

Be Valuable

A guide to creating value in the built environment



by Richard Saxon CBE

'Be Valuable' was born from a workshop held by Be's predecessor the Reading Construction Forum in 2002 on the subject of 'Designing the Future'. Richard Saxon became a most articulate and convincing champion of 'value' and 'integrated solution providers' and carried the themes forward into Be.

Thus, when nCRISP were looking for a champion to run a working group on value in 2004, Be was the natural partner and Richard the obvious choice to chair it. That group's illustrious and powerful membership produced for nCRISP a separate, complementary report to this one, focusing on a research agenda. Richard remained convinced that value was a powerful but poorly understood concept, and he has produced this report to demystify it. We are enormously grateful to Richard and his report is an appropriate testimony to his leadership both of Be and in the wider industry.

The report complements the work of other organisations such as the Commission for Architecture and the Built Environment and the Office of Government Commerce, to all of whom we are extremely grateful for their support and endorsement. Be is now a part of Constructing Excellence in the Built Environment and as such we already have plans for future work with these organisations, our members and other stakeholders.

Our vision is of a demonstrably better built environment delivered by an industry which, to paraphrase Richard on page 12, knows much more of how it adds value. If after reading this report you share that vision, please do contact us and get involved.

Don Ward

Chief Executive of Be and Deputy Chief Executive of Constructing Excellence in the Built Environment



Office of Government
Commerce (OGC)

The 'value' debate has been central to CABE's work since publishing 'The Value of Good Design' in 2001. This provided evidence of the economic and social benefits of good design for a number of different sectors, including healthcare, education, housing, civic projects, and the commercial sector. 'Be Valuable' updates this evidence gathering, but more radically explores how different sectors of the built environment profession and academia have developed concepts, methodologies and tools for valuing design, and the roles of different stakeholders in creating value.

The construction industry has understandably tended to approach value in a single dimensional way – whereas the reality is of a far more complex picture. 'Be Valuable' starts to address this complexity and talk about the existing tools and approaches. Increasingly it is understood that to aim for a single methodology in order to measure and demonstrate value in the built environment is a fool's errand.

Understanding the tools is not enough; we need to share a common language and belief in the value of design.

Thus there is a need to transfer new knowledge on the value of good design, targeting a particularly broad audience. CE's ability to talk to all sectors of the industry and its links with the Government bring together differing views and approaches to assessing and understanding value. The report identifies that this is an issue that crosses professional boundaries, and identifies actions for us all. 'Be Valuable' sets the agenda for ongoing work for CE, CABE, and others committed to exploring this critical issue further.

Richard Simmons

Chief Executive of the Commission for Architecture and the Built Environment

The report 'Be Valuable' is a very helpful and clearly written contribution to a crucial aspect of procurement. Over recent decades there have been wild swings in the balance between the two most important aspects of procurement – the quality and the cost. This report sets out concisely and authoritatively how essential it is to assess from the start of procurement the through-life quality that is needed, in terms of benefit afforded by the building, even although it is very difficult to quantify the benefits, and even to be accurate enough about the life-time costs in some types of building.

The report shows how clients have to give and require high priority to be given to not just to assessing and minimising whole-life cost, but also to assessing and maximising whole-life value. Fixation solely on costs, or compliance with self-set budgets, is shown not to be acceptable in any society that sets high store by sustainability – to procure the wrong building cost-effectively is a waste of money.

David Adamson

Director of Estates, University of Cambridge, seconded to the Office of Government Commerce (OGC) H M Treasury, as Director of Smarter Construction.

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1. Executive summary

The Be Valuable report aims to help customers of and suppliers to the huge industry that is the built environment.

Be define the built environment as embracing all inputs to the provision of managed space and infrastructure for public and private use: property investment and development, design, construction and facility management.

The tradition across this complex of industries has been to manage for cost minimisation rather than for value optimisation. Optimising value, the product of benefits sought over sacrifices required, is a far more rewarding strategy for all stakeholders. The report also suggests that built environments be seen as working assets rather than as physical artefacts.

The report explains the subjective nature of value and of stakeholder viewpoints. It suggests a vocabulary to use. The way built environment provides value to the economy, society and the natural environment is explored, noting the lack of research so far to provide evidence. Tools for measurement are discussed. Ways in which projects can define their value goals and achieve them are set out, improving on the usual quality of brief making.

“Not everything that counts can be counted; and not everything that can be counted, counts.”

Sign in Albert Einstein’s office at Princeton

The amount spent on buildings, in initial capital and in use, is small compared to the value added by their occupants. The focus should be on enabling occupier performance and minimising whole life costs. The ratios between initial cost (C), lifetime facility management cost (F) and lifetime occupant value added (VA) are instructive.

There is a rising demand from customers to buy integrated solutions to complex needs. Built environment supplies embrace consultancy, finance, design, construction, equipment and operation and need expert buying. The Private Finance Initiative (PFI), and its corporate counterparts, are opening up new business models for life-cycle value creation.

The report concludes with advice to each group of stakeholders and a recommended programme of research and support action to liberate more value for all involved.

Common factors are the need to measure and learn from projects in use to improve front end advice and design. The off-line learning and skills functions of all participants need to be stronger, to empower the project team. Strong evidence of reward from new thinking will accelerate and embed change.

2. Introduction: 'Value' replaces 'cost' as the key term

Value is a much-used word at present. Government seeks to buy 'best value' and 'value for money'; shoppers head for the 'value' sector of the market; entrepreneurs start up businesses based on a 'value proposition'. All these usages are (slightly) different in their meaning.

This publication aims to crystallise knowledge on the subject of value in the built environment.

This publication is aimed at customers in and suppliers to the built environment, a broad and central area of the economy which we shall define. It aims to crystallise knowledge in 2005 on the subject of value in the built environment, to make it useful for participants in their current work and to show where research is likely to lead in the near future.

The era since World War II in UK property and construction matters has until recently been ruled by the word 'cost'. Buildings were designed down to a budget by consultants, then tendered for by contractors with the lowest cost tender winning.

Minimising capital cost allowed developers to maximise profit, provided they produced an acceptable quality of product. Low capital cost in public buildings was the obvious way to increase the quantity of hospital beds, school places or council houses. There was a near-complete absence of consciousness of two other factors: the effect of the building on its occupants' performance and well being and the lifetime operating costs of the building. Buildings were always in short supply so there was rarely competition on standards which became the minimum acceptable to a low-aspiration society.

Good value in that era was defined as getting 'it' for the lowest possible price. 'It' was a generic, commoditised view of building, sufficient to get planning permission, pass building regulations and meet yardstick areas and specification for its function.

Breaks in the cloud began in the 1980's. Commercial landlords began to realise higher rents for premium developments, ones which served more demanding markets such as 'big-bang' city offices or enclosed-mall shopping centres. Higher costs were more than recovered as tenants saw the additional value in these developments: they could use the latest equipment and layout ideas and draw in custom more competitively, justifying higher rents.

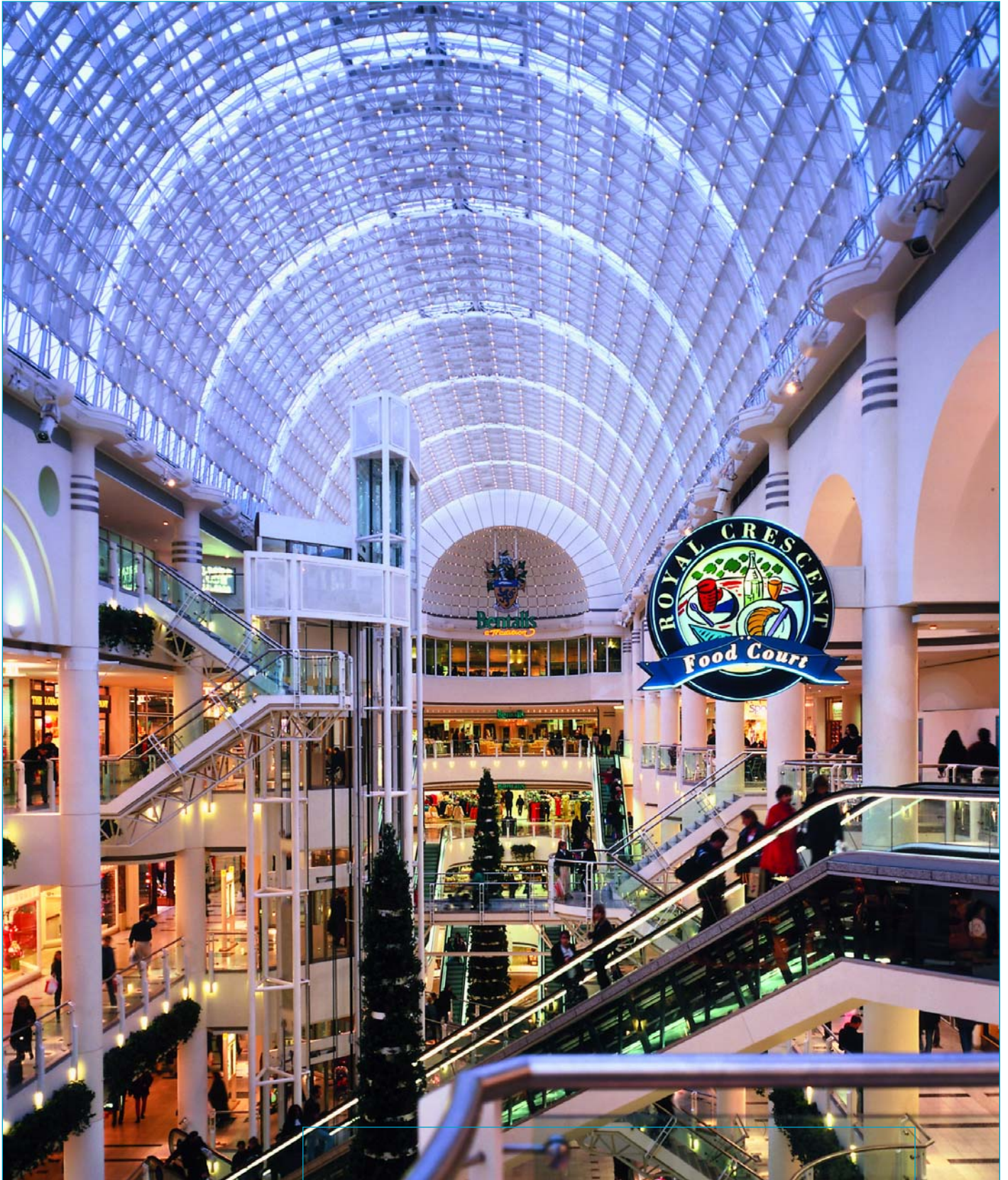
Government thinking changed once the idea of private finance emerged. Whereas under the traditional public finance model all capital costs were borrowed from the Public Works Loan Board at low rates but over 60 years, with operating costs met from malleable departmental revenue expenditure, under the PFI all costs fall as prior charges on revenue budgets. 1960's schools and social housing were poorly built to minimise capital cost, then neglected for maintenance (a policy called 'deferred repairs') in order to meet short-term pressures such as teacher salary increases. With a PFI school the unitary payment services the capital and funds the maintenance, including component replacement, making all these costs very visible. Value can now be seen, in cost terms at least, to involve the operating cost as well as the capital and its financing cost.

Premium business space – JPMorgan trading room, London.



Public private partnership – Bournemouth library

So the private sector became sensitive to performance enhancement and the public sector became aware of lifetime costs. Crossover of experience through public-private partnerships and the sustainability debate has led both sides of the market towards awareness of building performance as a whole: what an appropriate building can do for occupier and investor performance and what it really costs to deliver managed space in a publicly acceptable way.



Premium commercial space – The Bentalls Centre,
Kingston-upon-Thames.

Be, Collaborating for the Built Environment¹, is an organisation of about one hundred participants across the supply chain: customers, consultants, contractors, specialists and product makers, plus academic colleagues, dedicated to improving their own performance. We receive public money for research and must therefore share our findings with the wider industry. We do this enthusiastically as it is important to our members' success that those they deal with are receptive to the new thinking which Be has fostered. This new thinking centres on three interlocking cogwheels: the value created by good product, the value released by good processes and the improved skills required of people to realise both.

Be's new thinking



This publication concentrates on value in product. A partner publication is planned on *Implementing the results of construction industry reforms 1992-2003; The Business Case* (Report of a study commissioned by BRE Trust, Constructing Excellence in the Built Environment and the Directorate of Estates and Building Management, Cambridge University, 2006). Together they represent the 'one-two punch' of better product and lower cost, an unbeatable value proposition.

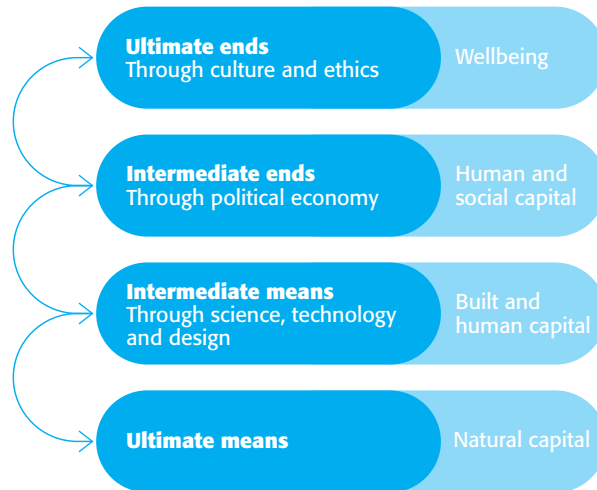
1. In April 2005 Be merged into Constructing Excellence, the government body for industry reform, which became Constructing Excellence in the Built Environment and changed to an industry-owned, membership-based organisation.

3. The concept of value: defining terms

Value, *noun*: worth, recognition of worth, intrinsic goodness; fair equivalent; that which renders anything useful or estimable; the degree of this quality, relative worth, esteem, efficacy or excellence; a quantum in measurement. *verb*: to estimate the worth of, to rate, to esteem, to prize.

Value is a personal matter, not an objective fact. What we value stems from what values we hold and from what we choose to value. Our values are formed from our society's commonly held views but also from our position as a member of that society and as a player in the transaction being valued.

Systems model of the human condition¹



The value equation

$$\text{Value} = \frac{\text{What you get}}{\text{What you give}}$$

Built environment is a key part of our intermediate means, converting natural capital into the basis for human and social capital. It also directly serves our ultimate ends in cultural terms.

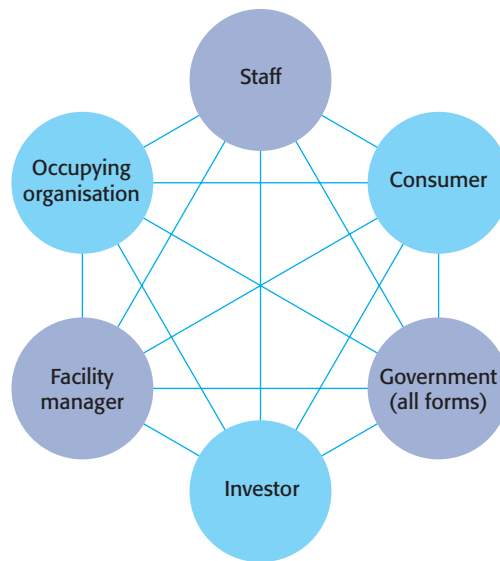
This subjectivity of value is a key point in discussing how to grasp and use the concept. It implies that to state the value of anything we have to know who is judging, and, in a multi-stakeholder situation, what will determine the balance of view. Built environment matters are highly diverse in their stakeholding pattern, with situations offering different value to each party.

Going beyond synonyms for value, it can be usefully defined as the balance between what you get and what you give. Positive value exists for any player when they get more in their own terms than they must give up. Negative value exists when sacrifices exceed benefits. We can also say that positive balance creates value, negative balance destroys it.

1. After Meadows D, 1999. Indicators and Information systems for Sustainable Development, in D Satterthwait (ed) the Earthscan Reader in Sustainable Cities, published by Earthscan.

Let us take as an example a building in which six stakeholder groups are involved: the occupying organisation (OO), its staff, its facility manager (FM), the investor who financed the building, the public that consumes the OO's product or service and the government in all its forms representing the wider public interest.

Stakeholder value exchange



There are fifteen bilateral exchanges between these six stakeholders. Each represents a positive value to one or both parties, enabled by the building.

- 1.** The OO does business with the public, facilitated by the building. The public pays the OO, creating a surplus of value, if they see sufficient value in the OO's offer. The OO also projects its brand through its corporate responsibility policies, including those expressed by its facilities, thus influencing customer and shareholder publics.
- 2.** The OO meets the public through its staff. How they perform is mediated by the facility: how effectively it enables the staff to perform and what the staff members feel about their employer because of the conditions in which they work.
- 3.** The OO's effectiveness is conditioned by that of their facility manager, in-house or outsourced, who enables the building to run as expected and who contains the cost within budget. The OO's fitout specification sets limits on the FM.
- 4.** The OO pays rent to the investor, providing the investor with a return on capital and the OO with premises of a certain quality at market rate.
- 5.** The OO operates within the regulatory environment provided by the government, ensuring that the occupier meets its rules. The OO also pays taxes and fees and lobbies government for advantages.
- 6.** The public do business with the OO's staff, the quality of that experience being mediated by the facility. Both get value from the interaction.
- 7.** The public's experience of the OO's facility depends for its quality on the services of the facility manager.

- 8.** The public may well invest with the investor, directly or indirectly, drawing income or growth from the success of the investor's business.
- 9.** The public pays taxes to the government and votes it in. It also looks to the government to protect it from danger or exploitation in its relations with the other stakeholders and for environmental protection from the impact of the property development.
- 10.** The OO's staff have the investor to thank for the basic quality of their workplace and for its location. As members of the public they too may be savers with the investor.
- 11.** The OO's staff rely on the facility manager to deliver what the investor and the OO made possible as a working environment. They cause most of the wear and tear the FM fights against.
- 12.** The OO's staff look to the government to protect their employment and their safety at work. They also vote and pay taxes.
- 13.** The facility manager gets the building that the investor provided, in terms of its basic fabric and systems. The investor relies on the FM maintaining the building to meet the lease whilst the FM's ability to meet the occupier's needs is constrained by base building quality.
- 14.** The facility manager operates within government regulations in providing a healthy and safe environment for staff and public.
- 15.** The investor had to treat with government to get planning permission and building regulations approval to build the development. The investor pays taxes and lobbies the government through its trade association.

You can see from this web of exchanges that each party weighs up the benefits and sacrifices of engagement, defining value in its own terms. The business case for the commercial development described in this case will probably not have considered the operating costs of the occupier in setting the specification. The public may well not have been overly impressed by the environmental impact of the development. Normal expectations were however reflected by the actions of each party and a net value was created in today's terms. As values change this particular compromise may shift. Were it a PFI proposition for a public occupier, the FM and investor roles would have been well integrated, reducing costs and risks to the occupier. Were it an owner occupier development, self-financed, the alignment of values might have been better still in the public's eyes, as is often seen to be the case. When the occupying organisation is owned by its staff, the resulting value alignment can often be detected in its premises. Where government is building for a public service use and is alive to the value of public esteem for a good facility, it will align the design to appeal to its voters' values.

Discussion of value in this publication is based on selective use of the term. To enable sensible discussion in the industry it is best to use agreed definitions of terms and we propose the following:

Value: The balance of benefits and sacrifices involved in a judgement of worth; hence positive and negative value; creation and destruction of value. In most derived definitions the word 'value' is deemed to be preceded by the adjective 'positive'.

Values: Criteria for judging value, subjective to the judge and based on culture, role in the transaction and personal experience.

Value proposition: The business model for a project or investment, setting out the benefits and sacrifices pattern for the proposal and demonstrating the creation of net value to the decision maker.

Best value: The optimum mix of benefits and sacrifices in the view of the decision maker. This may range from the lowest whole-life cost achievable for a standard benefit package to the most benefits available for the resources allocated.

Value for money: A phrase carrying a similar meaning to best value but implying that only money values are significant.

Value added: The difference between supply costs to a business and the income it achieves. This shows its value to its customers. 'Added value' is a synonym. When people speak of adding more value they imply being able to sell more of their service or product than competitors can, or a similar amount for a higher price, as it is more highly valued by customers.

Asset value: The amount realisable by selling the asset or its income stream.

Use value: The functionality and economy of a facility in service of the occupiers' business.

Cost = Purchasers' view of the financial sacrifice involved.

Price = Suppliers' view of what the market will bear.

Image value: The communications content of a building, enhancing the owner's or occupier's status, creating identity or brand and motivating its occupants and users. This can be generated through intrinsic design quality, the fashionability of its designer or other cultural associations (could also be termed perceptual value).

Cultural value: Contribution made to the community of a cultural resource, including that of the artefact as a work of architecture.

Environmental value: The balance of benefits and costs to the natural environment.

Social value: Value created for the public through provision of job opportunities, public amenities, environmental enhancement, tourism potential, area regeneration or improved accessibility.

Value stream: The progression of value-adding steps through a supply chain to deliver value to the customer and to their customer.

Value judgement: A personal estimate of merit, beyond calculated financial value. It may or may not include financial value, depending on that person.

Cost: Purchasers' view of the financial sacrifice involved in a transaction; the outlay involved in providing something for onward sale.

Price: Suppliers' view of what the market will bear; the value represented by an offer to purchasers.

Margin: The difference between achievable price and input cost.

Building performance: The measure of a building's ability to support occupier performance by enabling effectiveness whilst containing operating cost.

Affordability: The degree to which the purchasers' sought-for benefits can be achieved within the resources available. Resource limits may be negotiable if a satisfactory value proposition is presented, but they are often arbitrary allocations not related to payback.

Quality: Attribute bringing value by delivering benefit or reducing sacrifice; qualities are individual attributes delivering value. Poor quality is that which destroys value. The Design Quality Indicator (DQI) attempts to measure quality goals and achievements. It is a useful tool for gaining stakeholder consensus on values and thus on value and the qualities which represent it to them as a group.

Intangibles: Factors affecting value which cannot be measured in financial terms.

Net present value: A way of describing whole life value in today's terms; costs and benefits over a chosen period discounted to the present to represent the investment needed now to cover them as they arise. The word is usually and incorrectly used to refer to the costs alone; that usage should be net present cost.

Contract value: Another example of unhelpful use of the term value as if it were a synonym for cost. It is only value seen from the contractor's view.

4. How built environment contributes value

During its formation in 2002, Be held a defining conference in Rugby which concluded that the worlds of construction, property development and facility management needed to be seen as a continuum we called 'built environment'.

Starting as we did from a construction industry basis, the problems of lack of an industry mission and of customer focus seemed to stem from the detached role of construction in providing customer value.

Customers in the great majority do not seek to buy construction per se; they seek the use of facilities or the creation of assets. They find value in the availability of serviced space, developed and run to support their business or social service. Construction is only a periodic input to meet that need. To paraphrase the zen master Lao Tsu value lies not in the built artefact but in the use of the space within¹.

A value-oriented built environment industry would have as its mission "to add value for customers and society by shaping and delivering the built environment to meet their needs".

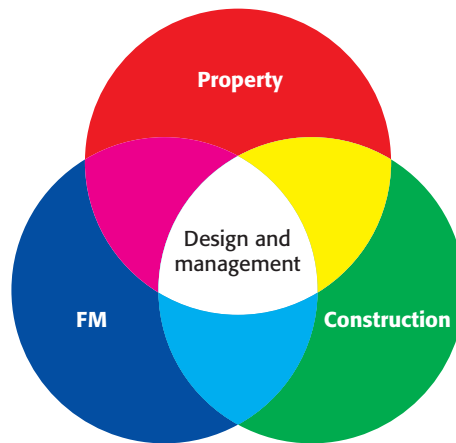
The problem for construction and its attendant professions is that they are remote from their customers' experience of their buildings. They do not often initiate projects nor do they often own or manage properties to support occupiers. Property people initiate and can own and manage, though in an investor's interest not an occupier's one. Facility managers operate buildings for occupiers but usually have little connection to those who specify the product; they must work with what they are given.

These three sub-sectors of the built environment really need to be added together for the value stream to be perceived and enhanced. A value-oriented built environment industry would have as its mission "to add value for customers and society by shaping and delivering the built environment to meet their needs".

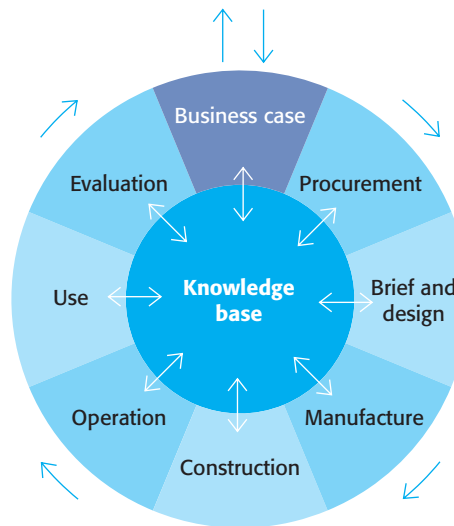
The overlapping circles of property, construction and facilities management represent a whole-life-cycle approach rather than the linear project approach of construction. From the customer or developer comes the case for construction, leading to design and building, hence to management of the working facility and around to reappraisal and modification or replacement.

1. Tao Ching (The Book of Changes) Lao Tsu around 600 BC "The thirty spokes unite in the one centre; but it is on the empty space for the axle that the use of the wheel depends. Clay is fashioned into vessels; but it is on their empty hollowness that their use depends. The door and windows are cut out from the walls to form an apartment; but it is on the empty space that its use depends".

Three economic sectors form the built environment



The life-cycle of the built environment



There is no standard industrial classification for the cluster of property, construction and facilities management. Research work is under way to define their scale and overlap. A provisional estimate is that the three sectors represent 20% of GDP, about £230bn in 2004. Construction is well tracked at £102bn, but of this half is repair, maintenance and improvement (RMI) which is arguably facility management. Design and other consulting services are about £15bn. Facility management embraces 'hard FM', synonymous with construction RMI, but with the addition of security and cleaning. Then there is 'soft FM' – the provision of occupier services from catering to ICT support. Property includes the provision of management, land and finance to develop and manage real estate and to trade in it.

The built environment cluster provides the infrastructure within which the rest of the economy operates. It also provides 77% of the fixed assets of the economy, according to the Office of National Statistics. Whilst half of all capital formation each year is put into built assets, their relatively slow depreciation compared to equipment means that built assets dominate the national stock.

The quality of buildings enables or disables the functional performance of occupiers and determines costs of occupation. The benefits and sacrifices come together, allowing an assessment of value. Modification or replacement occurs when decision makers perceive an opportunity to raise benefits and/or to reduce sacrifices to move the equation to positive value.

The operating performance of the economy and the quality of life of the country's citizens is substantially determined by the built environment.



Examples of performance linked to built environment investment are hard to come by. There has been little targeted research to enable better business cases to be made for investment. This is a priority referred to below. A descriptive outline would include:

- 1.** Productivity in workplaces related to the ability of the occupants to use the latest equipment and layout thinking and to enjoy a healthy indoor climate in economic facilities.
- 2.** Competitiveness of retail and leisure investments based on their attractiveness to tenants and customers, accessibility and operating economy.
- 3.** Speed and effectiveness of hospital treatment, given a cleanable and attractive environment under patient control.
- 4.** High achieving educational establishments in buildings which support effective regimes and build morale.
- 5.** The reduction of transport congestion through adding suitable capacity and management. Such investment also creates locational value on sites made more accessible.
- 6.** Regenerated neighbourhoods, with reduced crime, healthcare need and educational disadvantage following investment in better housing, access to opportunity and a high level of amenities.
- 7.** Expansion of city capacity by investment in infrastructure including water, drainage, electricity and telecoms, that allow occupation of buildings and their effective use.

The symbiosis of transport and commercial life – Tuen Mun Light Rail, Hong Kong.





The new Selfridges building in Birmingham uses many value creating tools, from iconic image to space efficiency through advanced fire engineering.

The built 20% of the economy enables performance in the rest.

This is not to argue that physical facilities and performance are linked deterministically, but that there is synergy between quality in the built and managed environment and the ability of people to achieve their goals. The built 20% of the economy enables performance in the rest.

The built environment sector is interlinked with the rest of the economy in many ways. We know that over half of all energy consumed is used to make and service buildings. A further quarter is used to move around the built environment, with journey lengths caused by the distance between facilities. The energy sector is thus a satellite of built environment. Its uncertain future as regards affordable and acceptable sources and emissions will be largely dependant on how buildings and infrastructure are made, serviced and located in the coming decades.

Water supply, drainage and sewage treatment stem largely from our settlement pattern and our use of water-borne waste. Problems arising from climate change can be tackled at least partly by new build strategies for use of water and handling of waste and drainage.

Transport takes place largely on built routeways. But as construction and maintenance are bulk intensive, it is estimated that 20% by volume of all traffic on our transport systems is construction or facilities related. Development patterns and densities also govern the need for and effectiveness of transport systems.

Information and communication technology (ICT) is embedded in the built environment, with service and location bound together. This is changing as mobile technology spreads, but it too is eventually physical as signals pass into landlines and switch complexes.

All the utilities are therefore an extension of built environment, animating the shell and representing a significant part of operating costs as seen by facility managers.

From the property viewpoint the built environment is a colossal asset. Two thirds of the 77% of national fixed assets of over £5,000bn are our houses, with the rest split between commercial buildings, public buildings and infrastructure. Much of the asset base is commercialised and annual trade is huge. As rent-bearing investment it provides income streams for investors. As mortgaged property it allows people to build up equity. The well-being of the economy is monitored partly against property indicators.

The quality of the total built environment is a large element in people's perception of the quality of their lives. Government control of development and building is legitimised by public demand for it. Indeed, the popular will is to resist the sacrifices created by development generally, whilst wanting its benefits; a classic valuation pairing. When development has been inspirational and well managed over a considerable period in an area then the quality of the location is valued by the public. Historic environments, well conserved, are an obvious example, but recent ones like Broadgate, London and Brindley Place, Birmingham have their admirers also.

Tourism is the litmus test. When people from out of the area pay special visits to experience a built environment it has arrived as a certified, valued 'place'. UK national income from tourism is substantial, testifying to good stewardship of the 'natural', historic and modern built environment. 'Natural' is of course man made also, in the sense that our farmed landscapes are very far from their wild state.

The value of place – Brindley Place, Birmingham.



Broadgate Arena, London draws visitors.



There have been several attempts to categorise value in the built environment systematically, to enable meaningful discussion and balanced consideration. Value can be subdivided in many ways as noted in chapter 2, each highlighting the interests of particular stakeholders.

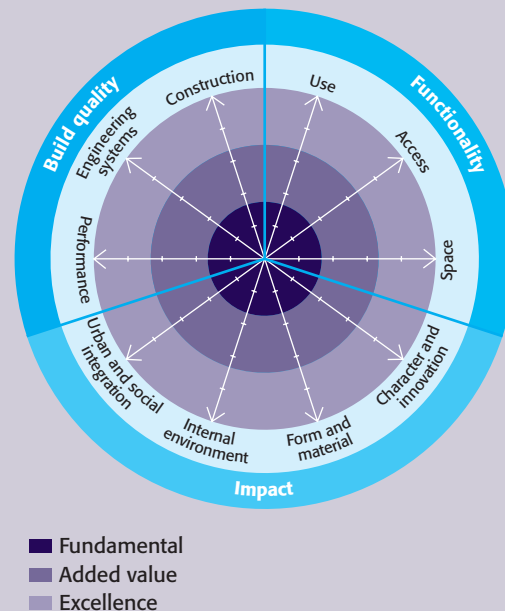
The Design Quality Indicator

(See www.dqi.org.uk)

In 1999, the Construction Industry Council (CIC) set itself the challenging task of producing performance indicators for the design of buildings, and to develop a tool that could measure and benchmark the design quality of constructed buildings. One outcome of this work has been the development of the Design Quality Indicator (DQI), a comprehensive intellectual framework that identifies the attributes of buildings that constitute high design qualities. Based on the ideas of Vitruvius, CIC identified the three quality fields of 'functionality' 'build quality' and 'impact'. Each topic under these three main indicator sections is separately rated against a group of about ten questions. The more overlap there is between these three quality fields the higher the overall quality of the constructed buildings.

The DQI can be used by all stakeholders, including public and private clients, developers, financiers, design firms, contractors, building managers and occupants.

The DQI tool provides a questionnaire which is a short, simple, non-technical set of statements that collect the views from all stakeholders by looking at the functionality, build quality in and impact of buildings.



1. Functionality is concerned with the way in which the building is designed to be useful and is split into use, access and space.

2. Build quality relates to the performance of a building fabric and is split into to performance, engineering and construction.

3. Impact refers to the building's ability to create a sense of place, and to have a positive effect of the local community and environment. It is split into character and innovation, form and materials, internal environment and urban and social integration.

All projects exist within a context of finance, time, and environmental resources and these are high on the agenda of all building commissioners, financiers and developers. Good design quality enables the better deployment of these resources and can add value. The DQI addresses this by advising professional input, and it has been found that the use of a DQI facilitator has proved particularly important at briefing stage.

The DQI operates with a dual weighting system which firstly allows results to be visualized depending how all the respondents judge the success of various aspects of the building. The second level of weighting addresses:

Fundamental factors which every building must achieve in order to function.

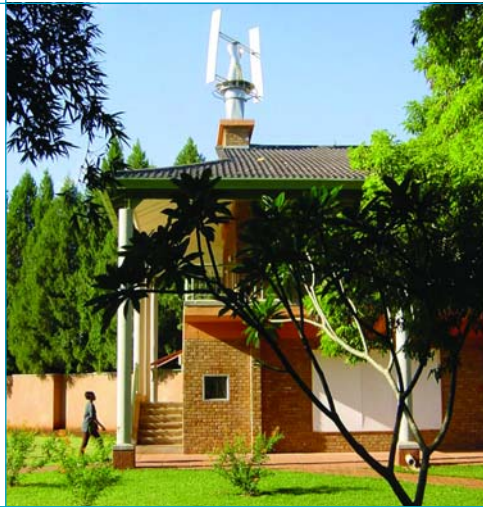
Added value starts to indicate that the building will add value to the activities for which it is intended.

Excellence is achieved when the design sparkles as a whole by satisfying the fundamental factors and adds value.

The Design Quality Indicator (DQI), developed by the Construction Industry Council (CIC), groups value attributes under the three traditional descriptors of architecture: Functionality (Vitruvius's 'Commoditas'); Build quality ('Firmitas'); Impact (a widened description of Vitruvius's 'Venustas') (see DQI diagram opposite). Functionality is synonymous with 'use value benefits' while 'use value sacrifices' and their minimising are contained in build quality. Impact embraces all social, cultural, image and environmental value areas, the least measurable aspects. Asset value is not addressed by the DQI.

Sustainability as a discipline uses the 'triple bottom line' to categorise attributes which must all be sound for a built environment to be sustainable: (Social) equity, environmental and economic, three Es, or 'people, planet and profits', three Ps, as Shell puts it. Economic sustainability implies positive use, image and asset value; Social sustainability requires positive social and cultural value; Environment sustainability requires resource efficiency and emissions at levels with which the natural environment can cope indefinitely. This last category is very far from achievable yet.

Ultra-low impact design for the International School, Harare, Zimbabwe, uses local materials and natural energy.



The case for investment in built environment, and for the qualities it should have to deliver the best benefit-sacrifice ratio (best value), would be far more easily made if there had been years of systematic research and feedback on what works and what it costs to run. The absence of customer, academic and practitioner investment in this knowledge is startling, but understandable given the past motivation of participants. We know the first cost of everything but the value of nothing, thus living in what Oscar Wilde defined as a state of cynicism¹.

Professor Peter Barrett of Sheffield University set down a process for moving the industry to a value basis at the second Revaluing Construction conference in Rotterdam, March 2005². He noted that value is created jointly by the whole team and that it must be equitably distributed if it is to be maximised.

Steps to achieve this would be:

1. Accept an holistic model of construction (closer to the Be definition).
2. Create a shared vision of the potential and its rewards for all involved.
3. Consider the relationship of market and social capital to overcome market inertia.
4. Capture knowledge from product and process in use to inform improvement.
5. Use continuing professional development programmes to evolve the attitudes of participants.
6. Create a better awareness of and accounting for long-term benefits from built environment to balance the short-term disruption most often remembered.
7. Promote awareness of the full value delivered to society by the built environment and its development and operation.

Barrett saw this as a looping process of continuously rising effectiveness.

1. "What is a cynic? A man who knows the price of everything, and the value of nothing." Oscar Wilde, 1892

2. Revaluing Construction 2005 – The Challenge of Change in Construction in Rotterdam was a follow-up to the first Revaluing Construction conference held in Manchester in 2003. The 2005 conference reviewed examples from 11 countries of change programmes, case studies and research findings. Proceedings at www.rc2005.org

5. How value can be defined for a project

The brief for a project conventionally consists of a list of requirements, and a statement of constraints, most notably of cost and time.

Advisors to the client produce a first draft which is then discussed with the appointed supplier's consultant team. A final statement of requirements usually emerges from feasibility study of what could be achieved in the circumstances and on that site. The brief-giver is usually the paymaster for the project and the paymaster's values are infused into the brief without that being recognised or questioned.



Corporate values – Scottish Widows HQ, Edinburgh

Several models of project procurement can be differentiated by reference to how the paymaster's values are evident and how these are modified, if at all, by balancing forces. A commercial development has a very simple value model.

The developer will judge the worth of a project by calculating its achievable asset value and comparing it to likely cost and the level of risk involved. The conventions of the letting market and of tenants' generalised requirements expressed by agents will speak for unknown tenant stakeholders. Town planners and building control officers will apply the rules of expressed public interest to the proposal. Funding partners will overlay their targets on the developer's thinking. The asset value calculation dominates over social and use values, though they are represented formally. Image value is important, but that image is aimed at the supposed responses of tenants and property world peers.

An owner-occupied development is likely to be based on use value. There may be dialogue between occupier management and user groups over what constitutes use value and there is usually a compromise struck between what users say they want and what the owner representative feels can be justified.

Asset value may well be a factor, but only a balancing one: owner occupiers often see use value as well above asset value levels. Social value above planning regulation level will be incorporated to the extent that it also represents image value for the occupier in the eyes of its investors and customers, the corporate responsibility concept.

A public building has the widest potential pattern of stakeholders. A directly commissioned public building is likely to major on user value and social value, with little concern for asset value. Landmark image value may be considered appropriate, especially if lottery money is involved. The compromise between user customers and the paymaster is likely to be fraught. If however the PFI is to be used, it has been typically harder to hear the voice of the user. Asset value may be essential via a fallback use in the event of the public tenant moving on. The performance of the project as an asset will be central even if the tenant is locked in.

The battle for 'affordability', between the unitary payment bid and the amount the occupier can bear, will moderate use and social value and image aspirations too. This cultural mismatch is the source of most criticism of the PFI.

Surveys of customer satisfaction with the construction industry regularly indicate disappointment with the product received. "They didn't really listen" is the complaint. Communication between client body and supply team is limited in effectiveness by the skills on both sides and by the processes they use.

Developer values – Plantation Place, London



Public values – Walthamstow town square, London.

Outside of the ranks of the very few regular customers, there is scant client understanding of how real estate and facility quality bring value to their business. Requirements statements are therefore typically generic. Construction consultants, both architects and quantity surveyors have limited insight to offer. Architects can bring relevant experience and a professional agenda for quality in the artefact whilst quantity surveyors can point to the budget level usually associated with requirements of that kind. Neither is necessarily dealing with value in customer terms.

The largest gap in skills identified by Be in exploring value has been in consultancy. This does not just point to those who call themselves consultants but refers to the skills in analysis of customer need and the establishment of an appropriate 'value proposition' for the project.

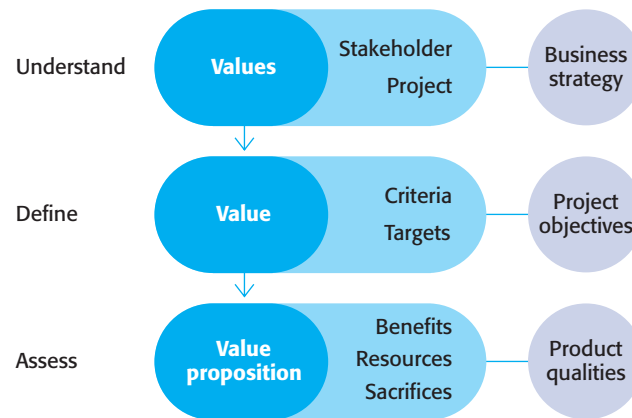
The largest gap in skills identified by Be in exploring value has been in consultancy – that refers to the skills in analysis of customer need and the establishment of an appropriate 'value proposition' for the project.

Knowledge is required of the occupier's business and its drivers, the effects of solutions on customer performance, the potential of the construction, development and facility management industries to realise useful solutions and the management of risks involved in progressing a viable project. Several professions own parts of this knowledge for any particular client type but there is little evidence of holistic appreciation or the ability to orchestrate the specialists. A 'built environment management consultant' is one way of describing the missing skill set. There is also no serious body of evidence of the relationship between occupier performance and building design and management.

Whilst this process may look like a rewording of conventional briefmaking and gateway assessment, it is novel in its emphasis on stakeholder involvement and in looking behind factual requirements. The most successful projects result from pro-active, inspirational clients and it is in uncovering what would really be valued by client stakeholders, and the authority that must permit it, that high satisfaction levels are achieved. The team facilitating the analysis and proposing solutions have to use strong communication skills, both to listen and debate well and to bring proposals alive for stakeholders so that when they see the final product they are not surprised, just delighted.

Work supported by Be at Loughborough University, the Value in Design (VALiD 2005) project, has created a tool for defining project value propositions. Developed through facilitated workshops of representative people across the customer-supplier chain, the 'VALiD' approach is to Understand, then Define, then Assess as the project progresses.

Understanding defining and assessing value



VALiD: an approach to value delivery that integrates stakeholder judgement into the design process.

(See www.valueindesign.com)

Value delivery is the key goal of all projects, but do all stakeholders in today's complex project relationships share a common vision and understanding of value? We need ways to help stakeholders understand and express value in their own terms, then share and align these expectations by making assessments during design and in use.

VALiD, Value in Design, comprises a suite of simple, practical methods that can be customised to engage stakeholders throughout the project process. It captures peoples' judgements and uses them to understand stakeholder value positions, to inform the design process and to demonstrate project performance on completion.

The use of VALiD can bring benefits including:

- A clear definition of value to each stakeholder
- Integration of stakeholder values into the business case
- Design decisions made with awareness of stakeholder values
- Supplier understanding of value can be maintained through design, construction and into use
- The transparent approach builds confidence and focuses providers on key areas requiring attention

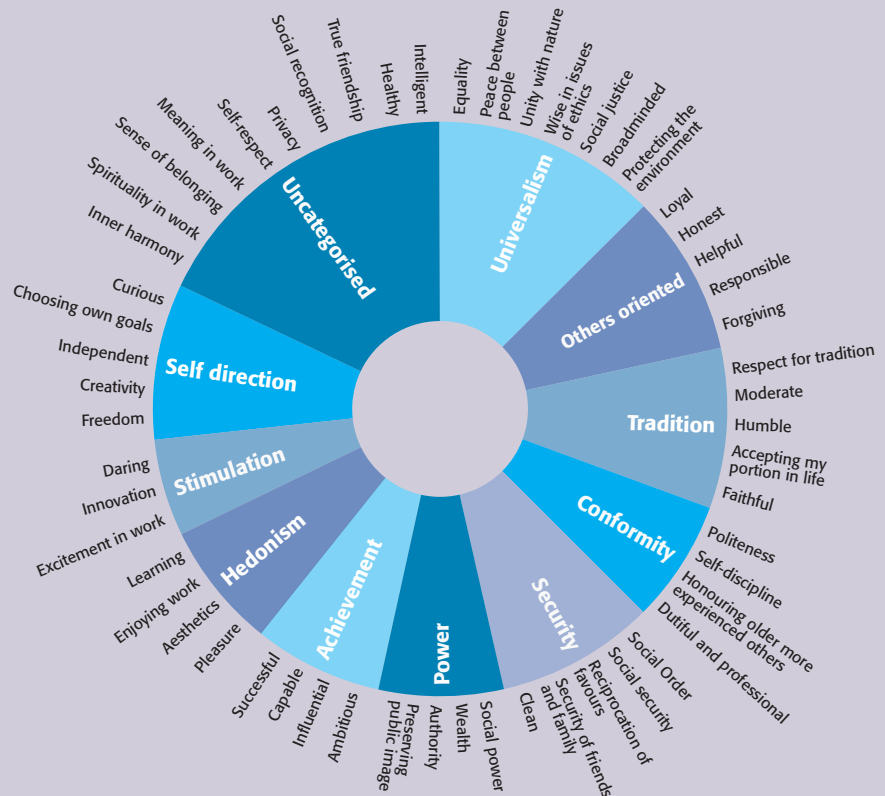
Case studies of effective use can be found on the VALiD website.

The VALiD framework

The VALiD framework has three elements:

Understand values – Define value – Assess value proposition.

Value survey model



1. Understand values – contains methods for helping stakeholders understand their own values, express them and share them. Each stakeholder's strategy should be informed by their organisational values. By seeing the values of others expressed, a common purpose can be defined more easily. VALiD provides a value survey tool.

2. Define value – the value brief is stated for each stakeholder group by setting an acceptable performance range for all criteria on a 'dashboard'. The dashboard bars show what stakeholders want to get and what they are prepared to give up to get it.

3. Assess value proposition – as the design emerges, its proposition can be judged by stakeholders against their dashboard targets. This then enables informed discussion to address any underachievement. The process helps stakeholders appreciate the effects of physical product on long-term business performance and costs, thus addressing both traditional efficiency and the harder issues of effectiveness.

Six principles form the basis of VALiD:	■ Value delivery is the goal of all projects ■ Value is subjective and is based on stakeholders underlying values ■ Provider and customer stakeholders in a project team each have their own understanding and expectations ■ Successful projects deliver value for all stakeholders ■ Value is judged by each stakeholder and results aggregated to form a project view ■ Effective value delivery requires ongoing dialogue between stakeholders to negotiate appropriate compromises
The six value medals	Lateral thinking guru Edward de Bono has recently published a thinking tool for value assessment which is a useful complement to the VALiD and DQI methodologies¹. Following the pattern of his 'six hats' approach to thinking around all aspects of an issue, he suggests six value dimensions to be considered in all propositions: Human values (gold medal); Organisational values (silver); Quality values (steel); Creativity and innovation values (glass); Environmental and social impact values (wood) and perceptual values (brass). Each 'medal' is assessable as to its strength or weakness in the proposition under consideration. The pattern of the six then suggests the overall strength of any idea in values terms. Whilst de Bono is not discussing built environment per se, he is discussing design. "You can analyse the past but you have to design the future". "Design means putting known things together to create new value"; Compared to the Design Quality Indicator (page 23) his 'medals' fit well; Silver fits onto functionality but also includes asset value; Steel fits onto build quality; DQI impact embraces gold, glass, wood and brass medals.

1. The six value medals, Edward de Bono. Vermilion, London, 2005. ISBN: 009189459X

6. The ratio between building cost and business value

In 1998 the Royal Academy of Engineering published a paper called 'The Long Term Cost of Owning and Using Buildings'.¹ One of its four authors was RCF (later Be) council member Richard Haryott of Arup.

The paper argued that capital cost is over-emphasised in projects: the real focus should be on serving the occupiers' effectiveness and containing ownership costs.

Using construction cost as 1, the 20 year cost of owning and using a building can be 5 times as much for a generic office building, whilst 20 year salaries of those using the space can be 200 times as great for the City of London example used. By inference, the right level for construction cost is one which optimises occupier performance and ownership and operating costs.

The paper had a galvanic effect, especially on public sector thinking about best value. The immediate and incorrect assumption was made that the 5 represented operating costs alone. People talked of lowering the '5' to '4' or the '200' to '199' by design and thus gaining a free building. In fact the '5' in the illustration consists principally of rent, the amalgam of construction and land costs, finance to pay for them, development costs and profits. Only a rump, typically a quarter to a third, is actual operating cost. All occupiers pay rent or its equivalent: opportunity cost on their own capital; use charges from the public sector; a PFI unitary payment. A typical, uninflated, 25 year PFI payment is often five times the capital construction cost, but with only a quarter of it providing FM services. It is possible to make a case for better construction standards to reduce whole life costs, but the use of borrowed money for additional capital makes payback calculations more taxing. (continued on page 28)

1. Raymond Evans, Richard Haryott, Norman Haste and Alan Jones, (1998) 'The Long Term Cost of Owning and Using Buildings'. London: Royal Academy of Engineering

1:5:200. Building costs against business benefits	The long-term costs of owning and using buildings was the subject of a paper published in 1998 by the Royal Academy of Engineering. This paper asserts that against the background of the cost of ownership and maintenance of buildings, the optimisation of productivity of the people creating wealth or providing a service in that building is a source of significant competitive advantage, or significantly improved service. Attention must therefore be given to designing a building which enables people to give of their best. The nature of work and the way that people interact in the workplace are influenced by changes in working practice, in technology, and personal expectations of the staff themselves. Demands are therefore placed on buildings to meet new and changing requirements. Developments in construction procurement methods such as the Private Finance Initiative (PFI) have introduced the construction industry to the need for a 'whole life cost' approach to the procurement of various types of public buildings, including amongst others, hospitals. Understanding the interplay between conflicting requirements and the surrounding issues is essential for both potential owners and managers of buildings, as well as for people involved in the production and commissioning of new buildings.
An example of a City of London financial services building illustrates the concept: Construction costs 1 Rent, maintenance and building operating costs (20 years) 5 Staff salaries and business operating costs (20 years) 200	The paper illustrates a guide for the whole life cost of operating and owning commercial office buildings. An example of a City of London financial services building illustrates the concept: Construction costs 1 : Rent, maintenance and building operating costs (20 years) 5 : Staff salaries, business operating costs (20 years) 200. The paper states that similar ratios might well apply in other types of buildings, and that there is a good deal of evidence that the building itself, if properly designed and managed, can lead to significant improvements in productivity. The objective of this paper was to highlight the main issues that arise, so that in the medium term improved systems and methodologies can be developed in order that better and more objective decisions can be made at all stages throughout the life-cycle of any building. Not only could similar ratios such as the one outlined be applied to other types of buildings, but other similar ratios could also apply within different office buildings, but with large differences between initial cost and subsequent costs being an important consideration.
	The split between the respective costs throughout the life of the building, combined with changes in use, technology and other operational aspects, lead to complex problems and conflicting pressures when trying to improve the productivity of a given building. These issues must be addressed on a whole life cost basis to ensure that there is an appropriate balance between the conflicting requirements. The cost of property is often judged in terms of the rental cost per square metre. The paper suggests that it might be more appropriate to examine the cost of occupation in terms of the people that are able to occupy the space or in terms of the output or productivity that can be achieved from that area. Optimising the productivity of people working in buildings is influenced by a range of complex and competing issues. The solution adopted must consider a wide range of issues including the whole-life-cycles cost and, most importantly, the actual cost and efficiency of the business to be conducted within the building. Investing in a building to improve productivity would appear to offer a sound investment in many circumstances and may have a key role to play in achieving competitive advantage for the occupier of the building.

'The Long Term Cost' paper started a number of arguments about the basis for the figures: whether they were credible: whether they should be discounted; what is included in each category. These recent arguments have overshadowed the principle message of the paper that concentration on first capital cost is not optimising use value: support to the occupier and containment of operating-cost. Study by the Be Value Task Group has come to the view that there is merit in knowing more about key cost ratios as benchmarks and that we can expect wide variation between building types and even individual examples of the same type.

The recommended indices for comparison are: Initial capital cost (C), including design but excluding site and finance costs; the hard and soft facilities costs over a rational period: lease length or PFI agreement period (F); Staff costs or better, value added over the period by the occupying organisation (VA). These figures capture the elements whose relationship can be productively changed by better planning. So '1:5:200' becomes C:F:VA. We exclude finance effects in the analysis as they are not resource uses and to allow figures to be compared over a long period.

Looking at the entire economy, new non-residential construction, i.e. that housing economic activity is about 3% of GDP. Wages and salaries are at least 70% of GDP. Value added approaches the total GDP.

So a ratio of 1:25 to 30 is credible between annual construction (C) and value added (VA) on a rolling basis. C to F (annual facilities costs) ratios of 1:3 to 5 are credible for office buildings where F includes management, operating, furniture, churn and change costs. So a central ratio for offices of 1:3:30 is possible for C:F:VA. In discounted terms, at 7%, the ratio would be 1:1.5:15.

To illustrate the scope for further exploration and for variation between sectors, an estimate for the ratio where an accountancy basis rather than a resources basis is used suggests a ratio of 1:0.6:6 for offices in London. Here the construction cost is experienced as annual rent and rates. Meanwhile the National Health Service Estates estimate for its resource ratio is 1:4.5:42, undiscounted.

Commercial development with a view to corporate performance – Pfizer, Torrey Pines, California



What was really interesting in 'The Long Term Cost' was the relationship between lifetime building costs and employee costs. Whilst the ratio differs between building types it is always true that staff costs will be an order of magnitude greater than facilities ownership and operating costs. The basic message is that facilities should support occupier performance and that minimum cost facilities may not do that.

That support can take many forms:

- Creating floorplates which support the most useful organisational patterns
- Optimising indoor environment for occupier health
- Providing socially effective circulation and amenities to optimise staff interaction
- Building in flexibility for low cost change and churn and value to alternative users
- Providing a degree of energy autonomy through daylighting, high insulation, renewable energy harvesting or on-site generation
- Designing for ease of security, cleaning and maintenance access
- Projecting an image which supports the occupier's and owner's corporate responsibility stances

Be drew attention to two further terms which could be added at either ends of the ratio. We highlighted the design and management cost within the capital spend, typically 0.1: one tenth of the cost. At the other end we pointed to the value added by the occupier organisation, which would typically be 25-100% more than the salary costs figure(s) used in 'The Long Term Cost' paper. The effort put into optimising the design (D) levers directly on the VA, value added by the occupier, to a ratio of 1:300, where C:F:VA is 1:3:30. Seeking evidence for this relationship in a variety of building types is a core part of the research being commissioned by Constructing Excellence in the Built Environment.

Anecdotal evidence is already useful. A paper on the comparative effectiveness of several research and development laboratories suggested that there would be benefit in a fresh view of designs and outcomes. This work led to the development of tools for practitioners.

Comparisons of healthcare productivity between old and new facilities for the same staff team showed that the saving in costs per patient over a year was greater than the charge for the new space.

There are also stories of rehoused schools whose exam results went up the league tables as their morale, health and methods are better supported. Of course it is people that produce the results, but the NHSE studies, for example, suggested that patients saw the (same) staff as kinder and more effective in their new setting.

Two conclusions are of immediate importance, before research on ratios across major sectors is done. Firstly, the value of front end input, into project definition, briefmaking, design and delivery planning is very high. Increased economy in construction costs alone can sometimes justify additional design effort, as for example when a 3D CAD model is prepared to save co-ordination costs later.

Additional effort to understand how value is created for the occupying organisation and how costs are created in use should repay many times over as better design strategy is followed. The second idea is that of pulling value through the construction and development process from the facility management end of the chain. The normal relationship is that the FM team works with what they are given and does not contribute to the design or specification of their facility. They also do not study the effectiveness of the facility for its users. A value-pulling reversal of that model would be for the facility manager to be focussed on owner and occupier performance, managing for it and collecting in-use data, feeding it forward to future projects. Previous experience would be used to guide the design team for a new building as to the configuration and specification which would best enable occupier and FM performance. In this model the facility manager becomes the brief writer or facilitator, defining the optimum investment pattern. It is a VA:F:C or even better VA:F:C:D.

Experiments with this model include 'soft landings', led by Be member the University of Cambridge Estates and Building Management Service. This approach requires members of the design team to occupy a new facility through its commissioning and early occupation stages, gathering feedback as well as easing the occupiers into their new base. The learning achieved is presumed to go into the consultant's knowledge management database to increase their ability to design for future user and FM effectiveness. The occupancy satisfaction level is clearly enhanced even in the learning projects. They get the soft landing.



The Japanese concept of Lean Thinking is based on 'pull', where a super-responsive manufacturing team follows customer demand rapidly to deliver what adds value for customers, cutting out non-value adding activity or 'muda'.¹

Construction currently 'pushes' buildings at customers, particularly through commercial development. There is far too little research on how things work and a reluctance to inquire 'how it's going' on the part of consultants in case the answer is embarrassing. Clients are not all Cambridge who know they will benefit by developing the skills of their regular suppliers and the feedback stage (M) of the RIBA plan of work has long ago lapsed for lack of client interest. Study of VA:F:C:D coupled with more emphasis on long-term relationships, could allow 'pull' based working to emerge, delivering far more customer value.

1. 'Lean Thinking – banish waste and create wealth in your corporation' James P Womack and Daniel T Jones, 1996 Touchstone Books London ISBN 0-684-81976-7 Lean thinking is based on five principles: precisely specify value by specific product, identify the value stream for each product, make value flow without interruptions, let the customer pull value from the producer, and pursue perfection.

The search for effective laboratory environments (ELE)

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Despite the fact that the designers, consultants, and suppliers engage with pharmaceutical clients on a regular basis to develop and deliver state of the art facilities, it is commonly recognised that knowledge of the underlying culture(s) and the day-to-day activities of all those involved in pharmaceutical research is worryingly limited. Lab design guides, where they exist at all, tend to be schedules of prescriptive spaces, furniture requirements, services and so on. Thereafter the development of a project brief is one of customising those standard recommendations to the needs of specific users, engaged in specific areas of research, undertaking specific activities. Given this is it any wonder that minutiae becomes the common form of currency during briefing? Consider also that this pattern of design in the pharmaceutical sector has hardly changed for decades, yet in stark contrast, science itself is changing rapidly and fundamentally. Why then are we surprised when changes become necessary almost as soon as labs are occupied or that expensively produced facilities not only quickly become redundant but the cost of change often exceeds the cost of initial fit out?

It was with these questions in mind that Adept Management collaborated with two of the world's largest pharmaceutical organisations, GlaxoSmithKline and AstraZeneca, along with a major supplier of facilities, AMEC, to evaluate how laboratory spaces can provide real value. The work involved analysing a variety of laboratory facilities and their users to identify those factors that impact upon the successful achievement of scientific goals. The data gathered provided a rich picture of the drug discovery process and, whilst some findings came as no surprise (reinforcing existing understanding), others overturned widely held presumptions on where and how value is delivered in pharmaceutical design.

Findings

Whilst there are plenty of metrics for efficiency, there appear to be no means of measuring effectiveness. We have, however, developed a comparative means of profiling it and recognising the balance of factors that both underlie and facilitate effective working. In simple terms, if drug discovery is something of a gamble, dependent on multiple variables, we have managed to develop ways of improving the chances of being lucky.

Using this perspective, laboratories can be reframed as much more than prescriptive techno-places designed to satisfy regulations and codes of practice; they become instead flexible areas (capable of accommodating multiple different activities) and supporting systems that sustain scientific communities and promote a culture of collaborative exploration.

Viewed in these terms, the profile of an effective laboratory environment demonstrates a balance of all the components appropriate to the nature of the work being undertaken – underpinned with a set of underlying generic principles.

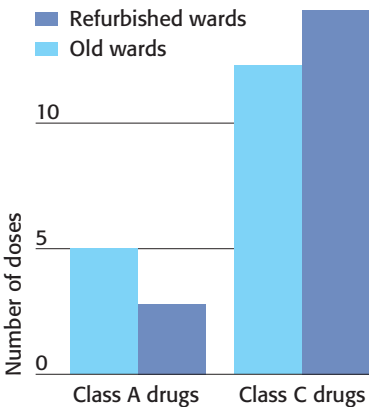
Summary

The tool-set derived from this research is now being applied by the collaborating organisations in the design of new, and the re-configuration of existing, laboratory spaces. Moreover, the tools are also being used to enable users to understand how they currently work; thus creating a shift in mind-set – a catalyst for promoting change (through a process of negotiation and self-awareness) via evidence-based decision-making.

This is proving valuable as a mechanism with which to challenge the users and the space, enabling more effective uses of facilities and resources to be developed and implemented.

The effects of architectural design on patient health outcomes

Levels of analgesic medication



Professor Bryan Lawson and Dr Michael Phiri at the University of Sheffield carried out some research¹ on behalf of NHS Estates involving a field investigation of wards at two hospitals, one in general medicine at Poole Hospital and one in mental health – South Downs Health in Brighton. Both hospitals had development programmes involving new and improved accommodation which were handed over during the course of the studies. In both cases the new wards took patients with the same pattern of referral and who underwent the same treatment regimes as those in the older accommodation, and in many cases the staff were also the same.

The researchers set out to explore whether the architectural environment of the hospitals could contribute to the treatment of patients and significantly influence their health outcomes. The team examined patients’ reactions to their environments and the health outcomes that resulted from their treatment within them.

Summary of findings

- Patients in the kind of accommodation they prefer appear to do significantly better than those who are not
- Patients feel very strongly about the issue of community versus privacy and have strong preferences for either single or multiple bed accommodation
- In the mental health sector patient treatment times were reduced by about 14% in the new accommodation
- In the general medical sector non-operative patient treatment times were reduced by about 21%
- There is considerable evidence that an overall improved atmosphere and quality of life may be one of the benefits of better places
- Patients appear to make significantly better progress in the new purpose-designed buildings than in their older counterparts
- Patients rate both their treatment and the staff caring for them more highly
- In the mental health wards the number of serious cases of verbal abuse and threatening behaviour were significantly reduced
- Patients were required to spend significantly less time in secure accommodation
- In the general medical wards patients required significantly reduced levels of Class A analgesic medication (see diagram left)
- Most of the architectural features apparently responsible for these benefits appear to be generic place-making features rather than hospital-specific factors
- Having personal control over their immediate environment is important. Patients generally show a high sensitivity to noise levels which can increase blood pressure and deprive patients of sleep
- The patient treatment time savings alone amount to annual revenue savings of nearly £2000 per bed-year at Poole (compared with the annual capital charges of £2800), and nearly £7000 per bed-year at Brighton (compared with the annual capital charges of £4800 – assuming depreciation over 25 years and 6% interest rates).

In the case of Brighton the patient treatment time savings exceeded annual capital charges by 46%. At Poole, the revenue costs will exceed the capital costs in the second year of operation and at Brighton, this will happen in the first year of operation!

1. ‘The architectural healthcare environment and its effects on patient health outcomes’ a report on an NHS estates funded research project by Prof. Bryan Lawson and Dr Michael Phiri, University of Sheffield, in collaboration with John Wells-Thorpe (Steering Group Chairman), South Downs Health NHS Trust, Poole Hospital NHS Trust and NHS Estates. The stationery office 2003 ISBN-0-11-322480-X www.tso.co.uk/bookshop

Soft landings

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When construction work on a new building reaches completion the contractor hands over the keys to the proud new owner and leaves site: the new owner moves into the building and carries on with his business. This simple statement masks a process which can be a source of immeasurable frustration, much of this being caused by the users' understandable lack of knowledge associated with systems provided in the building to control the working environment. Soft landings was conceived to assist the process of easing the users into their new building and to ensure that they obtain the best possible performance from it to support their business.

Soft landings identifies key areas of the building process and post-occupation period when activities should be given proper attention and value. Many of the functions identified are already an established part of the briefing, design and construction process but their importance is stressed and responsibilities identified.

Although soft landings is centred on the handover process from contractor to users, the document starts at the project briefing: certainly no project will be a success without due care at this important stage. The document aims to define user briefing responsibilities alongside those of the designers and to set environmental targets through workshops which call on historical experience as well as design intent. This ties in with later stage requirements for performance monitoring: The industry is not renowned for using performance feedback from past projects to improve product quality.

Activities are identified pre-handover and the major item is training. It is important that the users know how to operate their building and all its services systems. Not only should the training be adequate in depth and be delivered by competent trainers, but the users need to ensure that the right people in the user organisation receive the training, and not just one person. Other areas identified pre-handover set the scene for 'customer care' to be demonstrated post-occupancy by the contractor and designers, including knowledge of the occupier's migration programme and establishment of a visible presence for post occupancy help.

Post-occupancy tasks are related to technical help, covering ongoing training, user meetings, all designed to help the users to master the features of the building. Longer term input, up to perhaps three years, becomes less demanding in terms of time input, but includes systems monitoring, to ensure that the building meets its energy targets. In this vein the soft landings document makes a case for optional inclusion of a financial incentive or penalty, related to the building performance against targets set. This feature of the soft landings process has not been accepted with the same enthusiasm as the rest of the initiative.

Adoption of soft landings is a useful tool alongside the contract to add customer care and performance monitoring to an industry which has not given such factors a high priority. It requires a change in construction mindset which is now happening but a long list of outstanding defects left to the end of the Defects Liability period will never engender the soft landings ethos.

The research and eventual production of soft landings was supported by a wide range of companies and sponsored by the University of Cambridge Estate Department.

7. Integrated solutions to providing value in the built environment

Value accrues to occupiers of buildings not simply through their existence as artefacts but through their use as assets. Occupiers value the use of buildings rather than the buildings alone.

Thus a building needs servicing and managing in order to provide value. It also needs to be optimally located, financed and designed to serve its occupiers optimally. This is a complex product for customers to buy, a combination of product and service, involving a broad set of skills. Building occupiers have a lot of work to do to be successful customers and it is not surprising that many seek to avoid the effort. The conventional landlord and tenant arrangement addresses part of the issue, but is sub-optimal in many ways.

In other capital goods markets the concept of 'integrated solutions' emerged over the last decade. For aircraft, trains and railway systems and computer services there are now markets for the supply of externally financed, designed, assembled and operated systems for which buyers pay an overall charge. They can then concentrate on core business and buy the expertise of the supplier whilst also avoiding risk. Airlines can lease aircraft which are maintained for them and even operated. Within the aircraft supply the engines can be leased and maintained by the maker rather than being purchased. Rail services can be provided with the train builder taking the availability risk, providing enough train sets to ensure sufficient operable trains with optimum maintenance.

In other capital goods markets the concept of 'integrated solutions' emerged over the last decade.

The experience of the customers of integrated solutions has been that product quality and reliability has risen as suppliers learn about in-service costs and design them down or out. Suppliers have typically prospered as they have predictable income streams rather than lumpy sales.

In construction the concept surfaced in the Private Finance Initiative for public buildings and infrastructure. Suppliers provide the use of a facility for typically 25 years for a unitary payment which rolls up capital and finance cost and facility management services as required.

There are a number of forces acting to encourage integrated solution approaches	1. Customers seeking to offload risk and workload outside their core competencies, to enjoy predictable service and costs and to avoid using their own capital. 2. Customers seeking increased flexibility of space use compared to conventional tenancy, seeking to avoid long leases and upkeep or reinstatement obligations. 3. Suppliers seeking better financial performance through more stable income streams for which the market will assign a higher price-earnings ratio. 4. Suppliers seeking to differentiate themselves in the market, offering unique solutions to a particular customer and becoming a 'market of one' in Porter's term¹. 5. Regulators seeking to decrease environmental impacts by requiring recycling by the original supplier, thus making it attractive for manufacturers to lease items rather than sell them and to design for recycling.
	Flexibility and recycling are issues hardly addressed by the Mark I Private Finance Initiative deal but which are very high in the minds of customers. A bank reports that its in-house facility approach has evolved a '10 year policy', seeking to take short leases with new fit-out and furniture then writing them all off simultaneously. This minimises its needs to maintain or replace anything and provides it with enhanced flexibility in locating and scaling its groups in the unpredictable marketplace. The reciprocal of this tenancy approach is a landlord stance to offer short leases and to refit each time for a guaranteed service level. Financed and managed space with fit-out and furniture would attract such occupiers. Corporate outsources are alive to this demand.
Aligning corporate business needs and property strategy Alan Arthur Former property director for Lloyds TSB, now an independent consultant (alanjarthur@tiscali.co.uk.) "It is crucial to align the project or programme of works to the customer's business plans in terms of occupancy life."	Whilst much effort within the construction industry is expended in cost in use studies, this can be misplaced in value terms. It is crucial to align the project or programme of works to the customer's business plans in terms of occupancy life. This is frequently underplayed or misunderstood within corporate culture, yet it should play a significant part in the decisions made by the property team, and assume greater importance throughout the whole life value chain. Even the best property teams can make value decisions on assumed best practice knowledge based on optimal componentry or envelope life, sometimes intuitively, sometimes for a customer who has not been forced to consider the issue. Yet, in this period of burgeoning change, many methods of business need and delivery will be quickly outmoded. Will we be defending our country in the same way in 25 years time? Will retail delivery systems be as we know them in 10 years? I do not have all the answers yet, but I suspect there will be more change than we expect. Pressures on plc's to take a short-term view are clearly understood, but I contend that these issues will affect all clients over time. It is vital that the issues be debated in a challenging environment from the outset. The significance of the debate is particularly pertinent when linked to capital depreciation. Various companies will have different policies in place, but these will always need to be aligned to the operating life of the elements considered. The term can be defined by natural elemental redundancy, excessive use, or term of occupancy lease, whichever is the shorter. When assessing the net present value (NPV) for the business case, the depreciation period can make payback on short lease expiry periods particularly onerous. If the property team have made assumed long-term design and delivery decisions for a short depreciation term, it is unlikely that the project will proceed. More importantly, they have seriously failed to provide competent professional advice to their customer in value terms.

1. 'Competitive Strategy: analyzing Industries and competition'. Michael E Porter, Free Press 1998 ISBN 0684841487

A health service client is concerned that new PFI hospitals will need total replacement of medical equipment in ten years with minimum disruption, just as an aircraft might need a replacement engine or new toilets. The present closed model of integrated supply does not offer this flexibility, 'bricking-in' equipment in the core of the plan with no access strategy.

Integrated solutions in industry¹ started from the core of the 'design and manufacture' skill, where a 'system integrator' pulls together all the inputs needed to supply a market. Typically this integration is extended to providing maintenance and/or operation services, thus feeding back knowledge of how the equipment behaves in use and leading to continuous product improvement. Enabling customers to buy by providing finance then follows. The top layer is then the supply of consultancy skills. These not only help customers define their needs but help the provider to learn from experience and customer response.

"Developing affordable solutions to provide better initial quality and later flexibility will be competitively decisive."

For construction/FM the mental switch from supplying buildings at customers risk to supplying the use of facilities at supplier risk is large. 'Customer focus', as the phrase is, is essential to success in integrated supply yet is a mental leap. The system integrator is usually a constructor for reasons of balance sheet strength and appetite for risk. Yet they have previously relied on the client and their consultants to define what it is best to provide. Consultants have to become fully engaged in the system integration task, representing client need to the supply chain and managing knowledge in the continuous improvement process. Product improvement by design and process improvement by supply chain management are the two aspects of competitiveness which need to interact. Lean thinking: improving process by concentrating on value in the product and eliminating work which does not add customer value, implies seamless working between product and process sides.

Evidence from construction firms moving towards integrated services is that it is a major culture change challenge and requires strong leadership and coaching skills. After several years of PFI some have done well but others badly by not being sufficiently long-term or customer focussed in their thinking. One notable success is the partnership of BP and Bovis Lend Lease to provide filling stations across the world.

It is hard to become a generalist supplier of integrated services. Because customer demand sectors diverge noticeably, the supplier-centred skills of constructors and consultants must be re-oriented. The system integrator role is quite distinct in, for example, healthcare, school building or corporate offices. Insight into customer need and structured feedback systems will differentiate the offer and the skills in the team. Experience and insight will go on being key differentiators for customers. Genuine long-term collaboration between consultants, facility managers and system integrators seems essential to evolving and operating competitive offerings for each sector.

Healthcare patient outcomes depend to a measurable degree on the design and cleanliness of the treatment facility. As yet there is limited dialogue between customer and supplier to define what is best provided. Processes are overly rigid to make briefs, select providers, transfer risk and deliver the product. Flexibility in use, with low patient disturbance, is not currently addressed. Developing affordable solutions to provide better initial quality and later flexibility will be competitively decisive.

1. 'Integrated solutions – the new economy between manufacturing and services', Andrew Davies with Puay Tang, Tim Brady, Mike Hobday, Howard Rush, David Gann, SPRU, University of Essex 2001 ISBN 0-903622-96-3 and 'Delivering integrated solutions', Andrew Davies, Tim Brady, Puay Tang, SPRU, University of Sussex 2003 ISBN 0 903622 98 X.

Building schools for the future, the government's 15 year scheme for replacing all secondary schools, requires long-term partnerships between local authorities and school providers to be established. Once the competitive stage is complete, the remainder of the authorities' programme can be developed in partnership, optimising building effectiveness against costs. A very broad skill-set is needed in the team, across educational, information technology, finance, operation and community involvement concerns as well as design and construction. The new schools will ideally be hubs for neighbourhoods and a key part of sustainable communities.

A primary school at the heart of the community, financed by residential development of part of its site – Hampden Gurney School, Westminster.



Healthcare space – Birmingham's Queen Elizabeth Hospital

Corporate offices are evolving into a range of environments, more dependent on management of space, time and technology than on static construction or location. Retaining investment-grade status will be difficult as occupiers seek less commitment and more service and building operation is required to hit ever higher sustainability targets.

These brief sector portraits suggest the system integrators for each will need to have committed specialist involvement to be successful. Whilst there are common themes visible in all sectors, the supplier mindset has to be put in new perspective for the potential of integrated solutions to be realised.

The relationship between buildings and the equipment they house is a key issue.

"It is our investment in equipment which governs economic growth rates rather than our investment in built environment."

Richard Barras

Richard Barras¹ has suggested that it is our investment in equipment which governs economic growth rates rather than our investment in built environment. Before 1925 growth was building led, but productivity since then has been achieved largely by vaulting increases in equipment effectiveness. Moore's Law of computer capacity increase is a dramatic example.

Intel's co-founder Gordon Moore wrote an article in Electronics Magazine in 1965 predicting that the number of transistors on a chip would double every 24 months. Most experts, including Moore himself, expect Moore's Law to hold for at least another two decades.

However, we usually need to build or adapt buildings in order to be able to use the latest equipment: car use drives highway capacity; the A380 remodels the world's airports; magnetic resonance imaging (MRI) in hospitals requires specialised suites.

Systems are usually interlocked equipment, building and service bundles. Integrated solutions will involve them all, with equipment either dominant, as it is in a railway system, or significant as in a healthcare facility or modern school. The life-cycle of equipment will drive the building life-cycle as adaptation or replacement will follow. The building's own environmental and information systems have life-cycles of their own and will be synergetic with the user equipment systems. We can foresee a recycling model where building and user equipment items are leased not owned and are returned to their makers to recycle in exchange for new.

It is one major option that system integrators may be the equipment providers rather than the building constructors. Siemens, as an equipment supplier, is providing complete hospitals to China. Microsoft could be a school provider. BT could provide serviced and mobile office environments. The challenge is to see customer value and integrate suppliers to meet it.

1. Barras R, (2001) 'Building investment is a diminishing source of economic growth': Journal of property research, 2001, 18(4) 279-308. Richard is senior partner at Property Market Analysis and visiting professor at The University of Reading.



An equipment-led project, but with cultural goals too – BBC 'Mailbox', Birmingham.

8. Actions for all

If customers for and suppliers of the built environment acted to seek long-term value, optimising benefits and sacrifices, there would be significant gains for all stakeholders.

Customers could expect their performance to rise in value-based facilities; designers and constructors could expect value-linked reward to exceed that based on cost; the public could benefit from a rise in the quality of life and the sustainability of their lifestyle. However, this enticing situation is a long way off. Best value is not often a short-term concept and for the majority of customers the effect of their facilities on their performance and image is 'below the radar': invisible. The rise of value-based ways of thinking and working will be largely incremental. In these conclusions we suggest actions for stakeholders and an agenda for Constructing Excellence to pursue in support.

Customers

At the head of the supply chain, customers will need to 'pull' value through it. They first need to become more aware of the subject. Customers' client representatives and their facility managers should undertake systematic recording of facilities costs and analysis of business performance related to facilities and real estate issues. They should understand their users' and customers' needs from facilities. A benchmarking club to propose standard measures (like VA:F:C) and enable customers to compare themselves would be excellent, probably with chapters for each customer sector. New projects could begin by checking the benchmarks for similar facilities and setting targets based on relevant values. A voice for property and facilities matters needs to be on the board of any organisation, linking built environment issues to other organisational enablers of performance in the organisation's perspective on the Excellence Model or Balanced Scorecard.

Facility managers

The discipline of FM needs to rise in status and rigour, developing a body of knowledge on benefits and sacrifices involved in supporting occupiers of all types. For example, healthcare estates managers need to see themselves as being in the healthcare optimising business, not just in a cost-minimising field which can drive down the performance of the hospital for the community. Academic research with FM practitioner involvement is needed to build up the body of knowledge which will empower facility managers to help their customers achieve full value.

Consultants

We have identified a consultancy gap, a lack of ability to help customers to frame their requirements in a fully productive way. Designers and cost consultants tend to presume customers know what they need and to start work from familiar models. Being paid on a cost-derived basis, either in relation to project cost or on a lump-sum basis, drives down the potential for innovative thinking. Consultants should devise value-based reward structures suitable for each sector of the market, to reward themselves for developing higher performance solutions based on better brief making.

Roger Zogolovitch

Architect/developer,
AZ Urban Studios Limited
(roger@azurbanstudio.co.uk)



1 Centaur Street, London SE1 –
A development where consultants
shared value-based rewards.

Clearly fixed cost is important in the contractual delivery chain, but it disables the opportunity to widen the scope of the project to enhance value. The best way of understanding value based rather than cost based projects is by using an example of a journey. A value based journey sets out with an ambition but no clear destination, the cost based has the destination as the aim without any interest in the journey. Some would state ambition without destination to be a waste of time and others a destination without consideration of the journey a waste of opportunity. We need to have access to both types of experience.

The benefits of the 'value' regime over the familiar and historic 'cost' environment seem intangible and unproven. The key to making this change in thinking acceptable lies in understanding the nature of the collaborative project, its purpose, opportunities and benefits.

My career as an architect began with the architectural practice of CZWG, as a founder partner from 1975 to 1985. Since then my career has been as both architect and developer. My aims are to provide design led development projects that balance financial returns to investors with high quality buildings for their occupiers.

I have become expert at working with a development appraisal tool which forecasts both cost and value, in managing the risks and optimising the value of development projects through all their stages. It is the key shared document in managing the consultant team. I am convinced that it is my role as director on the design, the manufacturing as well as the marketing, together with the human capital of the collaborative team, which creates the process by which we make our projects successful.

It is curious that within development the professional disciplines usually calculate their fees in three ways:

1. Building professionals, architects, engineers, Qs, mechanical engineers, project managers, construction managers – **Cost fee based**
2. Marketing professionals, agents, surveyors, financial advisors – **Value fee based**
3. Legal and ancillary services, marketing, planning – **Time charge based**

It is not surprising that those that charge on a value fee basis have more influence on the project than those charging on cost fee or time basis.

Having acquired the site, the achievement of planning consent should add value. This should be the charging event. The fee on value for the early stages of the project – i.e. planning approval, would be a fixed proportion of the value created – this fee would be generated from the value of the scheme as approved.

An agreed percentage of this fee would be paid against forecasts to meet costs of making the design. Value has to be the total value of the asset created – this is a calculation of the gross value of all the elements and uses value in accordance with the RICS red book valuation on what is termed an 'open market value'. The advantage of this method is that it is standard practice in the real estate world and in the event of dispute can be the subject of third party verification. It is a much cleaner approach than trying to determine profit or added value as these concepts can be subject of too much argument over what is or isn't included whereas 'open market value' is the most used methodology. The rewards of each member of the professional team are in proportion to their respective fee percentages. The design team is now faced with maintaining viability on the basis of the consents obtained and in the current and future market conditions for the remaining period of the project.

1 Centaur Street, London SE1



Consultants (continued)

Design and cost consultants should join in with customers and facility managers in building databases of lifetime building performance for both costs and benefits. In use (or post-occupancy) evaluations of buildings should be regular and cover environmental performance, maintenance and operation experience and synergy with the occupiers and the community.

Business case material can flow from this towards better brief making and budgeting. We advocate a virtuous cycle of post-occupancy evaluation, good briefmaking and evidence-based design.

Consultants should also welcome integrated working with constructors. Far from encroaching on designers' territory, integration represents a partial return to the position before the twentieth century tyranny of contract method when designers chose their trade colleagues and worked up design ideas with them. Removing the tender barrier to collaboration cuts waste and allows target-based working, where the team aims together for a stated performance within the resources available, with their profit expectations protected in order to free them to propose cost savings that might cost them workload.

"Investors, developers and agents need to become more conscious of the root of asset value: the success of occupiers and communities."

Property people

Investors, developers and agents need to become more conscious of the root of asset value: the success of occupiers and communities. Tools for valuation of intangibles on a broad and asset specific basis are needed, to enable better cases to be made for development, redevelopment or purchase of buildings, and for community benefits to be negotiated in an atmosphere of better knowledge. Increasingly it is likely that property value will be composed partly of management skill in service provision: low inflation, shorter tenancies and added services will skew the basis of income streams towards value added rather than the pure property play. As fund investment decisions are increasingly influenced by corporate social responsibility policies, so values will play a larger role.

System integrators

Lead constructors, developers, or solution providers, putting together the site, finance, design, construction and management services required for a project, will benefit strongly from studying value creation. Early days in the private finance initiative reveal the scope for much better integration skills. Integrated design and construction offers have far to travel in processing and delivering customer benefit. Not only can better product be defined but more economical delivery can be pulled through, raising benefits and reducing sacrifices simultaneously. Education and training in leadership and collaboration skills, and in customer value drivers, will enable new competitiveness.

Specialist constructors

Specialists and product makers are increasingly becoming involved in supply chain teams before the value proposition to the customer is closed. This enables them to make proposals to meet performance requirements rather than simply pricing set designs. They need to develop their skills in collaboratively designing to meet the end-customer's value needs and to offer their product in a way that rewards themselves for value delivered. Product development based on customer values (e.g. good VA:F:C ratios) will be a better business proposition.

"The lack of awareness or skills which Egan found endemic are, at root, lack of ability to perceive value for diverse stakeholders."

Government

Government has much to gain from a move to value-based practice across the supply chain. As a major customer itself, it will gain value, but as regulator of all built environment impacts it will see national performance and quality of life improve. It may be possible for future regulations to support value-seeking behaviour as government moves to increase sustainability. Carbon emissions trading is a current example. The market alone may not move towards value-based practice easily or swiftly because of all the barriers perceived. Government investment in compensating for market failure will continue to be necessary until the barriers are overcome. Support for research investment will be particularly valuable. Regulations that reward value-seeking behaviour will be useful. The behaviour of the government itself in exhibiting joined-up, value-seeking behaviour as a built environment customer and development planner, will be a strong influence on the rest of the economy.

The new Academy for Sustainable Communities, as an agency of government, can play a value-creating role by promoting training of built environment professionals in the joined-up thinking that links individual projects to area regeneration and sustainable expansion. The lack of awareness or skills which Egan found endemic are, at root, lack of ability to perceive value for diverse stakeholders¹.

Enlightenment should improve skills in demand, supply and regulation.

1. 'The Egan Review: Skills for sustainable communities' – www.odpm.gov.uk/eganreview

Common messages

All participants can benefit from some insights from pioneers of integrated working offered at the second Revaluing Construction conference in Rotterdam in March 2005.

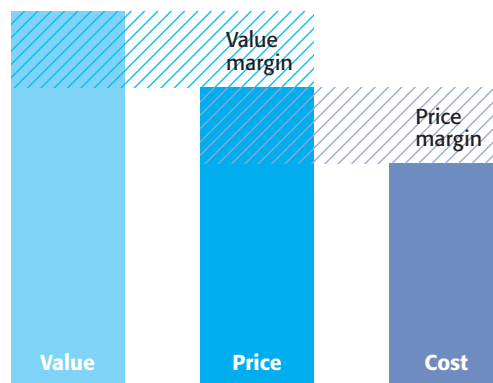
1. Using the Back Office to drive the Front Office. The project fixation of businesses in property and construction typically leads to little retention of learning or improvement based on it. Organisations with strong knowledge capture, marketing and training functions will be more competitive and evolve faster.

2. Investing in interoperable systems. Customer's and supplier's pay heavily for inefficiencies caused by information not being fully transferable between them due to IT incompatibility. Customers gain most over the building life in accessing data. They need to motivate and reward suppliers, who will themselves also benefit, to adopt interoperable systems for their information technology.

3. Recognising value creation and preservation phases. Most value is created in the opening stages of defining need and designing the response. Once the delivery phase begins the task shifts to defending the value proposition against erosion. 'Value engineering' to minimise cost, can erode the proposition if unskilfully done. Changes or substitutions to meet practical needs or increase supplier profit may also risk the customer quality sought.

4. Opening space between value, price and cost. A healthy principle is to work towards tangibly large margins between what the customer perceives to be value received, the price they pay for this and the cost the supply side incurs in providing it. Successful customer value creation and lean supply can open the space between value and cost. The price struck between them needs to be comfortable for both, to motivate good service and future improvement from the supplier and to show responsible procurement by the customer.

Opening spaces between value, price and cost



5. Concentrating on the end and the beginning. 'Soft landings' on move-in and in-use evaluation of buildings provides the knowledge for better consultancy to define future projects. A virtuous circle of better project definition, better commissioning in use and higher customer satisfaction can be achieved.

6. Feeding the value cycle. Designing for high potential customer and society value needs to be followed by good delivery, to avoid erosion from targets, plus management and measurement to capture the process and product effects and add to the body of evidence and the propagation of stories which raise the profile and esteem of the industry. This sets the scene for future high aspiration projects.

Next steps: research and action

A programme of research has been proposed to nCRISP to improve understanding and practice in value-based working (Report of the Be/nCRISP Value Task Group, March 2005). In summary, the research proposed is:

- 1.** Develop a vocabulary of value, a common language for discussion of the subject in the built environment, this should include a dictionary of Intangibles and ways of measuring them.
- 2.** Create a toolset to support customer business case-making on a value basis. This would include tools for estates professionals to value intangibles, probably drawing on brand valuation techniques.
- 3.** Carry out 'bottom-up' studies of value creation and destruction in the key sectors of healthcare, education and office work, relating benefits to sacrifices.
- 4.** Study value in the urban context, revealing the links between quality in the public realm and demand for healthcare, social services and justice system services. The positive effects of landmark quality projects should also be studied.
- 5.** Develop the indicative ratio VA:F:C (occupier value added to lifetime facility management cost to construction and design first cost) as a tool. Define the terms.
- 6.** Create a model of the built environment as a component of the whole UK economy, integrating property and facility management with construction.
- 7.** Develop concepts for value-based reward of supply side participants. These ways of rewarding suppliers would be intended to align motives with those of customers, releasing reward when value targets are met or exceeded.
- 8.** Set out the learning and skills agenda for professionals in all areas of the built environment, to inform employers, educators and the relevant Learning and Skills Councils (construction skills, asset skills, summit skills).
- 9.** Support action-learning exercises in value-based decision making, with volunteer customer bodies. Academic researchers and facilitators would support live programmes to enable and capture learning.
- 10.** Carry out an overarching study of all these programmes to draw out the common learning, sequencing and linking the individual exercises. A continuing knowledge management programme should also result.

Constructing excellence will provide member-led steering and participation teams to this programme. In addition, it would be sensible to form two ongoing support functions:

- A.** A benchmarking club for customers, consultants, facility managers and system integrators, collecting data on building performance, benefit and whole life cost, and comparing it. This would provide sound targets for new projects to achieve or exceed and act as a learning club. Building evaluation is best not done by the original authors and the club would provide shared advantages.
- B.** A support group for built environment solution providers. The BESP concept describes providers who integrate all or part of solutions for customers: consultancy, finance, design and construction, operation. Early experience suggests that this is complex and culturally challenging, but potentially superior as a business model.

A continuing role for Constructing Excellence will be to foster change towards the value based model. The motto 'work with the best; infect the rest' recognises that change is a virus and that it can become epidemic if the tipping point¹ is reached. It can also be fought off if progress is too slow and the antibodies of business-as-usual are strong.

Kotter's 8 step change model has proved effective²

1. Establish a sense of urgency.
2. Form a powerful guiding coalition.
3. Create a vision.
4. Communicate that vision.
5. Empower others to act on the vision.
6. Plan for and create short-term wins.
7. Consolidate improvements and produce still more change.
8. Institutionalise the new approaches.

Learning within and from projects needs academics engaged during its progress, a method used successfully by Be. We also note the observation that the present leadership of the industry is probably too old to welcome more than incremental changes. The Generation for Collaboration (G4C) network of Constructing Excellence is a more likely source of radical change making. We look forward to their contributions.

A built environment based on value-seeking would be a vastly superior one to that which we have today and would be achieved largely by changing approaches and tools. We urge customers, built environment professionals and government to become more valuable to themselves and the community by practising on a value-seeking basis. Work done to date reveals ways to begin. Much more can be achieved by further research, education and culture change. The value released will reward us all.

1. 'The tipping point' is the name given to that one dramatic moment in an epidemic when everything can change all at once 'The tipping point – how little things can make a big difference', Malcolm Gladwell UK 2000 Little, Brown and Company, London ISBN 0 349 11346 7

2. 'The hearts of change' Harvard Business School Press 2002

Appendix



Richard Saxon

Author and Task Group chairman

Richard Saxon CBE chaired the Be/nCRISP Value Task Group and wrote this report. Richard was chairman of Be, Collaborating for the Built Environment, from its formation in 2002 until its merger into Constructing Excellence in the Built Environment in 2005. He previously led the Reading Construction Forum from 1999 until its merger to form Be.

Richard is an architect and urbanist and a former chairman of Building Design Partnership, the UK's largest practice of architects, designers and engineers. He is a founder and past president of the British Council for Offices and a vice president of the RIBA. He has written two books on the concept of the atrium building. He received the CBE in 2001 for services to architecture and construction. Richard currently acts as a client advisor at Consultancy for the Built Environment. (richard@saxoncbe.com)

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Select bibliography on Value And Intangibles

CABE (2001) The value of urban design, London: Thomas Telford

CABE (2001) The value of good design: how buildings and spaces create economic and social value, London: CABE

CABE (2005) Physical Capital How great places boost public value, London: CABE

Carmona M, Carmona S and Clarke W (2001) A bibliography of design value, London: Bartlett School of Planning, UCL, available at www.cabe.org.uk

Connaughton J and Green S (1996) Value management in construction: a client's guide, London: CIRIA

Davies Andrew with Puay Tang, Brady Tim, Hobday Mike, Rush Howard, Gann David, Integrated Solutions The new economy between manufacturing and services, SPRU, University of Essex 2001 ISBN 0-903622-96-3 and Delivering Integrated Solutions Davies Andrew, Brady Tim, Puay Tang, SPRU, University of Sussex 2003 ISBN 0 903622 98 X

Davis Langdon and Everest (2001) Buildings that work for your business: building premises to enhance performance, London: Institute of Directors/Director Publications Ltd

Department of Culture, Media and Sport (2000) Better Public Buildings: a proud legacy for the future, DCMS, London: DCMS

Evans R, Haryott R, Haste N and Jones A (1998) The long-term costs of owning and using buildings. London: Royal Academy of Engineering

Hayles C, Bowles G and Gronqvist M (1997) Value from construction: a comprehensive bibliography, BRE Report BR 333, Watford: BRE

Haynes B, Matxdorf F, Nunnington N, Ogunmakin C, Pinder J and Price I (2000) Does property benefit occupiers? An evaluation of the literature, Occupier.org report number 1, Facilities Management Graduate Centre, Sheffield Hallam University

Heerwagen J (1998) Design, Productivity and Well-being: what are the links? Paper presented at the American Institute of Architects Conference on Highly Effective Facilities, Cincinnati, Ohio

HM Treasury (2003) Green Book, Appraisal and Evaluation in Central Government, London: HM Treasury

Hughes W, Ancell D, Gruneberg S and Hirst L (2004) Exposing the myth of the 1:5:200 ratio relating initial cost, maintenance and staffing costs of office buildings, in Khosrowshahi F (ed.) Proceedings ARCOM 20th Annual Conference, held at Heriot-Watt University, September 2004, Reading: ARCOM

Jackson-Robbins A (1998) Selecting Contractors by Value, London: CIRIA

Clements-Croome D (editor) (2000) Creating the Productive Workplace, London: E & FN Spon

Loe E (2000) The value of architecture – context and current thinking, London: RIBA Future Studies

Macmillan S (editor) (2004) Designing Better Buildings, London: Spon Press

Male S, Kelly J et al, (1998) The Value Management Benchmark: a good practice framework for clients and practitioners, London: Thomas Telford

National Audit Office (NAO) (March 2005) Improving Public Services through Better Construction London ISBN 010293245X and (ten case studies) 01029325449
www.nao.org.uk/pn/04-05/0405364.htm

Pearce D (2003) The social and economic value of the built environment, report to nCRISP, London: CRISP.

PricewaterhouseCoopers (2004) The role of hospital design in the recruitment, retention and performance of NHS nurses in England, London: CABE.

Richard Saxon (2003) CBE JCT Povey Lecture, RIBA, 29 October 2003

Ulrich R, Quan X, Zimring C, Joseph A and Choudhary R (2004) The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity report, Center for Health Systems and Design, College of Architecture, Texas A&M University

Spencer N and Winch G (2002) How buildings add value for clients, London: Construction Industry Council

Strategic Forum for Construction (2002) Accelerating Change, London: Strategic Forum.

Thomson D, Austin S, Devine-Wright H and Mills G (2003) Managing value and quality in design, Building Research and Information, vol 31, no 5, 2003, pp 334-345.

Treasury Task Force (2000) How to achieve design quality in PFI projects, Technical Note 7, London: HM Treasury

VTT (2003) Well-being through construction in Finland, Helsinki: VTT, available at www.vtt.fi/rte/dms/tuotteet/wellbeing2003.pdf

Worpole K (1999) The Value of Architecture – design economy and the architectural imagination, London: RIBA Future Studies

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