Edward Cullinan Architects

Knowledge strategy

For Edward Cullinan Architects, participation in the Spreading the Word project coincided with a period of soul-searching about the future. The practice was growing, and about to reach the notoriously difficult size where an organisation can no longer work as a 'family' in one space, senior members find themselves increasingly stretched by the demands of managing the business, and specialist managers are difficult to afford. With founder Ted Cullinan in his 70s, they also had to start planning for a reduction in his involvement. They found that thinking about knowledge management provided a helpful framework for thinking about the whole future of the practice. This is director Colin Rice's description of how they are developing their ***knowledge strategy****.*

Edward Cullinan Architects is the smallest practice to participate in Spreading the Word. It was founded in 1965 by Ted Cullinan with a powerful ideal of a co-operative practice focused on designing and making beautiful buildings that respond gracefully to their users needs and their physical context. Success in achieving this vision can be measured both in the steady flow of awards, and the high esteem in which Ted Cullinan is held by the profession.

Our principal areas of work have evolved with changing economic circumstances and will continue to do so. A strong lineage of visitors' centres to historic places, from Fountains Abbey, through Stonehenge, Archaeolink at Oyne and the Weald and Downland Open Air Museum now continues with projects for Petra in Jordan and the Cambridge and Edinburgh Botanic gardens. About 40% of our work is in mixed use urban regeneration, encompassing masterplanning and housing. Education has been a strong strand of work since 1990, with notable projects for Cambridge University, Warwick University, and more recently Sandwell and Greenwich Millennium School.

Success has attracted larger projects, which in turn has created pressure to grow. Participation in Spreading the Word coincided with a period of particularly rapid growth, from 28 architects and support staff in August 2004 to 39 at the time of writing in March 2005. This challenged many of the processes and arrangements that could be seen as 'natural' knowledge management for a small practice, and it made us think hard about fundamentals, rather than merely adjust some of the dials. As a design practice whose asset is creative ideas generated and realised by individuals working together, we came to recognise that we needed to develop a coherent strategy for managing knowledge as

> "Engaging in the Spreading the Word project showed us that knowledge management lies at the heart of planning a strategy for change"
>
> Robin Nicholson, Director

Practice Profile

Staff: 28 in June 2003, 39 in March 2005

Office: London

Projects: Masterplanning and mixed-use urban regeneration, visitors' centres, education, housing

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we become a larger and increasingly different organisation.

A further challenge comes from rapid change in the outside world. Communications technology, IT, the regulatory framework and the current revolution in the construction industry as a whole all make it impossible even to attempt to stand still.

Growth is changing our culture, too. Historically it combined a co-operative management structure with strong leadership from Ted Cullinan in determining the direction of design. This put a natural limit to growth in that there are only so many projects in which one person can be intimately involved.

A culture in which everyone including the younger members is positively encouraged to have their say and participate makes a strong foundation for knowledge management. We had long-standing techniques for knowledge-sharing in place, although not labelled as such. In planning for change we were determined not to abandon the strengths of our culture.

The practice has never been 'commercial' in the sense that the running the business has been secondary to the goal of making great architecture. But in an increasingly competitive world, keeping up with the game in terms of processes is crucial. In terms of the 'value disciplines' described in the Knowledge Sharing Manual, we have firmly set product excellence as our primary objective.

Starting points

On reflection, we were able to recognise a number of our established working practices as 'knowledge management'.

Workspace

We work in a single open plan studio with an understanding that everyone should keep ears and eyes open to conversation and work on the drawing boards. Knowledge sharing is helped by the key players having naturally loud voices and by everyone moving regularly with the ebb and flow of projects.

This used to be effective in creating a cohesive group, but as numbers have crept up from about 25 to 39 in the same space and drawing boards have been replaced with computers it has become less so. At present the zone of real day to day influence is probably only about a third to a half of the office.

When, for a time, the office was split between two floors the effect was to create a 'them and us' division. This has remained a warning and an influence on our thoughts about workplace design.

Friday lunch

Everyone takes turns to prepare a sit-down Friday lunch at the end of which there is a short meeting to deal with housekeeping, details of new jobs, forthcoming CPD events and seminars. People are encouraged not to plan external meetings at this time so that there is generally high attendance.

Weekly CPD sessions

A weekly CPD slot on Wednesday has been running for about ten years. Organised by a rotating group of three people, this combines:

- in-house presentations of current projects
- presentations by firms on particular materials or products of interest to the office
- in-house seminars by 'topic champions'
- feedback from people who have been to outside seminars or conferences.

Topics are selected in the light of an annual review of individual Personal Development Plans. Now that CPD has become mandatory for RIBA members there is a good turnout most

weeks (average CPD is 40.5 hours per annum, in addition to 45 hours training).

Office handbook
The scope of this is wide, covering:

- practice philosophy
- staff welfare
- facilities
- day to day running
- PR and marketing
- project management
- CAD procedures
- IT procedures, such as use of Outlook and Powerpoint

The handbook began as a dog-eared loose leaf file bristling with Post-It notes, but it is now electronic and quickly accessible through the office intranet, and and this has increased its usage and authority.

Database
This contains key project information and the office address book. It used to be a home-made FileMaker Pro database, but that was slow and awkward to use and over the course of the past year it has been made more accessible by a web-browser interface.

Project reviews
We hold project reviews at each RIBA work stage. These are of two types:

- Design Reviews on the architecture. A group of reviewers is assigned to stay with each project throughout, but review sessions are open to all and they usually attract a handful of 'outsiders'.

- Project Reviews, dealing with the process side of the projects.

Project reviews are all done by the same person — the Quality Manager required by ISO 9001 — so that divergence from office practice can be corrected, and new ideas fed back.

Stage reports
Stage Reports are standard practice for all jobs, and available to all to read. These do get read, and they inform reports on subsequent jobs.

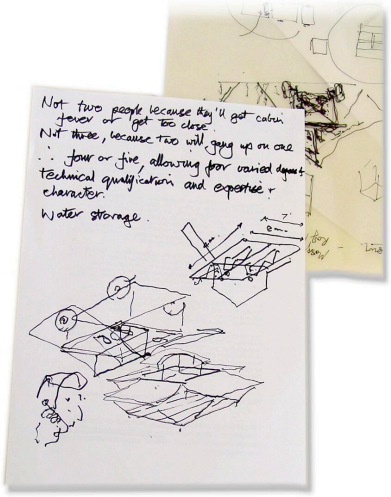
Lessons learned
We have talked for years about improving our practice by building up a library of annotated as-built drawings and specifications. However, this has not been systematically carried through.

Topic champions
Everyone in the practice is designated either a 'champion' or a 'supporter' of a particular field of interest, such as higher education, offices, access, or ethics. Champions are supposed to take responsibility for keeping abreast of developments and ideas in their field and go to relevant conferences and seminars, but again this has not really happened: people tend to be champions of the subject of their last job rather than their current one.

Mentoring
Younger members of practice are each allocated an 'uncle' or 'aunt' until they have taken their Part 3 exams.

On paper, our single studio workspace, project reviews, topic champions and various other practices together make a good foundation for knowledge management. In reality, we relied until recently very largely on the informal elements — our social workspace and Friday lunches — which are precisely the ones most at risk from growth and organisational change. Over the past year some of the more formal elements, such as the office handbook and project reviews, have started to make useful contributions, but others remain good intentions.

In reviewing our future, we decided that we needed to develop a coherent and practical knowledge strategy — not just a planning document, but an ethos that could underpin all the changes to the practice.



Knowledge strategy
Involvement in Spreading the Word showed us that there is no single fix: knowledge management needs to inform all our professional work and management. Everyone needs to keep abreast of constantly-changing regulations and other documented information. Tacit knowledge about design and about the culture of the practice — 'how we do things round here' — needs to be passed on to a flow of new staff.

A good strategy needs to include a systematic approach to learning and to both basic patterns of knowledge sharing — direct transfer through person to person contact, and indirect transfer through codified knowledge.

With this in mind we have looked at a range of tools and techniques and considered what they could contribute, and how they could be implemented effectively, in the context of our practice.

Workplace design
We moved into our present building in 1991 when there were just 20 of us, most work was done on drawing boards, and there were just a few computers between us.

Like desert nomads we brought our office layout with us from our previous building: perimeter layout desks, with drawing boards arranged to give face to face contact. It seemed to work.

As computers replaced drawing boards and numbers grew this evolved into a bay arrangement. Capacity has grown as flat screens have replaced large monitors, and A3 files have replaced plan chests and A0 drawing clips. Where people sit is decided through a process of bi-monthly resource reviews followed by a review of 'who goes where', moving people around so that team members are co-located.

But inflexibility has made the bay system begin to creak at the joints, and having reached capacity in our present studio — and been influenced by discussions in Spreading the Word workshops — we have drawn up a new plan for the office. Our overriding goal remains to continue the ethos of all working together in a large studio, but the knowledge management perspective has added some subtle nuances.

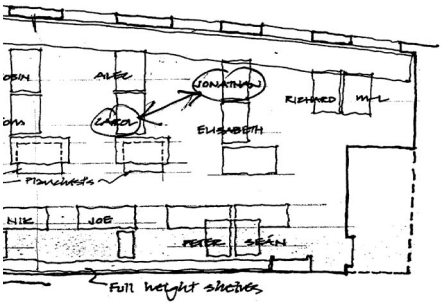
An audit of the way we use codified knowledge showed that the technical library has been largely superceded by electronic sources, so the space can be released for other uses. In future, we plan to get information on materials and components entirely from a combination of :

- external electronic sources such as Technical Indexes, Google and the RIBA product selector accessed from the NBS pane
- a categorised database of information gained in our projects and research.

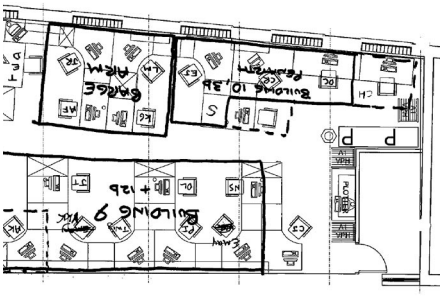
Features of the new plan which we hope will support and encourage knowledge sharing include:

- 'magnets' such as printers at the ends of the office rather than in the 'logical' position at the centre, to encourage people to wander
- eye to eye contact across the work tables, which had been lost in the bay structure
- all filing put on a service wall to make it easier to access (together with a reduction in paper filing to free up space)
- wall-mounted pin-up space in place of shelves, to restore the visibility of work in progress and the opportunities for discussion which we lost when CAD came in.

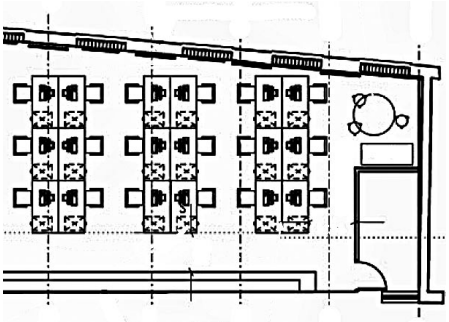
Evolution of a workplace



1991: Drawing boards, face-to-face contact, shelves along one wall, ample space



2005: Bays, computers, teams in relatively isolated groups, crowded



Future: Work tables (seating whole teams or parts) with eye contact across them and free circulation around them, 'magnets' and breakout spaces to give reasons to wander, support staff sitting with architects, pin-up space on the wall (and fewer paper files)

Induction
As the practice has grown, a more formal induction process has been introduced, and a member of the management team now works through a checklist with each newcomer.

Yellow pages
In the past the ease of simply asking around has made a 'skills database' or 'yellow pages' largely superfluous and we have never succeeded in developing a useful system. We plan to keep a watching brief on this.

Project reviews
We have been conscious for a long time that we need to standardise job running processes, and learn more from our experience. IT has made this both more practicable and, as the day to day running of the practice has become less visible, more necessary.

Until five years ago, individual job architects set up their files as they wished. This made it difficult to switch between projects and find information easily. A common filing system was rolled out in 2000, and now we have an electronic system in which the electronic folders mirror the paper files.

A comprehensive Office Handbook has been developed over the past eight years. In parallel, the IT manager has set out standard CAD and IT procedures in CAD and IT manuals. These remain evolving documents. Usage has increased since they were converted from hard copy into an electronic guide on the intranet, supported by a good search facility, and they formed the basis of achieving ISO9001 accreditation in July 2004.

The hurdle that had to be crossed to achieve accreditation was less having the procedures in place than auditing their usage, and using the audit process to feed improvements back into the system. The project review process is one vehicle for closing this loop.

Reviews take place at each RIBA work stage, involve the whole team, and follow a set agenda. One of the reviewer's roles is to tease out whether communications in the team are working — do people all understand the big project vision, and do they know what they have to do and by when?

Only sporadic a year ago, project reviews have now become a regular part of a project's evolution. They have changed from something we knew we *should* do to something we *do* do, with tangible benefits in improved communication within teams and across the office.

Hindsight reviews
After several experiments, the culture of carrying out hindsight reviews is spreading.

A recent hindsight review of a competition (carried out before we knew we had been successful) illustrates the approach we use. As many team members as possible attended, and it was chaired by the director in charge. Following the 'after action review' format, we discussed what happened step by step, whether it was good or bad, and how it could have been done better. The conclusions were recorded in a two columns, one 'facts' and the other commentary — a format we find helpful because it adds the 'wisdom' overlay in a clear way — and the report was posted on the wiki (see below).

Will anyone ever read it? Possibly not, but the benefits are as much in the process as the product. It is, for example, an opportunity to dispel myths that rapidly arise about a project; everyone has their own perspective on what and why things happened, and without formal review often only the loudest voice is heard. And involving the younger members in the process has a direct benefit in morale: 'This is an office where my views are actively sought'.

This particular review yielded several useful lessons. It showed us, for

example, that a movie record would be valuable for initial surveys of a large site, and that the competition team would have benefited from stronger 3D CAD skills. As a direct result, we purchased an easy-to-learn package which seemed ideal for early-stage work (Sketch-Up), tested it on another job (to great effect), and we have since bought five licences.

We have also started carrying out hindsight reviews on practice presentations for competition interviews, given to the whole office in a Wednesday CPD slot. These have multiple benefits: they give practice at giving presentations, an opportunity for others to comment on the content, and they help spread understanding of the latest ideas.

We have found hindsight reviews very effective — not least because they combine face-to-face knowledge-sharing with codification.

Wiki knowledge base

We are at an early stage in setting up a wiki, accessed through the practice intranet. Open source wiki software makes an attractively affordable alternative to commercial or bespoke software for a knowledge base, particularly in a small practice — without sacrificing power.

The basis of our system was set up by the IT manager using the TWiki package[1], and introduced to the whole office in a Wednesday seminar slot.

We started with a jump-in-and-splash approach to structure, but we have since re-thought this; one of the beauties of wikis is that they are so easily adjusted. The new structure has basic sections following the structure of the management teams in the office. The team leaders are thus the natural 'moderators' of their sections. Topic champions now have somewhere to record the material they collect. We hope it will also give them more incentive to keep up to date and play their intended role.

It is taking some time to decide what sort of material to include in the knowledge base. Should it, for instance, include 'passive' material — things like reference material and reports, which are unchanging and could be made just as easily accessible through the intranet — or only 'active' material to which insights and comments can be added in a more organic way? One point on which we are clear is that a wiki is an ideal home for all the little scraps of information that people have historically accumulated in private collections, but which could usefully be shared with everyone else; it should take no more time to put information like this in the wiki, where it can benefit the whole practice.

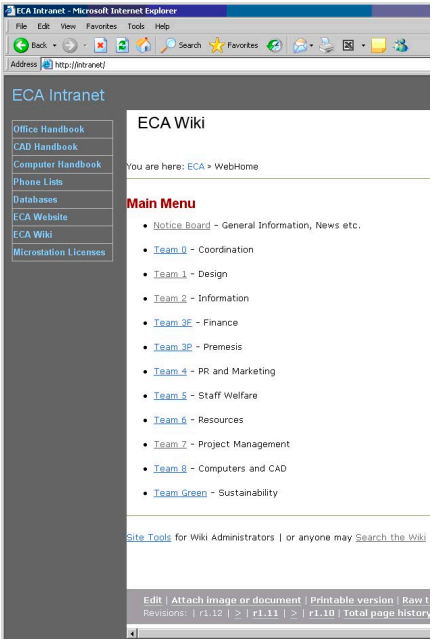
It is much too early to judge whether the wiki will be a success, but about 15% of people in the practice have contributed material so far and, after a slow start, usage is increasing.

Conclusions

We have learned a number of important lessons from our participation in Spreading the Word and our thinking about knowledge strategy and the future of ECA. The most fundamental of these are that:

- knowledge management has to be an ethos underlying everything a practice does
- solutions must, therefore, be continually evolving
- a knowledge strategy must have a broad front: there is no single answer
- the first priority is to promote face to face contact for learning and knowledge transfer
- … but it is important, too, to codify knowledge where possible and to be able to store and find codified knowledge easily.

ECA Wiki home page



The top-level categories are:

- Notice Board: General Information, News etc
- Team 0: Coordination
- Team 1: Design
- Team 2: Information
- Team 3F: Finance
- Team 3P: Premises
- Team 4: PR and Marketing
- Team 5: Staff Welfare
- Team 6: Resources
- Team 7: Project Management
- Team 8: Computers and CAD
- Team Green: Sustainability

Each page also has links to a search tool, recent revisions and a full history, a printable version, and page creation/editing and site administration tools.

[1] TWiki information and multi-platform software is available from http://twiki.org. The Wikipedia — a public wiki encyclopedia — at http://en.wikipedia.org is an impressive illustration of what wiki software can do.

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