

# **ProCure 21 And The Evolution of The Construction Process**

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## **Summary**

The National Health Service (NHS) has produced ProCure 21 in response to the NHS Plan and Rethinking Construction. ProCure 21 is the preferred method of construction procurement throughout the health service in England.

The central tenet of Procure 21 is partnering.

This Paper examines the new process of construction that has evolved within, Medicor, a Principal Supply Chain Partner, to embrace the challenges and opportunities of partnering and ProCure 21.

The Paper explores how communication gaps identified between the various parties in traditional construction have been closed and how the perceived pitfalls of partnering have been avoided.

Case studies are used to illustrate the new process and the paper celebrates learning from failure as the path to success.

Over the past few years the construction industry has been inundated with initiatives and programmes for reform. Quality Assurance, Quality Management, CDM, Supply Chain Management, Value Management, Value Engineering, PFI and Key Performance Indicators to name but a few.

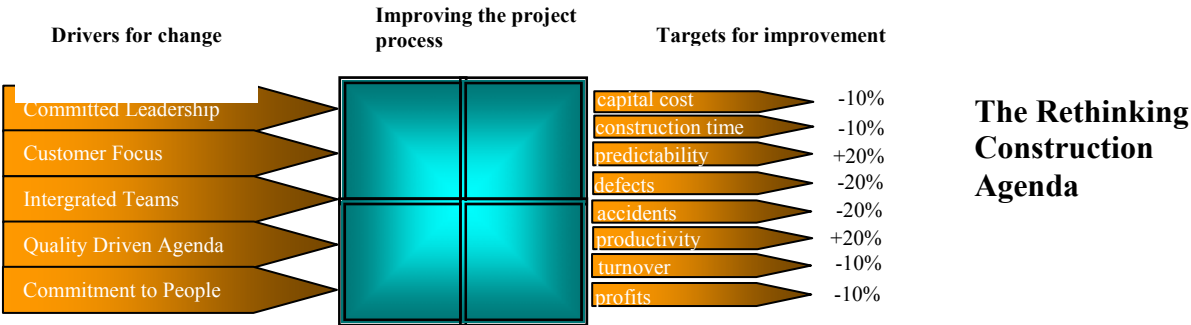
None has proved to be the complete answer to the industry’s documented ills and indeed some have been disastrous. It would appear that the industry is on the verge of initiative exhaustion. So why does the industry fail in meeting credible targets?

Currently there is an obsession with costs; a continual pressure to reduce expenditure regardless of outcome has led to a culture of confrontation, lack of added value and Client dissatisfaction. It has led to the demise in Graduate recruitment and retention due to the feeling of low status and lack of worth.

In 1998 the Egan report, “Rethinking Construction”<sup>1</sup> was published. For the first time the initiative proposed was not borrowed from other industries but formulated by the “wants” of construction Clients. It also involved the construction as a whole rather than parts.

Rethinking Construction set ambitious targets for the Industry, targets that cannot be met by tinkering at the edges. Only radical changes to the entire process will be able to deliver. Rethinking Construction did not ask the Industry to do it better; it asked it to do it completely differently.

The Egan report identified five drivers for change that in turn would give rise to targeted annual improvement.



Clearly these targets are aimed high, to prevent mere tinkering, and spread so as to offer an incentive to all parties within the construction process. However it was thought that public bodies would not be able to subscribe to any process that was not based upon lowest tender.

The NHS, the UK’s largest employer and currently the largest single procurer of buildings, has tried virtually every form of “fixed price” procurement to be devised. It has for many years recognised that quality healthcare is best undertaken in quality buildings and sustained in a quality environment. In 1994 NHS Estates published the document “Better by Design – Pursuit of Excellence in Healthcare Buildings”<sup>2</sup>. The document laid down the values to be expressed in good design and stated, “An attractive hospital need not cost more to build. If quality is seen as integral to the design and construction process, the probability of procuring fine, economical buildings which are flexible and tailored to the needs of present and future users is increased”. What was being recognised was that quality and not cost was the key to success. Defining quality is something we shall discuss later.

At the same time the Latham report, “Constructing the Team,”<sup>3</sup> noted, “there is an acceptance that a greater inter-disciplinary approach is necessary”. What was crucial in this report was the suggestion that all roles within construction are related and dependent, this is not simply about understanding all the roles but about valuing these and the work of others.

ProCure 21 is the latest NHS procurement method. The NHS ProCure 21 approach has been developed to promote better capital procurement in the NHS and is based upon the foundation of:

- Monitoring and improving performance through benchmarking and performance management
- Establishing a partnering programme for the NHS by developing long term framework agreements with the private sector
- Enabling the NHS to be a best client
- Promoting the use of high quality designs

The principle benefits of NHS ProCure 21 to the NHS and the delivery of the NHS Plan are:

- Working in long term partnerships with fewer suppliers
- Development of best practice across the procurement process
- Best value to NHS Clients
- Facilities coming into operation more quickly
- Identifying the best practice of the industry and applying it to the NHS
- A process of continual learning and reflective practice

As you will recognise this is very much the essence of Egan and Rethinking Construction.

It is of course very easy to write these principles down, it is an entirely different matter to put them into practice. NHS Estates opted to execute a pilot scheme using five supply companies operating across two regions, the North West and the Midlands. The five supply companies were selected at length and the pilot instigated for all capital works in excess of £1,000,000.

Each Principal Supply Chain Partner (PSCP) is formed from a group of companies, coming together under a partnering arrangement to deliver healthcare buildings under the ProCure 21 initiative. Parsons Brinckerhoff provides Building Services, Structural and Civil Engineering and Architectural services to Medicor, one of the PSCPs.

It was recognised that if we accept the need to do things differently then we cannot continue to do the same things in the same way, it is also obvious that we shouldn't adopt a policy of doing things differently just for the sake of it.

It has been described that in order to meet the Egan principles partnered teams must undertake the construction process in an entirely different way to that traditionally adopted. The remainder of this paper describes the new approach adopted and uses case studies to illustrate the evolution of a new construction process.

Clearly the change from a traditional adversarial model to that of an open integrated team was not going to be a straightforward process. At its core Partnering is not simply about understanding each of the roles within the team, but also to appreciate the value of each.

To illustrate, consider the Architect: - "I must be in control or They will make the whole thing look a mess"; the QS: - "I must be certain of the cost plan – that's my PI on the line"; the Engineer: - "I need a full site investigation and drawings from the Architect before I can start"; the Contractor: - "If I comment on the Design it will be my fault if it fails"; and finally the Client: - "Why don't they just get on with it and leave me alone".

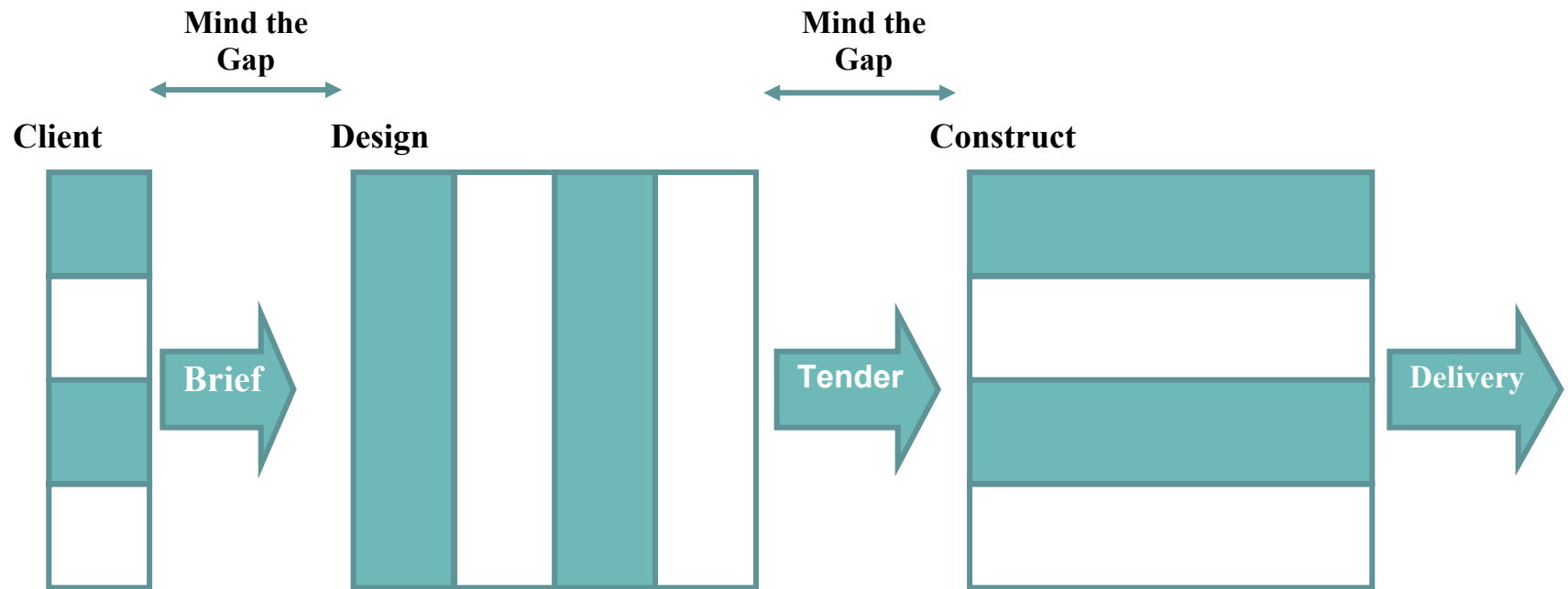
Banding together as Partners will not alone change these views. What is required is a new way of thinking about design and construction, a method that appreciates the value of each member, a method driven perhaps by purpose and not task.

If we are to change how we do things a natural starting point is the process by which we undertake our work. We all have different ideas as to what a design process is, however what we can agree on is the nature of that process.

The traditional design process is essentially linear, that is an input undergoes a transformation that results in an output. The Gantt chart and BSRIA design process flow chart<sup>4</sup> exemplify this. Thus the traditional view of process is that of a task or activity. Yet construction is not at any level a simple linear process – “brief in building out”. What is required is a process that makes sense of the complex relationships in construction and responds to uncertainty and risk. What is required is a process that gets you from where you are to where you want to be.

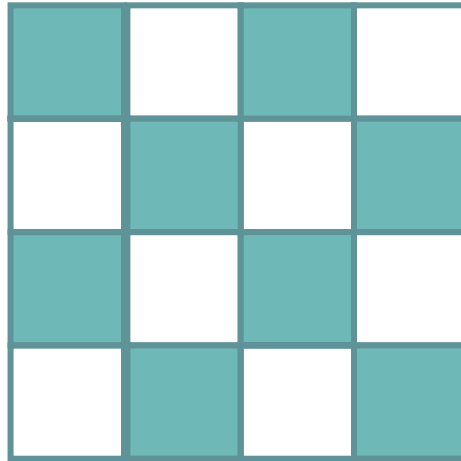
It was this view of process that was adopted by Parsons Brinckerhoff to deliver M&E engineering in a partnering framework, an approach based upon “systems thinking”. This approach is driven by purpose. The box describes the traditional process and the system based process.

<b>Traditional Process</b>	<b>Systems Process</b>
Defn: A task or activity	Defn: A means of getting from where we are to where we want to be.
Viewed from only one perspective (generally time)	Viewed from many perspectives
Useful in a restricted way	Can be the central idea on which other ideas are hung
Useful where conditions are stable, repetitive, predictable and certain	Can manage change, risk and uncertainty
Not dependant on teamwork	Totally dependant on teamwork
Requires a lot of work to produce the model	Can be used from the start



Traditional Linear Construction Process

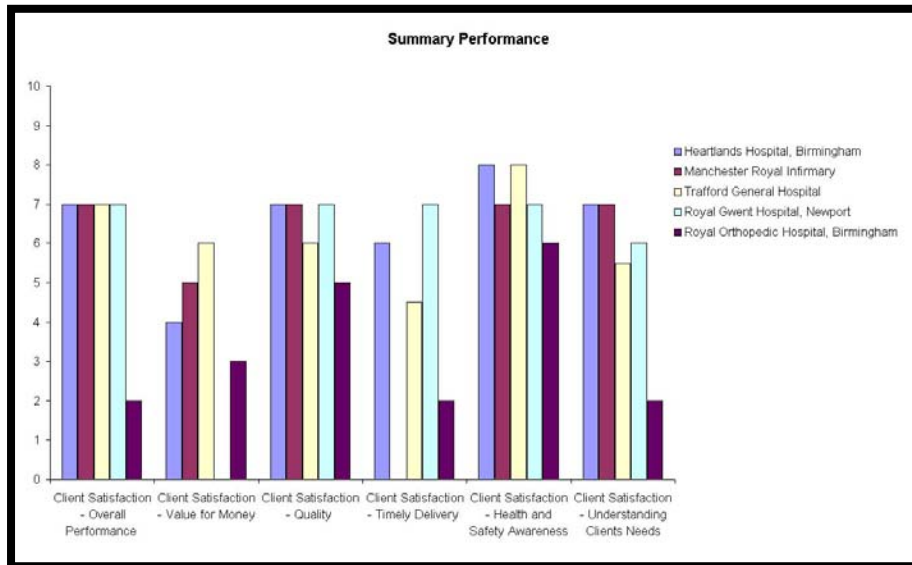
The Team



Fully Integrated Partnering System Approach



purpose for asking. It is this process of listening and observing, and the way in which the Team refine the process in response, that creates added value.



For all this I have not been able to find any agreement about how we should measure soft values, yet we must all recognise that their worth can be the difference between success and failure. Minor defects in the scheme at handover will disappoint the Client more than if those defects occur many years later.

In practice it is our ability to trade off the value issues that will determine our ability to meet the Egan challenge. We have already seen that timing is key- too late and costs can increase substantially, too early and a lack of dependability may arise.

It is in this sense that we can claim a quality driven agenda – Rethinking Construction’s fourth driver for change.

Of course if any of the relationships in the partnership are such that they do not contribute to this process then the opportunities are considerably narrowed. To prevent this from happening the first driver for change must be realised, that is committed leadership.

Leadership should not and must not be confused with management. Leadership is doing the right things, management is doing things right<sup>6</sup>. Many senior people manage their staff, they are buried in the day to day routine of getting done what is required, QA, CDM etc. Leadership provides the ethos of how things will be done. It establishes values for the Team and generates quality. Leaders recognise that the real decisions are derived from those who are adding value.

Committed leadership is vital if we are to achieve both the integrated team and a commitment to people, the final drivers for change.

We have been within the ProCure 21 Partnering framework since its inception and the reality supports that stated earlier, partnering is not an easy option. We have the systems in place and these are much as described but they have not worked as well as we would have expected each and every time. It has been noted that the opportunities for driving in value are narrowed if any party fails to contribute.

There are many stakeholders involved in the health sector construction process, any one of which can fail. The effect of such failure is dependant on where and when it occurs. Feedback across the industry indicates that the greatest impact potential exists within two of the main relationships; the Client and the Contractor. In the traditional linear relationship these are at each end of the line, in a

Partnering arrangement they are key to realising the Egan principles. So much so that it is worth exploring these examples further.

The majority of Clients that we encounter have traditionally procured buildings via the Design and Build (D&B) model. In simple terms the Client gives out the Brief and then after an agreed time takes possession of the development.

In the partnering arrangement the Client is key to the success as his role includes imparting purpose to the project. The industry has tended toward the Value Management process to obtain this. Medicor uses Value Management, to bring together the key stakeholders and derive a hierarchy of values that in turn evolves into the purpose, and it is purpose that is driving this system. This process we have come to term “Lean Briefing”. Yet Value Management exercises where very little is forthcoming and where a Client has refused to acknowledge the process at all, are not uncommon.

To some extent we believe that this is a function of the nature of the pilot. Many of the projects, prepared for a traditional D&B process, have been advanced to Full Business Case. Funding has been secured, thus giving the prime purpose - affordability. Additionally the Client may fail to realise the extent of his commitment and consequently not make sufficient resources available to take on the role of Construction Partner, simply wanting us to “get on with it”.

This can lead to issues further down the line, with the Client not fully part of the Team and unable to recognise the changing process. Being used to using Consultants to act as mediator the Client may find himself unable to relate directly with the construction phase of the development. Simply stated, Clients like having Consultants around.

These are soft values, values not always raised in the VM process but subsequently of great importance to the success of the project. In response we have adopted a short term approach whereby the Consultant retains a role throughout the life of the project. This will be replaced over time by the “best placed person” strategy, however for this to happen we must undertake a programme of educating both the Client and the Contractor.

Looking at the relationship between Consultant and Contractor in more detail. In the traditional construction process the Contractor’s drivers can differ considerably to those of the design elements. However it is well established that the contracting industry has much to offer the consultants.

Imagine for a moment a system whereby a manufacturer influences the building design by bringing product knowledge to the project at concept stage. As an example, by bringing together the manufacturers of the heating system components, from boilers through to radiators, it is possible to optimise value; this could influence plant room sizing or the visual aspect of a room.

With a well-managed integrated manufacturing supply chain the effective standardisation of systems becomes a reality. Detail design can become a component call off sheet, “six off Product 27, 14 off Product 42” and so on. This does not devalue design, far from it. Standardisation realises hard values, such as cost and quality, and allows the design consultants to concentrate their efforts toward establishing and satisfying the soft values, aesthetics, comfort, sustainability and the holistic healing environment.

It is through achieving the soft values that the advances in healthcare design will be made.

Yet, to many, the supply chain can often be seen as the holy grail of contracting. By bringing manufacturing into design there can be fears of taking away the contractors ability to “play the market”. We have all heard phrases like, “ Don’t name the supplier – you can get 50% off with an open hand”.

By reinforcing the ProCure21 principles we have come to realise that a manufacturing supply chain has more to give than take away. We achieve price certainty over a longer period, currently five years. The price takes into account not just the project being supplied today but is assessed against all projects, both confirmed and in the future.

The benefits have extended onto site. Many elements can be pre-engineered, clinical wash hand basins and assisted showers for example. This ensures quality and reduces installation time on site. By ensuring that the designs contain standard elements there is a marked increase in quality, the installers are not seeing new products on each project and understand what is expected. The increased repetition has brought us much closer to realising “right first time” as a given rather than a target.

The process has also produced many successes that would not have occurred as easily, if at all, through other more traditional methods.

A 72 bed Diagnostic Treatment Centre was commissioned by a Trust in the Midlands.

The project involved the provision of new ward and operating theatre accommodation that integrated into the existing hospital campus in a way that improved existing patient pathways, and facilitates a seamless, integrated patient journey through the new accommodation and existing diagnostic and theatre facilities.

The Trust’s programme is ambitious. Integration of the DTC into the existing hospital campus, which is steeply sloping, involved the rationalisation and improvement of the horizontal and vertical communication routes with the provision of new and upgraded hospital streets and a new vertical circulation core of lifts and stairs.

The interfaces between the planned development and the existing hospital facilities clearly presented a major challenge to the Medicor team.

In addition, the Trust had already progressed to FBC stage and so the need to identify and confirm the Trust’s Critical Success Factors for the project at an early stage was fundamental to Medicor responding positively to the Trust’s needs.

The Value Management process identified time as being the prime value. To achieve this it was necessary to find a way around the linearity of traditional construction.

If you want to provide a building in the fastest time then some form of modular construction is necessary. As a Team we explored all modular options. We looked at volumetric construction, used in the express style stop over hotels. This was fast, but not fast enough. Flexibility, a second value, was also not as prevalent with this form of construction. This left us with the composite panel type of modular building. Whilst these would deliver a good building the companies were providing a watertight shell for traditional fit-out of interiors and services. This did not seem to be pushing the envelope far enough. Surely the fastest way to provide the building was to pre-engineer the entire facility, complete with interiors and service.

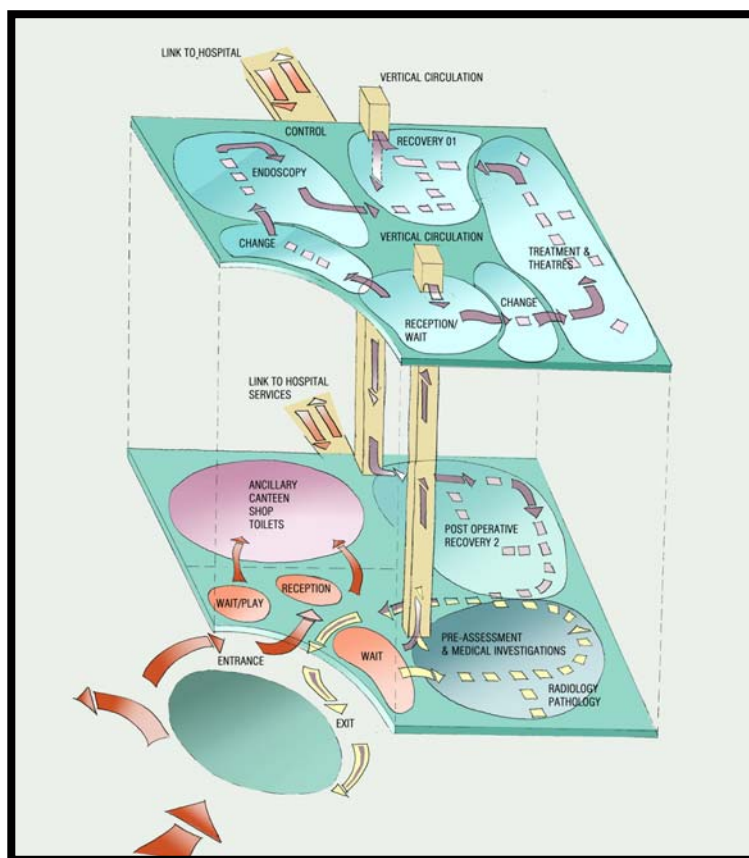
It was this approach that was adopted. By utilising the Team we were able to quickly assess suitability; interfaces to existing buildings and infrastructure; buildability – including future maintenance and installations; sustainability and aesthetics.

Yet this process of deliberation is not as linear as would be suggested. The relationships between cause and effect do not always produce the desired outcome. There are along the way many unintended outcomes and consequences. The connectivity of the outcomes can be startling.

Once committed to the pre-engineered approach the process becomes very lean. Complex multi-stakeholder issues need to be managed so as not to cause delay to the production process.

Better ways of communicating the design to the end-users have been developed, mock ups, models and computer imagery taking precedent over drawings. To illustrate, on the majority of projects the clinical staff wait until construction is well advanced before commenting on positioning of equipment and services. In the pre-engineered scenario their first view of the building is after fabrication. Clearly that is not the time to make changes.

The connectivity between processes is complicated. What is important is to focus on interactions through direct connections only. Indirect influences can be left to emerge as the project develops provided that your system is robust and driven by a single purpose.



**Patient Journey  
Illustration**



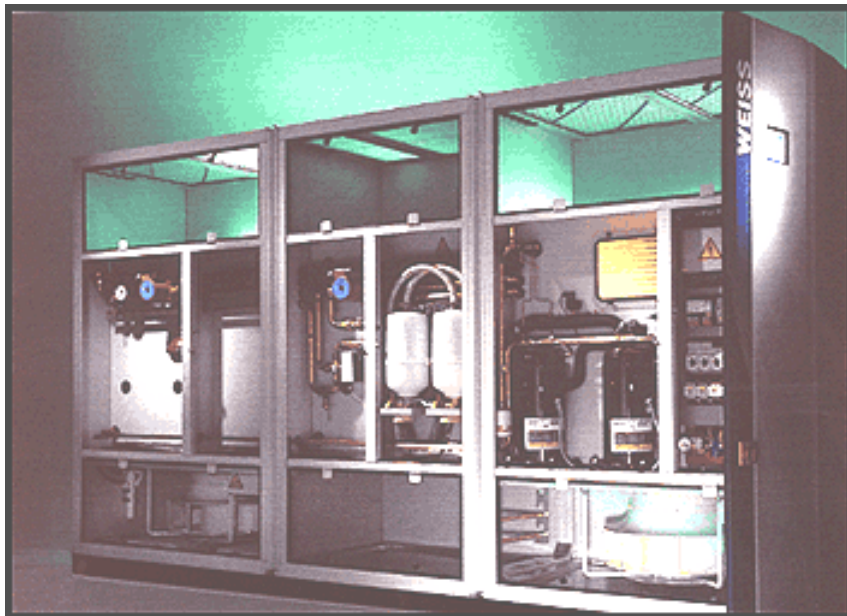
**Ward Design Visualisations**

It is not just the large projects that can benefit from a successful partnering approach. As part of another Diagnostic Treatment Centre development it was necessary to provide two new operating theatres within an existing building.

The identified value was affordability. The Team was faced with a building with no space for plant at slab level and a roof that could not support any plant loading. The traditional option would be to replace the roof with a new structure that would be capable of supporting the plant. Of course this would require an independent superstructure.

The Team chose to rethink the “given facts” for this development. By utilising the construction side of the supply chain during the design phase agreement was reached that a small area of the building would be rebuilt, as it was currently a courtyard infill of poor quality. This would give rise to a new area of roof that could be used for plant.

Consider what drives the size of the plant; it is not simply its function but also its specification. We sourced packaged plant, designed for operating theatres and used extensively on the Continent. The main difference was size. Our scheme would occupy a plant room only 40% that required for conventional equipment.



**Integrated Air Handling Unit**

Our approach provided an engineered solution at a cost, as we quickly ascertained, no more than our conventional equipment. Coupled with the savings in structural modifications the proposed system clearly satisfies the affordability check.

Although the system satisfies the prime purpose – affordability, and indeed one of the other value criteria – innovation, it failed a soft value, certainty. As with many soft values it was not noted during the Value Management process. It became apparent that although the Client looked for innovation and affordability it was the soft value that would define success.

When innovation was offered as a way to achieve the key value of affordability, the soft value became apparent. Clearly with any new approach there would be issues regarding full technical compliance with documents written some years ago. The equipment offered exceeded many of the requirements of the Client's out of date specification and alternative reasoning supported divergence.

Recalling the large number of stakeholders to be satisfied it is not surprising that our proposal was reluctantly rejected.

Again despite our ability to satisfy the hard values it was a soft value that defined success. Indeed to continue the example above, we believe the system established to be of such significance that we are currently producing, in conjunction with the manufacturer, full technical validation and training support for future Clients.

It is clear that as an industry we must improve the methods of establishing and then satisfying the soft values. It is also noted that KPIs do tend to flush out soft values but at the wrong point in the process. It may be that the role of KPIs can be further developed to exploit this unintentional connectivity and thus provide the means for controlling the soft values.

As suggested earlier, Partnering is not an easy path. As the examples show it is not easy to relinquish our traditional roles. Indeed it can be argued that where the new roles were not clearly defined at the outset the process was slowed whilst they evolved through reflective practice and persistence to regain the ideal. Tightly defining roles is as problematic as no definition. As we found role definition can stifle the partnering ethos leading to claims of "not my fault". The systems approach has enabled role definition in terms of best placed and this is something that can change throughout the project.

But evolution, the slow change to a new future, is the very essence of ProCure 21. Real change occurs only with a real change in thinking. Let us not forget however that change will not happen if you don't want it to.

We must also bear in mind success. Our success in establishing a true partnering culture has been shown by the response to events when things go wrong. When failure to deliver has occurred our system has shown robustness. The partnering pitfalls of reverting to type and the traditional claims culture have been avoided by strong purpose driven leadership and our desire to put Client needs first. Medicor are proud to have developed this culture and not adopted the easy path seen in marriages of convenience.

I have shown that it is often the soft values that define success and yet these are the values most difficult to define and measure. Only by practice and learning from each project will we come closer to understanding that which remains unsaid as much as we understand that which is.

I am convinced, despite the many stumbles along the path, that partnering remains the only viable option for the future of the construction process. ProCure 21 fully implements the drivers for change established in the Egan Report, Rethinking Construction, and as such makes partnering the vehicle of choice for the procurement of capital projects within the NHS.

Medicor, the supply vehicle of which Parsons Brinckerhoff is part, has evolved throughout the ProCure 21 pilot. Its systems have become leaner and more efficient as it strives to address the soft values of all the stakeholders including the Team members. The ProCure 21 process is still in its infancy, yet we have learnt a great deal, learning that has been captured and used to refine our processes. We continue to standardise our product and are closer to producing a "Brand" image for excellent healthcare building procurement both within ProCure 21 and further afield.

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