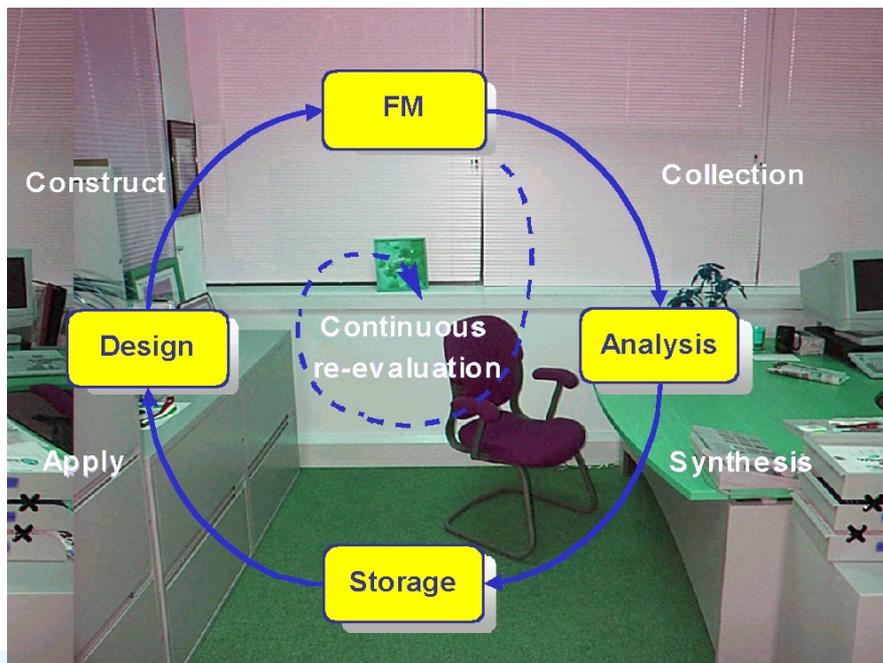


Report

Feedback from Facilities Management

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INTRODUCTION

Where is the wisdom?
Lost in the knowledge
Where is the knowledge?
Lost in the information

T.S. Eliot^[1] (1934)

Where is the information?
Lost in the data
Where is the data?
Lost in the **** database.

Joe Celko^[2] (1990)

The construction industry suffers from tremendous information overload. The difficulty in extracting the wisdom contained within that information means that the construction industry can't stop itself making the same mistakes over and over again.

What is going wrong? With all the great minds and thinking past and present, with all the lessons of history left for us to examine, it is difficult to understand why the industry hasn't progressed further. Why are we asking the same questions in our search for meaning that the Greeks were asking 2600 years ago? Do we not yet have enough information available to us?

What is this elusive quality called wisdom? How do we get it? Perhaps the answer lies in four levels of thinking:

- Data - simple facts and figures.
- Information - data that's been collected and organised. It is a reference tool. Something we turn to when trying to create something else.
- Knowledge - information that we have digested and now understand. Organised as knowledge, the information we have collected is given a context.
- Wisdom - for many, indistinguishable from knowledge. But they are two different things. Often, what is touted as wisdom is simply opinion. There is a big difference. Wisdom is knowledge that can be applied in a way that takes into account all pertinent relationships.

The recent high profile reviews of the construction industry show that we are not building on knowledge to develop wisdom. Instead, knowledge is being lost. This is due in part, to loss of information. This project aimed to capture the information and turn it into knowledge.

The Technical Report sets out an approach to capturing data from facilities management and using it properly to develop wisdom in building design and construction.

The intention is to find ways of using data collected for other purposes in a more intelligent way. In the first part, the general principles of feedback are outlined. Some examples of benefits are shown along with

some common barriers to implementing feedback. Human factors generally predominate, although information exchange technologies can facilitate efficient feedback once the will to use those technologies has been established.

The second section describes an enormous range of sources and applications of feedback and how these can be connected. Once these feedback mechanisms are recognised, they can be formalised and reliable mechanisms can be set up to ensure accurate and timely delivery of the required information.

The next three sections of the document look at three key areas where information useful for design improvement can be collected from building operation, maintenance and incidents. When applied by conscientious designers, the lessons learnt can result in better buildings and even a more productive workforce.

Five examples of improvements in operational reporting are described in section 3. Help desks, advanced building management systems, benchmarking, post occupancy evaluation and health and safety reports all generate useful information without necessarily involving substantial extra work. Maintenance reporting, production of information from the activities carried out on buildings and plant, can also generate useful information about life and reliability of components. If sufficient data is collected to identify the type of component, the information can provide extremely useful feedback into whole life costing.

As you use the data collection methods and the guidance provided, you will improve the performance of your own buildings. When you do, don't forget to pass your comments back to BSRIA to help the organisation develop better systems.

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1 THE NEED FOR FEEDBACK

1.1 CREATING BETTER BUILDINGS

Waste and unsuitable buildings

In typical construction projects 70% of labour and 30% of materials are wasted^[3]. This results in an overall efficiency of 47 - 57% for investment in construction projects. In a recent survey^[4], over 50% of building defects and failures are attributable to design. Building details were either wrongly designed, unbuildable or insufficient information was passed to the constructor. Design frequently failed to meet the brief and required remedial work after completion or it resulted in inefficient work patterns for the users. The loss of work efficiency is difficult to assess, but all these problems can be solved by better feedback to design.

The benefit of better buildings

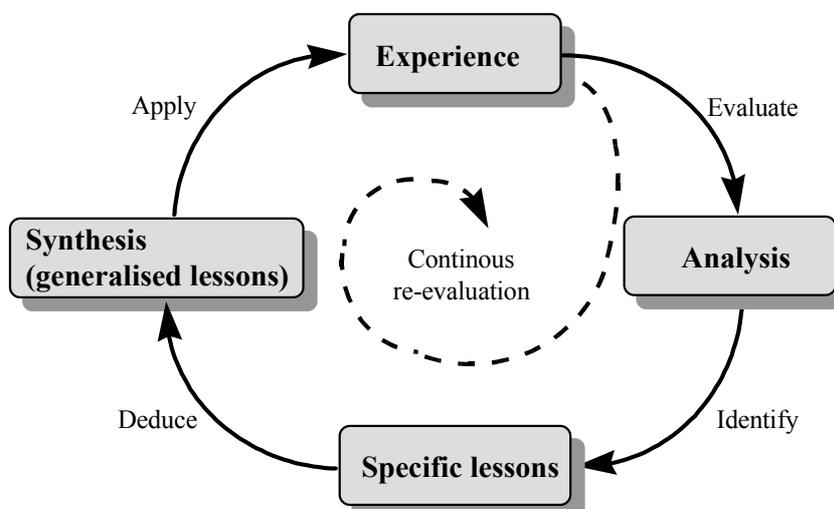
The cost of employing staff amounts to 68% of the total staff cost over the twenty-year life of a typical commercial building. Construction cost is only 3% of the total cost. Concentrating on reducing construction cost may therefore be a false economy. Several investigations have shown that improving the quality of a building has significant benefits in user satisfaction and productivity. An extra pound spent on construction can easily yield a pound a year in increased productivity. Few investments can provide a better rate of return; this pound spent on construction would have a net present value of over £11 with a discount rate of 6%.

What is feedback?

In the simplest form feedback is a means of learning from experience, by carrying out the processes of reflection and deduction. This involves

- analysing the experience
- identifying the lessons learned
- generalising from these to apply the learning to other situations, as shown below in Figure 1⁽⁵⁾.

Figure 1:
The feedback cycle



The BSRIA Application Guide *Feedback for better building services design*^[5] identified 35 forms of feedback that were used in so called islands of best practice within the construction industry. Many of these can, or should, involve facilities management in the production of information.

Continuing feedback

A common misapprehension is that feedback occurs at the end of a project and is therefore of no benefit to the users. This is not the case in construction projects. There are plenty of opportunities for using feedback in short feedback loops within projects and while the building is in use.

Successful feedback has been seen in some parts of the construction process on some projects, but it is still not widely used. Some of the more successful examples include use of information not recognised as feedback:

- Value management workshops
- value engineering workshops
- technical query sheets
- post-occupancy evaluation
- continuous commissioning
- energy efficiency benchmarking
- in-house design guides
- personal experience.

1.2 FEEDBACK FROM FACILITIES MANAGEMENT

Information from facilities management helps building operators, users designers and the public. It helps fit buildings to users' needs, generates more business and improves competitiveness for those who use it, and improves environmental performance by reducing waste in energy and materials.

Building owners benefit from better-designed and constructed buildings that have an appropriate life at a reduced whole-life cost. Designers can also make better design decisions on plant systems and sizing based if accurate usage, running costs, effectiveness, maintainability and plant lifetime information is available. Throughout the life of a building many people act as designers or use design information. Those who use feedback will gain a reputation for taking users' needs into account and can generate repeat business and referrals. Contractors can also benefit from fitting their programme to their client's needs. Other benefits are reduced energy use and reduced CO₂ emissions from greater energy efficiency and less plant over sizing. Occupiers will also benefit from a more agreeable and safer working environment.

Example Peter Clark, an NHS Trust Facilities Manager, introduced efficient information collection and found the benefits reach far beyond facilities management and into future buildings for the same operator and other operators. BIFM^[6].

Statutory and regulatory compliance

Enforcing Authorities, for instance the HSE, are aware that facilities management systems exist and expect data to be collected, monitored and produced to support legal and other obligations

Economy and efficiency

Management and programming of FM resources is a business necessity. In addition, data is readily to hand and can reported in different formats to meet business needs, for example geographic distribution, expenditure per asset, or contractor performance measurement. Remote interrogation by users allows them to check progress.

Marketing

Facilities management information supports service level agreements and aids internal and external marketing. The ready availability of, equipment availability and building plans promotes the facilities management function within and outside the organisation.

Business integration savings

Accurate data supports business planning and diary features ensure key milestones are not overlooked, for example property portfolio management and lease renewals. Integration with other business functions ensures effective resource utilisation of assets and space allocation.

1.3 BARRIERS TO FEEDBACK

One of the most immediate barriers to feedback is the time and cost involved in gathering information, storing and disseminating information. As always it is the client who ultimately pays. This, it can be argued, is unfair as designers and other parties derive the most immediate and direct benefit. Repeat clients on the other hand have a good deal to gain. Not surprisingly, these kind of clients are more actively involved in both the construction process and post occupancy feedback.

Barriers identified in the BSRIA Application Guide include the following:

Personal issues:

- fear of litigation - “I might reveal a problem to the client”
- resistance to change
- unwillingness to “own the problem”
- difficult to find and access feedback information to inform future work.

Organisational issues:

- cost/benefit ratio seen as unacceptably high
- time and cost involved
- benefits seen as too long term
- no perceived benefit.

The fundamental problem that has to be addressed is how to get people to work with feedback? This requires attention to the way information is presented to people. In short, it should be presenting information in a way that is: accessible, accurate, appropriate and adaptable.

Even if these are satisfied there is still a need for practitioners to adopt a culture of openness to change. This is very similar to the culture of total quality management (TQM), which requires feedback and continuous improvement.

The key to getting feedback from facilities management is making it part of the facilities management process. In practice this means getting it written into the service level agreement. The producers of service level agreements therefore need to be persuaded that feedback has real benefits.

1.4 HUMAN FACTORS

The key to implementing a new approach to working is motivation. People are motivated by a variety of factors including: recognition, self esteem and reward.

People are intrinsically motivated by an underlying need for competence and self-determination. In other words, perceiving oneself as competent in an activity increases one's intrinsic motivation for the activity.

In order to motivate a person to follow a particular course, it must appeal to their basic needs. Since basic needs include competence and self-determination, it would be counter-productive to impose a system that de-skills the users. Also, personal experience is rated highly among the feedback mechanisms favoured by users. To be effective, a change to a person's work pattern must also satisfy this need for learning.

There is a widespread perception among designers that they are under pressure to produce more and more in shorter and shorter design phases. Anything which is perceived as taking more time is unlikely to be adopted by designers.

It is therefore clear that any new working patterns would have to satisfy a variety of needs before they were adopted. They must be at least as effective as old methods, take no more time, provide some benefit to the user and provide some benefit that the user can pass on to the client.

Information exchange formats

There is not likely to be a single format that will satisfy all needs. There will at least be a paper format and an electronic format. It is likely that each organisation and possibly each designer will want information in a different format.

This leads to the need to produce information in a neutral format that can be adapted to users' requirements. Originating documents in electronic format makes this relatively easy. The extensible mark-up language, XML, lends itself to this approach.