Accelerated Knowledge Acquisition Programme for Real Estate and Facilities Management

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Abstract

There is a growing recognition of the impact of workplace strategies and other facility-related decisions upon business organisations. In Finland, the real estate sector has a pressing need to develop a new generation of business-aware researchers to deal with and resolve matters of strategic value to real estate owners and occupiers. The approach being advocated is a programme of accelerated knowledge acquisition, known as *KIITO*, in which information and communications technology (ICT) will play a key role in providing flexible access to learning. This will take place within the newly designated Graduate School in Real Estate and Facilities Management – a virtual institute linking several universities. Specific challenges in implementing *KIITO* include agreement on a curriculum that will build on existing academic strength, as well as supporting the diverse interests of the business community. A multi-disciplinary approach is being adopted to encourage greater interaction between domain experts and researchers. A new set of core competences is being formulated to deal with the challenges and to provide a focus for research projects. The rationale behind this tactic is discussed and examples are given of how ICT is already being used to support distance learning via the Internet.

Keywords: real estate, facilities management, competences, distance learning, ICT, virtual institute

Introduction

A knowledge-oriented society needs modern buildings to support its industry, businesses and the general economy. This leads to demand for new construction and refurbished real estate and the efficient management of the assets, facilities and services so created. Businesses and households need buildings that are well equipped, energy efficient and easy to maintain. This requires a construction project delivery process to match.

Traditional approaches to real estate and construction in Finland have long been challenged and the country can pride itself in being at the forefront in the use of prefabrication and other, modern industrialised approaches.

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In design, the use of CAD is widespread and general IT literacy in the sectors is higher than in other, larger economies in the EU. However, Finland may not be able to capitalise on this advantage because of a lack of people with the skill and know-how to exploit fully the available IT infrastructure as well as devising more customer-focused and sustainable approaches to real estate development, construction and facilities management. This is essential if the sector is to satisfy society's demands, in addition to those of business and industry, for 21st century buildings, neighbourhoods and cities. Furthermore, the approach has to be multidisciplinary, because of the multiplicity of needs involved and the complexity of the real estate development and construction process – taken in its broadest sense – and its end products.

This paper addresses the above issues with the aim of describing a new approach to researcher training and graduate development in Finland based on the model of a virtual institute. Particular reference is made to Internet Distance Learning (IDL) technology to provide a flexible means for private study with access to on-line support and tutoring.

Graduate Studies in Real Estate and Facilities Management

The initiative for a Graduate School in Real Estate in Finland – a country of some 5 million inhabitants – was mooted many years ago, but only within the last few years has that need developed to incorporate the emergent field of facilities management. This change has come about from a realisation that occupancy factors and costs are of greater consequence to building owners and users in the long run than initial or capital costs. Moreover, the effects of buildings and other constructed facilities on the well being of users have to be properly considered – health and safety, as well as legal issues, demand this approach. By concentrating on non-core business services, it is possible for business organisations to become more efficient and profitable.

The seriousness with which facilities management is taken by multinational firms can be found in their business strategies. Exploiting new markets depends on many factors, not least the provision of appropriate buildings and space. There is plenty of anecdotal evidence to illustrate the impact that poor management of buildings and space can have on a business. Historically, concerns about real estate have tended to stop short of how space within buildings was used, the activities that were supported and the quality of the internal environment.

Facilities management is, in contrast, more concerned with the dynamics of the workplace and is multidisciplinary in nature since it integrates human factors with building technology and environmental services (Atkin and Brooks, 2000). The integration of these *soft* and *hard* engineering aspects is present in any true facilities management approach, yet is often absent from the management of real estate *per se*.

Concerns about the workplace and spaces for living suggest an area of growing need for scientific study. The problems are non-trivial and require

depth of knowledge and multidisciplinary thinking for their resolution. Added to these concerns are those of relevance and timeliness. Relevance is obvious if seen in the context of addressing business needs and time is a luxury that no fast moving business can afford. Both factors point towards the need for accelerated learning or, more correctly, accelerated knowledge acquisition. *KIITO* has been designed to address this need.

Concept of *KIITO*

The Graduate School and its *KIITO* programme are designed to bridge the gap between present doctoral output and the expectations of business and industry in particular and society in general, by integrating the expertise and efforts of five universities' departments. The School and *KIITO* also bridge the gap between international best practice and local current practice by imparting knowledge from experts accessed through a global network. They are founded upon two fundamental principles:

- multidisciplinary thinking and learning, acquired and reinforced through a globally-accessible network of academics, researchers and practitioners;
- industry-relevant research projects underpinned by scientific theory and focused in areas that create a critical mass of human resource, expertise and achievement to solve real problems.

KIITO will, additionally, enable more efficient and effective use of existing (primarily) university-based resources and contribute to the success of other research programmes through the availability of its doctoral courses and publications. The School has the following aims:

- develop, test and refine theories of management, economics, law and technology applied to real estate and facilities, and contribute to the body of knowledge in these fields;
- expand and accelerate learning for researchers in research methodology and the planning and execution of research and development projects, through a more structured and focused approach;
- activate and progressively increase the exchange of knowledge and experience amongst researchers through their participation in a global network;
- create a knowledge base organised around key research themes to provide support to researchers, their projects and their supervisors, using expertise contributed by experts of an international standing; and
- raise the quality of research in the fields of real estate and facilities management through their close coupling and focus upon solving business and industry-relevant problems, supported by multidisciplinary thinking and application.

Multidisciplinary Nature of the Sector's Work

The real estate and construction sectors need people who understand the multifaceted nature of construction-based products and the process for their delivery. Know-how, which is fragmented across numerous disciplines, has to be integrated and embodied in people who can become agents of, and for, change.

Commerce and industry require buildings and other facilities that enable them to compete in increasingly global marketplaces. Buildings must therefore be designed to accommodate high levels of environmental services, information and communications technology, and heavy user-needs. They must also be able to respond quickly to needs, be adaptable to change and provide best value. The workplace is a dynamic environment that has the potential to support people and processes *or* to harm them. The latter is never intended, but it happens because of the lack of an integrated approach that involves all relevant disciplines.

Workplace issues interweave both *hard* and *soft* engineering factors. As such, the problems faced today by real estate owners and users require a multidisciplinary approach. Unravelling the complexity presents a challenge for everyone and no single discipline has all the answers. Success derives more from the conscious and controlled integration of the multifaceted nature of the tasks of creating, delivering and managing workplaces than by chance event.

A multidisciplinary perspective is thus being adopted within the School generally and in *KIITO* in particular to ensure that the necessary research expertise and thinking is accessible to participants in ways that will encourage greater interaction between experts and researchers. Formalisation of a new set of core competences is likely to arise and this is expected to become a major part of *KIITO*'s appeal.

Specific challenges in implementing such a programme include, amongst other things, a curriculum that will build on existing academic strength, in addition to supporting the diverse interests of the sector. In order to meet this challenge, university, research and related bodies within a wide range of disciplines connected with real estate and facilities management have been brought together. The aim has been to commit the academic establishment to the multidisciplinary concept of the School.

This multidisciplinary aspect brings into focus three distinct core competences:

  - risk management;
  - value chain management; and
  - management of customer needs and user requirements.

Research Needs and Approach

Owners and users demand best value from their buildings across the life cycle. They do not want surprises and expect that risks will be properly managed. They also expect that the supply side of the sector understands their needs, including those of the wider society, and can translate them into workable designs that strive for sustainable development.

The programme draws several key challenges into focus, including those related to *uncertainty and risk*, *value chain* and *customer needs*, all within a framework of sustainable development. This requires multidisciplinary thinking and action, as alluded to earlier, an interaction between domain experts. The challenges have led to the formation of clusters of related research. In time, a critical mass will be reached, thereby releasing significant contributions to science, technology, business and industry.

The basis of the focus on customer needs is the *management of requirements and demand for a decent, sustainable environment and constructed facilities*, which have to be more end-user and needs oriented so that they can support innovation instead of a production orientation. The sector is very fragmented and so *value chains are not adequately formed,* leading to inefficiency and waste. Likewise, *uncertainty and risk arising in the course of creating, delivering and managing buildings and other constructed facilities* are not properly managed, with implications for the local and national economy.

Research Themes

Uncertainty and risk – identification, prevention and mitigation strategies than turn risks into opportunities and rewards. The research is focused on identification, prevention and mitigation strategies that can handle uncertainty and risks which manifest in many forms and that adversely affect real estate development, construction and management. Research is necessary to provide reliable means for identifying and quantifying the many different types of risk throughout the different life stages. Prevention of hazards and other harmful events are obvious. Economic risk is perhaps less obvious, but no less critical to successful investment in real estate and facilities. Risk mitigation strategies are required to reduce the impact of risks and to enable the creation of business opportunity and appropriate rewards.

> Competence areas include land law, demography, macroeconomics, chaos theory, actuarial science, systems theory, stochastic simulation, optimisation techniques, microeconomics, environmental engineering, occupational health and safety.

Value chain management – the value chain across the entire life cycle, in particular how better value can be generated for all stakeholders. The research is concerned with the value chain through the different life stages of real estate and facilities; in particular, the question of how better value can be generated for all stakeholders. Research is necessary in the definition of value structures, value chains, value generation, added

value, reduction of fragmentation and innovation strategies of the sector's organisations. Particular attention will be directed towards streamlining the value chain for development, the means for maximising owner and user benefits throughout the occupancy phase and how, in particular, information and communications technology (ICT) can support and enhance the effectiveness of this process.

> Competence areas include macroeconomics, commercial law, construction economics, organisational behaviour, cross-cultural communication, information and communications technology, innovation and change management.

Managing customer needs and satisfaction – *giving owners, users and the wider society what they demand from their buildings.* The research focuses on managing customer needs and end-user satisfaction, in particular the means for giving owners, users and the wider society what they demand from their buildings. Research is necessary in examining the different needs of diverse user and stakeholder requirements – how needs come to light, how they evolve and how they can be taken forward and converted into design requirements. Particular attention will be directed towards methods for improving the alignment between initial customer needs and ultimate satisfaction and, in particular, the provision of a healthy indoor environment.

> Competence areas include macroeconomics, demography, sociology, cognitive science, human physiology, ergonomics, industrial design, environmental engineering, workplace design and futurology.

KIITO Programme and Internet Distance Learning

As discussed earlier, a primary activity of the Graduate School is the accelerated knowledge acquisition programme, *KIITO*. This will be based largely, but not exclusively, upon courses of study intended to provide education and training in research methodology and subjects that develop know-how and instil various competences. Emphasis will be placed on competences that help to develop the business acumen of individuals so that they are able to set their own work in the wider context of their employer's business. The courses are:

1. Research methods (including quantitative and qualitative tools and techniques)
2. Strategic business management
3. Facilities management
4. International finance, investment and real estate
5. Management of organisations and people
6. Customer relationship management
7. Value chain management
8. Building services engineering
9. Procurement systems
10. Corporate real estate management
11. Legal aspects of real estate
12. Real estate economics
13. International construction
14. Real estate valuation

The courses will make use of Internet Distance Learning (IDL) technology, dramatically reducing travel for those whose family or work commitments restrict study time to *out-of-hours* periods, and providing flexible access at a pace to suit individual preferences. Whilst the use of ICT to support learning is hardly new, the availability of robust, campus-wide database management systems that can control and monitor access to, and support interaction with, learning materials is a more recent achievement. On-line tests, multiple-choice, self-test question and answer sessions, chat rooms, threaded discussions and whiteboards are common features of these systems. Used thoughtfully and with due regard for pedagogical needs, learners can work efficiently at their own pace and in their own time. Moreover, the financial viability threshold can be lower than for traditional classroom courses, assuming they run more than once.

Figure 1. Screen image of learning materials for FM strategy (part)
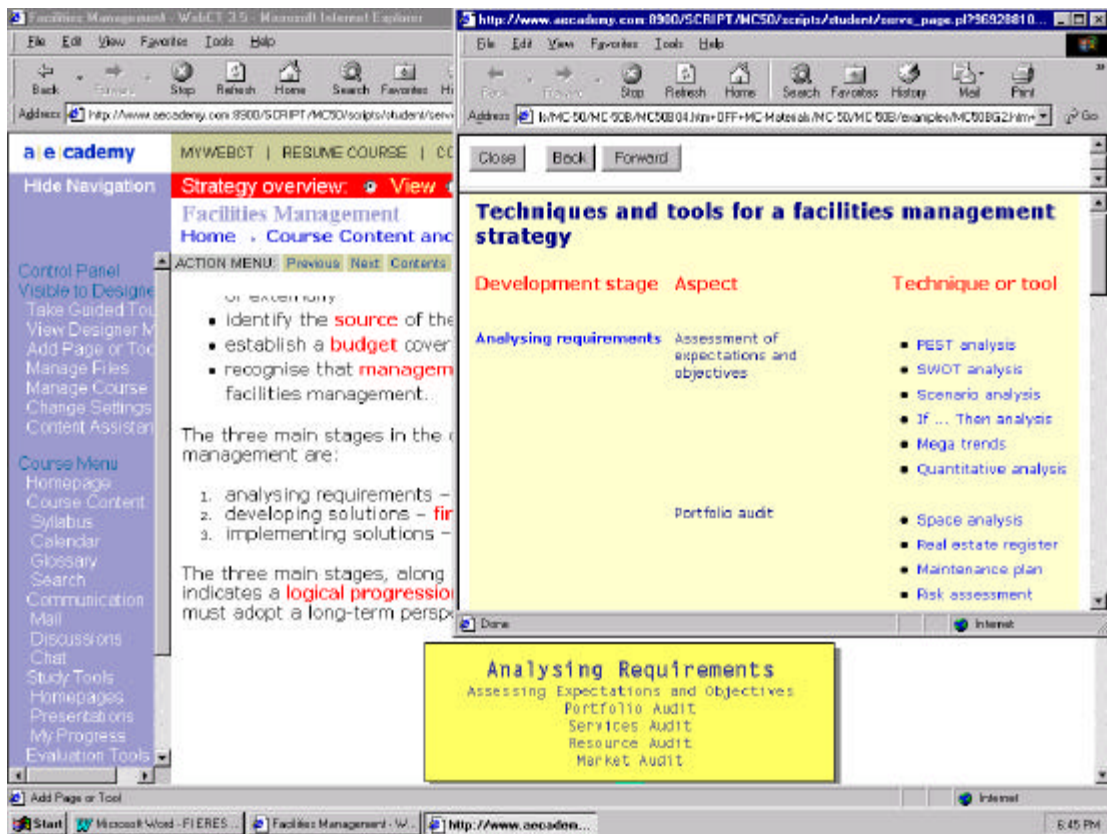
Several commercial systems are available of which *WebCT* is one of the market leaders, boasting an impressive user base (www.webct.com) – see figure 1 for typical appearance. Set-up costs are moderate, though the human resources required for mounting a full course can be easily underestimated. Courses that are available via the Internet must be complete and fully documented, unlike their classroom counterpart. Below are some typical screen images of a five-point credit course in Facilities Management that has been run successfully in Sweden at the master's level. The learning materials mix text, images, audio and self test

exercises. Short run video will be added next and more integrated media will be developed.

Figures 1-4 show different aspects of a work session, where additional information is accessed through hyperlinks set in the main body of the text. The use of IDL methods does, however, expose shortcomings in course composition and content, i.e. quantity and quality. Unlike the classroom, where it might be possible to gloss over points here and there, working with IDL prompts the course designer to include, rather than exclude materials. However, this has disadvantages since it is possible that information could be included largely for effect. The result can then be confusion from a plethora of materials that have little structure or cohesion. Good design would, by definition, reduce the likelihood of this occurring. Even so, there is a temptation simply to upload existing lecture notes and slides without a proper re-write. Course materials that are intended for oral presentation may be quite unsuitable for the Internet.

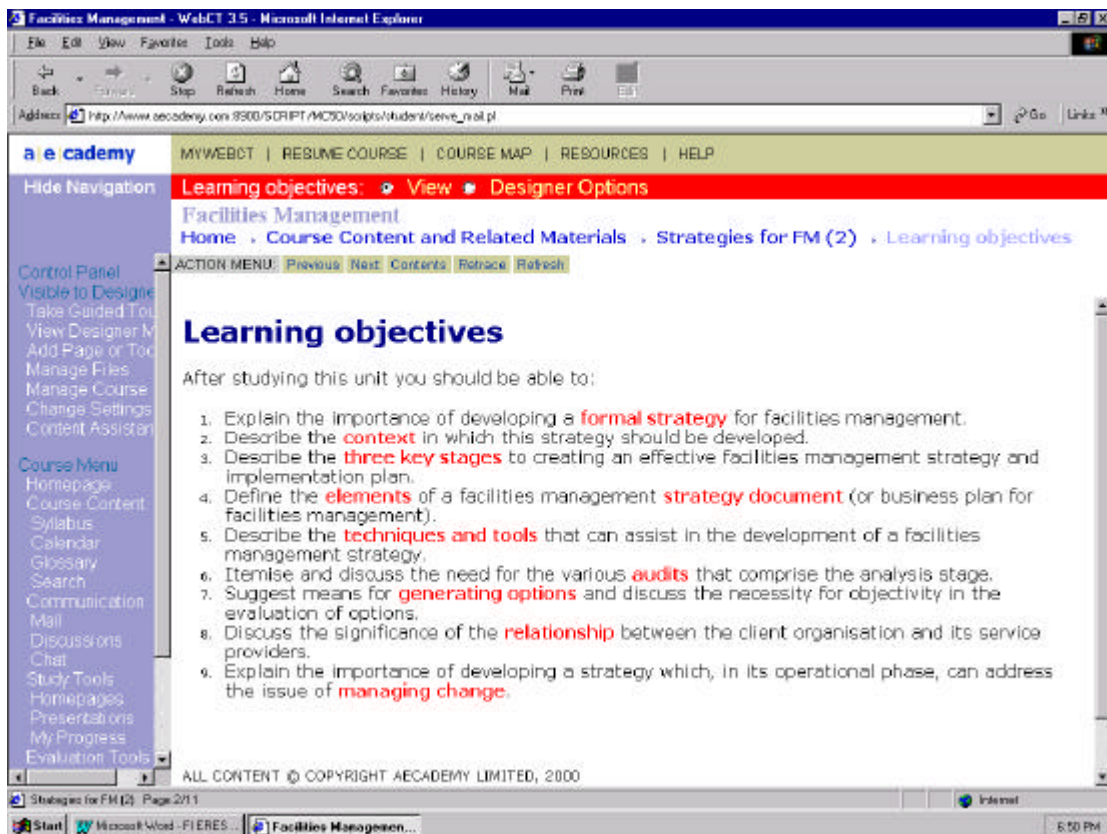Figure 2. The learning objectives for the course unit on FM strategy

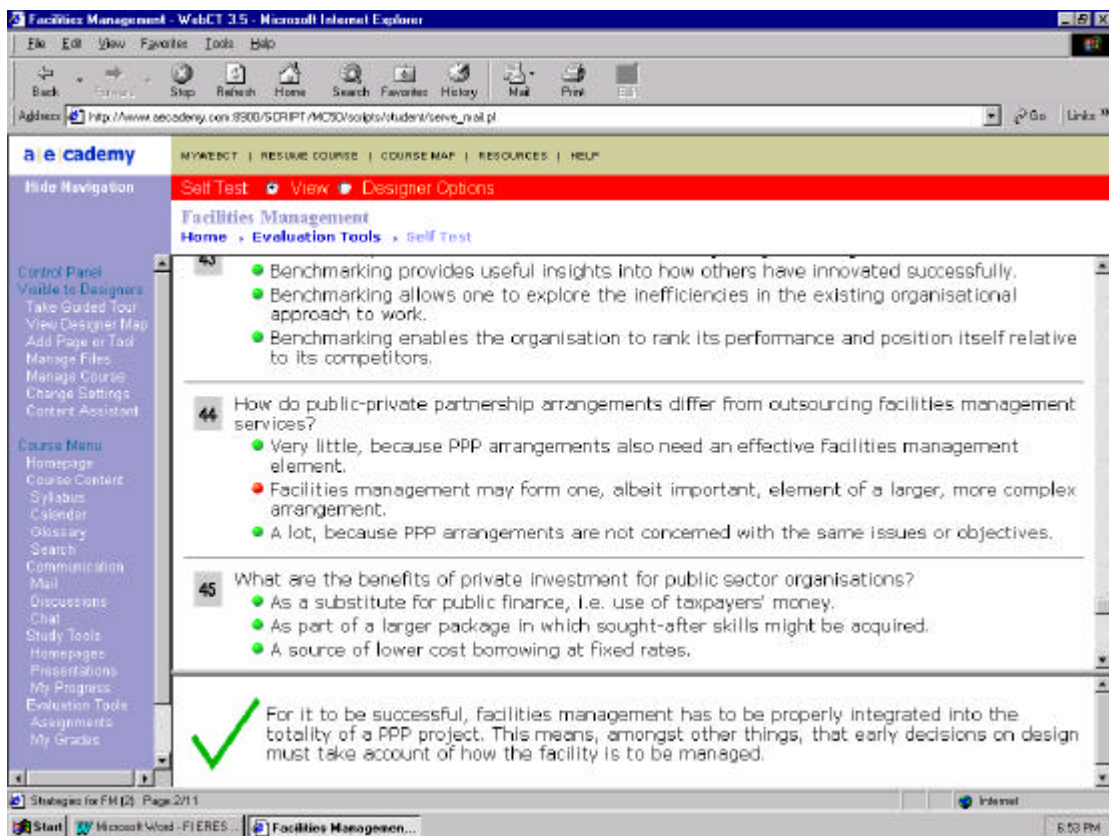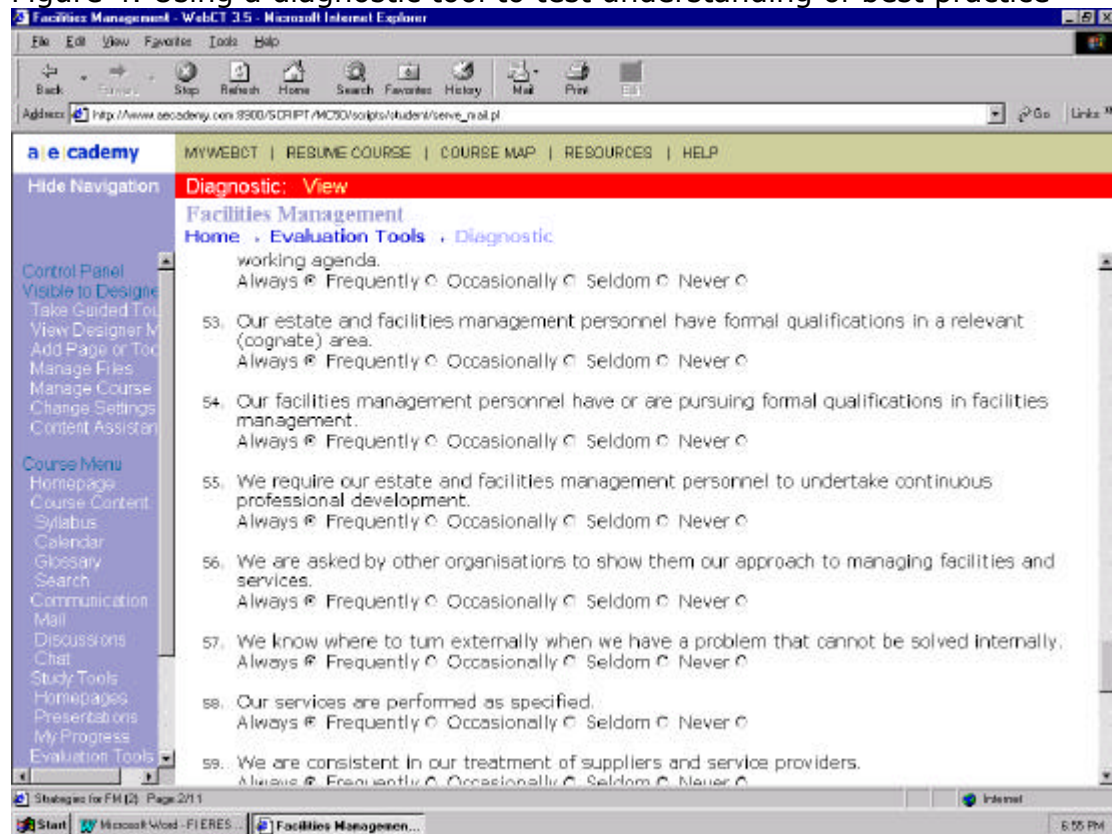Figure 3. Multiple-choice question and answer session

43
- Benchmarking provides useful insights into how others have innovated successfully.
- Benchmarking allows one to explore the inefficiencies in the existing organisational approach to work.
- Benchmarking enables the organisation to rank its performance and position itself relative to its competitors.

44 How do public-private partnership arrangements differ from outsourcing facilities management services?
- Very little, because PPP arrangements also need an effective facilities management element.
- Facilities management may form one, albeit important, element of a larger, more complex arrangement.
- A lot, because PPP arrangements are not concerned with the same issues or objectives.

45 What are the benefits of private investment for public sector organisations?
- As a substitute for public finance, i.e. use of taxpayers' money.
- As part of a larger package in which sought-after skills might be acquired.
- A source of lower cost borrowing at fixed rates.

✓ For it to be successful, facilities management has to be properly integrated into the totality of a PPP project. This means, amongst other things, that early decisions on design must take account of how the facility is to be managed.

Figure 4. Using a diagnostic tool to test understanding of best practice

working agenda.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

53. Our estate and facilities management personnel have formal qualifications in a relevant (cognate) area.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

54. Our facilities management personnel have or are pursuing formal qualifications in facilities management.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

55. We require our estate and facilities management personnel to undertake continuous professional development.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

56. We are asked by other organisations to show them our approach to managing facilities and services.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

57. We know where to turn externally when we have a problem that cannot be solved internally.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

58. Our services are performed as specified.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

59. We are consistent in our treatment of suppliers and service providers.
Always ⦿ Frequently ○ Occasionally ○ Seldom ○ Never ○

9

As with any course, it is important to be very clear about what will be gained from pursuing it. Whilst good pedagogical practice calls for due articulation of the learning objectives, the latter can all too often be incomplete or so broad as to make them pointless. It must be possible to see where and how learning will take place and then to demonstrate that it has. When developed thoughtfully, IDL courses can reach more people, quicker, directly and more cost effectively than traditional courses.

There will be steady growth in IDL courses across all sectors: real estate and facilities management will be no exception. Moreover, existing public sector institutions will have to recognise that they no longer have a monopoly in higher education and mid-career re-training. However, by collaborating with the private sector they will be able to improve what they do best, which is to provide tailored expertise to people who need the kind of human interaction for which ICT cannot substitute. Furthermore, they will be able to draw on a vast source of knowledge and other resources delivered at a reducing cost.

Conclusions

The launch of the Graduate School in Real Estate and Facilities Management in Finland is timely for two reasons. First, this virtual institute is able to focus on issues of strategic value for real estate owners and users. Second, it capitalises upon a maturing technology, Internet Distance Learning, to support a larger group of researchers across a wider geographical area than would hitherto have been possible. Moreover, it will accelerate both learning and the sharing of a common language among the researchers. Multidisciplinary collaboration is vital and can be managed through the twin support of the Graduate School and the *KIITO* programme. Present generation IDL courses may not represent true multimedia applications, but the next generation will because they can draw on a growing knowledge base accumulated through good research and feedback from implementation of the results.

Acknowledgements

Reference

Atkin, B. and Brooks, A. *Total facilities management*. Oxford: Blackwell Science, 2000.