



Facilities

The official research publication of **EuroFM**



20th anniversary special issue



www.emeraldinsight.com

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

Miss Page

20th anniversary special issue

Contents

- | | | | |
|-----|--|-----|--|
| 246 | Access this journal online | 280 | Lessons from Lao Tzu's
<i>Tao Te Ching</i> for the facilities
manager
<i>Low Sui Pheng</i> |
| 247 | Abstracts & keywords | | |
| 249 | Editorial
<i>Facilities</i> – 20th anniversary issue
<i>Jane Bell</i> | 289 | Integrated portfolio strategies for
dynamic organizations
<i>Franklin Becker</i> |
| 251 | Overview of special issue
<i>Edward Finch</i> | | |
| 253 | Introducing a service level culture
<i>Keith T. Pratt</i> | | |
| 260 | A fresh look at intelligent
buildings
<i>Andrew Mawson</i> | | |
| 265 | A starting-point for measuring
physical performance
<i>David Kincaid</i> | | |
| 269 | A strategy for facilities
management
<i>Keith Alexander</i> | | |
| 275 | Preventing Legionellosis: is your
action plan completed?
<i>G.W. Brundrett</i> | | |

Access this journal electronically

The current and past volumes of this journal are available at

www.emeraldinsight.com/ft

You can access over 100 additional Emerald journals, each with a comprehensive searchable archive of articles (many dating back to 1989), a detailed classification system and links to referenced material.

See page following contents for full details of what your access includes.



Access this journal online

www.emeraldinsight.com/f.htm



As a subscriber to this journal, you can benefit from instant, electronic access to the content of this title. Your access includes a variety of features that increase the value of your journal subscription.

Automatic permission to make up to 25 copies of individual articles

This facility can be used for teaching purposes, training courses, meetings or seminars. This only applies to articles of which Emerald owns copyright. For further details visit www.emeraldinsight.com/copyright

How to access this journal electronically

To benefit from electronic access to this journal you first need to register on the Internet. Registration is simple and full instructions are available online at www.emeraldinsight.com/register Once completed, your institution will have instant access to the journal content from www.emeraldinsight.com or via the journal homepage www.emeraldinsight.com/f.htm

Our liberal institution-wide licence allows everyone within your institution to access your journal electronically, thus making your subscription more cost-effective. Our Web site has been designed to provide you with a comprehensive, simple system that needs only minimum administration. Access is available via IP authentication or username and password.

Key features of Emerald electronic journals

Online Publishing and Archiving

You can gain access to past volumes as well as new material from this journal on the Internet via Emerald Fulltext. You can browse or search the database for relevant articles.

Key Reading

This feature provides abstracts of articles chosen by the journal editor on the basis of their subject-matter. These are selected to provide readers with current awareness of interesting articles from other publications within the same field.

Reference Linking

Direct links are provided from the journal article references to abstracts of the most influential articles cited (where possible this is to the full text of the article).

E-mail an Article

This facility allows you to e-mail relevant and interesting articles in PDF format to another PC for later use, reference or printing purposes.

Non-Article Content

The non-article content of our journals (product and materials information, industry trends, company news, etc.) is available online so that it can be accessed by users. It is possible to browse or search non-article content by keyword.

Additional Complementary Services Available

Your access includes a variety of features that add to the functionality and value of your journal subscription:

E-mail Services

Emerald's range of free e-mail alerting services is designed to deliver personal notification of news and features in a number of different interest areas.

Research Register

Located at www.emeraldinsight.com/researchregister, the Emerald Research Register is an Internet research forum where you and your readers can identify information on research activity world-wide. This feature is invaluable if you are seeking information or wish to disseminate information about your own research.

Support Resources

Comprehensive librarian and user toolkits have been created to help you get the most from your journal subscription. For further information about what is available visit www.emeraldinsight.com/usertoolkit

Choice of Access

Electronic access to this journal is available via a number of channels, enabling end users and libraries to reach the content through their preferred delivery system. The Emerald Fulltext Web site – www.emeraldinsight.com/ft – is the recommended means of electronic access, as it provides fully searchable and high value-added access to the complete content of the journal.

Subscribers can also access and search the article content of this journal through the following journal delivery services:

EBSCOhost Electronic Journals Service (EJS)

ejournals.ebsco.com

Huber E-Journals

e-journals.hanshuber.com/english/index.htm

Minerva

www.minerva.at

OCLC Firstsearch Electronic Collections Online

www.oclc.org/firstsearch/

SilverLinker

www.silverplatter.com

Swets Blackwell's SwetsWise

www.swetswise.com

Emerald Customer Support Services

For customer service and technical help, contact:

E-mail support@emeraldinsight.com

Tel +44 (0) 1274 785278

Fax +44 (0) 1274 785204



Abstracts & keywords

Facilities – 20th anniversary issue

Jane Bell

Keywords Facilities, Management

Introduces the special issue of *Facilities*, looking back at the changes in the journal over its first 20 years of publication.

Introducing a service level culture

Keith T. Pratt

Keywords Organizational culture, Cost effectiveness, Facilities, Management, Service levels, Quality

Service level agreements provide a mechanism for establishing a better relationship between the core business and the infrastructure and services that support them. It provides a statement of various service level options from which a number can be selected to support the customer or client, which describes the service to be given specific timing, frequency and cost. It enables decisions to be taken at a strategic level as to how these can be matched to achieve business profitability. The process is a continuing one and requires commitment at the highest level, to ensure not only that it is adopted properly, but that the services defined are properly and effectively delivered. Describes the various steps in the process and in broad terms how it can be implemented.

A fresh look at intelligent buildings

Andrew Mawson

Keywords Buildings, Office buildings, Working conditions

The Learning Building Group, which was set up in 1991, has developed a new approach to viewing

building needs. Describes the concept of intelligent buildings and outlines the requirements when designing buildings: to consider the customer's needs and match the building accordingly, bearing in mind four factors – people, environment, technology and possible change. A serious challenge to the traditional approach to the design of buildings.

A starting-point for measuring physical performance

David Kincaid

Keywords Assets management, Buildings, Facilities, Management, Maintenance

Based on work done in the area of reinvestment in building fabric and components by IBM United Kingdom, argues that costs could be reduced if design choices or construction quality are better controlled. Reinvestment costs can then become a fully planned element in the organization's management system.

A strategy for facilities management

Keith Alexander

Keywords Benchmarking, Corporate strategy, Facilities, Management, Standards

Facilities management is rapidly developing as a discipline, vocation and business service. A collaborative strategy is needed among leaders in practice, education and research to ensure that the professions are fully understood, knowledge and experience are shared and that professional and ethical standards are established to provide the benchmarks for effective practice. Early developments have been based on a strong practical discipline. Investment in research and education is now needed in order for the future to be built on a strong theoretical foundation. Sets out an agenda for those involved in advancing the discipline and promoting the facilities management message. The general challenge is to gain influence, show a business lead and win respect and authority. In organizations this involves setting the business agenda, developing systems and developing people – to nurture leaders, improve quality, and develop the knowledge and skills base – to secure the future.

Preventing Legionellosis: is your action plan completed?

G.W. Brundrett

Keywords Buildings, Facilities, Management, Health and safety, Legislation, Maintenance

Concentrates on the fact that Britain has had an unusually large proportion of cases of Legionnaires' Disease. Reminds employers of obligations of buildings legislation from the Health and Safety at Work Act and The Code of practice on Prevention of Legionellosis (which came into force on 10 April 1990). Reports on the history of Legionellosis, the infection route, actions for employers to take to prevent infection. Indicates

that outbreaks of the disease in a company is traumatic regarding staff relations and personal tragedy. It can also be expensive as insurance companies no longer look on outbreaks as “Acts of God”

Lessons from Lao Tzu's *Tao Te Ching* for the facilities manager

Low Sui Pheng

Keywords Ethics, Facilities, Management, Leadership, China

Indicates that literature on facilities management is written from a Western perspective with no reference to practices in the East: therefore suggests there is profit in integrating Oriental thinking with Western thinking. Takes the ideas of philosopher Lao Tzu and incorporates them with Western thinking to enhance the leadership effectiveness of the facilities management. Provides a summary of the main points of the 37 chapters in book I of *Tao Te Ching* and provides lessons from the 44 chapters of book II. Concludes that Lao Tzu's teaching holds a wisdom for the modern team leader but suggests Western facilities management should take note as Western notions of ethics and leadership qualities have already

caused erosion of Taoism and Confucianism in the East.

Integrated portfolio strategies for dynamic organizations

Franklin Becker

Keywords Uncertainty management, Strategic planning

Technology, mergers and acquisitions, changing workforce demographics, constantly shifting organizational strategies, new ways of working, global competition – all of these factors generate chronic organizational uncertainty. This article focuses on the nature of integrated portfolio strategies (IPS) which companies in North America and Europe have adopted to manage organizational uncertainty. It draws on the developing work on the science of complexity and adaptive strategies to explore issues of standardization and customization, supply chain relationships, knowledge and workplace options. It argues that uncertainty is best met with a diverse set of options that continually emerge and disappear over time in response to changing business conditions.

Editorial

Facilities – 20th anniversary issue

Jane Bell

The author

Jane Bell was Researcher/Technical Editor, *Facilities*, 1983-1989.

Keywords

Facilities, Management

Abstract

Introduces the special issue of *Facilities*, looking back at the changes in the journal over its first 20 years of publication.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

The *Facilities* that first appeared in February 1983 was a very different animal from today's highly polished Journal – at least superficially. Conceived in the spirit of the 1980s, it was designed to be both scruffy and reassuringly expensive at £85 a year. A buff-coloured monthly newsletter, advertising free, *Facilities* was literally packed with information and practical advice for busy managers. Our targets, as the introductory issue explained, were “All those responsible for the efficient, economic use of buildings in the 1980s”, a community whose interests and information needs were poorly represented at the time.

It was thanks to Dr Francis Duffy of DEGW, that *Facilities* got off the ground at all. Ever the architectural rebel, he was among the first to recognize the emerging importance of the “intelligent” client and the potential advantages to building designers and constructors and their professional teams of forging closer links with the occupier community. In partnership with the architectural press, Dr Duffy put together a multi-disciplinary team of contributors, representing a spectrum of interests which would never normally feature between the same covers. In just eight pages (later 16), readers could brush up on news and current developments in law, furniture and ergonomics, services, design methods, economics and organizational development – to name but a few. The aim, as issue 1's editorial explained was to make life easier for the “building manager”, a person faced with increasingly complex decisions involving a spectrum of expertise from acoustics to Xerography. This hard-pressed individual was “deluged by persuasion and advice. Highly trained in at least one aspect of management, he must act as a clearing house for a tremendous range of related skills”. The hope of our editorial team was that *Facilities* “with its inter-disciplinary approach” would “make freely available information which is now often locked within firms or professions – or heads”.

Laudable though these goals might have seemed, it was no easy task to identify and reach the target reader. Those on the receiving end of the newsletter could, quite justifiably, have accused us of fudging the question of identity, since from the start we were unclear about our targeting. Issue 1 went out as a “monthly digest for the office services and building manager”, although just for

good measure, we signalled that managing directors, chief executives, finance directors, administration managers, premises and Facilities building managers, workspace and office services managers might also find this a worthwhile read. Hardly a promising basis for developing that all-important standard reader profile!

Just a couple of months later, issue 2 proudly proclaimed this as a publication for the “building administration manager”. In fact it was not until 1985 that the term “facilities management” really began to take off, coinciding with moves towards professionalisation and the establishment of a facilities management association. As our March editorial put it, “There is no longer the slightest doubt that facilities, the new management buzz-word, is making its presence felt. To an increasing extent we are catching glimpses of a quiet revolution going on behind the scenes as a variety of groups acknowledge this new profession”. Only the month before, in February 1985, Roger Varnals had argued the case in a guest editorial for an association “to establish a network of communication between people who fulfil the same professional function without necessarily sharing common responsibilities or backgrounds”. Meanwhile, the Institute of Administrative Management had also formed a special Facilities Management Group, designed to complement the other management disciplines they represented. It was not, however, until 1983 that the two came together under the unified banner of the British Institute of Facilities Management.

It seemed unthinkable in those early days that ambiguity would remain a hallmark of facilities management, or that the aspiration to model the profession on anything other

than established lines would be ever be questioned. Yet, as we now know, the search is still on for a satisfactory solution to our central dilemma, described so succinctly by Professor Bob Grimshaw in his recent paper, as how to “achieve the difficult balance between developing the recognized characteristics of a traditional profession while pioneering a professional ethos that responds to the new environment of business” (“*FM: the professional interface*”, *Facilities*, Vol. 21, No. 3/4, 2003).

Today’s *Facilities* remains true to its pioneering role, upholding many of those original ideals. It provides access to high quality, well-researched information that might otherwise remain buried in institutions or individuals’ heads. More than this, it has retained a focus on making connections, crucially, in the more recent past helping to bring together the practitioner and academic communities. For, as many have argued, without a robust and coherent knowledge base, facilities management little deserves the designation of “profession”. Times have undoubtedly changed, and even the professional elite are having to revisit and refresh their appreciation of their roles and methods of practice. As we move into the second generation of *FM*, it might be wise for us to do the same. Recognition and status have always been our key priorities, and yet neither is likely to materialize without genuine substance. If we want to stand any chance of resolving that identity crisis, we need to focus on the things that will stand up convincingly to scrutiny and make a tangible difference – and the time to do that is now.

(The original editorial team included: Les Hutton – Editor, Joanna Eley – Technical Editor, Mick Bedford – Technical Editor)

Overview of special issue

In this 20th anniversary special issue of *Facilities* we have drawn together a few of the papers that continue to have a relevance to today's facilities managers. All the papers are drawn from a decade ago when facilities management had moved from being a fledgling concept to a major service industry. At that time people were asking key questions – “Is outsourcing the way ahead?”; “How do I measure what I value?”; “What does the intelligent building concept offer for the facilities manager?” Today the dust has settled somewhat. We know that outsourcing is not a “silver bullet”. We understand the importance of service level agreements. We recognise the importance of providing user control in the workplace. Yet we are still faced with many unanswered questions. From the chosen papers it is useful to identify some of the points which are still relevant today and those issues which have moved on.

The first of the papers in the special issue, by Keith Pratt, originally appeared in 1994. It provides a practitioner's practical recommendations on the development of a service level agreement. This paper deals with many of the pragmatic issues which are nonetheless vital to the successful implementation of a contract. The paper's particular value is the detail provided in how to implement and review a service level arrangement.

In the next paper by Andrew Mawson, the activities of the Learning Building Group are described – an Anglo-Scandinavian group of companies that sought to address the future needs of user organisations. The group's objective was to develop a “holistic” teaming approach to the briefing, design, delivery and management of buildings, tearing down the traditional barriers between the different disciplines working in “splendid isolation”. This paper reflects the growing realisation at the time that “building intelligence” is not about providing leading edge technology for some

unknown need: rather, it is about satisfying specific organisational needs.

David Kincaid is one of the luminaries of facilities management research. In his paper on the measurement of physical performance, Kincaid describes a case study of IBM. Premature component failure was the apparent cause of excessive operational facilities costs at the time. It was found that six of the 31 elements making up a building were responsible for two-thirds of the value of the potential expenditure. Some striking conclusions were derived including the observation that “50 per cent of the reinvestment for all six elements could have been avoided with no additional first cost had design and construction quality been handled at least as well as on buildings where premature failure did not occur”. This paper is an exemplary illustration of how powerful a case study paper can be and is in marked contrast to many publications today that claim to be case studies but provide little or not insight.

Keith Alexander has always been an advocate of the facilities manager as “changemaster”. In the paper “A strategy for facilities management facilities” describes how managers can become involved in setting the business agenda. He also highlights the importance of professional and educational developments. In the ten years since this paper was published it is true to say that many steps have been taken along the lines suggested, particularly in the European context.

In August 2002 an outbreak of Legionnaires disease in Barrow in Furness, UK, resulted in more than 100 infections and four fatalities. Initial inspections of the air conditioning plant at the Forum 28 in the town centre suggested it may have been poorly maintained and not properly disinfected. The paper by Brundrett on the prevention of Legionellosis continues to be relevant given the continued occurrences around the world. Such diseases are no longer seen as “acts of God” and it is increasingly the facilities manager who appears in the spotlight.

The paper by Low Sui Pheng is an interesting reminder that alternative approaches to facilities management prevail around the world. It suggests that the predominant literature neglects an alternative Oriental approach. The paper puts forward a

large collection of management “rules” which, to many practitioners, might seem counterintuitive. One such example is “The facilities manager should know that constant interventions will block the progress of the facilities team. As the team leader, the facilities manager does not insist that things come out a certain way.” This paper provides a refreshing view of the facilities management world.

No collection of facilities management papers is complete without a contribution by Franklin Becker. The paper on “Integrated portfolio strategies for dynamic organizations” describes how organisational uncertainty can

be addressed using a variety of options. As always, Becker is able to think “outside the box” and relate business issues such as supply chain management, customisation and standardisation with workplace issues.

Many of these papers will continue to be relevant to readers long after they have been published. This contrasts with much of the ephemera in print today. Issues come and go and often return. It is often instructive to return to some of the original publications for lost or misunderstood ideas.

Edward Finch

Editor of Facilities

Introducing a service level culture

Keith T. Pratt

Keywords

Organizational culture, Cost effectiveness, Facilities, Management, Service levels, Quality

Abstract

Service level agreements provide a mechanism for establishing a better relationship between the core business and the infrastructure and services that support them. It provides a statement of various service level options from which a number can be selected to support the customer or client, which describes the service to be given specific timing, frequency and cost. It enables decisions to be taken at a strategic level as to how these can be matched to achieve business profitability. The process is a continuing one and requires commitment at the highest level, to ensure not only that it is adopted properly, but that the services defined are properly and effectively delivered. Describes the various steps in the process and in broad terms how it can be implemented.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

In the past, service level agreements, many born out of the old “work and method” era, were decided on by top management but then driven from the bottom up. Current methods, however, need to be initiated at the top and steered by the top. The facilities manager’s role is pivotal to the successful analysis and introduction of an effective system in today’s workplace culture.

During the past months of the recession we have seen a variety of organizations turning their attention to reviewing their infrastructure and the way in which their businesses operate. Those who have taken the opportunity will have improved their profit margins and contributed to longer term survival. However, there are many businesses which have yet to examine the way they work and what really does contribute to core business profitability.

Facilities management at a strategic level can be a major contributor to the successful operation of a company and it is good news for the facilities profession that more and more businesses are realizing the importance of this fact and are seeking professional guidance.

Within any professional’s sphere of work there are a number of mechanisms and systems which enable the individual to find solutions which best fit the business they are looking at. Often the approach is an amalgam of ideas which have been honed and refined to match problems as they emerge. One such tool is a derivative of PPBS which in turn was developed from the work and method study era of the 1920s and 1930s. I refer of course to the service level agreement (SLA).

What has happened over time is that the very detailed, somewhat rigid and narrow procedures originally devised have come to be replaced by a more flexible and user friendly process which meets the needs of today’s market. This technique, therefore, has a substantial pedigree, tried and tested over time and now made simpler and easier to update.

The way in which the technique is used has also changed. While the old processes required commitment at the top and were then driven bottom upwards, the new approach focuses afresh on the real needs of the business and encourages change or re-engineering at the highest level. In the new

This article first appeared in *Facilities*, Vol. 12 No. 2, 1994.



scenario it is evident that to gain the maximum benefit from the use of the SLAs the organization must establish at the outset precisely what the core business is. This in itself can be a considerable challenge, but unless that is clarified, further work will be wasteful. Only then can the organization separate out services and other elements of support infrastructure, which contribute to core business success. Detailed work is then carried out to establish to what level it should be provided and what the cost and value of that contribution will be in terms of return on money invested.

Service level information can, therefore, be as sophisticated or as simple as the organization and its activities or processes demand. However, for the purpose of this article I have chosen a middle path that provides a level of sophistication which most businesses will need for both their current and future decision making. I have also assumed that the parameters of the core business have been agreed and the value of any supporting infrastructure identified in broad terms.

In addition, we must not forget the customer. Understanding the organization's customer needs and converting these into a menu of quality, volume and cost will also need to be part of the process. The SLAs must provide for the core business and infrastructure to be a partnership on the customers' behalf.

Finally, before we get into the detail it is important to ensure that the whole process is given a positive direction. Clearly, any process which is capable of exposing the framework of an organization challenging its activities and identifying costs in detail can have considerable impact on the people involved.

One has to be careful to ensure that during the process it does not become defensive. Whether it is used by in-house FMs or consultants, both should see the process as a proactive way of improving business profitability and business survival. FMs and the profession must be seen to be contributing at a strategic level to economic recovery.

In working through the process there are a number of key elements we need to address:

- definition of SLAs;
- key requirements for success;
- mission and objectives;
- management structure;
- key steps in the process;
- the continuing role of SLAs.

Clearly there are a number of ways you can frame the definition, but I believe that the following gets the message across:

- A service level agreement is a statement of various service level options from which one will be selected by the customer or client which specifies timing, frequency, cost, etc. to match the business need.

The key point here is that there is an element of choice and that the element of choice provides for both increases or decreases in the level of provision. What is important is matching the provision precisely to the business need. The flexibility also has to be matched to the framework of the business.

Markets are far more volatile these days and flexibility is essential if the business is to be able to respond quickly. It may be sensible at this stage to sound a note of caution. In my experience, the first cut at running the process can be a little rough round the edges.

Subsequent reviews and refinement over time improve your opportunity for getting a precise match to business need. So do not try to be too accurate, but do ensure you have costs and manpower properly distributed over the activities.

I have also mentioned the potential downside of treating SLAs in a defensive way. It is also essential that you recognize at the outset that if, during the process, elements are poorly drafted or incorrect they can give a very bad picture of the way services are currently provided.

If sufficient lead time is available I would advocate that the team complete as much of the data compilation as possible and then benchmark test against corresponding industry sectors before exposing the issues to a wider audience. In this way you will have the added benefit of testing alternative strategies and costs with your potential competitors.

I cannot stress too strongly the need for the initial stages of the exercise to be done well, even if all the descriptive work is a bit raw. This is not of course always easy, as the pressure is normally on at the beginning to get the first cut completed quickly. It may also be necessary for you to challenge the authenticity of financial information provided by the accountancy systems.

Finally, also be aware that embarking on this more formalized approach to agreeing service levels may destroy informal support networks with your clients or customers and

that ensuing discussions may raise concerns about employment and other issues.

So where do we start? Well there are a number of key elements to include in the process:

- top management commitment;
- a participative approach;
- involvement of junior staff;
- customer input;
- management framework.

Top management involvement and commitment to the process is essential. Not only does the process require top-level decision making, it also requires the creation of a senior or a top-level team to steer the whole process, both initially and during subsequent reviews. Linked to this must be clear communication about the way the SLAs will be used and the benefits to the staff, the business, the internal client and the company's customers.

The process demands a very open and participative approach, building on and developing past initiatives. Previous actions to realign or reduce budgets and any work on service statements or specifications for services that may have previously been devised should also be pulled out and fed into the process.

The roll-out of the programme must involve people from within the FM area at all levels and draw on customer input at an early stage. The involvement of more junior staff will often unlock opportunities for change and improvement that may have been overlooked. They may well have greater input to the improvements than anyone else. Do not discard early ideas as these can often prove to be the best. Please be careful about what will be considered to be customer input.

The reasons behind views from various parts of the organization about what level of service is really required for the business are seldom linked to the business, but are an amalgam of personal need, old habits, preferences, narrow focus, etc. This can be overcome by putting in place a clear management framework and channelling all such input through it. Getting the right customer input will also mean that the customer or consumer of the service will "buy into" change more readily.

The level at which any services are pitched should reflect and be linked to best practice. The provision does not, of course, have to

mirror that, but you need to be clear about where on the scale your requirements will sit. Benchmarking in this way will add credibility to your proposals and show clearly that your costs are within acceptable national parameters.

Any management framework must provide for future monitoring and control, providing a mechanism to input changes in business need that will be subsequently reflected in service change. However, the structure must ensure that any choices get top level sign-off to counteract the wide divergence of views and frequent changes that might otherwise emerge from various levels of the business hierarchy (see Figure 1).

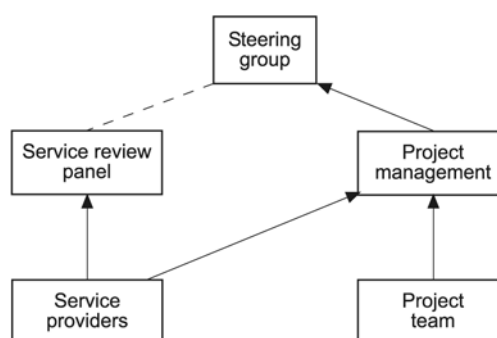
The focal point should be a high-level steering group; reporting into them should be a project management team. I believe that the process is greatly enhanced by having a small project team exclusively working on this, either from within the FM team or working with it in order to maintain continuity, do the leg work and to some extent force the pace.

The service provider grouping will be the FM team, or for that matter any other service provided which is not part of the core business. They will work to the project team mandate, to provide input to the process but within this will discuss and explore options with nominated people on a service review panel.

Service review panel

The service review panel, in turn, will be the group that takes a final view on the levels that can be afforded by the business. The steering group will also ensure that, at a high level, the buy-in to the chosen level and cost should and can be afforded by the core business.

Figure 1 Several components of the management framework



In the SLA reviews in which I have been involved, we have in almost every case put together a mission statement for the FM function. In its simplest form, it may reflect the FM's mission as being at the leading edge of FM providing cost effective and timely services for the core business. The key elements are:

- clarity about the purpose;
- identify key targets;
- establish constraints;
- determine measures of success;
- best practice.

Clarity of purpose is essential for the FM services role and this must be matched by clearly identified targets.

Disadvantages

One of the disadvantages is that there will be a range of views about the quality and appropriateness of services currently being provided. However, most of these will tend to be critical rather than complimentary because, over time, consumers of the services may have come to expect good service as the norm. As service quality rises so does expectation, and then service providers only get comment if quality slips even a little. Old informal networks will not provide the sort of input that is needed to define the service for core business in the future.

The usual approach is to achieve input at two levels. We have already debated the role of the service review panel, being the representatives of senior consumers who are in a position to judge the benefit, or otherwise of a service level to the business. In addition, to set some key targets it is important to be able to test ideas with larger groups of colleagues and debate the impact of change.

This could be achieved by interviews across the organizations or questionnaires, and will give a feel for the real perception of the organization as a whole. From this structure should come clarity about the purpose of the review and the boundaries or blocks that will be included.

Key targets must also be defined and, what is more, clearly explained so that the service provider, customer and the organization as a whole know what is expected. Often the pressure is financial but sometimes change

options are a spin-off of the change in business need.

There will be conflict about just how far one can go with change and some constraints will emerge, e.g. minimum health and safety issues. These will continue to be funded. However, if the funding level is high it may be sensible to evaluate the risk. This might be true, for example, of insurance cover. It is also vital to be clear about how success will be recognized and acknowledged.

Further, you may want to publish the results to show the improvement and send a clear message about why it has happened. Finally, please be clear about where you see yourself placed on the quality scale as a business.

Benchmarking quality

I have mentioned earlier the issue of testing your services against other benchmark information. There are a wide range of benchmarks for various sectors of the market and you can make choices from best of breed to the cheapest. Start by establishing where you are now before you change, and then judge what you can afford and which way to move on the scale.

There are now a number of steps to follow through to get the process under way:

- Agree scope, identify players and develop plan and timetable.
- Prepare documentation/instructions and brief players.
- Train players and customers encouraging cross-band input.
- Agree main service blocks.

We have talked about establishing the scope and overall structure, and at this stage these must be clearly documented and the names of the participants finalized and published.

It will also be necessary to prepare a plan and timetable. For each stage there will be a set of targets for the review panel, the steering group, the project team and the service providers.

Documentation

The documentation can take a number of different formats and will need to be tailored to suit the business. It is of course imperative

that you get this right at the outset, as to change the layout or configuration of data at a later stage can cause confusion. Should you be using a computer spreadsheet, it is even more important to maintain consistency.

However, there are some key pieces of data to include:

- Service line title.
- Services provided and levels.
- Impact on users and user acceptance.
- Service line metrics, etc.

Proposals for change will also require documentation for capture and there will need to be forms to gather information about the people involved in the process including contractors and suppliers.

Naturally, it is essential that all the participants in the process deal with issues and data in a consistent way and everybody should, therefore, be trained in sessions aimed to open up debate about the way things are done. These workshops are essential to ensure everyone knows the processes, understands the documents and to begin the fertilization of ideas in developing changes.

This initial stage must also clarify the main blocks of service that are to be reviewed, i.e.:

- security;
- catering;
- postal services;
- printing, etc.

The next steps are:

- define current situation including any contractual provisions;
- produce flow charts for service linkages;
- review data and identify opportunities;
- refine service-lines and evaluate options obtaining customer input;
- prepare service-line recommendations; address overlaps and identify funding levels;
- test options with customers' review panel.

The compilation of the data can then proceed to define the current situation and begin to look at flow charts for the various processes. You will find that using flow charts will help to identify how new ideas can be tested.

Once this data is in place, you can turn attention to looking more closely at each level, finding opportunities for change and evaluating with customers the validity of options you believe to be most appropriate. The ranking of each service-level choice in terms of minimum, intermediate, current and

extended, will enable you to see the impact of change both in terms of level and the related costs.

The resultant work should give you a series of recommendations for change, or if you are all happy with the status quo, be sure that there are no overlaps with other areas. This is an important issue and one which is sometimes difficult to resolve, because often the service threads are intermeshed with other aspects of the organization.

The cost for the recommendations should be established in order to be clear about funding levels. You will remember from the organization structure that we need to test all the options formally with the customer review panel and this debate will usually establish the level of cost for each option selected.

The next set of steps are the most crucial for the success of the process:

- agree level of cost;
- endorse new levels and costs;
- identify mechanisms for change.

As the service lines are worked through and agreed at the panel meeting for each service block, the costs will be added in priority order until you reach a total funding level.

In making the choices to accept the minimum, intermediate, current or extended levels and costs, the review panel will also have given the activity a ranking. The rankings have been established to enable further choices to be made ranging from mandatory or legal requirements, to unlikely ever to be funded. The cumulative selection can then be judged against the level of overall funding that is viewed as vital to support the core business, and the remainder of the levels put on one side.

At this point everything that falls below the funding level will be put to one side. In essence what this process does is to bring to the surface activities and costs that are the best fit for the core business.

The funding level and service choice must be approved at the highest level to ensure future compliance.

There are then a number of steps to take to follow through implementation. These are:

(1) Implementation planning stages:

- plan changes to service lines;
- identify implementation costs and timescale;

- review dependencies and validate decisions;
 - establish milestones for introduction;
 - plan evaluation of other opportunities for consideration;
 - establish cost-effective recharging process where required.
- (2) Budget finalization:
- detail costing of capped service lines;
 - confirm service level and advise customers;
 - finalize Capex and R&M project plans and build into budgets;
 - update service level options and resources required documentation.
- (3) Manpower planning:
- revise organization structure as required and address skills, grades and numbers;
 - review staff performance and fit within the structure;
 - assess training needs;
 - define roles and responsibilities.
- (4) Service development:
- detail service changes;
 - agree service metrics;
 - finalize service-level agreements;
 - set performance contracts;
 - define user responsibilities;
 - define and agree regular performance reporting and agree follow on requirements for review.
- (5) Communication programme:
- put in place user groups and communication links;
 - agree other publicity/communication;

- inform other administrative service providers or relevant external parties;
- link the end product to the customer care programme.

For the future you will need to follow through a final group of activities:

(6) Programme co-ordination:

- phasing of benefits (money and staff);
- maintain links to personal objectives;
- monitor progress and costs;
- set up regular reporting schedule to the steering group;
- follow through with training and development;
- ensure all interdependencies are addressed.

The consumers will need to be advised of the changes and this can probably be achieved by producing a services directory for the business.

I mentioned earlier that the process is one that should be regularly undertaken. While it is clearly important to reflect it in the budgeting processes, one of the primary needs for keeping matters under review is to stop drift. Drift is usually the most damaging to this process as over time the organization can demand more than it can afford and this can often lead to reduced quality and a level of dissatisfaction with the service provider.

Figures 2 and 3 show the process continuing.

Figure 2 Service review – project overview

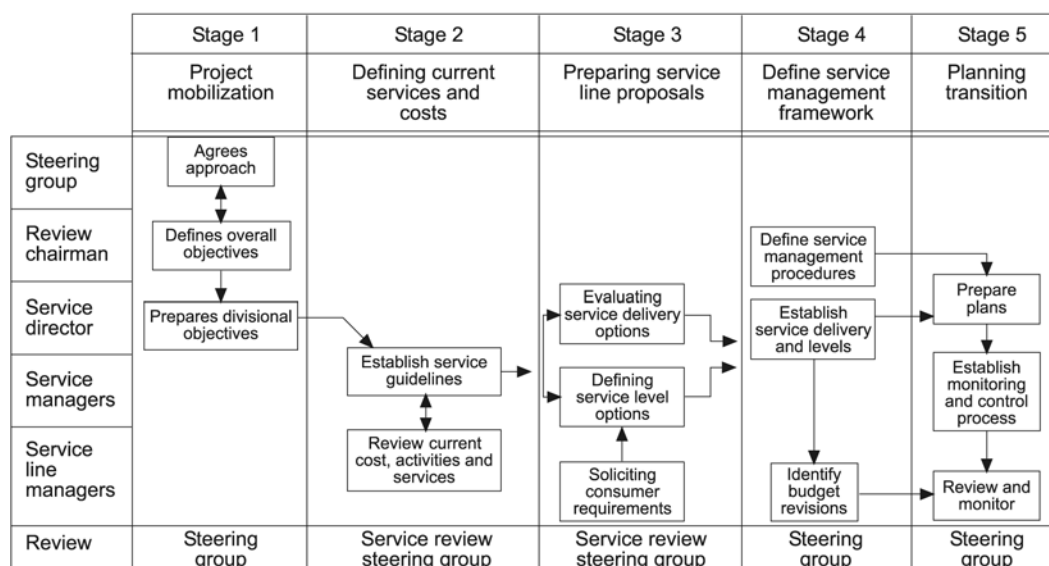
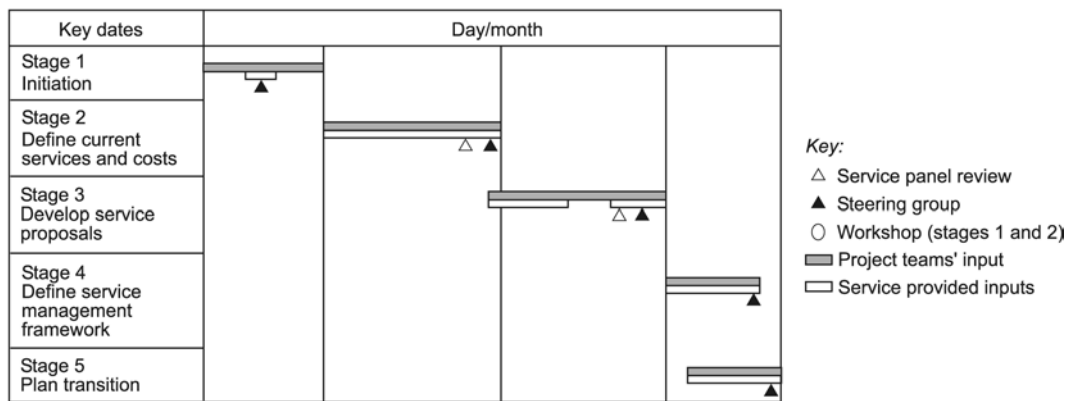


Figure 3 Service level – project plan

To summarize, the process is an essential element of well organized and relevant FM for tomorrow's business and can only benefit the standing of facilities managers. It provides a tangible understanding of the reality of services and costs and the management issues relating to these elements. Do not be over-concerned about the challenges that it will present or the issues of in-house and out-house solutions. The best mix is what is important to the business. The right answer may not be the best for the in-house facilities manager, but there are wider horizons to consider and the person in the FM role must remain pragmatic.

Whatever you do, customers or consumers must also commit to abide by

the decisions and be made to hold the line on agreed service levels. Clearly, if they do not you will not be able to contain drift, and costs will increase or quality will decrease.

By taking the lead and proactively reviewing how your business is supported you will not be waiting until the next round of budget cuts. Think instead about how you can contribute to your company's success.

Service level reviews are a continuous process, even a daily routine for some businesses. I hope this brief overview will encourage you to use the approach to aid your business and establish you as a key player in its survival.

A fresh look at intelligent buildings

Andrew Mawson

Keywords

Buildings, Office buildings, Working conditions

Abstract

The Learning Building Group, which was set up in 1991, has developed a new approach to viewing building needs. Describes the concept of intelligent buildings and outlines the requirements when designing buildings: to consider the customer's needs and match the building accordingly, bearing in mind four factors – people, environment, technology and possible change. A serious challenge to the traditional approach to the design of buildings.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

“Intelligent buildings” of today have been designed more as monuments to the engineers and architects who designed them rather than to meet any particular user objective. This is the conclusion drawn by the Learning Building Group research which has developed a new approach to viewing future building requirements.

The Learning Building Group

The Learning Building Group (LBG) involves nine Anglo-Scandinavian companies which came together in 1991 to develop workplace solutions based on the future needs of user organizations. It consists of some of Europe's leading workplace technology companies including: THORN Lighting, THORN Security Workplace Technologies (an ICL company), British Aerospace, SKANSKA, ABB Indoor Climate, KONE Elevators, Matthew Hall and Ericsson.

The LBG's work focused on capturing afresh the current and future needs of workplace users, followed by the development of solutions using an integrated technology approach to support business and people needs. The group sponsored a series of workshops with workplace users and facilities professionals which established their current needs and issues. These were subsequently reflected in business led, functional requirements and specifications for systems, structures and scenery which were used by the LBG company's technical specialists as a start point in the development of solutions.

The specialists came from each company to work together in workshop sessions, to develop the integrated solutions. These solutions have to be capable of evolution to meet the changing business needs of occupiers and investors and embrace advances in technology as they are available. The experience of working as a team with unified objectives, sharing knowledge and experience of their respective areas of technical competence led the group to recognize some serious benefits. The removal of the traditional barriers, which often confound the design and construction of buildings, led the group to follow a unified

This article first appeared in *Facilities*, Vol. 12 No. 2, 1994.



Facilities

Volume 21 · Number 11/12 · 2003 · pp. 260-264

© MCB UP Limited · ISSN 0263-2772

DOI 10.1108/02632770310500329

path in which the total solution became the sole focus of all team members.

From this experience the group developed a “holistic” teaming approach to the briefing, design, delivery and management of buildings, tearing down the traditional barriers between the different disciplines working in “splendid isolation”. The net result is a process that ensures a closer fit between the needs of users and the building’s capabilities and better value for money for building investments.

Intelligent buildings

Our first look at modern buildings led us in the direction of the “intelligent buildings” concept. Our studies concluded that many of the intelligent buildings in different parts of the world had been designed with a technology push. In other words, they did not seem to have been designed to meet any particular user objective, more to demonstrate some “clever” gadget. In a sense they were monuments to the engineers and architects who had designed them, rather than providing meaningful, valuable, manageable places to support people in their work endeavours.

On the systems side there were many gimmicks and, other than in the areas of disaster recovery, energy management and fire and security, there were few applications we could find which seriously added value for the user’s business. Certainly there were few indications of integration between systems. Each system seemed to be an island.

There were lighting systems, lift systems, environmental management systems, cable management systems, space planning systems, maintenance systems, etc., all focusing on one small part of the overall problem of managing a building, yet none addressing the total process. Lots of technology, but no-one to make the translation between it and the total needs of users, businesses and facilities managers.

It was from this base that the LBG set out to take an entirely different approach which was dominated by user needs not the white hot technology of the research lab.

Back to basics

To many of us within the group, the current methods of designing and delivering buildings

seemed strange. The designers of modern buildings tend to understand form, structures and systems rather than the pressures, behaviour and needs of the modern business. Just as with the design of any other product, you cannot design the product before you gain an in-depth insight into the perceived and actual needs of the user. So this is where we started.

We set about the design process in the same way that we would had we intended to design a computer or a software program. We started by asking people who used and managed buildings what they needed, in a structured way.

However, in its purest form this approach leads to the identification and solution of some of *today’s* problems. But buildings are supposed to have a design life of 25-50 years, so it is not enough just to consider today’s issues and problems, we must also consider the likely future needs of users/investors and their implications on the building itself.

To establish the users’ current requirements was not so difficult. We did this using questionnaires and structured workshops, testing conceptual models prepared before the sessions. However, capturing the users’ future requirements was much more difficult. To do this we had to help workshop participants cast their minds forward many years. We had to get them to think as businessmen.

We developed a vision based on a piece of research sponsored by ICL and a number of other companies carried out at the Massachusetts Institute of Technology. The research, known as “Management in the Nineties”, produced a number of interesting findings; but the most significant findings were related to the business environment and the use of IT.

The research concluded that the world will continue to experience an acceleration in the rate at which political, economic, technological and regulatory change is taking place. Each of these elements acts on the others, potentially creating growing uncertainty and competition.

The research on information technology identified a number of discernible trends. First, microprocessor technology is becoming cheaper and that trend shows no sign of abating. Second, the power available to each individual is allowing greater ease of use and the provision of some valuable applications.

Third, developments in communications technologies and standards are progressively set to increase the ease with which computers can communicate. The conclusion from this is that IT is in itself changing, but the ability to transmit and add value to information from customer to supplier means that whole value chains will be embedded within chains of IT systems.

The bottom line is that IT will become utilized much more as a key part of the business infrastructure both for small and large companies, enabling them to perform more effectively and react more quickly to change.

Technology

Having gained some feel for the business conditions businesses would have to cope with in the future, we superimposed the LBG research group's understanding of workplace technology developments which we could anticipate over the next 20 years.

Many people are sceptical about the ability to see this far into the future and predict the implications. However, we found that with the assistance of the experts from the various companies, who are not only studying the future but also making it happen, we could in fact identify discernible trends, and calculate the impact of one area of technology on another.

Looking into the future

When you take all these strands together, the conclusion is that the rate of business change will continue to accelerate, creating a high degree of uncertainty and the need to exploit market opportunities while they exist, and retrench when they have been exploited.

Competition and deregulation will lead to pressure on prices and profits, leading organizations to consider options which were hitherto taboo. These options may include mobile working and home working, which are further supported by the developments in technology, which are progressively removing the implied link between work and the office workplace. Going to work is, when all is said and done, a relatively modern (last 200 years) phenomenon.

So the successful organizations of the 1990s and beyond will need to be lean, fleet of foot and culturally capable of embracing change. They will need office workplaces that reflect their ever changing needs. They will need to invest much more strategically in buildings as business tools capable of supporting their current needs and evolving to meet the challenges of a changing future.

The LBG pyramid

Having captured current needs and established the future trends, we set about determining a simple model which would represent their implications for the physical building. This model was used to engender a common understanding within the group's multicultural, multidisciplinary team.

The LBG pyramid defines a set of high-level requirements for which both systems and structures could sensibly be developed. At the apex of the pyramid we placed people, since it is clear that the primary purpose of systems, structures and scenery is to enable people to contribute to their full capacity during the period of occupation. The elements of this framework are as follows.

Business

Buildings must be designed with real recognition of the types of business activities and functions which may be conducted through their life, recognizing that they will probably have a longer life than most of the organizations which will occupy them.

People

Buildings must sustain healthy effective life for the people working in them, removing stress wherever possible. Buildings and workplace systems must work for people (see Figure 1).

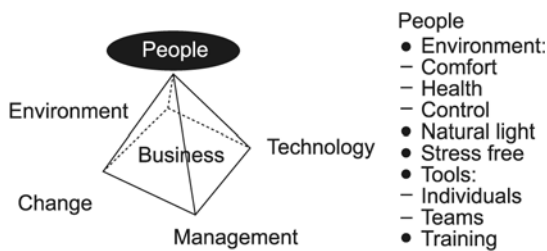
Environment

Buildings must be environmentally friendly in all aspects, with minimum emissions and energy usage throughout their lives (Figure 2).

Change

Buildings must be capable of coping with change on a number of fronts: organization change, user change, functional change, technology change, economic change and regulatory change. Systems tools for

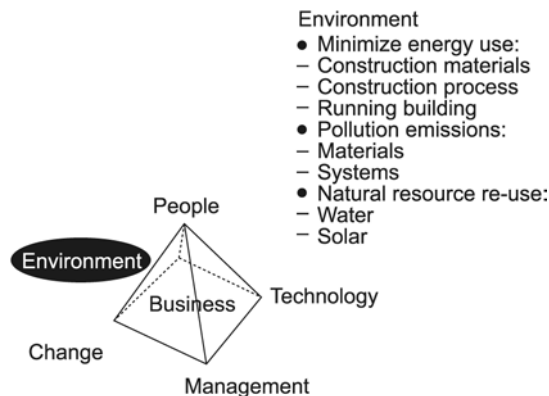
Figure 1 People



become economically viable, bringing their benefits to investors, users and managers.

None of the above can be considered in isolation, nor can the structures, services, systems or management be considered in isolation. They must be designed holistically to provide the building with capabilities which map on to the business needs of today's users and tomorrow's world (see Figure 4).

Figure 2 Environment



managing and monitoring change must be utilized (Figure 3).

Management

There must be a hybrid approach to the management of buildings, systems, facilities and structures. Buildings must have IT-based management systems which enable them to be managed effectively, providing high levels of service and control quickly and economically.

Technology

Buildings must not only be able to withstand developments in technology, but must be capable of taking advantage of them as they

Building capabilities

When you look at a building from a business or user's point of view, it is the way all the elements of the building work together that matters. It is no good having floors, ceilings, cabling, carpets, etc. designed with different objectives and on separate and unco-ordinated grids if you wish all the elements to give you, say, the flexibility to regroup workers rapidly, following an organization change.

You first have to consider what capabilities the building must have as a whole and then determine unified design objectives to support the development of the capability. So it was from this that we began to think about buildings having capabilities and not systems. Systems are the building blocks, from which capabilities are developed. Clearly, when you start thinking in this way you have to question whether you can effectively deliver such a building, using today's compartmentalized design and delivery process.

Within our work we identified a range of capabilities which map the business needs of users.

Figure 4 Technology

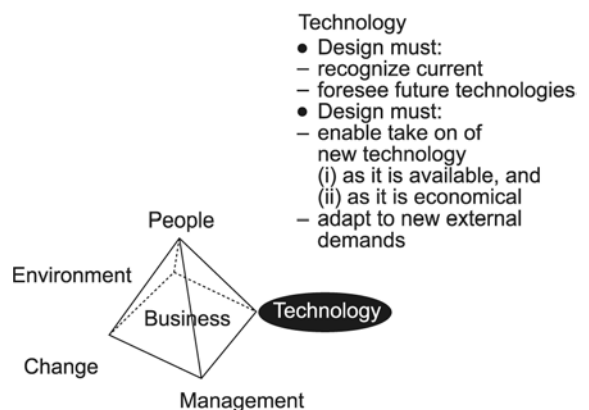
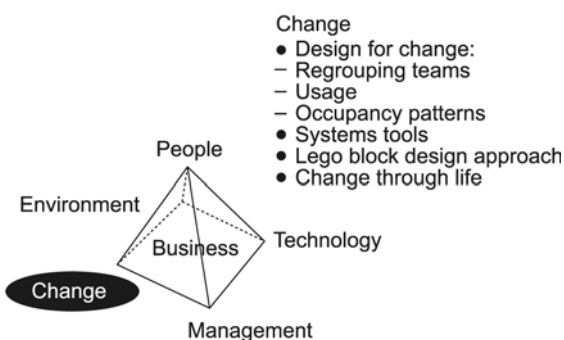


Figure 3 Change



Strategic investment in building capabilities

Our future is much more uncertain than our past was. We have, here in the UK, the most de-regulated free market economy outside the USA. Competition within almost every sector is fierce, driving down prices and forcing companies to find new ways of reducing costs and differentiating themselves. Similarly, developments in technology are moving on at a tremendous pace, often stimulated by competition. Product life cycles are shortening to the point where some products are becoming obsolete within 12-18 months as competitors strive to be first on the market with the latest technology.

All this makes for a great deal of uncertainty. It means we can no longer design buildings based on our experiences of the past. We must consider the needs of the future as a starting point. We need to invest in specific building capabilities and justify the investment on the basis of cost benefit related to the users'/investors' business priorities.

We need to think ahead and invest in buildings which are endowed with

capabilities which will make them more valuable to their investors as revenue generators and to their occupiers as business tools. In other words, to invest strategically in capabilities which will enable the business to perform effectively through changing business conditions.

Summary

In summary, the LBG took a fresh look at the building, treating it as a business tool with the capability to sustain the business and technological challenges of an uncertain future. The programme discovered new processes, solutions and methods, which seriously challenge the traditional approach to investment, design and delivery of buildings.

Future articles

Future articles will explore specific elements with the research such as architecture, integrated systems, integrated delivery processes, cost benefits and alternative workplaces.

A starting-point for measuring physical performance

David Kincaid

Keywords

Assets management, Buildings, Facilities, Management, Maintenance

Abstract

Based on work done in the area of reinvestment in building fabric and components by IBM United Kingdom, argues that costs could be reduced if design choices or construction quality are better controlled. Reinvestment costs can then become a fully planned element in the organization's management system.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

Much work has been done to measure facility management performance, but it often ignores the influences of erratic patterns of reinvestment in building fabric and components which can add as much as 25 per cent to the cost of running a building.

Much excellent work has been done in recent years to measure facility management performance, particularly in terms of operating costs. As valuable as this work is, because it focuses on a regular flow of recurring costs, it can cause managers to ignore an apparently more erratic set of significant costs associated with reinvestment in building fabric and components which are essential to maintaining the value and utility of buildings. Such costs can, in the UK, add a further 25 per cent to the basic costs for operating and maintaining a building portfolio of mixed maturity. Clearly such costs can only be ignored at our peril.

This article is based on some of the work done in this area by IBM United Kingdom and refers to recent research into the performance and cost managed building which was project managed by Arup Research and Development.

Asset management

In the late 1980s it became apparent to IBM United Kingdom that their portfolio of contemporary buildings would require significant periodic reinvestment to replace deteriorated or obsolete components. A new programme under the heading of asset management was created to develop the cost and project information required. It was then evident from IBM's experience that even carefully managed ongoing maintenance would always fail to maintain the full value and utility of buildings unless reinvestment was started as early as the fifth year after completion.

When IBM instituted this programme they were unaware of the work being done by Arup Research and Development with the BRE on the performance of a model building. However, in late 1989 they came together with a number of other parties on a nascent LINK (a DOE sponsored programme which

This article first appeared in *Facilities*, Vol. 12 No. 3, 1994.

© David Kincaid



encourages industry and government to work in equal partnership on research initiatives) Initiative Research project on building performance at the BRE. This led to the discovery that through their separate earlier work they had reached similar conclusions on the importance of reinvestment and the critical influence of design requirements and details on reinvestment needs. They also found that the other building owners represented on the project had similar experiences.

Background

Before discussing reinvestment it may be useful to understand IBM's experience with operating and maintenance costs. For several years they had conducted an annual review of the costs of operating buildings. This review featured detailed comparisons between their buildings and buildings of similar scale belonging to other large organizations. For a typical air-conditioned office, building standards of maintenance and overall costs showed remarkably little variation. Similarly there was little operating cost difference between IBM buildings wherever they are located in the UK, and whether they are owned or leased.

They concluded from this that if the resource given to the upkeep and operation of their varied stock of buildings was both typical and evenly spread then it was unlikely that poor maintenance and operation was the source of apparent premature failure of some building components.

Accordingly, IBM turned their attention to reinvestment requirements and began to see a distinct relationship between design choice and subsequent costs.

Reinvestment

Their programme led IBM to a detailed review of each of what were then approximately 60 marketing and services locations providing four million square feet throughout the UK. In a few cases full condition surveys were carried out. This review gave a set of figures for the reinvestment that would be needed over the following ten years for each building. The figures were allocated to 31 different elements

that were defined as making up a typical building.

What they discovered was that potentially they would need to reinvest, subject to the usual business restraints and portfolio changes, an amount approximately the equivalent of a 27 per cent increase in average annual operating and maintenance costs, each year to fund the necessary major repairs and replacements. Seen another way, this was the equivalent of a doubling of the energy costs for their buildings. Such a large sum obviously warranted further investigation and this led IBM to consider more closely the origins of three high-cost items, particularly where it seemed evident that premature component failure was involved.

Costly elements

Close inspection of the total ten-year plan revealed that six of the 31 elements made up two-thirds of the value of the potential expenditure.

These were:

- air-conditioning;
- floor finishes;
- external facade;
- roof;
- electrical services and lights;
- ceilings.

The contribution of each element is shown in Figure 1. The total list of elements is given in Table I.

The asset management team decided to focus on those six elements and asked themselves two questions:

- (1) Could these costs have been reduced if design choices had been different or construction quality better controlled?

Figure 1 Asset management – make-up of plan

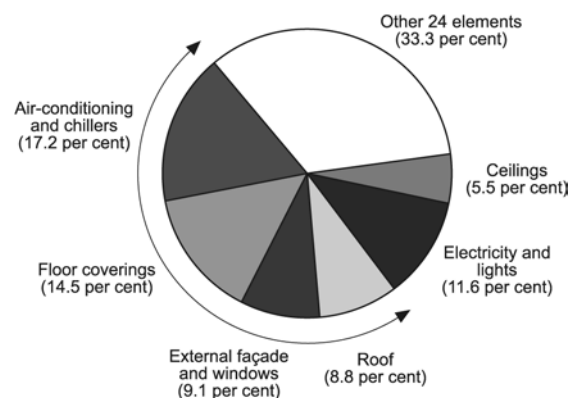


Table I Asset management – schedule of building elements

External façade
Structural frame
Roof
Windows
External doors
Floors and screeds
Staircases
Internal walls and patterns
Ceiling
Internal decorations
Floor coverings
Air-conditioning
Chillers
Pumps
Controls
Lighting
Boilers
Electrical services
Lifts
Alarm systems
Lightning protection
Pipework systems
Gas services
Drainage (internal)
Cradles
Communication
Security
Fittings and signs
Toilets
Roads/car parks
External drainage

- (2) Were other owners' buildings experiencing similar reinvestment needs?

To answer the first question they looked through the details backing up the elements of potential reinvestment. They wanted to discover whether reinvestment was necessary because of premature failure of all, or a large part, of the elements or simply because of wear and tear through a normal life cycle.

What they found was very instructive:

- (1) On average, 50 per cent of the reinvestment for all six elements could have been avoided with no additional first cost had design and construction quality been handled at least as well as on buildings where premature failure did not occur.
- (2) That the most difficult problem in determining this result came not from discovering the cause of failure but from defining a normal life span for each of the

elements. This is a point to which they subsequently returned.

In a sense IBM only had to look around to answer the second question. The buildings of the 1960s and even the 1970s, mainly designed in the modern idiom of curtain walls, flat roofs and extensive services, are being demolished or reclad and refurbished at a frantic pace. Government figures showed that 40 per cent of the UK construction industry revenue of £40 billion (circa 1990) from projects over £100,000 is for refurbishment and maintenance. They also discovered at a conference on building failure held by the RIBA in September 1989 that claims on architects have increased by 400 per cent since 1979. This interesting three-day conference devoted a day to each of three elements of buildings which are causing great concern: external walls, flat and metal-sheeted roofs and floors. Clearly these three fitted nicely with their top six areas of cost. They also learned that most of the speakers believed that many of the errors of the 1960s and 1970s were being repeated in current designs.

With these questions answered IBM were in no doubt that they had a problem worth exploring.

Further questions

To improve performance when the reinvestments are made and the new buildings are constructed, two further questions have to be answered:

- (1) What is the appropriate life for the elements that make up a building?
- (2) How can an investor ensure that design and construction quality will avoid premature failure?

Suggested answers

The answers to the first question are being properly addressed through the LINK research on building performance and cost in use, the performance and cost managed building, the results from which will be published shortly. This work, the research for which was done by Strathclyde University, should result in a more complete set of data on life performance and the ability to set life

cycle targets for different building components at the design stage.

Reinvestment costs then can become a fully planned element in the organization's management system.

The second question needs further consideration by clients and all other participants in the building industry. The problem is essentially one of establishing a better management system for projects. By its nature the building industry is fragmented and complex and to ensure a consistent result of the right quality, management systems for projects must be able to address several factors, a preliminary list of which might read as follows:

- (1) Ensure that the building industry understands client requirements on performance life. This must become a normal part of the briefing process on both new buildings and routine refits, refurbishments and rearrangements. Since building components have different performance lives the simple target method developed by Arup Research and Development should be considered during briefing (see Figure 2).
- (2) Make use of appropriate specialist skills at the right time for complex components and materials. Call in the "expert" during design, not after failure when we want to find out who is liable or how to repair failed components. These experts can include building surveyors and materials scientist specialists who seldom normally participate in the design process.
- (3) Put in place review and approval procedures to ensure that the details of buildings fabric structure and services are always correct through design and construction stages. Lack of appreciation of the significance of relatively small details was the dominant reason found in the study for premature failure. Thus avoidable rust damage on mechanical systems or curtain wall fixings is often the source of early breakdown of these high value elements.
- (4) Establish proper quality management procedures. The adoption of BS 5750 by an increasing number of building participants could be of major benefit in this area, particularly if allied to customer focus, failure prevention, continuous improvement and zero defects targets as seen in TQM quality approaches.

Figure 2 Asset management – target method

Stage 1 – use during client/designer briefing stage

Element	Years		
	10	30	60
Structure	-----		
Fabric	-----		
etc.			
"			
"			

Stage 2 – use during designer/supplier dialogue stage

Element – external wall				
Component	R	10	30	60
Glass	A	-----		
Neoprene	A	-----		
etc.				
"				
"				

Note: Used with the permission of Arup Research and Development

The conclusions reached in this article specifically reflect experience with the current average quality level achieved in UK buildings. The current focus on quality in construction may in future make inroads into this 25 per cent addition to operating costs. However, in the meantime it is likely that condition-driven reinvestment will continue to be a significant feature of facility management costs.

A strategy for facilities management

Keith Alexander

Keywords

Benchmarking, Corporate strategy, Facilities, Management, Premises management, Professionalism, Standards

Abstract

Facilities management is rapidly developing as a discipline, vocation and business service. A collaborative strategy is needed among leaders in practice, education and research to ensure that the professions are fully understood, knowledge and experience are shared and that professional and ethical standards are established to provide the benchmarks for effective practice. Early developments have been based on a strong practical discipline. Investment in research and education is now needed in order for the future to be built on a strong theoretical foundation. Sets out an agenda for those involved in advancing the discipline and promoting the facilities management message. The general challenge is to gain influence, show a business lead and win respect and authority. In organizations this involves setting the business agenda, developing systems and developing people – to nurture leaders, improve quality, and develop the knowledge and skills base – to secure the future.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

Facilities management emerged over the past decade in response to turbulent change in the business environment, the pervasive influence of information technology, more independence and a stronger voice for knowledge workers, and completion of the single European market.

The latter half of the 1980s saw a growing awareness, increased recognition and take-up of facilities management in both the public and private sectors in the UK. The 1990s will see its consolidation and maturity as part of the language of business at the turn of the century.

At a time of fundamental change in the public sector and corporate world, recognition of the role of facilities management in business performance has gradually grown. Corporate strategies for competitiveness core business, customer responsiveness and the continual improvement of quality have demanded a complete rethink of all processes and restructuring on an unprecedented scale. Pressure for a rationalization of the business, to reduce costs and improve flexibility has led to innovative approaches to managing the facilities that support the business. The recession has further increased the pressures.

Respect for individuals with special skills and abilities in co-ordinating diverse activities and making things happen is being supplemented by the development of professional qualifications and dedicated education and training. A single professional body in the UK now has the level of support to professional and business interests in the area. Packages of contracted services are being co-ordinated within the context of management control to ensure they deliver on quality, cost and time to meet user requirements. The market is currently in something of a confused state, with a growing number of consultants making sometimes conflicting claims. However, new service partnerships promise more effective relationships to the mutual benefit of users, clients and providers. The facilities management movement is coming of age.

The challenge to secure the future of facilities management as a credible discipline, vocation and business service is enormous. In times of uncertainty and deep cultural change

This article first appeared in *Facilities*, Vol. 12 No. 11, 1994.



Facilities

Volume 21 · Number 11/12 · 2003 · pp. 269-274

© MCB UP Limited · ISSN 0263-2772

DOI 10.1108/02632770310500338

in the professions, industries that have traditionally served the business needs will continue to exercise power over the way in which problems are defined. The new professional bodies will demarcate boundaries and strengthen qualifying rules to exclude in the interests of enhancing the position and status of facilities managers. Powerful industrial forces will shape the services and solutions that the market offers under the name of facilities management.

Strong and enlightened leadership is needed for the movement to prosper in the face of conservatism, defensive opposition, scepticism and prejudice. Careful thought needs to be given to the design of an open profession for the next century and to take advantage of modern communications to create networks that reflect the "virtual corporation". These structures should recognize the replacement of the career professional with the portfolio manager.

The facilities management movement can be summarized as a belief in potential to improve processes by which workplaces can be managed to inspire people to give of their best, to support their effectiveness and ultimately to make a positive contribution to economic growth and organizational success.

The future must be built on a strong programme of education and research dedicated to understanding and developing the discipline, to creating and disseminating a collective knowledge base and to identifying and codifying best practice. We have to create a forum for learned debate and for sharing and validating experience.

Gaining influence in the economy

The role of facilities management in the economy is gaining recognition. Key government policies in a market economy competitive policies, deregulation and privatization have each had an influence on the creation of the conditions in which facilities management has emerged and is gaining ground.

The importance of effective facilities and property management for inward investment is recognized by some development agencies in the UK, notably Glasgow Development Agency. The Audit Commission and other official bodies promote careful husbandry and exploitation of the building stock as part of

the national heritage more effective utilization of an important resource and a key environmental strategy.

Greater accountability for the use of public resources has heightened demands for improved efficiency and value for money. The introduction of competition and choice in delivering public services has opened opportunities for joint ventures with private enterprise.

In the Japanese economy, facilities management is already considered a key to economic prosperity. With greater reliance on office productivity, facilities management is seen as a way of improving the effectiveness of Japanese office workers. While similar developments have been slower to emerge in the UK, European policies for the environment, the workplace and public procurement extend and reinforce standards, and regulations have proliferated. These EU directives set the conditions for competition, industrial democracy and environmental protection.

Business indicators are starting to show signs of a recovery in the UK economy. Business prospects and confidence are beginning to grow. Official statistics show that whilst productivity is static in the service sector, it is rising in the shrinking manufacturing sector. The climate for acceptance and the opportunities for influence in the economy could not be greater. As yet facilities management has no effective voice in environmental politics. Positive action in lobbying and political influence and involvement in European programmes is vital.

Facilities provide the infrastructure for business and play a role in attracting inward investment. The key facilities issues for the future in all sectors of the economy are:

- increasing adaptability to changing business needs;
- providing a healthy workplace for creative people;
- assimilating the potential of new technologies;
- ensuring full use of diminishing resources while minimizing environmental impact.

Taking the business lead

Within organizations, facilities management must also begin to exert greater influence in

the business arena. The last decade has seen enormous changes in organizations. Corporate restructuring and internal turmoil have been the norm. The “new organization” is emerging with a flatter structure, decentralization of responsibility and greater autonomy for operating units. Some question how far the influence will spread, but all organizations have been touched in some way and many are already changing fundamentally. However, as yet there has been no fundamental change in the buildings and facilities that support them; just a slow evolution of established models and practices.

Most commentators will readily agree that improving customer responsiveness, re-engineering business processes and creating a service edge are the keys to contemporary business in Europe in the 1990s. However, research studies have identified weaknesses in the way in which these concepts are being implemented in the UK and companies and are fearful of the impact of European competition.

Business forecasts suggest a rapid evolution of the profile of organizations and fundamental changes to working patterns to create a competitive advantage in the climate of the 1990s. Organizational structures are becoming flatter and decentralized. Corporate objectives have to balance with the demands of local managers.

Senior management has to create the conditions in which facilities can be effectively managed and have ultimate responsibility for generating the resource on organization needs to support its business objectives. Strategic planners need to predict future business conditions in order to make the appropriate decisions about the balance of facilities needed, the way in which to organize their operation and management, and the best way of providing them.

Few recognize the role and potential of facilities as a “factor of production”, a vehicle for corporate identity and positive asset. Many companies should take a fundamental review of the way in which facilities are managed and the contribution they make to the business to identify the opportunities they provide and recognize their business impact.

There is a need for visionaries and business leaders who are able to develop and manage facilities to provide an advantage. Facilities managers need to be involved in setting the business agenda. There are few better placed

than those responsible for facilities management to assume a leading role as a “changemaster” in corporate restructuring and process re-engineering.

For the organization, facilities management means:

- creating a facilities policy that expresses corporate values;
- giving the authority to the facilities business unit to improve service quality;
- developing facilities to meet business objectives;
- recognizing the value that facilities add to the business.

For the facilities management organization, the strategic role entails:

- formulating and communicating a facilities policy;
- planning and designing for continuous improvement of service quality;
- identifying business needs and user requirements;
- negotiating service level agreements;
- establishing effective purchasing and contract strategies;
- creating service partnerships;
- systematic service appraisal quality, value and risk.

Shifting boundaries

All this implies deep cultural change in organizations, influencing restrictive attitudes and practices and evolving structures to remove the barriers to progress imposed by traditional, functional and professional boundaries.

Facilities management should be positioned as a cross-disciplinary activity and enable the application of generic management skills across these boundaries. This requires the development of new roles and profiles. Three emerging management roles in facilities management organizations are those of managing customers, managing service and managing assets.

These management roles concentrate on three important challenges facing facilities management:

- (1) empower people in organizations so that they are at their most effective;
- (2) organize the service to meet business and user needs and promote the corporate identity;
- (3) harness the potential of new technologies.

The intelligent client role requires greater customer awareness. Managers need to understand the needs of people in the workplace as producers and consumers. Facilities support the effectiveness of people as producers. As consumers of facilities and service, users are increasing the demands for quality of working life. The customer team is a key to sustaining a healthy workplace.

The customer interface must be designed to take account of the complexities of the workplace and the need for adaptability, the interaction of people, technology and processes. The intelligent client will also have a responsibility to innovate to develop production systems which develop people while improving productivity; and for the environment, to develop sustainable workplaces.

Having identified the requirements and agreed service levels, the facilities manager will assume the role of an informed buyer, build a service team and create effective service partnerships. The role requires a clear service vision and creation of an effective interface with the service providers. As the service master, the role involves closer consideration of the human resource issues central to the creation of the service team.

Facilities must be seen in context of business, and will be related to key income/cost ratios. Economies to reduce the cost of being in business must be sought, because of the pressure on costs, and the constant search to reduce overheads. This is particularly the case in the public sector where the influence of the private sector is seen to bring positive benefits.

Facilities are also treated as a fixed asset and appear on the balance sheet. Facilities are traditionally treated as a capital development and need to be managed to enhance and realize their value, just like other company assets. Research studies at the University of Reading identified considerable room for improvement in property management in all sectors of the UK economy.

As well as fulfilling these three roles, facilities organizations also need to be managed as an enterprise. A board member will be ultimately accountable for the enterprise and the contribution facilities make to the business. Responsibility for aspects of the facilities processes will be devolved and the team empowered. To be effective, key members of the facilities team will need the

authority to match the responsibility for managing the service delivered to internal and external customers; to seek opportunities to generate income and harness purchasing power, consistent with core business philosophy.

Improving quality

As a business discipline, facilities management is concerned with all the processes that ensure user needs are satisfied in particular business contexts; in setting up the conditions in which processes can be continually improved. The balance between an organization's need and the provision of the facilities that are necessary for effective operation of a business, a hospital, a school, etc. is achieved by the processes that continuously match the provision of buildings, systems and services to changing needs.

The skilled facilities manager identifies the processes by which an organization delivers and sustains a quality operating environment and services to meet strategic needs at best cost. These are the planning processes to identify needs and specify requirements, the delivery processes that ensure quality provision and the monitoring processes that enable control. All these must encompass facilities management.

Winning respect

The present breed of facilities managers has moved to positions of broad responsibility through accumulated experience. These managers carry a vast store of practical knowledge and possess vital skills, knowledge and experience that is not easily captured and codified for future use.

The future of facilities management cannot be built around these exceptional people. The knowledge base must be improved and the systems and processes created to ensure continual improvement in quality.

In contrasting the architectural revolution and facilities management, Francis Duffy (founding editor of this journal and chairman of RIBA, the Royal Institution of British Architects) defines professionalism as "the ethical use of knowledge in the context of action". The knowledge base is about what

users want, what buildings can and cannot do, and about how the relationship between users' needs and building capacity must be built and managed over time. He concludes that the professions are better positioned and intellectually more able than either commerce or the universities to build up knowledge in the context of action.

A new balance of skills is needed combining leadership, technical understanding and management knowhow, purchasing and contracting skills, personal and interpersonal skills. The facilities manager is, by definition, a hybrid manager. We need to develop business leaders who recognize the opportunities, can motivate others and create a service environment: to encourage relationships among users and providers in which everyone is a winner.

Building a credible profession

At a professional level, there will be an increase in networking for the open exchange of information and experience. There will be a clearer distinction drawn between consortia of clients, a profession of consultants and a federation of contractors. Split, not between two associations competing for the same status, but differentiated into demand and supply interests.

The formation of British Institute of Facilities Managers (BIFM) through the merger between Association of Facilities Managers (AFM) and Institution of Facilities Managers (IFM) aimed to ensure the association will develop, grow and represent the interests of practising facilities managers in the UK in a coherent fashion. The formal constitution of EuroFM as a network of non-profit-making bodies extending through 14 European countries will provide a prime means of transfer of information and experience in facilities management. IFMA's European Bureau will provide effective support to European members.

Considerable interest is now being shown by the traditional professions of the building industry. RICS, RIBA, CIOB, CIBSE each have formed committees to identify the opportunities provided to members by recognition among clients of the importance of facilities management. However, each seeks to redefine facilities management and limit its scope according to individual

perspectives. It is, for instance, claimed to be part of estate management by the Royal Institute of Chartered Surveyors (RICS). It is vital to recognize the contribution that each can make to the facilities team while recognizing the need for an overall, strategic approach.

A maturing market

As a business service, facilities management is concerned with the creation of effective partnerships to deliver quality services. The market for facilities services is developing rapidly, with increasing emphasis on management roles. Property companies and consultants are developing new value-added services. Managing agents offer to co-ordinate the range of services that come together in the complete package. Contractors continue to deliver groups of services to meet specifications.

Most market forecasts indicate the continued growth of the contracting out of services grouped under facilities management. But facilities management and contracting out are not synonymous. In some sectors, e.g. information technology, the definition of facilities management assumes the outsourcing of the installation and maintenance of the IT service. All services will be regularly subjected to market testing and there will be greater choice, but this increases the need for effective planning and contract management inside the organization. Facilities management itself cannot be contracted out. It is an organization's core business.

Contractors who wish to succeed in the field will take heed of the trends and begin to develop packages of high-value-added services that meet increasing demands for performance with guarantees of quality, price and reliability. Indeed, they will develop as service companies, rather than contractors, and will have to work much harder at customer relationships to build longer term, seamless relationships of trust with their clients.

Securing the future

There are three essential issues for the effective implementation of a facilities strategy:

- (1) *Meaning* a plausible, well-grounded definition of facilities management actionable and easy to apply;
- (2) *Management* clearer guidelines for practice, filled with operational advice rather than high aspirations;
- (3) *Measurement* we need better tools for assessing an organization's rate and level of improvement to ensure that gains have in fact been made.

Adaptation to change will continue to be a key business criterion in the coming decade and will continue to provide the greatest challenge for facilities management. Predicting the future and managing uncertainty is in the nature of facilities management. Identifying the influences for change in the business environment and developing facilities to accommodate it are central to the function.

The next few years may see a reconsideration of some present trends in recognition of a loss of adaptability and control. Among the trends under scrutiny we may find that organizations which have experimented with new policies to reduce space dependency will have to contend with increased staff disorientation. Intelligent buildings, with their ever-increasing complexity, will be shown to be much less manageable. The introduction of quality assurance to BS 5750 will be shown to have increased bureaucracy and failed to improve quality. Many green policies will be seen to have sterilized human environments through a short-sighted focus on the technical issue. Contracting out will be seen to have reduced options and sacrificed long-term objectives for short-term gain. In addition, Europe will have increased competition but provided few opportunities in new markets

Such findings will emphasize the need for longer term planning and will reinforce the strategic approach to facilities management. The main development of the 1990s is likely

to be the emergence of the intelligent user. Organizations will have a much improved ability to determine and specify their facilities management requirements, closely aligned to the business strategy. They will be determined and able to get the best out of the industries that serve them.

There will be a move to holistic policies which take full account of the human condition rather than technical fixes to ill-defined problems, e.g. sick building syndrome. Top companies will recognize the value added by effective management and exceptional service and will organize facilities management to enable fulfilment of its potential, at a business rather than a technical level.

The facilities department will be organized as a profit centre and will seek to create the relationships that will enable the service to develop, with continual improvement of quality, better value for money and at minimum risk to the organization. This will create the conditions that will encourage management spin-offs and buy-outs, with advantages of retaining intelligence and ensuring continuity.

In some organizations we will see the emergence of the facilities director. The facilities director will have a similar breadth of responsibility to the present breed of facilities managers but with greater authority to act and with the opportunity of involvement in business planning.

In this way, facilities management will be truly demand driven. It is in this context that we will see the development of the professional role of a facilities manager. We are likely to see the growth of the facilities management consultant, and the continued emergence of facilities management contractors. Business skills (marketing, human-resource management and contracting skills) will be at a premium.

Preventing Legionellosis: is your action plan completed?

G.W. Brundrett

Keywords

Buildings, Facilities, Management, Health and safety, Legionella, Legislation, Maintenance

Abstract

Concentrates on the fact that Britain has had an unusually large proportion of cases of Legionnaires' Disease. Reminds employers of obligations of buildings legislation from the Health and Safety at Work Act and The Code of practice on Prevention of Legionellosis (which came into force on 10 April 1990). Reports on the history of Legionellosis, the infection route, actions for employers to take to prevent infection. Indicates that outbreaks of the disease in a company is traumatic regarding staff relations and personal tragedy. It can also be expensive as insurance companies no longer look on outbreaks as "Acts of God".

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

Britain has had an unusually large proportion of cases of Legionnaires' Disease. This is partly due to the vigilance of the public health laboratories working effectively with our medical authorities, and partly due to poor building maintenance. Recent HSE guidelines require all employers to review their water services and, if needed, prepare an action plan for remedial work. Staff training and written record keeping are also required. This note reminds employers of their new obligations.

Legislation on buildings is growing. For many years, the emphasis was to ensure that new buildings were healthy. Control was applied through the building regulations. The emphasis has now changed. Building regulations are now more closely linked to energy conservation and the health, safety and welfare of the occupants are cared for by the Health and Safety at Work Act. This Act is supplemented by detailed guidance on individual topics and one of the most recent is *The Code of Practice on Prevention or Control of Legionellosis*. In commercial premises, the enforcement of the regulations comes from the environmental health officer. The Code came into force on 10 April 1991. Compulsory registration of evaporative cooling towers is also now required.

The known number of cases of Legionnaires' Disease is around 200-300 per year, but many cases go unreported. Actual numbers could be an order of magnitude higher. The professional body with responsibility for such services is the Chartered Institution of Building Services Engineers (CIBSE). They were among the first to publish advice for designers over ten years ago and more recently to issue a Technical Memorandum. However, cases continued, and so more binding measures were required. Our high incidence is attributed partly to the poor maintenance of building water services and partly to the friendly informal links which the physicians have with the national Public Laboratory Service Laboratory. Half of our cases come from returning holidaymakers, but there are seldom outbreaks in those countries which share the resorts with us. The new code obliges us to take even greater care of our water services.

This article first appeared in *Facilities*, Vol. 12 No. 11, 1994.



Facilities

Volume 21 · Number 11/12 · 2003 · pp. 275-279

© MCB UP Limited · ISSN 0263-2772

DOI 10.1108/02632770310500347

The *Legionella* name came from the first identified outbreak at the American Legion's Convention in Philadelphia in 1976. We now know from stored tissue that this bacteria was responsible for mystery illnesses 50 years ago. There are 39 species of *Legionella* and most illnesses can be linked to one of 14 serogroups which belong to one of the species (see Table I and Figure 1). Sub-typing is now a refined science and very precise matching can now be made between patient and source.

Legionellosis is the general medical term for any illness caused by the *Legionella* bacteria. The bacteria are unusual in that they are able to induce two kinds of illness. Both are caused by inhalation of *Legionella*-contaminated water aerosols. One is Pontiac fever, a flu-like illness which is not life threatening and does not normally require medication. It tends to infect everyone in the vicinity of the source. The other is Legionnaires' Disease. This is a form of pneumonia which, like all pneumonias, is life threatening and requires urgent medical attention. The chances of recovery are good when identified early. This is a disease of susceptibility affecting around 1 per cent of the population. Those most at risk include heavy smokers because of their

lung damage, those on immunosuppressant drugs who are usually in hospital, and anyone who has an underlying illness. The chances of infection increase rapidly with age above 50 years. Males are over twice as likely to catch it.

The infection route is well established. All water is likely to be slightly and harmlessly contaminated with *Legionella*. If nutrient is available through dirt and traces of rust, then multiplication can occur whenever the temperature lies between 20-45°C and high bacterial concentrations can result (see Table II). If this contaminated water is dispersed in air it can be inhaled by persons exposed to it. Susceptible individuals catch the disease. The technical steps for preventing this are:

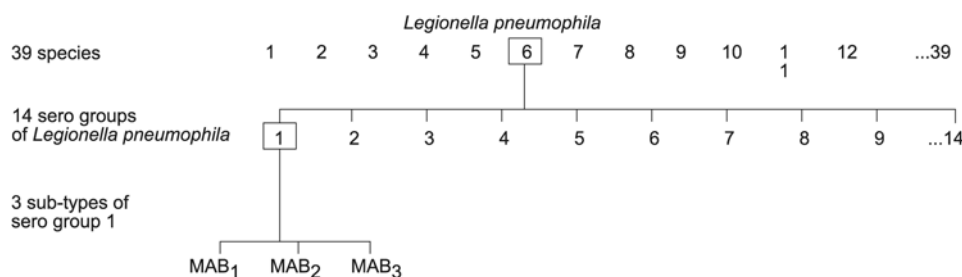
- keep all water clean;
- avoid water temperatures between 20-45°C;
- if water temperatures unavoidably have to lie in this temperature band then biocidal water treatment is required. This is particularly true for whirlpool spas which operate between 37-40°C and evaporative cooling towers which often operate between 35-45°C.
- locate evaporative cooling towers well away from openable windows and fresh air inlets so that there is little opportunity for drift to enter the building;
- identify the prevailing wind direction and check for downwind buildings which may contain a high proportion of susceptible persons, for example, hospitals.

The legislation applies to all water systems in which temperature is likely to exceed 20°C and which may release a cloud of droplets during operation or when being maintained. The three most frequent services are the hot and cold water services, evaporative cooling

Table I Causes of sporadic outbreaks of *Legionella*

Case type	Number of cases	Percentage
Cases with <i>Legionella pneumophila</i>	126	86
Of which Sero Group 1	101	69
Sero Group 2	6	4
Sero Group 3	4	3
Sero Group 4	2	1
Cases with <i>Legionella micdadei</i>	12	8
<i>Legionella bozemanii</i>	6	4
<i>Legionella longbeachae</i>	2	1
Total cases with species and sero group analysis available	146	100

Figure 1 The Genus *Legionellaceae*



MAB₁ is the most virulent and is closely associated with outbreaks

Table II The presence of *Legionella* in buildings

Building type	Service	Number of establishments sample	Proportion in which <i>Legionella</i> detected (percentage)
Hotels	Hot and cold water	104	53
	Cooling water systems	9	67
Hospitals	Hot and cold water	40	70
	Cooling water systems	13	38
Business	Hot and cold water	17	75
	Cooling water systems	24	54
Residential	Hot and cold water	3	67

towers and whirlpool spas. In ordinary buildings, the hot water services are exempt if their volume does not exceed 300L. In health-care premises there are special guidelines. Other specialist water services include heated car washes, overhead greenhouse irrigation systems, dentist water-driven drills and portable humidifiers in hospitals.

The *Code of Practice* outlines the management obligations. It is complemented by a *Guidance Note*, GS(G) 70 which gives technical details of compliance. As with all HSC Codes, no-one is obliged to follow the guidelines. Failure to comply is not an offence but it places an obligation on the employer to satisfy a court that he has complied with the requirements in some other way. This is difficult, expensive and not recommended.

The Code requires employers to take five simple actions:

- (1) Appoint a named managerial person to be responsible for water hygiene.
- (2) Undertake a risk analysis of the water services. This requires identification of all the water services, an inspection to assess cleanliness, for example in the water storage cistern, and temperature measurement both in storage vessels such as cisterns and calorifiers and at tap outlets.
- (3) Prepare a written action plan to prevent or minimize the risk of exposure to *Legionella*. The actions would be expected to be prioritized in a logical way based upon the cost, benefit and convenience of the actions. The actions should be sufficiently specific and detailed to be implemented and managed effectively. Many produce a three-year plan. All plans should incorporate specific

measures to ensure that the control measures remain.

- (4) Train staff. The operating and maintenance staff should know the potential sources of risk and the measures to be adopted to minimize the risk. Written handbooks explaining how to operate and maintain the water services are essential.
- (5) Record and keep written documentation showing details of the precautionary measures that have been carried out. This includes the action, date carried out and signature of the person doing the work. The results of any measurements or check tests and the dates of completion of any remedial work noted. These records should be readily available and be retained for at least two years (see Figure 2).

The suppliers of goods and services have a corresponding responsibility to provide adequate information on their work and to leave their work properly installed, commissioned and with operating and maintenance instructions, before use.

Professional bodies such as CIBSE run continuing professional development (CPD) courses for practising engineers to bring them up-to-date. The lessons from such courses highlight potential problem areas.

Many buildings lack accurate plans which show the water services. Little systemic updating is done and it is not uncommon to have no plans at all. Little can be achieved until the water circuits are identified and drawn. These plans should identify the flow routes and directions and enable the location of all taps and any dead ends to be marked. In most offices, the hot water is recirculated around the building. The first and last taps

Figure 2 Audit check list

	Competence level				
	1	2	3	4	5
Risk assessment					●
Minimize risk					●
Training					●
Records					●
Responsibilities					●

Note:

More evenly at all levels – progress is determined by the slowest

are used as sentinel taps because they reflect the highest and lowest temperatures in the loop. Spot checks on these two outlets provide reassurance that all is well.

Engineers plead that no budget is available for the work needed. Remedial work need not be expensive in many cases. Thermal insulation improvements, adjustments to thermostat settings and regular site cleaning procedures go a long way to improve neglected premises. The work is not optional once the risk analysis has identified the problems. The legal responsibility lies with the manager responsible for the water hygiene (Figure 3).

Lack of knowledge is a frequent plea but is no longer acceptable. CIBSE provides design guidance, the HSC Code explains management responsibilities and the HSE Guidelines in HS(G)70 show detailed measurements.

Communication problems are a familiar weakness in large organizations. The most obvious cure is for the responsible manager to visit the buildings randomly and frequently and check that the actions specified are actually going ahead. Poor communication can also make the action plan unresponsive. Building use can change without the knowledge of the engineers. This may result in an inadequate hot water supply and lukewarm temperatures unknown to the engineer. All action plans should include cross checks to ensure that the plan changes automatically whenever building use alters (see Figure 4).

One of the more subtle failures is in uneven progress. Success requires clear management responsibility with associated authority, a thorough audit, a well-documented action plan, thoughtful staff training and good documentation. It is important to move forward slowly and evenly in all five areas. Success is determined by the weakest link in this chain, not by the best. Some companies

Figure 3 Hot and cold water services

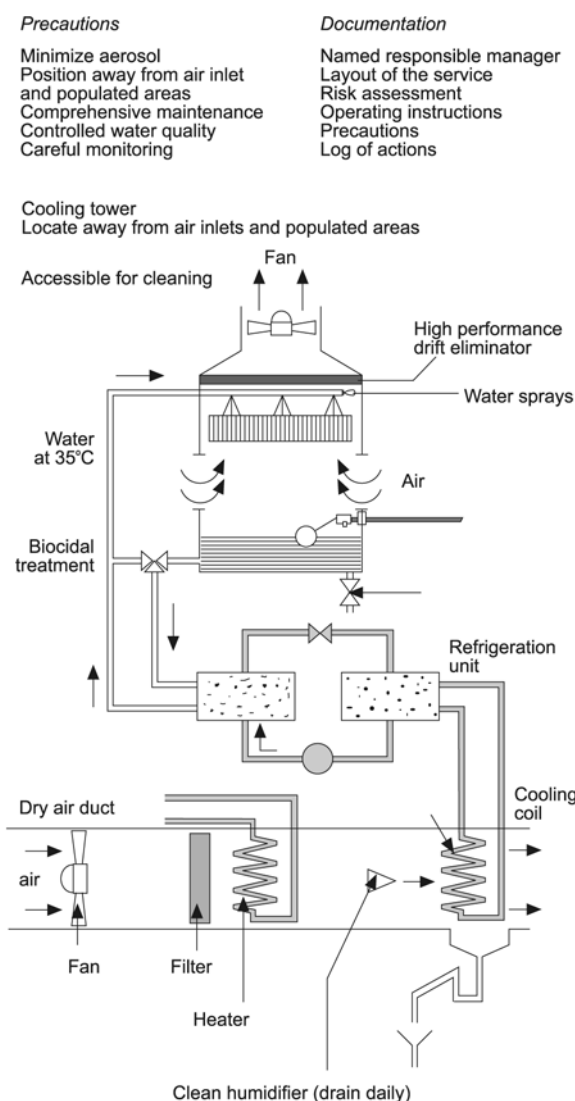
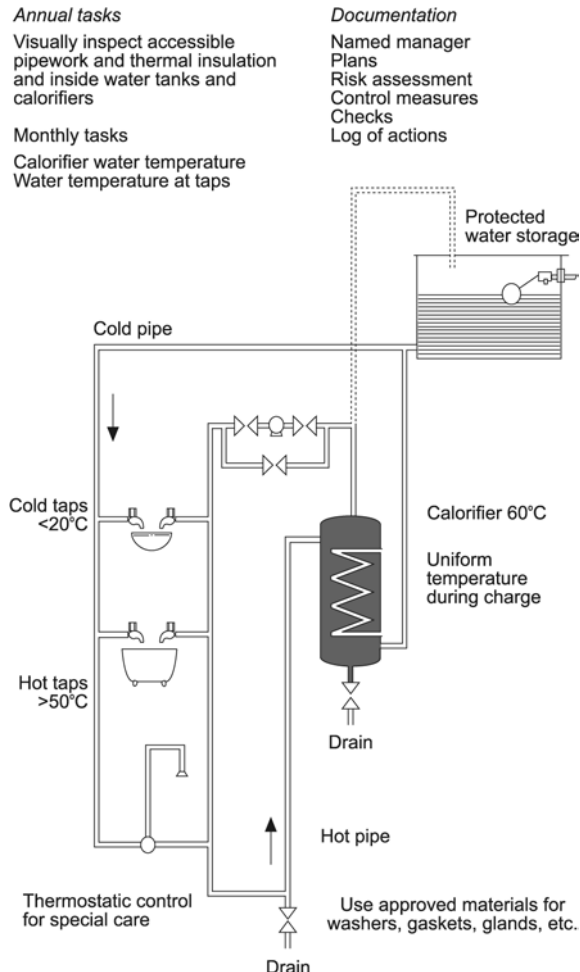


Figure 4 Air conditioning served by an evaporative cooling tower



spend much in two or three of the areas and become dismayed by the slow progress.

Finally, the impact of an outbreak of Legionnaires' Disease on a company is traumatic in staff relations and in the personal tragedies which can occur. It is also expensive. To date, the vast majority of compensation claims from injured parties have been settled out of court and paid for by the insurance companies. This is less likely to be the case in future. Settlements have been on the basis of "Acts of God" but, as the claims have grown, the insurance companies are looking more carefully at the fine print and are reaching the conclusion that the majority of epidemics are preventable and caused by neglect. Neglect is not insurable.

In conclusion :

- The law requires a manager to be appointed to be responsible for water hygiene in and around buildings.
- This manager has to provide an assessment of the health risks associated with those water supplies.
- A written action plan is required which identifies the risks and specifies the remedial steps necessary to remove or minimize them. The priorities will be determined by cost, benefit and convenience.

- The most effective programme improves the management, the audit, the action plan, the training, and the documentation simultaneously and progressively.
- Microbiological testing is now very precise and can sub-type *Legionella* bacteria to match the type found in the patient. This helps to identify the likely source.
- Insurance companies are now regarding epidemics as preventable.
- Insurance cover does not normally cover cases of neglect.

Further reading

- Brundrett, G.W. (1992), *Legionella and Building Services*, Butterworth-Heinemann, Oxford, ISBN 07506 15281.
- Chartered Institution of Building Service Engineers (CIBSE) (1991), *Minimising the Risk of Legionnaires' Disease*, Technical Memorandum 13, (revised 1991), The Chartered Institution of Building Service Engineers, London.
- Health and Safety Commission (HSC) (1993), *The Control of Legionellosis Including Legionnaires Disease*, Guidance Note HS(G) 70, revised by Health and Safety Commission, Sheffield, ISBN 0118821504.
- HSE (1991), *The Prevention or Control of Legionellosis: An Approved Code of Practice*, L8, Health and Safety Commission, Sheffield, ISBN 0118856596.

Lessons from Lao Tzu's *Tao Te Ching* for the facilities manager

Low Sui Pheng

Keywords

Ethics, Facilities, Management, Leadership, China

Abstract

Indicates that literature on facilities management is written from a Western perspective with no reference to practices in the East: therefore suggests there is profit in integrating Oriental thinking with Western thinking. Takes the ideas of philosopher Lao Tzu and incorporates them with Western thinking to enhance the leadership effectiveness of the facilities management. Provides a summary of the main points of the 37 chapters in book I of *Tao Te Ching* and provides lessons from the 44 chapters of book II. Concludes that Lao Tzu's teaching holds a wisdom for the modern team leader but suggests Western facilities management should take note as Western notions of ethics and leadership qualities have already caused erosion of Taoism and Confucianism in the East.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

Introduction

Management is essentially concerned with people within an organization where the human aspects are dealt with. A cursory review of the existing management literature, both general and pertaining to facilities management, would, however, reveal that the literature is written entirely from a Western perspective without any reference to practices from the East (Low, 1991). The booming East Asian economy now means that facilities managers from the West must take into account Eastern beliefs, cultures and philosophies when working in this part of the world. The

Asia-Pacific's construction demand is expected to amount to more than US\$1 trillion annually for the next few years (*Straights Times*, 1994). Nine Asian countries (including China, Taiwan, South Korea, Hong Kong and Singapore) will spend up to US\$600 billion from 1993 to 1998 on building works (Tan, 1994). The East Asian economy is also expected to grow significantly in the long term to fuel further demand for construction works (World Bank, 1993). In the process the need for facilities management in this region will become increasingly important (Low, 1994).

While it is certainly not the intention of this article to belittle management writers from the West, it suggests that much more could be gained if Western management wisdom can be integrated, or at least assimilated, with oriental thinkings and philosophies. Without this integration or assimilation, Western management principles would be handicapped for their lack of relevance when placed in an oriental or Eastern perspective. Nevertheless, this is not to suggest that Eastern ethical ideals and philosophies are superior to their Western counterparts or vice versa. It is the contention of this article that much synergy can be garnered for facilities managers by merging Western and Eastern management philosophies and beliefs. This merger would more specifically benefit facilities managers who are trained in the West but have found it necessary to practise in the East also. In addition, Western-trained facilities managers who practise only in the West may also gain from the added wisdom

This article first appeared in *Facilities*, Vol. 12 No. 12, 1994.



Facilities

Volume 21 · Number 11/12 · 2003 · pp. 280-288

© MCB UP Limited · ISSN 0263-2772

DOI 10.1108/02632770310500356

propounded by Eastern philosophies and beliefs.

Unlike the West, where the English medium has popularized Western management thoughts and thinking throughout the world, the same cannot be said of Eastern beliefs and philosophies. Apart from being constrained by the Chinese language which is not spoken nor written to a large extent in most parts of the world except Asia, the Orient is often viewed with a tinge of mysticism which makes it almost impossible for Westerners to penetrate. While there is no lack of ancient and present-day strategic thinkers as well as philosophers in the East, their thoughts and philosophies are still not well circulated let alone popularized throughout the world. With the economic opening of China and the fast growing East Asian economy, interest in oriental thinking and philosophies for managerial practices is now kindled. Sun Tzu's *Art of War*, an ancient Chinese military treatise written some 2,500 years ago has now been modified and effectively applied to today's business management and marketing problems (Ries and Trout, 1986; Wee *et al.*, 1991). Its extension into project management was also well received (Low and Yeo, 1993, 1994). With its rich wealth of history and talents, China has never been short of strategic thinkers and great philosophers. Apart from Sun Tzu, the other more notable philosophers are Confucius (and his disciple, Mencius) as well as Lao Tzu (and his disciple, Chuang Tzu), among others, whose teachings have had a tremendous influence on Chinese civilization and society.

By way of extension, facilities managers who are practising in the East should take good note of some of their teachings if the synergy mentioned above is to be harnessed. It is worth noting that the facilities manager will act as a team leader responsible for the operations of his property management and maintenance team regardless of whether the building concerned is a conventional or intelligent building (Low, 1993). As there will be a large number of engineers, supervisors, technicians and other tradesmen in this team, the facilities manager must therefore function well as an effective team leader. For this purpose, Lao Tzu's *Tao Te Ching* will be explained to help facilities managers further enhance their leadership effectiveness in an oriental setting.

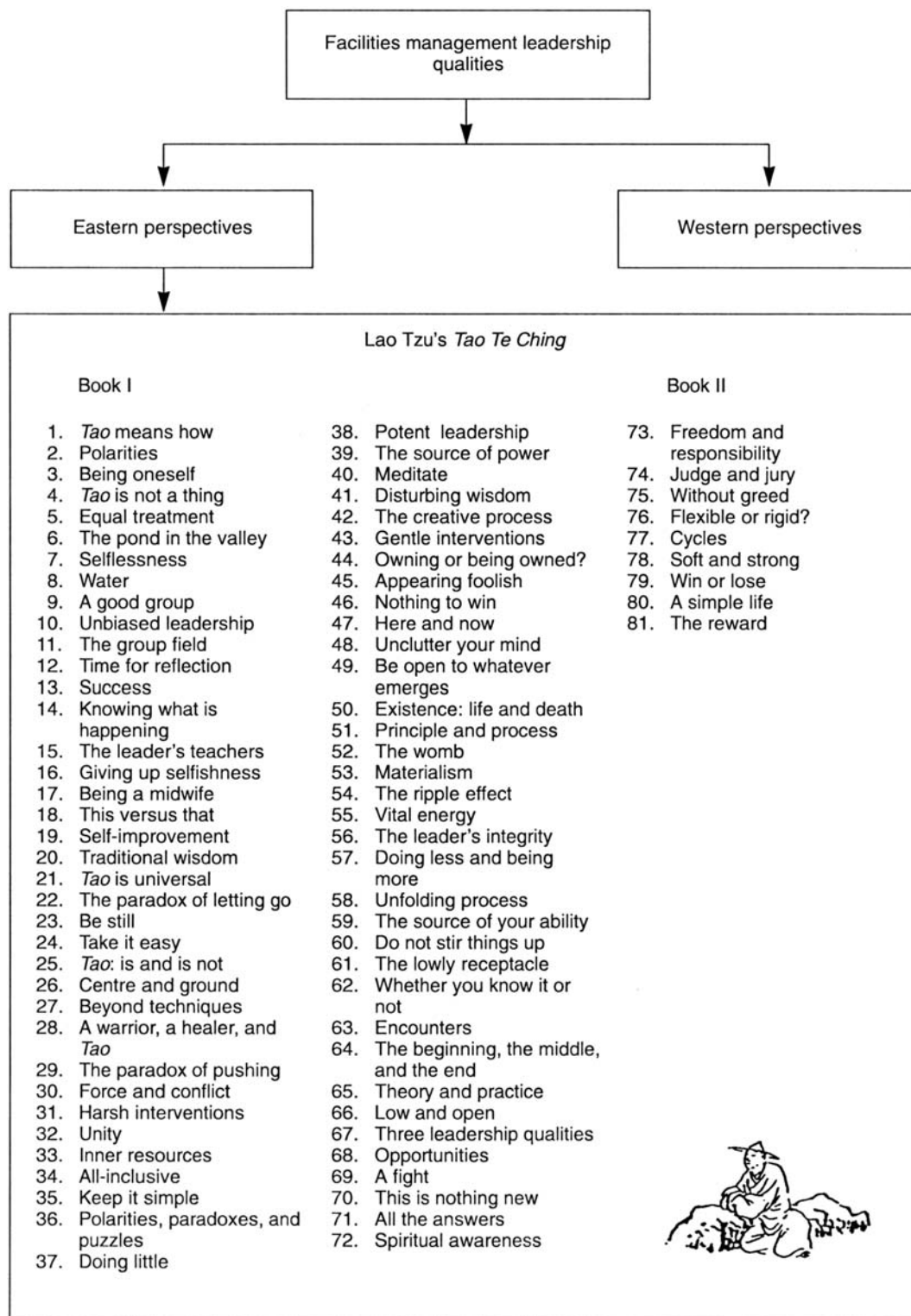
Lao Tzu's *Tao Te Ching*

While historical records about Lao Tzu have remained sketchy and are still debatable today (Chan, 1963) the *Tao Te Ching* was said to be written by a man named Lao Tzu who was an older contemporary of Confucius (551-479 BC). Lao Tzu was a native of the Chu Jen Hamlet in the Li Village of Hu Hsien in the State of Chu. His surname was Li, his personal name was Erh and he was styled Tan. He was the historian in charge of the archives in Chou. Records kept by the official historian, Ssu-ma Chien, showed that Lao Tzu was once dubbed a dragon by Confucius for his wisdom, sightfulness and virtue.

As the historian in charge of the archives in Chou, Lao Tzu was able to cultivate the way (*Tao*) and virtue aimed at self-effacement. He lived in Chou for a long time but departed on seeing its decline. When he reached the Pass (or City Gate), the Keeper there was pleased and said to him: "As you are about to leave the world behind, could you write a book for my sake?" As a result, Lao Tzu wrote a work in two books, setting out the meaning of the Way and virtue in some 5,000 characters, and then departed. None knew where he went to in the end (Lau, 1963).

The text of Lao Tzu is divided into two books. There are a total of 81 chapters – 37 in book I and 44 in book II (see Figure 1). More specifically, book I is known as the *Tao Ching* and book II the *Te Ching*. There is nothing unusual about this division except the mere fact that the first word in book I is *Tao* while the first word in book II is *Te*.

As a contemporary of Confucius, Lao Tzu was the founder of Taoism, one of the most influential philosophical thoughts in Chinese civilization. Confucianism, the dominant system in Chinese history and thought, emphasizes social order and an active life. Taoism, on the other hand, concentrates on individual life and tranquillity, thus suggesting that Taoism plays a secondary role to Confucianism in the Chinese society. Lao Tzu was a wise man who taught people not only to have a gentle and meek presentation, but also to be motiveless, selfless, pliant, yielding, pure-minded and natural. It is generally difficult for people to accept Lao Tzu's thoughts because most people will only notice the surface of things and not their essence. Because Lao Tzu's thoughts are abstract (for example, "The *Tao* is an empty

Figure 1 Framework of Lao Tzu's *Tao Te Ching*

vessel; it is used but never filled”), illogical (for example, “Give up learning, and put an end to your troubles”) most people would tend to dismiss his teachings as being irrelevant in their daily lives (Tsai, 1989). The emphasis on simplicity has also led people to regard the teachings of Lao Tzu as negative and defeatist. Its focus on primitivism and

renunciation of civilization, taken literally, is entirely contrary to modern civilization (Chan, 1963). *Tao Te Ching* teaches man how to live, including ethics, government and diplomacy. When *Tao Te Ching* is compared with Confucianism, it can be noted that there are more similarities than differences between Confucius’ and Lao Tzu’s teachings. Both are

primarily interested in moral, social and political reforms; cherish the same basic values such as humanity, righteousness, deep love and faithfulness; oppose the use of force and punishment; and highly esteem the integrity of the individual and social harmony even though their approaches are different. In short both emphasize the goodness of human nature and the potentiality of everyone to become sages. It is because of these similarities that Taoism and Confucianism run harmoniously parallel throughout Chinese history so that every Chinese is at once a Taoist and a Confucianist (Lau, 1963).

Tao is simply the way of life. It is about living naturally, effortlessly, spontaneously and correctly. *Te* can be translated to mean virtue or morality. Translated literally, *Tao Te Ching* can be taken to mean the book (*Ching*) of how (*Tao*) things happen or work (*Te*). While it is difficult to define what *Tao* is, the book itself has three topics:

- (1) Natural law or how things happen.
- (2) A way of life or how to live in conscious harmony with natural law.
- (3) A method of leadership or how to govern or educate others in accordance with natural law (Heider, 1992).

The main focus of *Tao Te Ching* is concerned with man. A total of 80 per cent of this book is devoted not to the substance of *Tao* but to its function, particularly to its operation in society. It is for this reason that the extension of *Tao Te Ching* to facilities management becomes relevant.

The framework for applying Lao Tzu's *Tao Te Ching* (Chan, 1963) to facilities management and, in particular, to team leadership qualities is shown in Figure 1 where the Eastern and Western perspectives to management are annotated accordingly. The lessons and qualities for effective leadership in managing a facilities team, adapted from Heider (1992) can then be drawn appropriately from the 81 chapters in the two books. While the important attributes for effective property management are already known (Low and Lee, 1993), the leadership qualities which a facilities manager should possess for managing his facilities team within an oriental environment are still relatively unclear. These issues pertaining to leadership qualities of the facilities manager are examined next.

Lessons from *Tao Te Ching* – Book I

Before progressing to apply the principles of *Tao Ching* for facilities management practices, the facilities manager should first recognize that *Tao* is something which cannot be defined but can only be known. The method of knowing *Tao* is through meditation or being aware of what is happening. By being aware of what is happening, the facilities manager senses how it is happening and, in the process, begins to sense *Tao*. To become aware of what is happening, the facilities manager must pay attention with an open mind and set aside all personal prejudices and bias. This is important because prejudiced facilities managers see only what fits these prejudices. Philosophically speaking, *Tao* is not a thing, not a sound or any other vibration, not divisible into parts, does not change, cannot be diluted or augmented and has no partner or complement. *Tao* is one unity which determines everything, comes before everything, is the law of everything and the principle of how everything works.

The relevant principles expounded by the 37 chapters of book I in the *Tao Te Ching* for managing a facilities team are annotated below:

- Knowing how polarities work, the wise facilities manager does not push to make things happen but instead allows processes to unfold on their own accord. The facilities manager teaches by example rather than by reprimanding others on how they ought to be. The facilities manager should know that constant interventions will block the progress of the facilities team. As the team leader, the facilities manager does not insist that things come out a certain way.
- The facilities manager who is down to earth can do what needs doing more effectively than the person who is merely busy. Effective action arises out of silence and a clear sense of being.
- People are not better off than the rest of creation. The natural principle which underlies human beings also underlies everything else equally. Neither is one person or one people better than the rest of humanity. The same natural principle is everywhere. One person is as worthy as the next. Knowing this, the facilities manager, as the team leader, does not

pretend to be special and does not gossip about others or waste time arguing the merits of competing theories. Silence is a great source of strength.

- Enlightened leadership is service, not selfishness. A good facilities manager grows more and lasts longer by placing the wellbeing of all above the wellbeing of self alone. By being selfless, the facilities manager enhances self. And because he has given up selfishness, he can enhance others.
- A good facilities team leader works in any setting without complaint, with any person or issue that comes on the shopfloor. He acts so that all will benefit and serves well regardless of the rate of pay. He speaks simply and honestly and intervenes only to shed light and create harmony.
- A moderate ego demonstrates wisdom. When facilities team leaders become famous, the teacher outshines the teaching. Very few famous people are down to earth. Fame breeds fame, and before long they get carried away with themselves, fly off centre and crash. The wise facilities manager settles for good work and then lets others have the floor. The wise facilities team leader does not take all the credit for what happens and has no need for fame.
- A good facilities manager will attempt to mediate emotional issues without taking sides or picking favourites.
- A good facilities team leader should set aside regular time for silent reflection. Turn inward and digest what has happened. Let the senses rest and grow still. When the facilities team members have time to reflect, they can see more clearly what is essential in themselves and others.
- If a facilities manager measures success in terms of praise and criticism, his anxiety will be endless. On the contrary, having a good reputation or becoming well known for his work can be a hindrance to his further development. A good reputation arises naturally from doing good work. But if a facilities manager tries to cherish his reputation, if he tries to preserve it, he loses the freedom and honesty necessary for further development.
- When the facilities manager is puzzled by what he sees or hears, he should not strive

to figure things out. He should stand back for a moment and become calm. When a person is calm, complex events appear simple. A good facilities team leader should also stay in the present. This is because the present is more available than either memories of the past or fantasies of the future.

- To become more profound, a good facilities team leader should give up his selfishness. He should forgo his efforts to be perfect or rich or secure or admired. Such efforts will only limit him. They block his universality.
- The wise facilities team leader does not intervene unnecessarily. His presence is felt but often his team runs itself. On the other hand, lesser leaders do a lot, say a lot, have followers and form cults. The worst managers use fear to energize the team and force to overcome resistance.
- The facilities manager should not lose sight of the single principle of how everything works. When this principle is lost and the method of meditating on the process fails, the facilities team becomes mired in intellectual discussion of what should have happened, what this technique or that might do. The team will very soon become quarrelsome and depressed.
- There is a tendency for a highly educated facilities team leader to respond to one theoretical model or another. It is, however, better simply to respond directly to what is happening here and now. If there is no choice, the team leader should make sure that the model is compatible with conventional wisdom. Most people are plagued by endless needs but the wise team leader is content with relatively little. Most people lead busy lives, but the wise team leader is quiet and reflective. Most people seek stimulation and novelty, but the wise team leader prefers what is common and natural.
- When the facilities manager gives up trying to impress his team members, he becomes very impressive. But when he is just trying to make himself look good, the team knows that and abhors it. The best work of a wise team leader is done when he forgets his own point of view. The less he makes of himself, the more he is. When he yields to the wishes of the person working, he encounters no

resistance. The wise team leader lets go in order to achieve.

- The facilities manager who knows how to be still and feel deeply will be effective. But the facilities manager who chatters, boasts and tries to impress the facilities team has no centre and carries little weight.
- The wise facilities manager should recognize that trying too hard may produce unexpected results:
 - the flashy facilities team leader lacks stability;
 - trying to rush matters will get him nowhere;
 - trying to appear brilliant is not enlightenment;
 - insecure team leaders try to promote themselves;
 - impotent team leaders capitalize on their positions;
 - it is not holy to point out how holy you are.

The wise team leader should recognize that all these behaviours come from insecurity. They feed insecurity. None of them will help the work. None will contribute to the leader's health. The wise team leader who knows how things happen does not do these things.

- The facilities team leader who is centred and grounded can work with erratic people and critical group situations without harm. Being centred means having the ability to recover one's balance even in the midst of intense action. A centred team leader is not subject to passing whims or sudden excitements. Being grounded means being down to earth. A down-to-earth facilities manager knows where he stands and knows what he stands for. Hence, the centred and grounded team leader has stability and a sense of self. On the contrary, one who is not stable can easily get carried away by the intensity of leadership, make judgemental mistakes and fall ill.
- The facilities team members need the team leader for guidance and facilitation. The leader or facilities manager, in turn, needs his team members to work with. If both do not recognize the mutual need to love and respect each other, each misses the point.

- The facilities team leader who knows when to listen, when to act and when to withdraw can work effectively with nearly everyone, even with the most difficult and sophisticated team members.
- The wise facilities team leader who understands how processes unfold uses as little force as possible to run the team without pressuring the team members. When force is used, conflict and argument follow. The facilities team will degenerate when the climate is hostile.
- There may be times when it seems as if one must intervene powerfully, suddenly and even harshly. The wise facilities team leader will only do this when all else fails. The team leader should feel more wholesome when the facilities team process is flowing and unfolding naturally. Harsh interventions serve as warnings that the team leader may be uncentred or have an emotional attachment to whatever is happening. Even if harsh interventions succeed brilliantly, there is no cause for celebration. This is because someone's process has been violated. Worse still, the person whose process has been violated may well become less open and more defensive. A deeper resistance and even resentment may be built up. Hence, the wise facilities manager should recognize that making team members do what he thinks they ought to do will not necessarily lead to clarity and consciousness. While team members may do what the facilities manager tells them to do at the time, they will cringe inwardly, grow confused and plot revenge. Hence, the facilities manager's victory is actually a failure.
- The intelligent facilities team leader knows how other people behave. However, only the wise team leader will know himself. This is because the management of other people's lives takes strength but the management of one's own life takes true power.
- The facilities team leader should not accept one person and refuse to work with another. He does not own people or control their lives. Leadership is not about winning.
- A good facilities manager should not let himself be carried away by the team process. He should stay free from chaos

and conflicts but, yet at the same time, feel present in all situations. The superficial team leader cannot see how things happen but can only be swept away by drama, sensation and excitement.

- It may puzzle people at first to see how little a good facilities team leader actually does and yet how much gets done. A good team leader knows that Tao does nothing at all and yet everything gets done. Hence, when the team leader gets too busy, the time has arrived for him to return to selfish silence. Selflessness keeps him centred. Centre creates order. And when there is order, there is little to do.

Lessons from *Tao Te Ching* – Book II

Book II of the *Tao Te Ching* (known as *Te Ching*) is made up of 44 chapters. The relevant principles expounded by these 44 chapters in book II of the *Tao Te Ching* for the facilities manager to manage his facilities team are annotated below:

- Unwise facilities team leaders who lose touch with what is happening cannot act spontaneously but will try to do what they think is right. If this fails, they will often resort to coercion. On the other hand, the wise team leader who loses his sense of immediacy becomes quiet and lets all efforts go until a sense of clarity and consciousness returns. The quiet path leads towards a more conscious existence. The busy path creates an exaggerated materialism.
- Facilities team leaders should recognize that all creation is a whole, and separation is an illusion. Hence, power only comes through co-operation, independence through service and a greater self through selflessness.
- The good facilities team leader knows how to be creative. In order to lead, the team leader must first learn how to follow. To prosper, the team leader must learn to live simply. In both cases, the interaction is creative.
- Clear gentle interventions will help to overcome rigid resistance. If gentleness fails, the facilities manager should try yielding or stepping back altogether. When the facilities manager as a team leader yields, the resistance will relax.

Few leaders, however, realize how much how little can do.

- A wise facilities team leader recognizes that there is a problem with owning a lot and with getting more and more. This is because the more he has and the more he gets, the more he has to look after. Worse still, he might lose even more. That is not owning but being owned. Hence, if he gives up things, he can give up spending his life looking after things.
- The best work often looks simple to the facilities team members. Yet a great deal more happens. This happens when the team leader's stillness overcomes the team's agitation. The wise team leader knows that it is far more important to be content with what is actually happening than to get upset over what might be happening but is not.
- Stimulating expeditions distract both the team leader and his facilities team members from what is actually happening. By staying in the present and being aware of what is happening, the team leader can do less and yet achieve more. A good facilities manager should therefore learn how to unclutter his mind and simplify his work. As he relies less and less on knowing just what to do, his work will become more direct and more powerful.
- The wise facilities team leader does not impose a personal agenda or value system on his team members. Being open and attentive is more effective than being judgemental. This is because people will naturally tend to be good and truthful when they are being received in a good and truthful manner.
- The wise facilities team leader knows that everything comes and goes. He will see no point in grasping, clinging, worrying or cringing over what might happen.
- By knowing how things work, a facilities team leader will also know the importance of staying flexible. Everything that grows is flexible. All enduring strength is flexible.
- The integrity of a good facilities team leader must never be compromised. Confusing jargon is one sure sign of a team leader who does not know how things happen. The honest team leader must not be seduced by offers or threats nor be swayed from the centre.

- A good facilities manager should interfere as little as possible. Interference, however brilliant, creates a dependence on the leader. Likewise, the fewer rules the better. This is because rules reduce freedom and responsibility. The enforcement of rules is coercive and manipulative which, in turn, diminishes spontaneity and absorbs the facilities team's energy. The more coercive a facilities manager is, the more resistant his facilities team will become. His manipulation will only breed evasion because every law will create an outlaw.
- The wise facilities team leader should learn to trust what is happening. If there is silence, let it grow because something is bound to emerge out of this silence. Likewise, if there is a storm, let it rage because it will eventually resolve into calmness.
- The facilities manager needs to be aware of what is happening and how things happen if he is to lead his team members and go about his daily routines. If he is aware of what is happening and how things happen, he can act accordingly, steer clear of trouble and be both vital and effective.
- If the facilities manager teaches his team members by making complex explanations, he will confuse them. They will take notes and fill their minds with opinions. Hence, the ability to distinguish between theory and practice will save the facilities manager much trouble.
- A good facilities team leader has no position to defend and shows no favouritism. In the process, no one will feel slighted and no one will wish to quarrel. When the wise leader stays in the background and helps to facilitate the property management and maintenance process, there will not be resentment or resistance. Hence, the greatest things the leader does will largely go unnoticed. Good leadership consists of motivating people to their highest levels by offering them opportunities, not obligations.
- The three qualities that are valuable to a facilities team leader are compassion for all creatures; material simplicity or frugality; and a sense of equality or modesty. A compassionate person acts on behalf of everyone's right to life. Material simplicity gives one an abundance to share. A sense of equality or fair play is by far one's true greatness.
- The facilities manager should never seek a fight. If a fight comes to him, he should yield and step back. This is because it is far better to step back than to overstep himself. His strength is good intelligence and he should advance only when he encounters no resistance. If he makes a point, he should not cling to it. Likewise, if he wins, he should be gracious. The wise leader recognizes that the person who initiates the attack is often off-centre and easily thrown. Even then, a good leader should have respect for any attacker and should never surrender his compassion or use his skills to harm others needlessly.
- It is impossible for a facilities manager to know all the answers to all the questions posed to him. Knowing that he does not know everything is far wiser than to think that he knows a lot when he really does not. The wise leader has learned how painful it is to fake knowledge and does not, therefore, indulge in pretending. He recognizes that it is a relief to be able to simply say: "I don't know".
- It should not be the facilities manager's role to punish people for their bad behaviour. This is because punishment does not effectively control behaviour. At the end of the day, he may discover that the instrument of justice works both ways, and that punishing others actually punishes his own work.
- The wise facilities team leader is not greedy, selfish, defensive or demanding. The facilities management process will not prosper if he grabs the lion's share of the credit for the good work that has been done. His team members will rebel and resist if he relies on controls in an effort to make things come out a certain way.
- The rigid facilities team leader may be able to lead repetitive and mechanical exercises but he will never be able to cope with lively team processes. As a rule, whatever is fluid, soft and yielding will overcome whatever is rigid and hard. What is soft can be strong. Hence, the wise leader knows that yielding overcomes resistances, and gentleness melts rigid defences. The ability to be soft makes the facilities manager a leader.

- The wise facilities team leader should not move around collecting a string of successes. He should instead help others to find their own successes. Because there is plenty to go around, sharing success with others is a sign of one being very successful.

Conclusion

While Lao Tzu's teachings certainly hold a tremendous wealth of wisdom for the facilities team leader, it should be noted that not all his ancient sayings are relevant in the modern-day context. In effect, some of Lao Tzu's teachings may be defeatist and negative when viewed from the perspective of the twentieth century. Nevertheless, the most defeatist of Lao Tzu's teachings (for example, to give up all of one's worldly possessions) is not meant for the modern man to attain in full. It is only for him to strive as a moral ideal and consciously to keep this ideal continuously in mind if he aims to achieve humility, ethical practice, fair play and inner peace. Likewise, although Lao Tzu's *Tao Te Ching* may have its origin in the Orient, its influence on Eastern societies may not be entirely foolproof today because of the penetration of Western thinking and concepts into Chinese societies. While Taoism and Confucianism may still predominately form the basic social fabric of Chinese communities, exposure to and reception of Western notions of ethics and leadership qualities have already caused some erosion to occur in the East in so far as Taoism and Confucianism are concerned. This should be taken note of by practising facilities managers from the West.

References

- Chan, W.T. (1963), *The Way of Lao Tzu. Tao Te Ching*, The Bobbs-Merrill Company Inc., New York, NY.
- Heider, J. (1992), *The Tao of Leadership. Lao Tzu's Tao Te Ching Adapted for a New Age*, Eastern Dragon Books, Malaysia.
- Lau, D.C. (1963), *Lao Tzu. Tao Te Ching*, Penguin Books, London.
- Low, S.P. (1991), "An overview of management perspectives for the building profession", *The Maintenance Man*, Ngee Ann Polytechnic, pp. 51-60.
- Low, S.P. (1993), "Conventional versus intelligent buildings: a comparison of running costs", *SISV Yearbook*, Singapore Institute of Surveyors and Valuers, Singapore, pp. 50-8.
- Low, S.P. (1994), "QA for facilities management systems", *Proceedings of the International Convention on "Towards Better Buildings in the Tropics"*, Universiti Teknologi Malaysia, 24-26 January, pp. 10.01-1 – 10.01-12.
- Low, S.P. and Lee, H.S. (1993), "Effectiveness of the managing agent in property management", *Facilities*, Vol. 11 No. 9, pp. 5-15.
- Low, S.P. and Yeo, K.K. (1993), "Sun Tzu's *Art of War* and its strategic relevance for construction project management", *RICS Research Paper No. 20*, The Royal Institution of Chartered Surveyors, London.
- Low, S.P. and Yeo, K.K. (1994), "Sun Tzu's *Art of War*: applications for leadership qualities and client-project manager relationship", *The Management Development Journal of Singapore*, Vol. 4 No. 1, July, pp. 10-30.
- Ries, A. and Trout, J. (1986), *Marketing Warfare*, McGraw-Hill, New York, NY.
- (The) *Straits Times* (1994), "Asia-Pacific construction market worth over \$1 trillion", *The Straits Times*, 28 May, p. 44.
- Tan, L.C. (1994), "Infrastructure spending in Asia. Asia most lucrative market for power and telecoms", *The Straits Times*, 14 July, p. 13.
- Tsai, C.C. (1989), *The Silence of the Wise. The Sayings of Lao Zi*, Asiapac Publication, Singapore.
- Wee, C.H., Lee, K.S. and Hidajat, B.W. (1991), *Sun Tzu: War and Management – Application to Strategic Management and Thinking*, Addison-Wesley, Singapore.
- World Bank (1993), "The East Asian miracle economic growth and public policy", *World Bank Policy Research Report*, Oxford University Press, Oxford.

Integrated portfolio strategies for dynamic organizations

Franklin Becker

Keywords

Uncertainty management, Strategic planning

Abstract

Technology, mergers and acquisitions, changing workforce demographics, constantly shifting organizational strategies, new ways of working, global competition – all of these factors generate chronic organizational uncertainty. This article focuses on the nature of integrated portfolio strategies (IPS) which companies in North America and Europe have adopted to manage organizational uncertainty. It draws on the developing work on the science of complexity and adaptive strategies to explore issues of standardization and customization, supply chain relationships, knowledge and workplace options. It argues that uncertainty is best met with a diverse set of options that continually emerge and disappear over time in response to changing business conditions.

Electronic access

The Emerald Research Register for this journal is available at

<http://www.emeraldinsight.com/researchregister>

The current issue and full text archive of this journal is available at

<http://www.emeraldinsight.com/0263-2772.htm>

The uncertainty dilemma

A pharmaceutical company wants to launch a new science program, involving the immediate hiring of 50 new scientists, but is constrained from doing so because their existing lab space cannot accommodate the new hires and it will take at least 18 months to build new space.

A consulting firm obtains a major project which will involve 30 consultants working on site for a period of six months. The project begins in a week's time; but there is no space in the client's offices for the consultants to work, and conventional leasing and fit-out of space would take several weeks to complete and involve a two-year lease commitment, much longer than needed.

Uncertainty is endemic and chronic in today's organizations. The reasons reveal themselves in daily newspaper and TV headlines: mammoth mergers and acquisitions (\$1.3 trillion in the USA in 1998 alone (Munro, 1998)), technology that changes with anxiety-provoking speed, a labor force for which in many sectors demand for qualified workers greatly exceeds supply, and fierce and unpredictable global markets and competition. And if these forces were not disruptive enough, there is e-commerce, that is rewriting the rules of how companies produce and deliver new products and services. In the face of such factors no organization can survive, let alone prosper, without rethinking how, where, when, and in what ways they do business. The workplace itself is no exception.

Perhaps nowhere is the face of uncertainty so sharply in relief as surrounding new technologies. We think of this as a "current event" but, as experience with ATMs suggests, this is not a new challenge. The ATM was originally designed to ease congestion at branch counters. But providing a cash-and-dash service for customers changed customer expectations. Customers demanded 24-hour, 365 days-a-year service – wherever they were. That was not at branch banks, but in supermarkets, convenience stores and gas stations. One outcome? A huge surplus of branch bank office real estate from which banks are still trying to extricate themselves.

But crises contain opportunities. If ATMs are in supermarkets and other retail establishments, why not blur the boundaries of these activities?

This article first appeared in *Facilities*, Vol. 18 No. 10/11/12, 2000.



Facilities

Volume 21 · Number 11/12 · 2003 · pp. 289-298

© MCB UP Limited · ISSN 0263-2772

DOI 10.1108/02632770310500365

Wells Fargo Bank of San Francisco, for example, has been working with Safeway supermarkets to promote a dramatic increase of in-store branches. The new stores are becoming multi-functional, enabling customers to do everything from getting money and paying bills to buying theater and airline tickets, insurance certificates, and savings bonds. In the near future they will provide access to Web-based information. The new technology, whether ATMs or the Web, does not render real estate and facilities irrelevant. But the form, size, location, function and permanence of the place can change dramatically (Roberts, 1997).

Technology, mergers and acquisitions, changing workforce demographics, constantly shifting organizational strategies, new ways of working, global competition – all of these factors generate chronic uncertainty and force management to adopt new mindsets about what good practice means (see Table I).

Doing this with speed and imagination is transforming how companies procure, construct, and manage their real estate portfolio. Cost-reduction remains an important driver for an Integrated Portfolio Strategy (IPS). But the primary driver of an IPS is flexibility: the ability to deliver the right type and amount of space, when and where it is needed, for only as long as it is needed. This follows the same logic as just-in-time and lean manufacturing processes: pay for and use resources only as you need them. An IPS acknowledges the “death of predictability.”

Integrated Portfolio Strategy (IPS)

The concept of diversification so fundamental to a financial portfolio is equally critical to an Integrated Portfolio Strategy (IPS). Yet many organizations are still putting almost everything they “own” into the equivalent of a

standard bank savings account. It is safe, but not very smart. A real estate and facilities strategy that considers conventional leased or owned space in “traditional” types of office buildings as the only acceptable solution for housing employees in the context of significant uncertainty is neither safe nor smart.

An IPS considers a wider range of solutions, including tensile and modular or mobile buildings that can, in comparison to standard building types, reduce the construction time from 30 to almost 100 percent; fully-serviced offices that allow virtually instant occupancy and exit; and new partnerships that exploit the potential for one company’s excess space to be another’s expansion space. Because the amount and type of uncertainty shape the nature of an IPS, management must consider not just whether some event or consequence will or will not occur (the formation of a new team; the potential for exploiting a new business opportunity; that less physical proximity of teams will slow the development of a new product); but what the probability of that event or consequence is. An IPS demands both more information and more explicit discussion among senior management about underlying assumptions, concerns, decisions, and their impacts.

Zero-time space

Zero-time space borrows from the concept of “acting in zero time” in an agile organization. This occurs by meeting customer demands and exploiting “market opportunities instantly by means of simultaneous enterprise-wide collaborations and actions” (Fradette and Michaud, 1998). Zero-time space is space that can be procured and/or constructed and be ready for use in as short a period of time (as close to zero) as possible from when the need to occupy (or exit) a space occurs. The problem, of course, is that conventional approaches to procuring and constructing space, and divesting oneself of it, take time. Being flexible with conventional real estate approaches is like trying to run a 100 yard dash wearing concrete blocks.

Zero-time space can be achieved physically, by new approaches to construction; organizationally, by new approaches to procurement; technologically, by exploiting

Table I Drivers of workplace uncertainty

- Size and composition of teams
- Organizational restructuring
- Mergers and acquisitions
- Location of business opportunity
- Time pattern of business opportunity
- New technologies
- Workforce demographics
- Global politics and financial markets

the potential of information technology to enable remote work; and operationally, by new policies for allocating and using space (see Table II).

Policy approaches

Non-territorial space

Some forms of AO, notably non-territorial offices, are in fact a form of zero-time space. Unlike conventional office allocation, in which each person has their own assigned office or workstation, and therefore any growth in employee population requires physically adding new workstations or offices, non-territorial space accommodates (within limits) such growth seamlessly, simply by changing the ratio of workers to office spaces (Becker and Steele, 1995). Similarly, this system can accommodate reductions in population without creating vacant workstations that may be permanently reassigned, thus losing the ability to accommodate future growth. Once the system

is in place, policy changes (e.g. the ratio of employees to workstations) can accommodate organizational changes at a far faster and less disruptive rate than virtually any other zero-time space approach.

Shelling or “dark” space

One of the most typical forms of zero-time space policies is “shelling.” This is the policy of constructing the base building shell, without interior fit-out, in advance of needing the space. When the space is actually needed, the time to occupy is much shorter because fit-out can be done quickly. At Sears’ corporate headquarters outside Chicago the shelling concept has been refined to better accommodate the fact that exactly where in a building or complex more space will be needed is often not known. Sears addressed this issue by leaving some space in each building (rather than in a single building) “dark” so that it can be allocated intelligently as the need arises throughout the organization.

Time-paced vs. event-paced construction

Intel, the world’s largest computer chipmaker, builds new fabrication facilities every nine months, before the chip to be manufactured in that facility has been designed. Their strategy is time-paced vs. event-paced (Eisenhardt and Brown, 1998). Most organizations wait until the event has occurred (whether it is the design of a new chip, the start-up of a new program, the launching of a team) and then start to consider how to house them. Intel starts with the facility, which is waiting, ready for use, when the need arises.

Contingent (fully-serviced) space

HQ Offices, Regus (see Plates 1 and 2) and other companies provide fully-serviced or “turnkey” office space; that is, space that

Table II Zero-time space strategies

Policy

- Non-territorial offices
- Time vs. event-paced planning
- Shelling and “dark” space
- “Copy exactly” design
- Telework
- Mix highly standard and customized solutions

Construction

- Pre-engineering structures:
 - Mobile
 - Modular
 - Tensile

Procurement

- Fully-serviced offices
- Excess capacity space
- Shared resources

Design

- Anticipate future uses; design for conversion
- Modular (kit-of-parts) and free-standing systems
- Raised access floors
- Mobile and easily reconfigured furniture
- Software-based programmable HVAC systems
- High bay and clear span structures
- Flexible and fixed zones; service splines

Plate 1 Regus fully-serviced office space



Plate 2 Regus fully-serviced office space

comes fully ready to use, from furniture, computers, and telephones to a receptionist. Sign a lease or rental agreement and you can immediately occupy the office. Originally serving primarily very small professional firms (e.g. legal, accounting, marketing) and start-ups, large companies like AT&T, Andersen Consulting and Hewlett-Packard have in recent years formed alliances and special relationships with such providers on a national basis as one way of helping provide zero-time space to their mobile workers. The fully-serviced office industry is now estimated to be in excess of a \$2 billion industry.

Excess capacity space

Wineries and breweries routinely contract to use excess manufacturing capacity in a competitor's facility. Using the same principle, Digital Equipment Corporation (before being acquired by Compaq) sold their building on the outskirts of Newmarket, UK, and renovated and moved into what had been a warehouse space less than two miles away. And then their group grew, so they forged a deal with an alliance partner located nearby to occupy some of its surplus space at below market rates. Both firms benefited. Space was available immediately and below market rates for DEC; its alliance partner reduced its fixed space costs and gained a prestigious co-tenant (Becker *et al.*, 1994).

In California, Pacific Telesis sent 20-30 person sales teams to communities for three to four months each year to sell *Yellow Pages* advertising (Becker and Tennesen, 1995). Typically, the sales staff would live in a local hotel and lease and fit out office space in the community, often requiring a lease that was longer than needed. In a pilot project, rather than leasing conventional office space and providing a daily living per diem, Pacific Telesis contracted with a Marriott Suites Hotel to provide all employees with

accommodation. They also obtained exclusive use of its conference rooms for use as a sales campaign headquarters. As a result, Pacific Telesis had no real estate costs apart from the costs of IT and office furniture and reduced room rates.

Construction approaches

Mobile, modular, and tensile structures are three types of "pre-engineered" building construction approaches that have the common value of being transportable and reusable. What makes them "pre-engineered" is that they start their life in a factory, and then are transported to the site where they are erected. Modular, mobile, and tensile structures hold in common the popular view that they represent poor quality, and often ugly, kinds of space. The reality suggests a more complex picture.

Mobile structures

Since at least the 1940s, mobile office units have been used as field offices for contractors and builders on construction sites. This zero-time space solution allows a construction team to be housed on the project site as soon as construction starts, and then leave as soon as the project is completed.

Intel applies the same principle to trailers. They are used:

- (1) when occupancy is short-term;
- (2) to avoid the costs of compressing office size to increase density;
- (3) to improve synergy from closer on-campus adjacency to existing buildings than would be possible if the only alternative was leasing available office space.

Cost is not the primary consideration. Time and flexibility are.

Intel attaches trailer modules to each other to form an open bay structure to which restrooms, conference rooms, access ramps/stairs, lighting, and an overhead sprinkler system and open plan system furniture are added. All utilities (electricity, voice/data, water and sewer) are brought to the trailer site underground and distributed within the modules. The time from construction to occupancy is typically about three months. The primary benefit is the ability to keep the design engineers on the same site with those

they needed to interact with and to accommodate their need for this space quickly (Becker and Sims, 2000).

Modular

Modular buildings are usually considered not only temporary but ugly. They do not have to be.

Three years ago, the ABN/AMRO Bank found itself needing space for 600-700 people, in about six months' time, with no such space available to lease in or near their Southeast Amsterdam HQ. Today the bank occupies 100,000sq.ft of Class A corporate office space constructed from pre-fabricated modular units (Becker and Sims, 2000). In its final form the building consists of four floors and a total gross area of 11,500sq.m (approx. 115,000sq.ft). It was constructed using 675 prefabricated modules to create 710 workspaces that are a mixture of cellular, group, and open plan offices. The floors are made of concrete and the ceiling height is about 2.70m (see Plates 3 and 4). The data infrastructure is state-of-the-art. The building includes entrance, reception area, meeting rooms, computer room, restaurant, kitchen, and coffee corners (Plates 5 and 6). The contract is structured as a sale and guaranteed sell-back. The firm manufacturing the modular units, De Meeuw, will buy back

Plate 5 Interior of the ABN/AMRO office building



Plate 6 Open plan office in the ABN/AMRO modular office building



and remove the building after five years, should the Bank want to sell it. (The modules can actually be dismantled and returned to the factory for refurbishment.) The building is designed to last anywhere from ten to 25 years or more with proper maintenance. The total project costs were 31 percent lower than leasing conventional office space (including rent and refurbishing). The end result was a building that once constructed was essentially indistinguishable from a well-built conventional office building.

Tensile

From circus tents to Olympic villages, airports, casinos, churches, exhibition space, offices and scientific laboratories, tensile structures are a familiar part of our built environment landscape. Contemporary tensile structures are, in fact, part of an increasingly sophisticated alternative built environment. Like some of their more modest portable building brethren, their impermanence provides a form of zero-time space that can be used in a variety of sophisticated ways when permanence is unnecessary (see Plates 7 and 8).

Like other life sciences companies, the nature of the research being done at Monsanto has

Plate 3 Prefabricated modular units at the De Meeuw factory



Plate 4 ABN/AMRO modular office building



Plate 7 Tensile structure – Monsanto Bridge**Plate 8** Interior of Monsanto Bridge tensile structure

been transformed over the last decade. In this changing research context Monsanto wanted to launch a new bioinformatics group of about 30-40 researchers. They wanted them operational in less than three months, but had no available space in existing buildings. Adding to the complexity, it was not clear how long, beyond one year, the new group would exist.

The solution selected was the “Bridge,” a 7,200 gross sq.ft temporary tensile translucent “bubble-looking” structure using high technology tenting material stretched over a steel frame (Becker and Sims, 2000). The structure had to meet all the same building codes as a permanent structure. From snow-covered ground to being fully operational took 25 days.

Warehouse

Most “white-collar” workers find the idea of going to work in a warehouse or factory as appealing as an ice storm. Yet such structures have the potential to provide a special kind of zero-time space solution for companies that cannot predict what activities and types of work will be done in a building (see Plates 9 and 10).

Manufacturing sophisticated bearings/bushings and industrial chains, IGUS, located in Cologne, Germany, wanted a building shell that could accommodate anything from a factory to a supermarket, as well as any kind of reorganization of space, even if that meant

Plate 9 IGUS building shell warehouse

having office workers sitting where bearings had been manufactured a few days before.

The solution was a clear span structural system designed by the Nicholas Grimshaw Partnership (Becker and Sims, 2000). Tensile cables connected to structural columns (masts) in courtyards allow for totally open floor areas where uses can be located or relocated anywhere without obstructing columns. Any panel can be quickly and easily changed from a solid panel to a window, to a door simply by removing bolts. “Pods”, self-contained mezzanine level rooms within the building shell, are not easy to move, but easy to add. Exposed building systems, including the electrical, HVAC, water, plumbing, and power/data organized in easily accessible cable trays and “drops,” make it possible to

Plate 10 Interior of IGUS building shell warehouse

locate services anywhere in the building without restriction. Modular systems (furniture and interior panels, as well as interior and exterior cladding), are bolted rather than welded on. The bolts are exposed and easily accessible, minimizing the need for special tools or labor. The furniture is freestanding and the walls are demountable. High bay space makes possible erecting buildings within buildings to create multi-level space within the same building shell.

The building construction took nine months. An exterior polyester-coated aluminum panel, simply bolted on, can be removed in ten minutes; an interior panel takes from one to two hours. It took two weekends to change the tooling department, with all its machines, to offices. The bearing department, growing between 40-60 percent each year, has completely moved locations five times in five years.

The pattern counts

Each workplace solution described above has advantages and disadvantages. Modular structures are quick to construct, but they have less residual value than conventional construction. Tensile and modular structures can be disassembled and relocated, but the permitting process may require more time and effort. Fully-serviced offices make immediate occupancy and exit possible, but are often not located exactly where the company wants space. These individual solutions' different benefits and drawbacks, when assembled as part of an IPS, define their business value and competitive edge. One's strength compensates for the other's weaknesses. The overall business value and competitive edge come from the pattern not the individual elements.

Changing the CRE mindset

Conventional boundaries for constructing and procuring space are disappearing. To survive in today's world requires a broad portfolio of real estate options. Some of these will be quite conventional; others will include workplace solutions like non-territorial offices, shelling, excess capacity space, pre-engineered structures, and fully-serviced space.

Understanding what the nature of an Integrated Portfolio Strategy should be for

what kinds of industries and jobs, and under what set of circumstances different zero-time workplace solutions are best applied, will create new business opportunities for those firms and individuals that learn how to deliver IPS with zero-time solutions. It will also enable organizations, frustrated by the inevitable gap between how long it takes to bring a conventional building online, by conventional lease periods, and by the unavailability of acceptable space in the desired location at the right time, to create an IPS that uses the scarce resources of the organization with greater imagination and to better effect.

Robust adaptive strategies

The key to developing an effective IPS is recognizing that to wrest control, create order and eliminate chaos with simple and standardized solutions is unlikely to succeed. A better approach is to fight uncertainty with variety and complexity. The key, according to Eric Beinhocker, is to cultivate and manage populations of multiple strategies that evolve over time (Beinhocker, 1999)[1]. An adaptive population of strategies keeps an array of options open over time, minimizing long-term and irreversible commitments.

Elements of an adaptive strategy

For thinking about the key characteristics of an adaptive strategy, Beinhocker suggests a metaphor of an Alpine hiker whose goal is to reach and stay on the highest peaks (Beinhocker, 1999). The challenge is to do that when it is foggy and you cannot see far ahead; when there might be an earthquake; when the food is only at the peaks and if you stay too long in the valley you could starve; and you have no map of where you are going. How do you survive in such a landscape?

Keep moving

In the biological world, species respond to a constantly changing environment and relentless selection pressures through mutation and sexual recombination, "constantly reshuffling the genetic deck in search of higher fitness" (Beinhocker, 1999). One strives, in other words, to create a dynamic, continually evolving mix of workplace solutions, some of which will survive over time and some of which will disappear or be modified. Because fully-serviced offices may not survive in a decade, or new construction techniques may

make it possible to significantly reduce construction times, is not a reason for not exploiting their potential today.

Deploy platoons of hikers

Beinhocker argues that the more places you are simultaneously exploring, the more likely you are to find a new higher peak or to know where good spots are when your peak begins to collapse. Parallelism in experiments increases the odds that one or more will work out. A population of strategies allows for diversity (requisite variety). Parallelism allows you to take a few risks without “betting the farm” (Beinhocker, 1999). In the context of IPS this means that one might explore the use of more sophisticated modular and tensile structures, along with using another firm’s excess capacity space for a defined period.

Mix short and long jumps

An Adaptive Walk is a process of incremental upward steps in the landscape: a short jump from what is familiar. Pogo Jumps are great leaps into the unknown, where you can jump off a cliff or land on a much higher peak (Beinhocker, 1999). The key is mixing conventional approaches (e.g. leasing class A office space), minor adaptations (e.g. compressing space) and radical departures (e.g. a tensile structure or leasing space with a competitor or relying on cyberspace).

The underlying metaphor for complexity is biology, not physics. “In nature, genetic diversity is critical to species survival. If a species has a diverse portfolio of genetic experiments, and the environment changes and reduces the fitness of typical members, the existence of atypical members, some of whom have a quality useful in the new environment, makes the species survival more likely. By mixing short and long jumps, the population of strategies will include a greater diversity of experiments, which will undoubtedly produce some unfit mutants; more importantly, however, the diversity may contain the seeds for success in an unknown future” (Beinhocker, 1999).

Value strategies as real options

Fundamental to the concept of a robust adaptive strategy is choice. Most companies emphasize the financial value of potential strategies. But most of these measures, like

NPV, payback period, return on capital, and the like, have a common flaw: “They fail to account for the uncertainty of the future and the probability distribution of different potential outcomes” (Beinhocker, 1999). One option may open up entirely new avenues of exploration and another might be a dead end, but traditional analysis gives them the same value. Taking space in a fully-serviced office complex, for example, may look less financially viable than leasing one’s own space. If, however, the less expensive lease not only commits the company to a location it may no longer need during the life of the lease but also, perhaps even more importantly, if sharing space with other companies generates opportunities for staff to make new professional contacts and to broaden their understanding of a market or new technologies or identify new business opportunities, then the seemingly straightforward financial analysis underestimates value.

In the financial world, an option is a right, but not an obligation, to buy an asset within a certain time at a certain price. Options have value because they create and preserve an opportunity to do something in the future. As the example above suggests, “A strategy also has option value because of what it could lead to, as well as what it is intended to lead to. The strategy may open future possibilities (not certainties) that the company did not have available to it before” (Beinhocker, 1999).

Beinhocker argues that “not only is there value in having lots of choices, there is also value in having a choice available over time, as it provides flexibility in an uncertain world” (Beinhocker, 1999). Workplace solutions that solve today’s problems while buying future time are an important component of a diverse and continually evolving Integrated Portfolio Strategy. Maintaining the right to build a conventional structure in the future, should the need for such space become more certain in the future, makes good sense, especially if erecting a temporary or mobile structure on the property immediately eases a current space crunch while still preserving future flexibility. Is there a cost to this? Yes. Is it worth it? It depends on the degree of uncertainty associated with the company’s future growth and with the real estate market.

The objective is not to urge every company to build a tensile structure or sign a contract with Regus for fully-serviced space, or to allocate 15 percent of their next new building to “dark” space. Nor, however, is it to rely on a limited array of familiar workplace solutions unlikely to help a company use its scarce resources to best advantage in an uncertain world. The goal is to create real options that preserve flexibility at a cost that recognizes flexibility’s value. Robust, adaptive strategies willingly sacrifice the apparent certainty that traditional strategies imply for the sake of flexibility and a higher probability of success over time.

Accepting this shift in what constitutes “best practice” also recognizes that workplace strategies are not, *per se*, technical decisions, despite their grounding in engineering, architecture, finance and other technical disciplines. As Peter Schwartz writes about scenario planning, “the goal is to change management’s mindset. With that change comes a willingness to consider options and strategies previously rejected” (Schwartz, 1991). ATMs were considered by most bankers 30 years ago to have little value and no future. Few executives regarded the Internet as a threat to (or opportunity for) their core business as little as two to three years ago. None dismisses either today. The world in which business is conducted is being transformed. Corporate workplace strategists have little choice but to consider new ways for using, constructing, and procuring space. This is most likely to be effective when it is done as part of a continually evolving and integrated portfolio strategy, not as a series of discrete, isolated workplace solutions.

The key characteristic of an IPS is that its workplace solutions (options) are developed and ready to be implemented before they are needed. They are an insurance policy to hedge against uncertainty. The key element of an effective strategy, from this perspective, is not the solution *per se*. It is the right information and experience about demand, on the one side, and how to implement different solutions, on the other. Dove argues that key enablers for an agile organization are knowledge management and change proficiency (Dove, 1999). These are hardly new concepts. What is new is the “need for more formal and conscious understandings about these practices, raising them to the level of a recognized competency brought about by

the quickening pace of knowledge development and knowledge-value decay” (Dove, 1999).

These competencies, in turn, are linked to a much better and closer development and management of the supply-chain relationships. Companies need to learn how to cooperate in order to compete. For corporate real estate executives, the supply chain will become more diverse, involving manufacturers of modular and tensile structures, fully-serviced office vendors, real estate brokers, information technology and human resource experts. The focus shifts from managing real property to managing information that triggers which options are exercised. Or, put another way, the shift is from asset management to managing customer-centric supply chains (Champy, 1998).

Few companies have access to real-time data systems that show where space is located and what its occupancy and density patterns are; or how many job offers have been made, for what specific groups, in what locations. Fewer yet have data available that show how long a group or team is expected to need space (like a rental car agreement that says the car will be returned in a week’s time, and good data about the probability of that occurring). That is, most real estate executives have no model of basic business processes, such as how long teams engaged in particular types of projects typically stay together, how many people join and leave them throughout different phases of the project, and so on. Without such information, managing the corporate real estate portfolio is a crap shoot.

Standardization and customization

The common strategy for coping with uncertainty is standardization. As argued above, it is unlikely to succeed over time. Manufacturers of just about every other product, from computers and bicycles to jeans and cars, are coming to understand that. The answer seems to be in some form of mass customization.

Office “manufacturers” need to seriously consider the potential for mass customization. It takes the right kind of information, linked to a web of cooperating suppliers working together, to solve a customer problem. The

real competitor is not the individual company, but the supply chain itself.

Standardization makes sense. It can reduce costs, decrease uncertainty, speed planning and design cycles. It can also result in design and manufacture of products and services no one wants; or will use only because they have no other choice, even if the product undermines performance. Rethinking supply-chain relationships, working to develop a feasible basis for mass customization of workplace solutions, developing a far more sophisticated knowledge base and information flow like that found in logistics, developing new vendor relationships that can be exercised like financial options, investing in learning – these are the characteristics of an Integrated Portfolio Strategy that have the potential to enable companies to manage uncertainty effectively.

Note

- 1 For this section I am indebted to Eric Beinhocker, from whose work on adaptive strategies I have drawn extensively.

References

- Becker, F. and Sims, W. (2000), *Managing Uncertainty: Integrated Portfolio Strategies for Dynamic Organizations*, Cornell University International Workplace Studies Program, Ithaca, NY.
- Becker, F. and Steele, F. (1995), *Workplace by Design: Mapping the High-Performance Workscape*, Jossey-Bass Publishers, San Francisco, CA.
- Becker, F. and Tennessen, C.M. (1995), *The Hotel as Office*, Cornell University International Workplace Studies Program, Ithaca, NY.
- Becker, F., Quinn, K.L., Rappaport, A.J. and Sims, W. (1994), *Implementing Innovative Workplaces: Organizational Implications of Different Strategies*, Cornell University International Workplace Studies Program, Ithaca, NY.
- Beinhocker, E.D. (1999), "Robust adaptive strategies", *Sloan Management Review*, Vol. 40 No. 3, pp. 95-106.
- Champy, J. (1998), "Goodbye, info age; hello, age of logistics", *Computer World*, Vol. 32 No. 34, p. 54.
- Dove, R. (1999), "Agility = knowledge management + response ability", *Automotive Manufacturing and Production*, Vol. 111 No. 3, pp.16-20.
- Eisenhardt, K.M. and Brown, J.C. (1998), "Time pacing: competing in markets that won't stand still", *Harvard Business Review*, Vol. 76 No. 2, pp. 59-69.
- Fradette, M. and Michaud, S. (1998), *The Power of Corporate Kinetics*, Simon & Schuster, New York, NY.
- Munro, N. (1998), "The new deal", *National Journal*, November 21, p. 27.
- Roberts, M. (1997), "Future in store for ATM", *The Banker*, Vol. 147 No. 855, p. 88.
- Schwartz, P. (1991), *The Art of the Long View: Planning for the Future in an Uncertain World*, Doubleday Currency, New York, NY.