes	d) Too many changes

**6. How well were changes handled in this project?**

	a) No problems	b) Minor problems	c) Major problems	d) Badly handled

**Comments on Handling Change:**

## D. Value

**7. How did the actual value on this project compare with your expectations**

Measured in terms of:	a) Better	b) As Expected	c) Worse
<i>Value for money to the client</i>			
<i>Return on your investment</i>			
<i>Future opportunities with this Client</i>			
<i>Future opportunities with other Clients</i>			

**Comments on Value to the client, to the team and to your organisation:**

## **E. Your experience of working on this project**

*8. Please describe innovations in processes or products developed and used on this project*

*9. Please describe notable achievements on this project.*

***10. Please describe issues surrounding critical events (e.g. significant change, misunderstandings or non-conformance), that had a significant impact on the progress of the project and / or your role in the project.***

***11. Please describe lessons that should be learned from this project for future projects.***

**12. Please mark the point on each scale that best describe your experience on this project with this team**

Co-operative	<div><div></div><div></div><div></div><div></div><div></div></div>	Confrontational
Complex	<div><div></div><div></div><div></div><div></div><div></div></div>	Straightforward
Stressful	<div><div></div><div></div><div></div><div></div><div></div></div>	Relaxed
Challenging	<div><div></div><div></div><div></div><div></div><div></div></div>	Uninspiring
Innovative	<div><div></div><div></div><div></div><div></div><div></div></div>	Traditional

---

**Comments:**

## F. Your views about this questionnaire

	Too complex	About right	Inadequate
Did you find this questionnaire			
How long did it take you to complete the questionnaire			
Suggestions:			

**Thank you for completing this questionnaire. Please return it to the Review Co-ordinator:**

no later than \_\_\_\_\_

## Appendix 2 Procedure for dealing with inter-connected areas

*This stage is necessary in session 3 of the review workshop if there is a high degree of inter-connectedness between the decision areas.*

The purpose of this activity is to develop two or three alternative plans in the form of a portfolio of options for improvement that could be taken, one within each decision area, at the same time (see below), and to choose the plan with the greatest potential for benefit.

Plans	Decision Area 1	Decision Area 2	Decision Area 3
Plan A	Option A1	Option A2	Option A3
Plan B	Option B1	Option B2	Option B3
Plan C	Option C1	Option C2	Option C3

Of course, Option A1 could well be the same as Option B1 ... etc.

### Identify Plans

- Explain to participants what the plans are, i.e. **a bundle of actions to be taken together**. Identify a number (at least two) of **promising plans** for the decision areas that you have been working on.

### Choose the best plan using agreed criteria

- Carry out a comparative analysis of pair of plans (see below). If possible, give the plans meaningful labels. Compare plans on each of the criteria selected in stage 3.1.

Criteria (examples)	Plan A (Actions A1-A2-A3)	Plan B (Actions B1-B2-B3)
Cost Customer satisfaction Time saving Delay in gaining planning approval		

- If there is a clear winner on all criteria, eliminate the less preferred plan. Repeat for second pair of plans and so on
- If no clear winner emerges (on some or all of the criteria) **record why** – the reasons are probably things that are **uncontrollable** in nature or **uncertain** at the time of the workshop. These **uncertainties** are **explored** in the Session 4 of the review workshop.

## Appendix 3 Project participants

### Industry Representatives

#### *Clients*

##### **Thames Water Utilities**

David Glendinning

Start Shurlock

##### **Whitbread Hotel Company**

Mike Thomas

#### *Constructors*

##### **Taylor Woodrow Construction**

Peter Dixon

Andrew Lees

Stuart Walker

Project Manager

#### *Consultants*

##### **Davis Langdon Consulting**

Dr John Connaughton

##### **Ove Arup Partnership**

John Gregory

from January 1999

Ray Noble

until December 1998

### University Representatives

##### **Leeds Metropolitan University**

Graham Orange

Lead Investigator

Alan Burke

##### **London School of Economics**

Dr Chrisanthi Avgerou

Lead Investigator

Dr Tony Cornford

Prof. Frank Land

Prof. Jonathan Rosenhead

### Project Staff

##### **Leeds Metropolitan University**

John Boam

from September 1998

Sarah McAndrew

until May 1998

##### **London School of Economics**

Mike Cushman

from March 1998

Dr Barbara Farbey

until February 1998

Alberto Franco

until January 1999

### Project Advisors

Tim Broyd

Project mentor

Charles Lancaster

Link/IDAC project co-ordinator

from April 1999

Peter Pullar-Strecker

Link/IDAC project co-ordinator

until March 1999



## Appendix 4: Outline of Selected Problem Structuring Methods

### Strategic Choice Approach

The Strategic Choice Approach (SCA) is a planning approach centered on managing uncertainty in strategic situations – that is in situations where the benefits of decisions which are taken in one area are affected by what decisions are taken in other areas. The uncertainties which are handled include

- uncertainty about priorities
- uncertainty about how the system will behave
- uncertainties about what other decision-makers will do.

The approach moves through four modes of decision-making, though the group may decide to cycle through these in a flexible sequence. It will normally be guided by a facilitator with experience of the method. Specialised software (STRAD) is available, this can be used to support and record, but not replace, the paper based participative methods of group workshops. In each of the four modes information is elicited from the members of the group, and needs to be agreed by them, often on flip charts. These form a trace of the progress made, and are often photographed and issued as a record to assist group members after the meeting.

The first mode is *shaping*, in which the group establishes key areas for decision. The output of this phase is a ‘problem focus’ which includes urgent, important and interconnected decisions, but which is small enough to be manageable. The second mode is *designing*, in which the group is helped to identify feasible combinations of options for action in these areas. *Comparing* is an activity in which the group evaluates these alternatives against a range of criteria which they see as important – though in the process they commonly also uncover uncertainties which get in the way of finding a straight-forward ‘best’ option. The last mode is *choosing*, in which the method leads the group towards agreement in some areas and setting up exploratory investigations in others. In each of the modes there are decision-aiding tools, many of them graphical in nature, to help the group to make progress. Strategic Choice has effective and accessible software (STRAD), but can alternatively be used without computer support. One of the first uses of Strategic Choice was in the UK construction industry. Since then applications have ranged from food retailing in St. Petersburg to development in North East Brazil, from site rationalisation for a plastics company to establishing national policies for the transport of hazardous materials in the Netherlands. The method is fully described in J. Friend and A. Hickling “Planning Under Pressure”, Butterworth-Heinemann 1997.

In this project Strategic Choice was used as the basis of designing the review workshop tools.

### Strategic Options Development and Analysis

Strategic Options Development and Analysis (SODA) is a general problem identification method. It uses ‘cognitive mapping’ (a graphical way of representing the concepts which some one uses to understand a situation, and the connections between them) as a device to elicit, model and store individuals’ views. These maps are then merged to form a framework and agenda for workshop discussions, in which a facilitator guides the group towards commitment to a portfolio of actions. The Decision Explorer software makes the merging and manipulation of maps possible. A recent text is C. Eden and F. Ackermann “Making Strategy: the journey of strategic management”, Sage 1998.

In this project SODA was used to identify the key research issues and help formulate an agenda for the research.

## **Soft Systems Methodology**

Soft System Methodology (SSM) is a general method for system design or re-design. It starts with a period in which alternative world views which are held by those with an interest in the system are identified. With the guidance of a facilitator/consultant, participants build ideal-type 'conceptual models' of systems which would make sense from each of these perspectives. These conceptual models are compared with perceptions of the existing system and each other in order to generate debate about what changes are culturally feasible and systemically desirable. The most recent text is P. Checkland and J. Scholes "Soft Systems Methodology in Action", Wiley, 1990.

In this project SSM was used to help model the information systems requirements.

- An overview of Problem Structuring Methods including descriptions and case studies of these methods and three others is given in J Rosenhead (ed), "Rational Analysis for a Problematic World", Wiley 1989.

## Appendix 5: Further Reading

### Government Reports on the Construction Industry

Egan J. (1998) *Re-thinking Construction: Report of the Construction Industry Task Force*. DETR, London.

Latham Sir M. (1994) *Constructing the Team: Final Report of the Government/Industry Review of Procurement and Contractual Arrangements in the UK Construction Industry*. HMSO, London.

These two reports set out a new direction for the construction industry. The Latham Report both identifies the major issues confronting the UK construction industry if it is to shed its reputation of confrontation and poor quality and succeed in an increasingly globally competitive market. The report clearly identifies the role of clients in driving up standards in the industry and not just driving down costs. The report set a target of 30% savings across the industry. The report spurred a programme of research into management processes in the industry of which the B-Hive project was part.

The Egan Report identified the lack of understanding within the industry of the needs of clients. Its proposals for more co-operative processes were based on better understanding of the roles and requirements of all members of the supply chain.

### Partnering

Bennett J. and S. Jayes (1998) *The Seven Pillars of Partnering: a Guide to Second Generation Partnering*. Thomas Telford Partnering, London.

Bennett J. and S. Jayes (1998) *Trusting the Team the Best Practice Guide to Partnering in Construction*. Thomas Telford Partnering, London.

These two publications taken together provide a dramatic description of what can be achieved through second generation partnering and a practical guide on how to set about the task of constructing strategic partnering arrangements. They introduce the notion of second generation partnering, focussing on the need for co-operative decision making and the use of feedback rather than partnering within a project.

They argue that through second generation partnering cost savings of up to 40% and time savings of up to 50% are possible.

### Organisational learning

Argyris C. and D. A. Schon (1978) *Organizational Learning: a Theory of Action Perspective*. Addison-Wesley Publishing Company, Reading, MA.

Chris Argyris and Donald Schon introduced the notion of the learning organisation. They argue that the ways organisations are structured and operate reflects, well or badly, the learning of individual members. Changing the rules of an organisation, formal and informal, is equivalent to learning. They made the critical distinction between single loop learning, error detection and correction -doing something better, and double loop learning which challenges operating assumptions and ask the question about why operations are being performed at all. This is a more theoretical book that has been highly influential and opened the way for much important later work.

Nonaka I. and H. Takeuchi (1995) *The Knowledge-creating Company*. Oxford University Press, Oxford.

This book by Japanese authors based in the USA makes important Japanese experience available to western readers. The book focuses on how companies can create knowledge, preserve it and share it among the members of the organisation and transform the company. They argue for clear leadership by senior managers in order to provide space for middle managers to explore problems and come up with solutions that can be adopted by the company. They introduced the concept of middle up-down management to describe the key role of middle managers.

Pedlar M., J. Burgoyne and T. Boydell (1996) *The Learning Company: a Strategy for Sustainable Development*. (2<sup>nd</sup> edition) McGraw-Hill, London.

This book is based on UK experience with examples drawn from UK companies. It is written in a clear how-to-do-it style. It is designed to be used by company managers to assess and change their own organisations.

Senge P. M. (1990) *The Fifth Discipline: the Art and Practice of the Learning Organisation*. Century Business, London.

Peter Senge's book was the one that brought the idea of the learning organisation to a wider audience. He built upon the key ideas of Argyris and Schon but added a systems perspective – his fifth discipline that enabled the other four: personal mastery; sharing mental models; shared vision; and team learning.

### **Lean Thinking**

Womack J. P. and D. T. Jones (1996) *Lean Thinking : Banish Waste and Create Wealth in your Corporation*. Simon & Schuster, New York, NY.

This book adapts Japanese lean thinking ideas for European and American audiences. It summarises lean thinking as: “precisely specify *value* by specific product, identify the *value stream* for each product, make *value flow* without interruptions, let the customer *pull* value from the producer, and pursue *perfection*”. The book describes how to use this approach to drive *muda*, (waste) from the value chain. The approach depends upon information and knowledge sharing across the whole supply chain.

### **Value Management**

Connaughton J. N. and S. D. Green (1996) *A Client's Guide to Value Management in Construction*. CIRIA, London.

Value management was one of the starting points for developing COLA workshops and was used for two pilot workshops. As well as describing the value management approach to developing a better understanding and definition of clients' needs this guide provides a useful introduction to using workshop based techniques in construction management.

### **Information Systems**

Avgerou C. and T. Cornford (1998) *Developing Information Systems: Concepts, Issues and Practice*. (2nd edition.) Macmillan, London.

This book describes what is involved in developing an information system to meet the needs of a business. It informs non-specialists in information systems of what is involved in the process of developing a new system as well as providing an outline of the processes involved.

Dutton W. H (1999) *Society on the Line: Information Politics in the Digital Age*. Oxford University Press, Oxford.

William Dutton attempts to describe the profound changes that pervasive information and communication technologies is starting to have now and will have in the near future at an accelerating pace. Included among sections on differing aspects of society is a key section on tele-access in business management and work focussing on virtual organisations and the new workplace.

Earl M. J. (ed.) (1996) *Information Management: the Organizational Dimension*. Oxford University Press, Oxford.

This collection of essays examines many of the new forms of organisational responses to developments in information technology. The first section on organisational horizons describes how businesses are changing the way they operate. The later sections concentrate more on how businesses can manage and exploit information technology developments.

### **Action Research**

Stringer E. T. (1996) *Action Research: a Handbook for Practitioners*. Sage, London.

A practical guide to conducting action-research and the principles behind it. It describes the cycle of Look–Think–Act–. It describes the method that was used to develop COLA and which can be used much more extensively for co-operative research and development within the construction industry.





17 July 2009

Mr. Stuart Walker,  
B-Hive Project Manager,  
Taylor Woodrow Construction Ltd.,  
Raywood House,  
445 Burslip Road,  
Southall,  
Middlex.  
UB8 3NQ

Dear Mr. Walker,

Mathematical has a long tradition of involvement in research targeted at improving health conditions and the ways in which it carries out its business.

The Withrall Fluid Company has been pleased to support the development of the COGA process through the B-House project. The WHC construction partnership, with a significant number of world class contractors and consultants, has benefited from the on-site workshops which have been undertaken on our projects, including the various recently completed on the new London Heathrow Mainline Road, one of the largest reconstruction projects.

Through the application of the Business Excellence Model to our business we are aware that the Watkinson Hotel company has a requirement to develop robust processes in order to support the development of our property development projects, amongst other areas. The EXOLA process will be *one* of the tools *used* and *is* in our pursuit of Watkinson Excellence.

~~Form already~~

Debra Crawford

### Property and Procurement Director

○

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 E-mail: [info@hawaii.edu](mailto:info@hawaii.edu)



TWC: 21488 df: 240

200 August 1998

Dr Stuart Wolpert  
European [Marketing] Division  
Southall

Dennis Stewart,

Service has been an important project within Taylor Woodrow's research and development programme. It has enabled us to develop practical and innovative approaches to feedback and learning with a select team of world class client organisations, key construction service providers and academics.

In particular, the development of the Cross Organisation Learning Approach (COLA) has helped rationalise Taylor Woodrow's approach to Continuous Improvement within the context of our commitment to Business Excellence. It has also helped crystallise the thinking behind our on-going development of Cross Organisational Knowledge Management.

I would like to extend my thanks to the whole B-Hive Team for their hard work and dedication, as well as the BSC and FPSC for their sponsorship. I feel confident that it will not only become increasingly beneficial to all the B-Hive team members, but will also prove beneficial to the many others within our industry who are committed to freemasonry.

Best regards

Yours sincerely,

*Dennis*  
Dennis Mac Gille  
Deputy Managing Director

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Taylor Woodrow Management  
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1000

## B-Office and the CGLA Process

I thought I would write to say that David Langston Consultancy has been pleased to work with you and the rest of the B-Shine team on the development of COLA. The assessment of leading clients such as Whitbread and Pepsico Water, as well as the world class contractors, consultants and academics involved making up the research team, made for a stimulating research process and a valuable end-product - the COLA process.

We at DUC will be looking at other ways in which COTLA can be used to enhance the value we provide to our clients.

These authors

*Visum deinde*

W. Cunningham  
Partner

Reproduction of *Salmonella* Enteritidis: 1000 CFU/mL in 1 h at 42°C, which is the *q* parameter, varies as a function of temperature.

**WALTER LANGDON & NEAR INTERESTS**