EcoQUIP

Delivering efficiency, quality and sustainability in healthcare through innovation procurement

Case Study Based Report

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EcoQUIP

Supporting the efficiency, quality & sustainability of healthcare through innovation procurement

EcoQUIP was funded by the EC CIP programme and was carried out over four and a half years from April 2012 to October 2016 and built on the experience of the pioneering LCB-Healthcare programme supported under the Lead Market Initiative.

EcoQUIP set out to demonstrate how to improve the efficiency, quality and environmental sustainability of healthcare using innovation procurement and to create an 'Innovation Procurement Leaders Group' of individuals that have competence in innovation procurement and the capacity to pioneer new approaches to procurement and initiate new projects.

At the heart of EcoQUIP were the pilot innovation procurement projects on which this report is based. They were undertaken by heath care organisations in Italy, Hungary, Netherlands, Poland and UK with the support of the enabling partners.

This report is based on the experience of these EcoQUIP Innovation Procurement pilot projects and describes the approach and methods used, the learning gained in their implementation and the outcomes.

The EcoQUIP partners hope that this report will provide useful examples and helpful insights into the implementation of innovation procurement projects in the healthcare sector and beyond.

The Project Consortium

The project team brought together healthcare organisations from across Europe, which enabled organisations to bring together expertise in innovation procurement, capacity building and project management, government departments and European network organisations.

Coordination Team

- Department for Business, Energy and Industrial Strategy
- Optimat Ltd
- JERA Consulting Ltd
- Department of Health England

Partners

- The University Hospital of Bologna
- Erasmus University Medical Centre
- Nottingham University Hospitals NHS Trust
- Sucha Beskidzka Hospital
- Semmelweis University Health Services Management Training Centre
- The Rotherham NHS Foundation Trust
- European Health Property Network
- Heath Care Without Harm Europe

Foreword

The EcoQUIP project started with austerity measures in full swing across Europe and when the healthcare sector was already facing huge challenges with an aging population, increasing expectations and demands as well as enormous cost pressures. At such times, hard-pressed budget holders can see sustainability as a costly luxury and innovation an unnecessary risk. The EcoQUIP consortium and the EU Commission funders therefore showed great foresight and courage to embark on a project with sustainability and innovation at its core.

The success of the pilot projects within EcoQUIP shows, not only the commitment and ability of the project partners, but also that innovation is the key to delivering improvements in efficiency, quality and cost while meeting the need for environmentally sustainable public services. Innovation, however, is not without risk. It is the success of the stepwise Forward Commitment Procurement (FCP) process in managing the risks for customers and suppliers that has allowed these supplier innovations to reach the market. This success should draw the attention of other healthcare professionals and policy makers alike.

The pilot projects reveal some important factors. Perhaps the most important is that innovation occurred, not as a result of a prior R&D programme but as a direct response to the identification and the framing of a previously unmet need in the context of a procurement activity. It is the prospect of a purchase order that effectively motivates suppliers to invest money, time and effort. It is the new, previously unmet demands made by the customer that makes innovation natural and necessary. A perhaps surprising outcome was the enthusiasm of suppliers for this approach. Accurate information about a customer's real needs allows suppliers to differentiate themselves from their competitors on the basis of value rather than a race to the bottom on cost.

It is also clear that, while innovation creates new value, it takes time. The pilot projects show the importance of good early engagement with all the stakeholders in the customer organisation, partly to accurately describe the full extent of the unmet need but also to ensure the procurement is properly embedded in the procuring organization at all levels and can survive for the time it takes to engage with innovative suppliers.

The project coordinators had a vital role to play in these projects. They provided continuity when, inevitably, staff moves and other changes affected the procuring organisations. The diverse projects were carried out in different countries and cultures and the project coordinators had a critical role in supporting partners and adapting the Forward Commitment Procurement principles to very different local environments.

More work will be required before innovation procurement is the rule rather than the exception in public services in Europe. The EcoQUIP project has provided vital learning, case studies and a cadre of experienced and committed professionals in the European healthcare sector. Collectively the case studies demonstrate that better quality, more sustainable services can be provided at lower cost if procurements provide time and space for innovation. The practical experience in innovation procurement created by this project should be built upon and extended if Europe is to maximise the value inherent in innovative, cost effective services and industries.

Dr Jonathan Frost OBE,
EcoQUIP Steering Committee Chairman

October 2016

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Introduction

The EcoQUIP project set out to demonstrate how improvements in the efficiency, quality and environmental sustainability of healthcare could be achieved through the application of innovation procurement. Pilot innovation procurement projects were at the heart of the project and were undertaken in different types of healthcare organisations, in contrasting regions of Europe.

The main tangible achievement has been the launch of innovation procurement tenders and the purchase of innovative goods and services, but we are also proud of the contribution that the project team has made to the policy and practice discussions and debates on innovation procurement, both at a national and European level.

The pilots started at a time when innovation procurement was a new concept to the vast majority of the stakeholders and when the number of practical examples of successful innovation procurement projects were few and far between.

The journey of the EcoQUIP partners over the course of this four-year project has, therefore, been one of learning new skills, transferring know-how and enrolling and engaging others in adopting new approaches to procurement. In effect this has meant leading a change management process within the partner organisations and with their suppliers and stakeholders.

The pilot projects were carried out at a time when healthcare budgets and services in Europe were coming under increasing pressures. In this environment, innovation can seem counter intuitive, associated with greater risk and higher costs. Instead the focus is on short-term cost savings in procurements and downgrading the importance of difficult to quantify outcomes such as quality of care, environmental sustainability or the patient experience. Yet the costs of not innovating are rarely considered. As demonstrated in this and other pioneering projects, procurement has the potential to be an important strategic tool capable of delivering better public services, better value, and stimulating innovation in the supply chain.

Over the duration of the project there have been several developments that have improved the prospects for innovation procurement; perhaps most significant are the revisions to the public procurement directive that encourage procurement practices in support of innovation. Although coming a little late in the day for EcoQUIP, these revisions have helped to increase acceptance of innovation procurement and open doors for its adoption. This was particularly true for the EcoQUIP partners in Italy and Hungary. There are now an increasing number of case studies helping to establish innovation procurement 'good practice' and demonstrating the tangible benefits of innovation procurement; The Public Procurement of Innovation (PPI) Platform has helped to develop an online community of innovation procurement enthusiasts. Finally, the level of resources made available through Horizon 2020 has helped to raise awareness of innovation procurement and encourage its adoption by a wider public sector audience. However, innovation procurement remains a tool used by the minority and much work remains to be done to bring about wider understanding and adoption.

The healthcare sector is, in principle, an excellent lead market; if one hospital has an unmet need, this is likely to be shared by others. This means that if one hospital can identify a need and engage suppliers in providing a solution, the supplier has a potential market of more than 15,000 hospitals in Europe and potentially a global market opportunity. In addition, the pressures on healthcare technically, demographically and financially mean that innovation is increasingly a necessity as the existing solutions fail to meet the needs of hospitals, healthcare professionals and patients.

However, in this project we have been surprised at the limited degree of replication and sharing of ideas across the healthcare sector. All too often good ideas do not reach, or are not taken up by this wider market and practical means to overcome this are yet to be found. One observation, that may be part of the problem, is that policy documents that address the major challenges facing healthcare routinely fail to see procurement of goods and services as part of the solution, focusing instead on service models and organisational practice. Procurement is still seen as a back room function in the majority of hospitals, called upon to deliver cost savings and very rarely seen as a strategic tool directed towards service improvement.

A number of priority areas for healthcare innovation became apparent over the course of the project, including products and services for improved hygiene and infection control, pressure care management, solutions to improve the patient environment, sustainable catering, low emission and low carbon energy, and uptake of eHealth solutions and cost-effective management of long-term conditions. These led to specific projects both within the scope of EcoQUIP and in spin-off projects that stimulated bids for, and in most cases attracted, additional EU funding.

This report is based on the experience of these EcoQUIP Innovation Procurement pilot projects and describes the approach and methods used, the learning gained in their implementation and the outcomes.

It describes the overall innovation procurement approach and methodology adopted and then goes on to outline how five of the individual pilot projects applied the approach and methodology in practice in a series of detailed case studies. Our hope is that it will inform and inspire the next generation of innovation procurement projects.

Innovation Procurement

Creating demand for new and improved goods and services

Across Europe, healthcare is facing major challenges that need innovative solutions, including:

- Upward pressure on the costs of providing care
- Downward pressure on budgets
- An unresolved gap between the service on offer and the healthcare needs of populations
- Increased expectations that healthcare budgets and provision must be sustainable
- Increasing hygiene and infection control issues
- The anti-biotic crisis
- Changes in healthcare delivery, patient expectations and an aging population
- Environmental problems imposing costs on healthcare such as the impact of air pollution on health
- Disruptive innovation - new technology creating new opportunities and struggling to find a way in old systems and funding structures

The public procurement of innovation aims to create the conditions where innovation can thrive in the economy; suppliers provide the goods and services that society needs, leading to better and affordable public services. Procurement is one of a number of demand side measures that can be used to overcome market failures i.e. where the market alone fails to deliver what society needs. Other demand side measures include progressive, sensible regulation, fiscal measures and progressive targets.

What do we mean by innovation?

Innovation is the process of translating technology and knowledge into new usable products and services. The key success factor for innovation is an accurate understanding of the unmet need it is targeting.

What do we mean by 'Innovation Procurement '?

The EcoQUIP Partners defined innovation procurement as 'buying goods and services in a way that stimulates innovation in the supply chain to meet the unmet needs of the organisation'.

A critical factor for suppliers of new products is the confidence that there will be a market once the solution is proven. The amount of investment made by product and service developers and by their supply chain depends on this confidence. The future customers of the new products and services can significantly affect investments decisions by making the future market as certain as possible (while retaining competition).

The innovation procurement approach adopted in the pilot projects was therefore based on a simple premise; that by providing a genuine and credible demand, customers can stimulate and enable innovation in the marketplace and support early adoption of new solutions.

The Buyer-Supplier Paradox

Delivering social objectives, such as better, cost effective healthcare services, requires new solutions that are either not available in the market and / or are available at excessive cost; because they aren't available customers don't demand them, and as there is no demand, the solutions don't receive the investment required to enter and be competitive in the market. This means that public sector objectives are often compromised by lack of affordable and effective products and services to deliver them. The buyer-supplier paradox.

EcoQUIP worked to resolve this 'buyer–supplier paradox' by enabling the healthcare customers to accurately identify their unmet needs and then to communicate them to the market in a way that stimulated suppliers to respond.

The Buyer-Supplier Paradox

Understanding the supplier perspective

By understanding what motivates suppliers, and helping to overcome potential barriers to delivery of a solution, customers can transform the marketplace.

The main risk for a supplier investing in developing and commercialising innovative goods and services is, that having developed a new offering, will customers buy it? Innovation procurement aims to reduce this risk by making visible a customer's unmet needs and presenting a clear and credible future demand in the form of an outcome based procurement requirement and forward commitment to buy solutions that deliver the outcomes, i.e. a credible articulated demand. The customers 'credible articulated demand' needs to provide sufficient incentive to galvanise supply chains to deliver the customers requirement.

The customer then needs to continue to support delivery of their requirement by ensuring that the procurement process creates a level playing field for innovating suppliers and innovative goods and services. This might involve for example adjusting the pre-qualification process to allow new players and SMEs to qualify; evaluating offerings on factors other than price on which the customer places a value, such as reducing carbon emissions and environmental impact; and evaluation of price based on the whole-life costs or 'total cost of ownership' of the goods and services on offer.

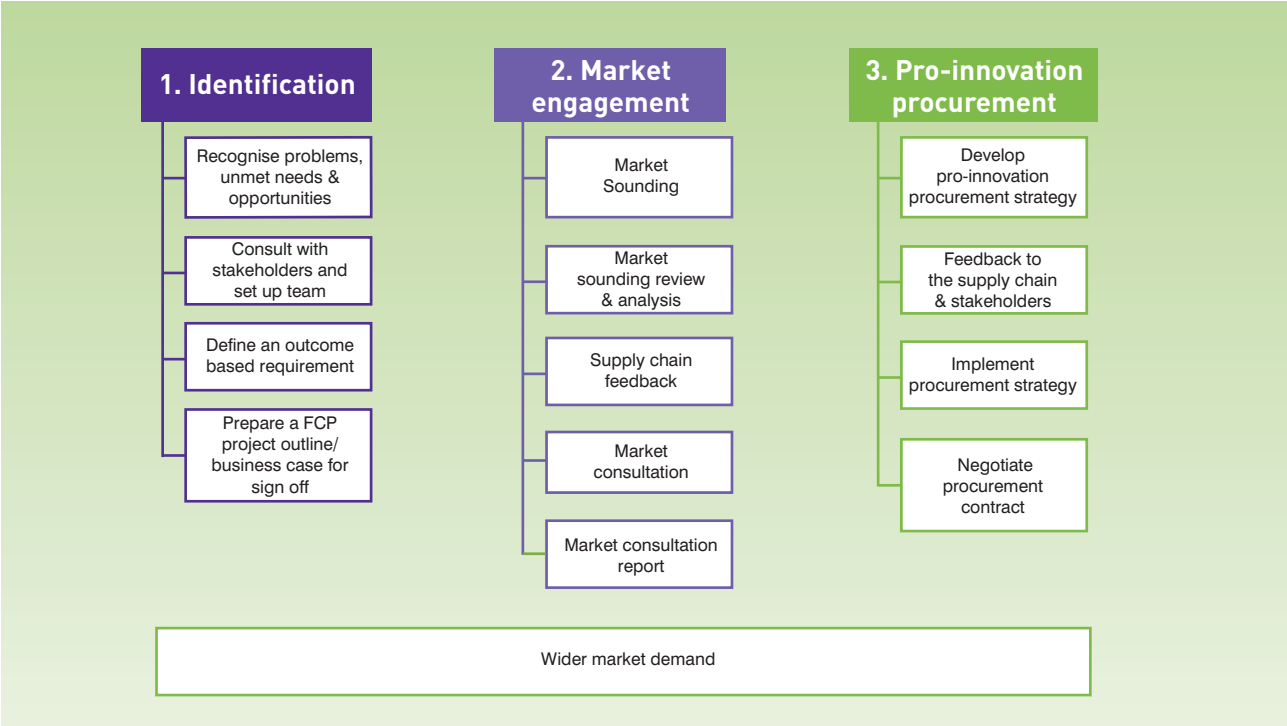
Customers can also encourage suppliers to respond to their unmet needs by demonstrating that there is a wider market demand. Although the articulation of demand from one customer is helpful, an expression of a common demand from several customers presents a more attractive and convincing proposition to suppliers. Such 'wider market development' may include reaching out to other buyers once an unmet need and requirement is identified to stimulate them to distinguish the same or similar need; inviting other potential customers to join in market engagement activities; enabling other customers to buy the solution through the creation of a public tender; and promoting the solution once purchased.

Competition allows procurers to achieve low prices and high potential volumes are important to allow suppliers to achieve low prices by economies of scale. However, suppliers highly value the opportunity to differentiate themselves from competitors on criteria other than price since this allows them to gain or keep market share by providing better value for the customer at a competitive cost. The Forward Commitment Procurement (FCP) approach to innovation procurement described below supports this supplier need and, used well, attracts high quality suppliers.

Innovation Procurement Methodology

Forward Commitment Procurement

The innovation procurement approach adopted by the pilot projects was based on the Forward Commitment Procurement (FCP) method. FCP is a leader-led approach, meaning that one lead customer identifies an unmet need and works to define an outcome based requirement that can be communicated to the market. Ideally they would also then support the development of a wider market to demonstrate to suppliers that there is demand for the innovative product, solution or service.



Overview of the FCP Model showing the different activities undertaken at each stage of the process.

The FCP model translates into the public sector an approach typically taken by business in using supply chain management and procurement to promote investment in new products. Private sector companies actively manage their supply chains to promote investment in innovation and new or improved products. They do this by engaging with their suppliers and providing credible information about their future requirements and purchases. This provides the incentive and security for the supply chain to invest to deliver what is needed, when it is needed, at a price that is affordable. By mirroring this approach FCP provides an early market engagement tool for the public sector to create the conditions for their supply chains to flourish and deliver new cost effective solutions in a way that manages the risk for the customer and the supplier.

FCP is a step-by-step incremental approach to innovation procurement, incorporating the elements of innovation procurement good practice and is designed to help manage the risk of innovation for both the customer and supplier. Not all stages of the FCP process may be feasible or indeed necessary in all cases. The process is adapted to suit the circumstances of the customer, the timeframe of the project and the nature of the supply chain. It is therefore useful to understand the rationale of the different stages so that their relative importance can be judged for different circumstances.

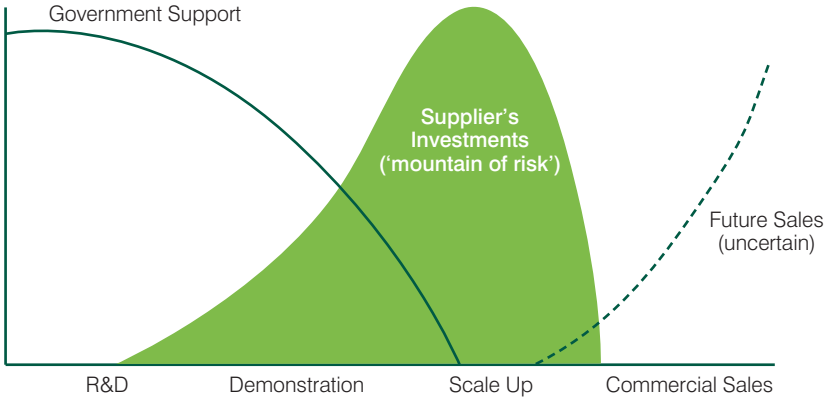
Background and origins

FCP was conceived and the methodology first developed by the Environmental Innovations Advisory Group (EIAG, 2005-20081) which was set up to examine the relative failure of the environmental sector to bring innovations to market and to make recommendations on how this could be remedied. EIAG paid particular attention to the risks faced by the supplier (see figure below).

The analysis carried out by EIAG highlighted that the time of maximum risk for a supplier is not during the research and development phase, which is relatively inexpensive. Rather it is when much larger amounts of money and time are spent on demonstrations and scaling up before commercial sales prove that the market will buy the product. State aid rules mean that this is a phase when grants are not readily available, while public procurement practice means that very rarely will there be any firm indication that commercial sales will result once the product is available (DTI 2006[1]).

EIAG concluded that rather than a funding gap producing a 'valley of death' between the relatively low cost and risk of the R&D phase of product development and the revenue flow in the commercialisation phase, suppliers faced a 'mountain of risk' (see figure below).

They identified that uncertainty of future sales, rather than the lack of funds, is the dominant barrier. Rather than any lack of research, invention or innovative aspiration, the relative failure of environmental innovation was due to a lack of 'credible articulated demand'. EIAG felt that this could be remedied by the public sector taking action to mobilise the supply chain to deliver environmental innovations through intelligent supply chain management.



EIAG re-imagined the 'valley of death' as a 'mountain of risk'.

Shown in the figure above is the risk profile of a supplier of innovation. The time of maximum risk (indicated as the 'mountain of risk') occurs during demonstration and scaling up. Suppliers have to invest while there is uncertainty about future commercial sales. (Adapted by Van Meerveld, Nauta and Whyles (2014) from DTI (2006)[2]).

It was on this basis that EIAG conceived, developed and tested a public procurement methodology, which could be capable of driving environmental innovation and called it 'Forward Commitment Procurement'.

'In essence, the approach involves providing advance information of future needs, searching out and engaging with potential suppliers and, critically, incentivising them through a Forward Commitment - the promise of current and future business to promote investment in innovative new product development' (DTI 2006).

[1] Bridging the gap between environmental necessity and economic opportunity, First report of the Environmental Innovations Advisory Group, DTI 2006

[2] H. van Meerveld, N.J. Nauta and G. Whyles (2013) Forward Committment Procurement and its effect on perceived risks in PPI projects

FCP: a step-by-step process

The actions in FCP form a coherent and incremental process that procuring organisations can follow. It enables both customers and suppliers to approach innovation procurement in stages whereby decisions are made to proceed or withdraw based on the outcome of the preceding stage. It is reassuring for both parties to know that they can withdraw at any stage in the process having incurred only the justifiable 'opportunity costs' and only progress should the market and organisational conditions justify the investment.

The incremental process of gradual adjustment of standard procurement approaches, together with methods and examples of how to implement each stage that are consistent with procurement regulations help to facilitate the acceptance of innovation procurement within the organisation.

The FCP process distinguishes three phases of innovation procurement: identify the unmet need and embed in the organisation; engage the market by presenting a credible demand; implement pro-innovation procurement process.

The three stages of FCP are outlined below:

Stage 1: Identification

All the pilot projects began with an identification stage. In this stage, the customer identifies unmet needs or opportunities within the organisation that require innovation, engages and consults the relevant stakeholders, defines the unmet need and requirement in terms of outcomes, and embeds the project within the organisation.

This stage aims to create the conditions necessary for credible engagement with the market, by providing the missing 'credible articulated demand'.

It also helps to create the conditions for innovation in the organisation and a firm foundation for the credible engagement with the market. It is, however, part of the process that is often over looked in discussions of good innovation procurement practice. Innovation is often seen as a threat to the norm and resistance to change is a common feature of organisations. Ensuring that internal stakeholders are involved and consulted from the start of the project helps to not only ensure that the unmet need and requirement is understood accurately, but that stakeholders and end users will be receptive to new solutions when they are implemented.

The end point of the identification stage is a genuine, credible unmet need expressed as an outcome based requirement. All the actions undertaken in the identification stage are to achieve this result.

Outcome based requirements are a cornerstone of innovation procurement and the FCP process. An outcome based specification focuses on the desired outcomes that are required from goods or services rather than a detailed technical specification. This allows providers scope to propose innovative solutions that might not have occurred to the delivery team. Outcome based specifications are also known as 'functional specifications'.

Stakeholder Engagement

Stakeholder engagement is an important part of the identification stage. There are a wide-range of internal stakeholders involved in and affected by any procurement, for example the budget holder, the operational managers, end-users, environmental managers, finance managers and, of course, procurement staff. These stakeholders have an investment in the solution and are best placed to determine the shortcomings with existing solutions and what the solution needs to deliver.

The purpose of stakeholder engagement is to gather practical insights into the current situation surrounding the procurement in question, how requirements may need to change to adjust to future conditions and how it could be improved. Consultation and engagement also serves to engage staff in the acceptance of new solutions. Identifying and enrolling the necessary stakeholders was an essential starting point for the pilot projects.

The enrolment of key stakeholders helps to:

- Establish willing participation in the adoption of new procurement approaches
- Enable the accurate definition of the unmet needs and supply requirement
- Ensure all opinions are heard
- Provide a forum for assumptions to be challenged and the status quo questioned
- Support acceptance of new solutions and technology

Stakeholder engagement works to underpin the project's success and to create a firm foundation for the project implementation within the organisation, ensuring that the unmet need and requirement are defined accurately and fostering a willingness to accept new approaches and solutions.

Stage 2: Market Engagement

The market engagement phase is a 'pre-procurement' activity i.e. it takes place before a formal procurement procedure begins. Its purpose is to assess the appetite, capacity and capability of the market to respond to the customer's requirements. It is never used to assess or evaluate suppliers. Successful market engagement requires a pro-active approach on the part of the customer and for suppliers to believe that the customers are serious and committed.

The FCP model describes a two-stage process of market engagement: a market sounding stage and a market consultation stage. The market sounding stage typically involves remote consultation with the market and the use of a response form where the market actors respond to the expressed outcome requirement. The market consultation stage typically involves direct contact with potential suppliers in a meeting, a workshop or event such as a site visit.

The feedback from the market-sounding phase enables the customer to assess the capacity, capability and willingness of the supply chain to deliver a solution based on the information it has provided. It also enables the supply chain to comment on the requirement helping the customer to refine their requirement. Aligning customers' needs and market capabilities is an important factor in the success of innovation procurement.

If alignment is necessary (i.e. the market is unable to meet the demand in the current market conditions), the project, approach or requirement may need to be refined before procurement begins. For example, more research may be needed, policy or regulatory barriers may need to be overcome, or the market may need a longer term commitment from the customer to justify investment.

Market engagement also enables customers to get insights into the supplier perspective and understand the framework conditions for innovation. For example, information about regulatory and other barriers that suppliers may face.

Successful market engagement not only provides advance notice to suppliers of a customer's needs, it also serves to break down barriers between customers and suppliers, and helps to determine the procurement strategy that is most likely to deliver the desired outcomes.

Typically, market engagement involves customers providing written communication to the market, launching the market engagement in a way that ensures all potential suppliers are aware of the opportunity, for example using a Prior Information Notice (PIN) published in the Official Journal of the European Union (OJEU) and the physical engagement of suppliers in a workshop and / or meetings.

Market engagement tools used in the pilot projects included:

- Prior Information Notice (PIN)
- Market Sounding Prospectus (MSP)
- Market Consultation Questionnaire or Response Form
- Technical Dialogue
- Market Workshops
- Site Visits

Stage 3: Pro-innovation Procurement

Much of the work of innovation procurement is undertaken in the identification and market engagement stages, before the formal tendering process gets underway. This pre-tender activity creates the necessary conditions for innovation in the customer organisation and supply chain. For example, it ensures that the unmet need and requirement are accurate and that stakeholders are engaged (which will support acceptance of new solutions) ; that the project is fully embedded in the organisations and has senior management support: and that there is a budget approved. However, if an innovation procurement project is to succeed this pro-innovation approach needs to be continued into the procurement process.

Pro-innovation procurement means conducting the tendering process in a way that gives innovative solutions a chance to compete on a level playing field. The tendering process needs to be designed to support and enable innovative solutions to be presented and given due consideration.

A useful tool at this stage in the process is a 'pro-innovation procurement strategy'. The time taken to develop the strategy is usually well spent, providing a valuable framework to bring together internal stakeholders around common objectives and address any divergences of opinion before the formal procurement process begins.

A 'pro-innovation procurement strategy' is one designed to allow suppliers' scope to bring innovative solutions to the table and an opportunity to distinguish their products and services on factors other than price alone. When pro-innovation procurement is new for those involved in the evaluation process a formal document, agreed by the project team and signed off at Board level or equivalent, provides a 'touch stone' and common point of reference for the evaluation committee.

The pro-innovation procurement tools adopted in the pilots included:

Outcome based / functional specifications: The potential for finding an innovative solution is greatest when buyers specify what they want in terms of outputs or outcomes. An outcome based specification focuses on the desired outcomes that are required from goods or services rather than a detailed technical specification. This allows providers scope to propose innovative solutions that might not have occurred to the delivery team. Outcome based specifications are sometimes referred to as 'functional specifications'.

Outcome based specifications allow suppliers to present innovative solutions rather than being tied to supplying existing products and services.

Pro-innovation specifications: Suppliers can be concerned that offering new solutions will be seen as too risky by the customer. Specifically referencing a willingness to consider and provide trial opportunities for new solutions encourages suppliers to bring forward innovative ideas.

Competitive dialogue: The competitive dialogue procedure provides scope for client / supplier dialogue and this is invaluable when innovative solutions are being sought. It allows discussion with suppliers and innovators to determine how their solution meets the need expressed and how it can be developed to the point of supply. Using the Competitive Dialogue process enables customers and suppliers to discuss options and solutions and for both sides to achieve greater clarity of what is needed and what is feasible within the constraints of the tender process before proceeding to final bids. The process aims to increase value by encouraging innovation and to maintain competitive pressure. The new EU procurement directives should make competitive dialogue more freely available to customers where innovation is sought from suppliers.

Pre-Qualification Questionnaire (PQQ): The purpose of the Pre-Qualification Questionnaire is to help the contracting authority to evaluate the expertise and suitability of potential suppliers to meet the advertised requirement and determines which potential suppliers will be invited to tender. PQQs are (surprisingly) where many opportunities for innovation can be lost. Standard PQQs can be a barrier for small suppliers and those without a track record in the sector concerned, which may mean that companies with the potential to offer innovative solutions and valuable experience from other sectors are excluded from tendering. PQQs can also be an opportunity to reinforce messages about innovation.

Trials and demonstrations within the procurement process: All too often demonstrations fail to reach the market. Undertaking a demonstration within an innovation procurement process not only ensures that if proven successful, the solution has a ready-made market, but also that the solution is in the first place accurately directed to meet the needs of the customer so is more likely to prove a success.

Forward commitment: Giving a supplier confidence in a future market underpins the FCP approach adopted in the pilots. At the tendering stage of an innovation procurement project the customer should have the information needed to assess the level of commitment necessary for suppliers to present a competitive bid. This may, for example, mean a longer term contract to enable suppliers to recover their investments.

Stimulating wider market demand: Another way in which customers can help increase the confidence of suppliers in a future market is by helping to create a wider demand. At the tendering stage this could even mean joint procurement.

Evaluation criteria based on factors other than price: The evaluation criterion adopted are of critical importance in creating a level playing field for innovative solutions. Giving suppliers an opportunity to differentiate their offerings on factors other than price is key. Price based tendering is unlikely to encourage innovation. Customers need to consider carefully both the criteria they will use and how they will arrive at a consensus evaluation score among the project team or evaluation committee.

Whole-life costing / total cost of ownership: The cost of a product is not just its purchase price. There are hidden costs for the customer associated with operation, maintenance, end of life disposal and such like. Taking into account these costs enables customers to realise the true costs of goods and services. Value for money is the optimum combination of whole-life cost and quality to meet the needs of the customer.

Whole-life cost, or life-cycle cost (LCC), commonly referred to as "cradle to grave" costs, refers to the total cost of ownership over the life of an asset. It includes the whole- life financial cost, which is relatively simple to calculate, and the environmental and social costs and benefits which can be more difficult to quantify. Expenditure included in calculating the whole-life financial cost include, planning, design, construction and acquisition, operations, maintenance, renewal and rehabilitation, depreciation and cost of finance and replacement or disposal.

New procedures: The new public procurement directives have introduced new procedures (including competitive procedure with negotiation and innovation partnerships). National implementing legislation should be consulted as this will determine how these procedures have been adopted at a national level.

Evaluation based on Whole Life Costing or Total Cost of Ownership

A peer learning workshop was held in Rotterdam on 13 January 2016 at the Erasmus Medical Centre. The peer learning workshop included a site visit to see the award winning automated VMARC bed and mattress cleaning facility in operation and to hear first-hand about the experience of the procurer and supplier in using innovation procurement to deliver better, cost effective and more environmentally sustainable outcomes.

The workshop also looked in more detail at a key aspect of the projects success: total cost of ownership (TCO). The goal of TCO is to find the optimum between investment and operational costs, so rather than making procurement decision based on lowest price, look to make decision based on lowest cost of TCO.

The principles of TCO were outlined and a worked exampled illustrated that the lowest purchase price does not reflect the cost of owning equipment over its life cycle.

To learn more about TCO, visit the EcoQUIP Resource Centre to watch the video of the session: **http://www.ecoquip.eu/resource-centre.html**

Innovation Procurement in Practice

Pilot Project Case Studies

The pilot projects set out to test innovation approaches across diverse regions and cultures, aiming to demonstrate what is possible, how innovation procurement can be adapted to different organisational and legal structures, and ultimately to create examples of good practice for the wider population of hospitals in Europe. This section of the report describes in detail five of the EcoQUIP leader-led projects.

Each of the pilots followed the three FCP stages of identification, market engagement and pro-innovation procurement described previously. This three stage process is reflected in the structure of the case studies. Each of the pilots were, however, unique in the way they adapted and applied the FCP model to the nature of the problem or opportunity, the scale of the investment, the nature of the supply chain and the procurement and organisational culture in which the projects were undertaken.

A range of supporting documents used in the pilots, including examples of Prior Information Notices, Market Sounding Documents and Tender Adverts, can be found at **www.ecoquip.eu.**

The Pilot Projects

The necessity driving the need for innovation in these five pilots fell into one of two categories:

1. Existing service contracts coming to an end and the need for step-change improvements and service transformation

   The Rotherham NHS Foundation Trust, Rotherham, UK

   People Centred Low Carbon Catering Services for Hospitals

   The University Hospital of Bologna (AOSP), Emilia – Romagna Region, Italy

   Integrated people-centered and environmentally sustainable facilities services

2. Problems that needed an innovative solution

   Erasmus MC, Rotterdam, The Netherlands

   Advanced robotic bed-washing created through an innovation procurement

   Nottingham University Hospitals NHS Trust, Nottingham UK

   Ultra-Low Emission Energy Solution

   Sucha Beskidzka Hospital, Sucha Beskidzka, Poland

   Photovoltaic Awnings System – providing thermal comfort, making a hospital greener.

Erasmus Medical Centre, Rotterdam, The Netherlands

Advanced robotic bed-washing a delivering auditable, replicable and green bed-washing

Erasmus Medical Centre (Erasmus MC) is one of eight University Medical Centers in The Netherlands. Erasmus MC's vision is to become a recognized leader in health and healthcare innovation. Erasmus MC also has a strategic ambition to be a green, low carbon hospital and to decrease the total amount of energy used in combination with efficient processes in the new hospital.

This pilot project was undertaken in the context of the design, build and equipping of a new 900 bed hospital being built on the same site as the 'old' hospital. The new hospital was designed not only to be an excellent building but also to be a truly healing environment. This major building project has been in progress since 2009 and will be completed in 2018.

Project Overview

The project related to the need to purchase a new bed washing facility/solution suitable for use in the new hospital which could wash 70,000 beds every year. A review of the existing bed washing facility demonstrated that it was highly resource intensive, primitive and, in fact, no longer produced by the original supplier. Although new solutions were available on the market, the project team wanted to be more ambitious and find a solution that truly added value to the primary processes and green ambitions.

Erasmus MC decided to explore the ability of the market to supply a solution that met all their requirements: the bed washing solution should be environmentally sustainable, fit-for-purpose, and deliver replicable, consistent and auditable cleaning outcomes. In order to stimulate and support the supply chain to deliver this innovative solution, the Forward Commitment Procurement (FCP) innovation procurement method was used.

The project led to the creation of a totally new solution that delivers the required outcomes and has a lower total cost of ownership than the old bed washing facility. Two advanced fully automatic robotic cleaning-units - known as "VMARCs" - are now installed and running.

Innovation often involves cross fertilisation between supply chains. This solution combines existing proven robotics technologies with new, and newly combined, innovations. Robotic technology, developed for car production lines has been adapted to solve the problem of bed cleaning in hospitals. The technology developed also has wider applications throughout the healthcare sector for resource efficient precision cleaning of hospital equipment.

Erasmus MC has not only acquired a replicable, consistent and auditable bed cleaning process, but also a more cost-effective solution with a significantly lower environmental impact in comparison with the previous solutions and others that were already available on the market. The Total Cost of Ownership (TCO) of a single clean bed was lowered by 35% and the CO2 footprint by as much as 65%.

Erasmus MC won the European Commission's first Public Procurement of Innovation Award for this project.

"The product is completely new and developed directly in response to the innovation procurement project to meet the unmet needs of Erasmus MC".

Maarten Timmerman,
Strategic Buyer

Innovation Procurement

Identification

The first step in the project was to set up a cross-departmental project team involving all the key stakeholders within the hospital and an external project facilitator. Through a consultative process an unmet need was identified and the product requirement defined in outcome terms.

The process was supported by an external facilitator from the Netherlands Organisation for Applied Scientific Research (TNO) who was trained in innovation procurement – specifically the FCP methodology. As an external project team member, the TNO advisor played a key role by acting as innovation procurement coach and as project facilitator; helping to coordinate the project, assist team members and question the seemingly obvious.

Defining the need in terms of outcomes

The outcome based requirements agreed through the consultation process were as follows:

- Capacity to clean 70,000 beds per year
- A reduction in carbon footprint (compared to "old" facility)
- A solution that also enables the measurement, checking and control of bed cleaning and disinfection; an auditable process
- Total cost of ownership over the life cycle of the solution to be as low as possible, while achieving the other outcomes.

As the project progressed, the original project team identified that procurement was usually dealt with at the level of a budget holder (usually by a head of department) assisted by procurement staff and with staff from the relevant department occasionally involved. However, the project team soon realised that for this project a wider perspective was needed and greater involvement of a broad range of stakeholders and this led to the creation of a Decision Making Unit (DMU).

Once the outline of the procurement was agreed and all the important stakeholders were committed, senior management was approached for approval to proceed with the project. In this case approval was required from both senior management and the Tender Board which governs all procurement projects at the hospital. This not only gave the project team formal status, but also ensured that future activities would not be compromised by last minute changes, shifting priorities, extra bureaucracy or steps in the procurement process.

Embedding the project in the organisation by establishing a Decision Making Unit (DMU)

A DMU is a group of employees responsible for finalising major decisions, usually involving a purchase. Major purchases typically require input from various parts of the organisation. Highly technical purchases, such as production equipment, also require the expertise of technical specialists. In some cases the DMU is an informal ad hoc group, but in this case, it was created as a formally sanctioned group with a specific mandate.

There are typically six roles within a DMU:

1. Initiator who suggests purchasing a product or service.
2. Influencers who try to affect the outcome decision with their opinions.
3. Deciders who have the final decision.
4. Buyers who are responsible for the contract.
5. End users of the item being purchased.
6. Gatekeepers who control the flow of information.

These six roles are formal roles.

In terms of effective project governance and embedding the project in the organisation, the following was important:

- Identifying the decision making group as early as possible
- Ensuring that the group was recognised by senior management
- Making clear the role and influence each member played during the procurement process
- Making the priorities or agendas of each members transparent (this can differ significantly)
- Reminding members of their role and agendas during the process
- Making sure the team is complete (has an important influencer been forgotten?).

Market Engagement

A pro-active market engagement campaign included publication of a Prior Information Notice (PIN) in the Official Journal of the European Union (OJEU). This was publicized widely in the national press as well as trade magazines and via social media. As a result, the project received a great deal of attention in the media and there was considerable interest from the market.

"Market engagement is about convincing the supply-chain you are a serious and credible customer".

Jeroen Veenendaal
Former Strategic Procurement Manager

Erasmus MC organised a market meeting day to stimulate innovation and cooperation among suppliers prior to a formal tender being launched. The goal of this 'market meeting day' was to discuss in detail the challenge: how to efficiently clean beds in a sustainable way in the context of Erasmus MC.

A large number of suppliers (around 60 people) attended, as well as stakeholders and several other healthcare organisations. The participants had various backgrounds, such as industrial designers, cleaning organisations, university centres of innovation, mechanical engineers and many others. Furthermore, the attendance of other healthcare parties showed that there was a wider future market for innovative solutions.

The market meeting day focused on:

- Providing parties with more insight into the challenge set by Erasmus MC
- Demonstrating the commitment of Erasmus MC to buy innovative solutions
- Helping potential suppliers find partners to develop better and more innovative solutions
- Discussing how Erasmus MC should organise the procurement process (e.g. tender procedure and awarding of contract) to enhance the chances of a successful outcome.

The day started with presentations to clearly communicate the project and the outcomes needed. This was followed by a guided tour to demonstrate the importance of clean beds and demonstrate the existing bed cleaning process. The afternoon session was highly interactive. In multiple discussion sessions people were invited to address questions like "how clean should hospital beds be?" and "how do we determine the most sustainable solution?"

In one of the most interesting sessions, each organisation was asked to write down their skills and competencies and highlight gaps in information, skills or techniques needed to develop an effective solution. This activity created a platform for suppliers to find potential partners to create a consortium with the necessary knowledge and skills to deliver the outcomes.

Despite this kind of process being very new to them the workshop participants responded positively and enthusiastically. The Erasmus MC team emphasised that although any individual company in the room could create a 'good enough' solution for the challenge, the team wanted to encourage joint effort combining different ideas and techniques in order to create the best possible solution.

Over the course of the day participation and open communication was encouraged and facilitated and as the day progressed the market parties became more and more open to each other and were able to share ideas and work on future collaborations.

"Market engagement gave us the opportunity to test and influence the market and highlight issues that the supply chain may not be aware of. For example, we tried completely new industrial sectors that have no track record in healthcare. They responded enthusiastically to our challenge!"

Joram Nauta, Senior Project Manager, TNO

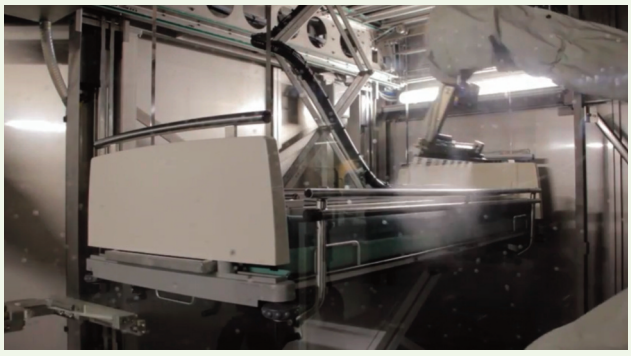
Pro-innovation Procurement

On the basis of the information from the market engagement phase the outcome based specification was refined. Securing internal backing was also vital at this stage to ensure that senior managers and the organisation was fully behind the project, and Erasmus MC developed a pro-innovation procurement strategy for approval to ensure that the procurement was founded on solid ground.

As part of the pro-innovation procurement strategy it became clear that award criterion were vital to ensure the best solution. Following discussions the following criteria were established:

- Total Cost of Ownership (TCO)/Service
- Carbon Footprint
- Fit with strategy of Erasmus MC organization.

This was a radical change from normal procurement practice in that the emphasis was on qualitative criteria, which would not normally play any significant role in evaluation. Providers of solutions were encouraged throughout to consider the whole life-cycle impact of the offered solution.



VMARC robotic bed washing solution in action

Award Criteria

Erasmus MC developed three award criteria for it's new bed cleaning facility:

1. Total Cost of Ownership/Service,

2. Carbon Footprint, and

3. Fit with strategy of Erasmus MC organisation.

By making carbon footprint an award criterion, Erasmus MC sent a strong signal to the market that suppliers have an important role to play in reducing embedded carbon, both in their products and their supply chain. The importance of this was signalled from the start, i.e. in the market consultation document, and it was constantly reinforced, ultimately becoming one of the three foundations of the procurement strategy.

As Erasmus MC did not have any prior experience of using embedded carbon as an award criteria, nor did the supply chain (that emerged from the market meeting day), the help of external advisors (TNO) was invaluable in determining mechanisms to enable the different solutions to be compared fairly.

The criteria ensured that the solution could be implemented and managed effectively in the context of the hospital, that it was aligned with other operations in the hospital, and whether it would be delivered when needed and to the required quality standards.

Other important aspects of the procurement strategy included the use of Competitive Dialogue procedure based on an outcome specification to enable maximum opportunities for innovation. The aim of the strategy was to maximise the number of potential consortia that could present their ideas during the competitive dialogue and then to reduce the number of participants as the dialogue process progressed. The competitive dialogue began with eight participants, of which two made it to the final bid phase.

Baseline data for the Total Cost of Ownership and Carbon Footprint of the current solution were calculated to support the procurement process and ensure that benefits could be calculated. To help suppliers to calculate the Total Cost of Ownership (TCO) / and carbon of their solutions support and expertise was offered by TNO.

Outcomes and Innovation

The contract was initially awarded to IMS Medical (a Dutch SME) for delivery of two fully automated robotic bed-washing units. A payment scheme was agreed upon for each of the phases of development until delivery on-site, for example an initial payment for the detailed design and development and a payment after a successful on-site tests. In this manner the development and proof of concept was in essence co-financed. The final payment for the units was conditional on the success of the tests on-site. After the initial development phase the contract was taken over by IMS Innovations who were also an investor and the actual design and construction company participant. The contract was extended with an agreement on an uptime-guarantee of at least 98%.

The technical development and testing required, and indeed the technical risk, was considerable including a number of unforeseen problems that were solved by the suppliers working in close cooperation with the customer and ultimately leading to better outcomes.

> "Upon signing the contract, a real partnership was formed. This proved to be a dynamic process by which the necessary adjustments were and had to be made by experimentation. All final development and delivery has been done in continuous dialogue."
>
> Maarten Timmerman,
> Strategic Buyer

Summary of benefits

- Reduced environmental impact: a 65% reduction in CO2 footprint was achieved and verified. An external consultancy (TNO) provided technical support for carbon-footprint assessment and TCO calculations. Verification results can be provided upon request. Reduced water and chemical consumption and disposal as the new solution uses steam and reverse osmosis water with very few chemicals
- Cost efficiencies: a 35% reduction in Total Cost of Ownership (TCO).
- Improved and auditable cleaning of beds: the level of cleanliness of the beds is assessed using ATP swab testing to ensure freedom from bacteria.
- Replicable and auditable cleaning of beds for health and hygiene: The new solution is a precision solution that cleans beds to a consistent standard and can be audited and tracked.
- Ability to clean a wide range of hospital equipment: the new solution can also be programmed to clean a wide range of hospital equipment to a high and auditable standard (e.g. wheel chairs, drip stands and food trolleys).

A range of additional features: during the development of the solution the close relationship with the supplier enabled deeper understanding of the potential of the solution and additional features were able to be incorporated such as track and tracing the cleaning history of each bed; scanning of the bed for faults and maintenance; use of reverse osmosis water to facilitate lower temperature cleaning and rapid drying.

This solution for cleaning hospital equipment is totally new to the healthcare market. Robotics technology is widely used in the automotive and other industries, with an increasing number of applications in the world of healthcare. Other innovations within the solution included the development of a steam nozzle to enable precision cleaning with minimum water and chemicals and the use of reverse osmosis water to enable rapid drying, lower wash temperatures and less chemicals. Due to the in-built flexibility of robotic cleaning and disinfection, it can easily be scaled up internally and with other hospitals, as they face a similar challenge.

There is also considerable scope for broader applications to other equipment that needs cleaning. The VMarc can be programmed to clean all equipment that has standard dimensions and needs reliable, auditable and regular cleaning, for example wheel chairs, drip stands, food trolleys. As the risk (personal and financial) of Hospital Acquired Infections (HAI) increases the market for first class hygiene and auditable cleaning processes is expected to develop and expand.

A video of the "VMarcs" can be found at:
http://www.imsinnovations.nl/index.php/nieuwsarchief/67-nieuwe-video-beddenwasstraat

Nottingham University Hospitals NHS Trust

Ultra-Low Carbon Energy Solution for the City Campus

Nottingham University Hospitals NHS Trust (NUH) is one of the largest acute teaching hospitals in England. It was established in April 2006 after the merger of the Nottingham City Hospital and the Queen's Medical Centre (QMC).

The NUH City Hospital Campus is located in a 30.69 Hectare estate comprising more than 150 buildings

The Trust has an annual income of over €1000 million and employs more than 14,000 staff. The clinical activities include 'general hospital' type care services for the local population of Nottingham and a wide range of specialist services for patients across the East Midlands region of the UK and beyond. It provides 24/7 acute and specialist services to over 2.5 million residents of Nottingham and its surroundings communities.

The City Hospital Campus is located in a 30.69 Ha estate comprising more than 150 buildings dating from the 1800s, through the 1960s, to the present day. One of these has a heritage status and many of them have poor energy performance.

Project Overview

This project concerned the need for NUH to replace its main heating and power facilities. For the last 35 years the primary source of heat to the City Campus has been a coal-fired boiler linked to a steam distribution network. Both the boiler and the distribution network are coming to the end of their useful life, providing an ideal opportunity to fundamentally rethink the Trusts approach to energy supply and management and bring the Trust's heat and power solution up to date.

Underlying the project was an awareness of unprecedented challenges associated with increasing energy costs; the price of carbon; the need for flexibility in building use in the face of changing healthcare provision; and the goal of a substantial reduction in CO2 emissions. Moreover, the Project Board were well aware of the detrimental health impacts of poor air quality and climate change and therefore the importance of healthcare organisations taking a position of leadership in the use of clean energy.

> "We have an important duty in respect to climate change, to become ever more environmentally friendly and reduce our carbon footprint. This is a fundamental rethink of our energy provision, and we will step up to our role as an early mover".
>
> Peter Homa, NUH CEO

The Project Board agreed three core requirements for the Trust's new energy solution:

- To be leaner: reducing the amount of energy consumed when delivering healthcare.
- To be cleaner: utilising clean, high efficiency onsite power generation, which has the flexibility to meet current and future energy needs.
- To be greener: exploiting all technically and commercially viable zero carbon and zero emission technologies.

Energy consultants were asked to review the different options for the Trust and their proposal was to replace the central boiler with a large scale combined heat and power (CHP) plant. However, the project board realised that, although this would meet their immediate needs, it would not deliver their longer term carbon and energy efficiency targets, nor offer the necessary flexibility in energy generation in a changing healthcare environment.

Instead the Trust adopted an innovation procurement approach, consulting widely with the market in advance of the formal tendering process. As a result, it became clear that there were solutions available that had the potential to deliver both the long term carbon and energy efficiency targets and the required flexibility in energy generation to match the Trust's changing needs over the coming years.

The innovation procurement approach gave the Trust the insights and tools needed to think beyond what was currently available, challenge business as usual solutions and engage the market in pre-tender dialogue to determine what was possible given the right market conditions.

The project was subject to a number of delays arising from unexpected organisational developments which were outside the control of the project team and the need to provide suppliers with more detailed information on the future estate strategy, state of the infrastructure, energy consumption and future projections. In addition, it became clear that the changes taking place in the Trust meant that the project team lacked the technical knowledge and resources to conduct this complex procurement without external technical support. The procurement strategy therefore recommended that the Trust adopt the Carbon Energy Fund procurement framework.

Once the information had been gathered, an Estates Strategy developed and a procurement framework selected, the tender for an 'Ultra-low carbon, low emission Energy Solution' was ready for publication in autumn 2016 through the Carbon Energy Fund. It is expected that the delivery of the solution will be completed in 2018/19.

It would be easy to discount innovative technologies early in the business case development process due to a high level optimism bias. Therefore, the appraisal of options in the preparation of the business case must take this into account to ensure focus is set on the strategic aspects of the innovation and not simply on the financial element to prevent discounting the innovation too early in the business case development.

Innovation Procurement

Identification

The project was driven by the need to replace an ageing, carbon intensive and inefficient energy generation and distribution system. The energy manager was tasked to undertake a review, and reported to the Director of Estates and Facilities that:

- The coal fired City Hospital boiler house and steam distribution system is over 35 years old and requires significant investment over the coming years to ensure continued supply of steam for heating and hot water to the site.
- The standby gas fired boilers are in need of replacement, as they are nearing the end of their useful life.
- There are several potential single points of failure in the distribution system that need to be eliminated.
- NUH is committed to achieving the NHS Carbon Reduction Strategy target to reduce the NHS carbon emissions by 34% by 2020 and 50% by 2030, from a 1990 baseline. The current heating demand represents 67% of the Campus' carbon footprint.
- The new solution would need to take into account the changing nature of healthcare delivery which could lead to changes in future energy demands.
- The current cost of energy to the Trust is approximately £11 million a year, of which the City Campus energy costs are circa £4.5 million and any new solution will need to demonstrate financial as well as energy efficiencies in terms of whole life cost savings.

For the last 35 years the primary source of heat to the City Campus has been a coal-fired boiler linked to a steam distribution network. As well as being environmentally polluting, the boiler and the steam distribution network are coming to the end of their useful life.

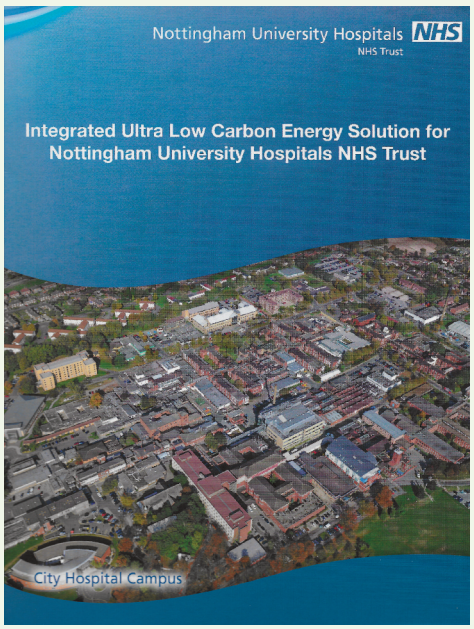
As a result of this assessment, the Trust commissioned consultants to advise on the replacement of the site's energy systems. The recommendations were based primarily around large centralised on-site energy generation that would deliver a significant one-time reduction in energy use and emissions, but would not necessarily achieve the long-term flexibility, carbon reductions, and reduced exposure to rising energy prices that the Trust required into the future. Consequently, the Trust decided to undertake an innovation procurement project that aimed to identify potential solutions that would enable the Trust to achieve the recommendations.

Market Engagement

Adopting an innovation procurement approach, the Trust decided to look beyond the solutions commonly in use in the NHS and engage with the market to understand what could be achieved given the right market conditions. The trust posed two questions to the market:

- Can we do better than a large scale traditional CHP solution?
- What technology, goods, and services are available to support delivery of a forward looking integrated approach?

A Prior Information Notice (PIN) was issued to communicate the unmet need, supported by a Market Sounding Prospectus and a site visit for interested parties.



Outcome based requirement

The Trust needs to procure an innovative and integrated ultra-low carbon energy supply and management solution, so that it is able to adapt to meet the Trust's power, heat and cooling needs now and in the future.

The energy solution needs to be reliable, low maintenance and flexible enough to meet the shifting demands of healthcare over the next 20 years.

It should be cost effective, deliver progressive improvements and be future proofed i.e. take advantage of new and emerging technologies and anticipate increases in the cost of energy and carbon and in emissions standards.

The Trust is interested in exploring innovative technical, commercial and financial arrangements with potential suppliers, for example to spread the costs of capital investment and facilitate take-up of emerging technologies.

The market sounding received an enthusiastic response from the supply chain, with over 120 people registering their interest and attending a site visit in January 2012. Over 65 high quality and often detailed responses to a market consultation questionnaire were received. These responses gave a highly informative snap-shot of the state of the market.

The main messages from the suppliers at the site meeting:

- The supply chain is confident of meeting the Trust's 34% reduction by 2020
- New technologies are available that support the project objectives, including fuel cells combined cooling, heat and power systems, and a range of renewable energy technologies (PV, Biomass, etc.)
- The supply chain is ready for the challenge
- However, more information is needed and NUH need to opt for either a centralised, decentralised or hybrid solution prior to tendering

Feedback from this market engagement exercise was that in order to arrive at a credible tender specification, the Trust needed to look in more detail at the current situation with regards to energy consumption and costs. In addition, potential suppliers would need to have more clarity on the condition of the buildings and estate and better understand the long-term energy needs in the context of the Trust's clinical and estates strategies. For example, regarding closure of buildings, the future of the laundry and relocation of clinical services.

Refinement of the specification and embedding in the organisation

At this point in the process, the project was subject to a number of delays arising from unexpected events, such as the need to up-grade the CHP Plant located at the NUH Queens Medical Centre, out-sourcing of the Estates and Facilities activities, multiple staff losses, roles relocation and changes leading to loss of skills and leadership. In addition, new requirements were introduced requiring NHS Trusts to submit detailed business cases for large scale capital projects to central government for approval, which added further delays. During the life of the ULCES Project new guidelines were published for the NHS to inform the approval process of business cases of large capital projects in the public sector.

Guidelines on financial appraisal of different solutions explored for the development of the business case require the inclusion of a risk factor inflation called "optimism bias" to account for the risk of potential problems during installation or operation. The proportion of cost inflation is based on a number of different variables including whether a solution has been used before in the healthcare sector. This approach to costing might disadvantage innovative technologies and solutions early in the business case development. However, as the business case is developed through the key approval gates (Strategic Outline Case, Outline Business Case and Final Business Case), Optimism Bias is reduced accordingly as more information and certainty exists to inform the business case.The process for completing the clinical and estates strategy was also taking longer than anticipated.

The project team was able to use the business case development and alignment with the estates and clinical strategies to stimulate a wider debate and detailed discussions among senior management. This helped to embed the project in the organisation and secure senior management endorsement for the procurement approach and ambitious specification.

A second phase of market engagement followed in 2015 and a PIN was published in the OJEU with a refined outcome based specification and a second site meeting held in January 2015.

The site visit provided potential suppliers with an opportunity to hear more about the hospitals requirements and the procurement approach and tour the site. It also enabled suppliers to network and connect.

Extract from the Prior Information Notice (PIN) published in the OJEU

ULTRA LOW CARBON ENERGY SOLUTION

This project provides an opportunity to ensure that the Trust's energy provision is fit for the future and changing models of healthcare provision. The Trust needs to achieve more than a step-change reduction in energy demand and emissions; we want to reverse historical trends and deliver continuous efficiency improvements across the Trust over the next 20 years. To facilitate this, the Trust would like to explore options for trialling or demonstrating innovative solutions.

Following the market sounding exercise and a further review of the situation on site and future requirements, the Trust has established that rather than replace the central boiler, the Trust needs to move to a highly energy efficient partially or fully distributed energy solution. Several areas have been identified as suitable for a distributed solution, including the laundry, which is moving to 24hr commercial operation.

The Trust has determined that the best solution will be one that has the following outcomes:

- Cost effective (based on total cost of ownership)
- Reliable and resilient in operation
- Flexible in use - to meet variable demand efficiently
- Flexible in siting – low noise, low vibration, small footprint
- Future ready - adapt to changing needs of the hospital estate, climate etc.
- Low maintenance, with minimal down time
- High energy efficiency
- Low operational and embedded carbon
- Ultra-low emission - minimal emissions of greenhouse gases and other atmospheric pollutants, i.e. NOx, particulates and other pollutants detrimental to health

The Trust believes that an innovative solution is needed to deliver these outcomes and encourages the supply chain to propose technically innovative solutions. The Trust also wishes to understand the range of financing models that are available and to explore the scope for demonstrations and trialling of innovative solutions and any grant funding that may be available.

The Trust would specifically like to hear from suppliers regarding availability and feasibility of innovative and newly emerging solutions such as:

- The adoption of Fuel Cell CHP as all or part of this solution
- Tri-generation to provide cost effective cooling for certain high priority areas
- Options for energy demand management
- Non-capital financing options
- Grants and demonstration funding for innovative solutions (based on zero residual value).

The supply chain response was again encouraging, with key messages from potential suppliers:

- The Estates Strategy must be in place prior to tendering to minimise risk and manage costs
- More information on the energy consumption per building is needed
- A robust procurement framework is essential to guarantee a proper comparison of alternatives
- Fuel cell technology has considerable benefits, is increasingly affordable and could deliver all the Trusts requirements

EcoQUIP Study Tour: Fuel Cell Technology

As fuel cell CHP was of significant interest to NUH as a solution that was capable of delivering the required outcomes, the project team wished to increase their knowledge about this technology. An EcoQUIP Study Tour was organised for NUH and the wider network in April 2015.

The study tour involved presentations from suppliers and installers on the technology and benefits and a site visit to the UK's largest fuel cell CHP installation at the Crown Estates redevelopment in Regent St., London. The event not only provided participants with first hand insights into the potential of fuel cell CHP, it also demonstrated to suppliers that a number of the participating hospitals were interested to explore how the technology could be applied in their hospitals. As a result of the study tour one of the suppliers decided to apply to join the Carbon Energy Fund procurement framework for the supply of energy solutions to the public sector, and Hull NHS Trust subsequently shortlisted a fuel cell CHP solution for one of its sites.

Pro-innovation procurement

The project team reported to Senior Management the findings of the market engagement process. Reflecting on the need for a robust procurement framework and the recent loss of skill sets within the project team as a result of the out-sourcing of the estates department, the decision was made to adopt The Carbon and Energy Fund (CEF) procurement framework for the procurement of the solution, based on the outcomes communicated in the PIN.

The CEF was co-created with the Department of Health and was specifically created to fund, facilitate and project manage complex energy infrastructure upgrades for the NHS and wider Public Sector. It is a special purpose vehicle allowing different parts of the Public Sector and NHS to work together. It has a proven track record of more than 40 projects and in-depth experience of procurement, engineering, legal and finance.

The CEF has been specifically created to fund, facilitate and project manage complex energy infrastructure upgrades for the NHS and wider Public Sector and can offer the skills and frameworks to manage the tendering process in partnership with the Trust project Board and Project Team. CEF provides specialist support, knowledge and expertise throughout the life of the contract and sets a minimum guaranteed energy saving from the project.

The tender will initially hold a mini-competition based on the outcomes communicated to the market in the PIN, leading to the selection of preferred Bidders and the refinement of solutions via technical meetings. This will be followed by an Invitation to Tender (ITT) and selection of preferred Bidder.

The procurement under the CEF commenced in October 2016. Parallel to the procurement exercise, a business case will be developed and refined. Due to the long governance process attached to projects of this nature within the NHS, it is expected a contract will be signed in Winter/Spring of 2018, and the installation process will be completed in 2019.

Sucha Beskidzka Hospital, Poland

Innovation procurement of a photovoltaic awnings system – generating patient comfort and useful electricity at Sucha Hospital

Sucha Beskidzka Hospital

Sucha Beskidzka Hospital is a medium sized public hospital, with 441 beds in 17 wards providing services for the general population located in Suski county, in the South-Western part of Małopolska voivodship (province), Poland. The hospital opened in 1982 and is one of the largest and most modern in the region where it is perceived as a leader of change. Services performed by Sucha Beskidzka Hospital include hospital treatment, specialized outpatient care, emergency care, rehabilitation and diagnostic services. Annually around 15,000 discharges and over 100,000 outpatient specialist consultations are performed in the hospital.

The hospital employs around 200 doctors, over 340 nurses and midwives, and more than 300 other medical and non-medical staff.

Sucha Beskidzka Hospital continually seeks to improve the quality of its services enabled by the highly competent staff and effective management. Participation in the EcoQUIP project has introduced new approaches to procurement to drive innovation and help improve the effectiveness of its operations.

Project Overview

For many years Sucha Beskidzka Hospital has struggled with the problem of high temperatures in the patient rooms during the summer. Approximately 70% of the windows in the wards face the south and are exposed to considerable solar radiation. In the summer the recorded temperatures of specially fitted blinds in the rooms exceeded 30 ^{o}C. This level of high temperatures had a detrimental impact on both patients and staff and was also seen as a risk to the operation of hospital equipment.

An innovation procurement pilot project was implemented to address the solar radiation problem. The solution was an integrated shading and photovoltaic solution which was retro-fitted to the south facing facade of the hospital. This was a brand new and first to market solution.

The selected solution provides effective shading and also generates renewable energy. In addition, the project has led to a transformation in the procurement processes within the hospital.

"Sucha Beskidzka Hospital is pleased with the outcomes of innovation procurement. The procedure was interesting and gave the hospital an insight regarding possibilities of the market, rather than the list of off-the-shelf products. The procured solution meets our expectations and is an efficient answer to our unmet need."

Janusz Baczewski Deputy CEO,
Sucha Beskidzka Hospital, Poland

Innovation Procurement

Identification

One of the first challenges for the project team was to identify and define a genuine unmet need for the focus of the pilot innovation procurement. Before this could happen however, the concepts and methods of innovation procurement had to be introduced.

Workshops for staff on the methodology of innovation procurement introduced key concepts and approaches

A short course on innovation procurement methods was designed and delivered to the hospital project team and related stakeholders. As innovation procurement was completely new to the people involved this provided the opportunity to introduce aspects of innovation procurement good practice such as unmet needs, outcome based specification and whole life costing. The project team also participated in an EcoQUIP study tour to the UK.

The adoption of innovation procurement approaches requires a change in mind-set which is a difficult thing to achieve. Initially the staff did not fully comprehend the concept and methodology and these had to be continually reinforced throughout the project.

"Trying to change an equilibrium that organisations built up naturally in the past is never easy. But ultimately those changes led us to a common success. I think that the shift in mind-set was the hospital's biggest achievement in the project."

Mateusz Lichon,
EcoQUIP Project Assistant, Poland

The identification stage of the innovation procurement project took time and a number of different approaches were taken in order to define the unmet need i.e. the focus of the project. These included:

- Discussions with hospital management (meetings)
- Discussions with hospital staff
- Workshops with wider group of staff
- Training events
- Setting up an "evaluation group", which walked around hospital, talked to patients and personnel in the search for the area of improvement
- Going through "next to purchase" list in a search of products suitable for innovative procurement
- Peer-learning visit in the UK

None of these activities provided the answer and the project team found it difficult to define a need that would be a good subject for the EcoQUIP innovation procurement project.

The inspiration came from another EU project (RES-Hospitals), which was supported by the Intelligent Energy Europe programme and aimed to identify opportunities and make the business case for the hospital to move from fossil-fuel energy consumption to more renewable energy sources.

At one of the workshops, the growing problem of overheating in patient's rooms was highlighted as there was a growing problem of overheating in patients' rooms because about 70% of such rooms (including ICU, post-operation rooms and stroke unit) are located in the southern part of the Hospital and were exposed to considerable solar radiation from late spring to early autumn. Over the years the Hospital has implemented a number of measures to try to address the problem and reduce internal room temperatures. For example by installing air conditioning units and fitting internal blinds on windows. However, these measures proved to be uneconomical and / or ineffective.

Analysis of the unmet need

In order to verify the scale of the problem, temperature measurements were taken in July 2013. It turned out that even with an outside temperature of 27°C; the blind temperature reached almost 40°C. Such high temperatures have a detrimental impact on both patients and staff but can also lead to the failure of hospital equipment. In addition, it emerged that the hospital had to meet new legal infrastructure standards issued by the Ministry of Health (Journal of Laws of 2012/0/739). This act obliged healthcare facilities to make use of devices to protect against direct solar radiation.

The conclusion of the identification stage was that this was indeed a genuine problem that needed to be addressed, had a legal basis for taking action and that an innovative solution with added value for the hospital in terms of energy efficiency was needed.

Defining an outcome based requirement

The project team then discussed and defined the requirement. It was agreed that the unmet need was for a cost-effective low-carbon solution to maintain the thermal comfort of patients and staff in the hospital. The project was approved by senior management ahead of a market engagement process being launched.

Outcome based requirement

Improvement of thermal comfort of patients and personnel of Sucha Beskidzka Hospital with the lowest (zero) exploitation costs.

The hospital requires a cost-effective and low carbon solution to maintain the thermal comfort of patients and staff that will meet following criteria:

- Economic (based on whole life cycle costs)
- Reduction of carbon emissions
- Easily applicable within a hospital setting
- Ensuring that thermal comfort would be sustainable across the hospital wards, while also meeting overall requirements for an innovative solution
- Meet the legal requirements of the Ministry of Health.

Pre-procurement actions

A series of pre-procurement actions were taken in line with innovation procurement good practice. Such pre-procurement actions were at that time, and still are, very rare in Poland and were entirely new to the Hospital.

Market Engagement

Creating wider market demand

In order to demonstrate a wider market demand for such a solution, one of the first pre-procurement actions was to contact other hospitals and establish if they also faced the problem of excessive exposure of patient rooms to solar radiation and required a solution that would effectively address the problem. Eight hospitals expressed their interest and desire to explore the potential of an innovative solution to address the unmet need.

Market Communication

A PIN was published on the hospital project web-page (in Polish and English) and in the Official European TED journal in Polish (Ref. No 2013/S 244-424795), and in English (Ref. No. 2013/S 244-424798).

The PIN invited expressions of interest to participate in a pre-procurement technical dialogue. A database of more than 200 potential suppliers was set up based on desk research. These potential suppliers came from across Europe and beyond. This was followed by a highly pro-active communication campaign to engage and notify suppliers of the opportunity and explain the new procurement approach. This involved email and telephone contact, the latter proving to be most effective.

The communication process informed potential suppliers about the forthcoming tender, its aims and requirements and provided information concerning the technical dialogue being announced. The communication also encouraged suppliers to participate in the dialogue.

As a result of the market communication action, 19 companies and consortia submitted proposals and were invited to a market meeting.

The initial meeting presented information about requirements, innovation procurement, the concept of life long costs and the EcoQUIP project. In addition, a site tour was organised for the suppliers to provide a better understanding of the hospital's needs.

Suppliers presented a number of solutions at the market meeting day

Technical dialogue

As the project team did not have sufficient expertise regarding the available technological solutions. A technical dialogue with potential suppliers was planned to learn from the suppliers. This allowed the different options and the full range of solutions to be taken into account and be reflected appropriately in the final tender. Supplier information also enabled the team to further refine the specification.

A Dialogue Commission was appointed by the hospital to conduct the technical dialogue. The Commission met with the 16 suppliers that had confirmed interest in participating in the dialogue.

A range of potential solutions were presented by the suppliers which differed widely in terms of technology, cost (price estimations ranged from 34,011 EURO to 783,488 EURO), and extent of changes needed to the hospital infrastructure, and expected outcomes.

The potential solutions included one or a combination of approaches:

1) Solutions limiting sunlight exposure
2) Solutions regarding cooling, heating and rotation of air
3) Solutions regarding use of renewable energy sources.

The technical dialogue assessed the different approaches based on the outcome based specification criteria:

- Economic (based on whole life cycle costs)
- Reduction of carbon emissions
- Easily applicable within a hospital setting
- Ensuring that thermal comfort would be sustainable across the hospital wards, while also meeting overall requirements for an innovative solution
- Meet the legal requirements of the Ministry of Health.

Following technical dialogue, the Dialogue Commission refined their specification to focus on solutions that limited the exposure of sunlight on the premises and had the potential to generate renewable energy

Tendering Process

The technical dialogue led to a tendering process conducted as an open tender which resulted in six bids being submitted, three of which were compliant with the requirements set out in the tender specification. The Dialogue Commission evaluated the remaining tenders. The successful bid was for the supply of an integrated shading and photovoltaic solution, retro-fitted to the south facing facade of the hospital, as illustrated below:

The solution comprises individual shade and Photovoltaic modules installed on the southern facade of the Hospital

Outcomes and benefits

The solution comprises individual shade and photovoltaic modules installed on the southern facade of the hospital on a specially designed supporting structure anchored in the outside wall, so that the awnings are set at an angle of 55° to the wall.

The installation of each of the photovoltaic panels has been calculated to ensure it achieves the greatest power output, while at the same time reducing solar penetration. The total power generating capacity of the installation is 138 kWp. Indeed, the final installation is proving to be more efficient than original engineering assumptions predicted at the contract development stage.

The installation took place over the period August – November 2015, at the total cost of PLN 948,487.21 (some: EURO 230,888.93).

This is the first installation of a retro-fitted, integrated shading and solar power generating solution for the thermal comfort of patients and staff in a Polish hospital. The installation has received acclaim from a number of sources and other hospitals are visiting the site and expressing interest in buying the solution.

Cluster Controller (photovoltaic plants monitoring system) is used to control the installation, facilitating open access to system data (e.g. volume of electric power generated, volume of solar energy absorbed and processed, etc.). Cluster Controller is interfaced with the Internet and all pertinent system data may be freely accessed through the Sunny Portal website.

The temperature of the wards has been monitored and stakeholder feedback collected. Staff and patients have commented on the increased comfort and appreciation of the solution, reporting that the temperature is perceptibly lower than it used to be on sunny days and has significantly improved working conditions as well as healing environment.

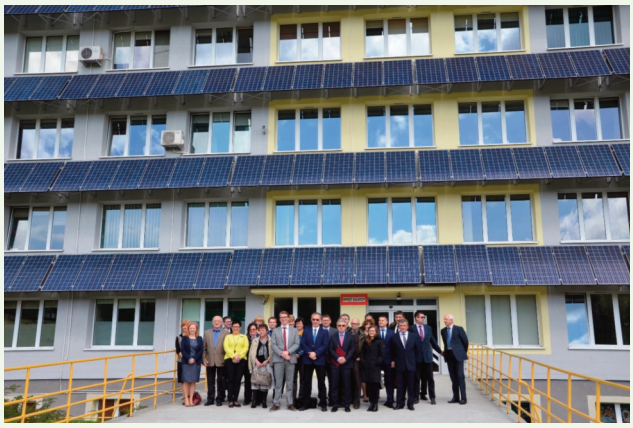
Benefits of the photovoltaic awning system:

1. Reduction of temperature in the patients' rooms through the reduction of solar radiation
2. Improvement of overall thermal comfort of patients and staff in Hospital premises located on the south-facing side
3. Reduction of CO_2 emissions by making use of the electric power generated by the in-house photovoltaic installation
4. Reduction of electricity consumption throughout the hospital for cooling purposes
5. Economic benefits:

- Electricity generated by the photovoltaic panels: ca. 79 000 kWh/year (340 pcs. of photovoltaic modules with a total peak electric power output of 85 kWp)
  Value: 79 000 kWh/year x PLN 0.5/kWh, i.e. PLN 39 500.00 (around 9,200 EURO)/year (gross)
- Reduction of electricity consumption routinely required for maintaining thermal comfort throughout the hospital wards: ca. 50 000 kWh/year
  Value: 50 000 kWh/year x PLN 0.5/kWh, ca. PLN 25,000.00 (around 5,800 EURO)/year (gross)

Official Opening

The official opening of the photovoltaic solution took place in April 2016. The event was well attended and the solution attracted many favourable comments.



"Innovation procurement was a challenging but worthy experience. By using it, the Hospital was not only able to assess the possibilities provided by the market but also assist the market in developing the solution tailored to meet the challenges the Hospital faced. We are sure that the developed solution can be also used in other hospitals struggling with similar issues. Innovation procurement required a lot of preparation, workshops and – what's most important and difficult – the big change in ways of thinking regarding the Hospital's needs and usage of public procurement. That time however was well spent, as now the Hospital is better prepared for future similar initiatives".

Monika Kubasiak CEO's Assistant regarding Technical and Exploitation Issues, Sucha Beskidzka Hospital, Poland

"This is a truly innovative solution on a nationwide scale, not as yet encountered in any of the healthcare units we have audited to date. The successfully implemented Project shows exceptional commitment, coolly professional and innovative approach of the top management and key personnel to the scope of activities specifically aimed at overall energy efficiency.",

Włodzimierz Biel, Chairman of the Board, Auditors, DNV Business Assurance

"Can we have it?",

Adam Stycze , CEO, My lenice Hospital, Poland

"The concept of making use of the photovoltaic panels as the awnings effectively reducing exposure of the premises within the Hospital wards to solar radiation is indeed a very innovative approach. Presently, overall body of knowledge regarding the potential for application of the photovoltaic panels in the healthcare facilities seems to be on a much insufficient level. I am therefore positively surprised by your creative approach to the actual application of such technologically advanced solutions, which I have had no opportunity to see at any other healthcare facilities throughout the Malopolska province, i.e. area of operation of the Regional Fund for Environmental Protection and Water Management in Krakow which I happen to head. Both the Project itself and the actual manner of its implementation is definitely an idea worthy of recommendation and dissemination in other facilities of similar profile.",

Ms Małgorzata Mrugała, Chairman of the Board, the Regional Fund for Environmental Protection and Water Management in Krakow

"With regards to the visit in your Hospital, I would like to thank for your hospitality and provision of many valuable pieces of information about the projects you implemented. That includes renewable energy sources – technology in the form of photo-voltaic panels. I believe that the visit helped me to expand the scope of information regarding a number of important issues related to such big projects and understand the value of implementing such technologies. In concussion I would like to emphasize that in my opinion your Hospital is equipped with modern technical equipment that can be used in other public units."

Paulin Wierad, Administration and Technical Department Manager, Brzesko Hospital

Conclusions

Becoming a member of the EcoQUIP project induced the need for a major change in the approach to procurement. Previously, all procurements were carried out in the same way, and in common with other healthcare units in Poland: detailed specifications were drawn up and selection was based on lowest price criterion. In the case of the Sucha Beskidzka Hospital whole life-cycle costing was on occasion used as a criterion for a purchase, although the concept of using procurement to deliver solutions to address unmet needs and the use of outcome based specifications and pre-procurement engagement and technical dialogue were unknown.

However, the first change that took place was asking: "What is it that we really need"? Previously the hospital bought whatever they were running out of, rather than ask what was needed. The shift in conversation from "What should we buy?" to "What do we need?" was a major achievement and has transformed the procurement process.

In this project Sucha Beskidzka Hospital also used technical dialogue for the first time and the project was one of the first to adopt technical dialogue within the healthcare sector in Poland. Despite initial concerns and caution, the benefits of the technical dialogue process were evident to those involved and proved that suppliers were interested in offering solutions. This approach provided an opportunity to learn about alternatives and a forum to discuss the merits of different solutions before making a purchase.

Before launching the technical dialogue, the project team did not have sufficient expertise regarding the available technological solutions. The new approach enabled them to gather knowledge and make informed decisions concerning the final tender specification.

Changing procurement methods proved to be difficult, as any change tends to be. In the early stages of the project considerable efforts and patience were needed to overcome resistance to new methods. For example, staff were initially concerned about their own capacity to conduct the process.

"Innovation procurement was a challenging but worthy experience. By using it, the Hospital was not only able to assess the possibilities provided by the market but also assist the market in developing the solution tailored to meet the challenges the Hospital faced. We are sure that the developed solution can also be used in other hospitals struggling with similar issues. Innovation procurement required a lot of preparation, workshops and – what's most important and difficult – the big change in ways of thinking regarding the Hospital's needs and usage of public procurement. That time however was well spent, as now the Hospital is better prepared for future similar initiatives".

Monika Kubasiak CEO's Assistant regarding Technical and Exploitation Issues, Sucha Beskidzka Hospital, Poland

An important success factor for the project was the intervention of the EcoQUIP project facilitators who became external 'agents of change'. The key element required for an efficient purchase of an innovative solution is a fundamental change in the way of thinking. Such change would be difficult to achieve without someone from outside who is not accustomed to organisation's 'business as usual' routine.

With the help of the EcoQUIP external facilitators, the hospital staff were able to internalise new thinking in terms of unmet needs and outcome based specification and successfully carry out an innovation procurement.

"It was great to see the change in the perception of innovative procurement by the Sucha Beskidzka team. Initially the project was seen by most of the team as something strange, an 'artificial' exercise done for the sake of no one knows what. Results that came, information acquired during the technical dialogue proved that the initial concept was right and efforts undertaken are bringing innovative solutions. When the Hospital was proposed to take part in the other PPI project they did not hesitate to join the consortium."

Marcin Kautsch, EcoQUIP Coordinator, Poland

The Rotherham NHS Foundation Trust

People Centred Low Carbon Catering Services for Hospitals:
Transforming service provision, reducing environmental impact and increasing efficiency

The Rotherham NHS Foundation Trust

Situated in South Yorkshire in the north of England, The Rotherham NHS Foundation Trust (TRFT) is responsible for the delivery of healthcare services to a local population of Rotherham and district which has a population of approximately 252,000. The Trust's main site is The Rotherham Hospital, an acute hospital with around 440 beds that provides services to around 66,000 day case and in-patients and 295,000 out-patients per year. A total of 4,300 staff work for the Trust, of which around 3,000 work on the hospital site.

TRFT has the advantage of its own on-site kitchen facilities and the hospital's catering services are outsourced to a supplier contracted to provide meals to in-patients staff and visitors and run the hospital's Rooftop Restaurant, which is popular with visitors, patients, and staff and serves over 500,000 meals annually.

Project Overview

Through the use of innovation procurement, a new catering contract is delivering a higher quality catering service, with lower environmental impact and cost savings whilst accomplishing the EcoQUIP triple objectives – quality, efficiency and sustainability.

The project arose from an opportunity created by a long-term catering contract coming to an end which coincided with the Trusts participation in the EcoQUIP project. This allowed the Trust to fundamentally re-think its catering requirements, put the needs of patients, staff and visitors at the heart of the contract, seek out innovative solutions from suppliers and explore the use of new technology and alternative delivery models.

At the same time, as signatories to the Down to Zero Towards Zero Carbon Catering Compact, the Trust had committed to procuring progressively lower carbon catering services. This meant not just reducing carbon emissions linked to the day to day catering operations, but also to reduce the carbon embedded in the catering supply-chain.

The project team brought together stakeholders from across the hospital, including estates and facilities, senior nurses, infection prevention and control, patient representation, finance, communications and procurement to identify their requirements and reconcile differences.

The Forward Commitment Procurement (FCP) innovation procurement method was adopted, incorporating innovation procurement good practice such as stakeholder consultation, early engagement with the market, use of outcome specifications, and pro-innovation tendering and contract terms.

> "A pro-innovation approach and innovation procurement good practice were adopted throughout the procurement process, with the pre-procurement activities seen as critical to creating a firm foundation for the project and credibility with suppliers. These activities were directed at maximising the potential for innovation in the supply chain to meet the requirements identified by the project team".
>
> Gaynor Whyles, Jera Consulting

The outcome of the project was a transformation in the service provision to better serve the needs of patients, visitors and staff; mobilization of capital investment by the supplier; and the creation of a contracted low carbon and innovation action plan. In addition to a better and more environmentally friendly catering service, the Trust anticipates cost savings of over €1 million over the first five years of the 5+5 year contract.

Innovation Procurement

The Forward Commitment Procurement (FCP) innovation procurement method was adopted as this was familiar to the Trust and had proved highly successful in previous projects.

Identification

Understanding the requirement

As the existing contract had been in place for 15 years, a cross-departmental project team was brought together, including nursing staff, facilities, dieticians, procurement, finance and patient representation, to undertake a complete review of the catering operation. In the first instance the project team outlined the success and failures of the current provision and then went on to identify the requirements of the new service provision in terms of outcomes.

This was done through a consultative process that engaged a wider stakeholder network, in particular nursing staff. As the contract had been in place for so long there were many issues and differences to address within the project team before a common vision could be agreed.

Some of the issues discussed were: the poor communication between ward staff and the service provider; lack of flexibility in meal provision; plate waste; wrong meals or unwanted meals, bulk ordering by nursing staff; the need to support vulnerable patients with eating while there were pressures on nurses' time to deliver the meal service.

The service for staff also had problems, such as staff spending their lunchtimes queuing for food or being located far from the restaurant. There were also fundamental issues such as whether the on-site kitchen and fresh cooked meals should be retained or alternative models considered.

"We believe that new and emerging catering service models and innovative technologies have the potential to offer benefits in terms of patient outcomes, efficiency, quality, sustainability and carbon reduction".

Juliette Greenwood, (former) Chief Nurse

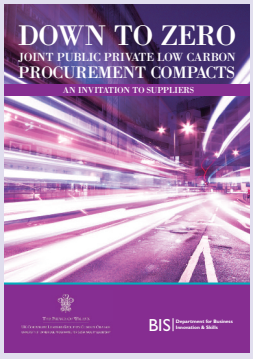
The clinical vision for the new service was defined as: an innovative integrated solution for the provision of high quality patient-appropriate meals that are enjoyable, attractive, support patient recovery and are delivered as an integral part of nursing care.

The Trust has embraced the NHS commitments to reduce carbon emissions and are committed to 'towards zero carbon catering' through their signature of the Down to Zero Low Carbon Procurement Compact. The tendering of the new catering contract offered an ideal opportunity to drive forward a step change in the environmental sustainability and carbon footprint of catering provision with in the NHS and demonstrate that this can be done in a cost effective way without loss of quality. The project team expressed their commitment to an environmentally sustainable, low waste and low carbon catering service.

"The project team were encouraged to think outside the box and be ambitious in setting their requirement. It became clear that transformation was needed, and an innovative approach that would enhance the patient experience through choice and quality of service to deliver 'the right meal, at the right time, to the right patient, every time"

Gaynor Whyles, EcoQUIP Project Facilitator

Down to Zero Procurement Compacts is a joint initiative between the Department for Business Innovation and Skills and the Corporate Leaders Group on Climate Change. As a signatory to the Towards Zero Carbon Catering compact, making a commitment to require and favour low carbon catering services, TRFT was motivated to make sure that 'low carbon' was a core requirement of the new service.



Market Engagement

Once the project team had clarity on the type of service and outcome they wanted from suppliers, this was set out in a Market Sounding Prospectus (MSP). The MSP aimed to communicate clearly to suppliers that the Trust wanted to rethink 'business as usual' and engage suppliers to deliver new ideas and models of service to deliver the outcomes. To this end, the document set out the context, process and outcome based requirements as well as an indicative procurement timetable.

Outcome Based Specification

TRFT identified a requirement for People Centred Low Carbon and Environmentally Sustainable Healthcare Catering

People Centred

The catering provision needs to meet the current and future needs of patients, visitors and staff.

For patients:

- Demonstrates a step-change in both patient mealtime experience and nutritional care
- Facilitates patient recovery
- Enables involvement of nursing staff in meal provision and accurate assessment and recording of a patients daily dietary intake
- Delivers the right meal and nutrition to patients when required
- Is flexible and versatile - for example meeting the diversity of dietetic, ethnic and cultural requirements,
  being available when needed outside core 'meal times'
- Provides mechanisms for a constructive interface with clinical and nursing staff and for monitoring performance and progressive service development

For Staff: The Trust needs to ensure that staff have easy access to nutritious, high quality, enjoyable and affordable food and drinks, it must be available and delivered in a way that is convenient for staff and in tune with meal breaks and shift patterns and providing, when required, a retreat from the patient environment.

For visitors: The Trust wishes to provide affordable and accessible food and drinks in a relaxed social setting that meets the needs of different types of visitors to the hospital.

Environmentally sustainable, low to zero carbon catering

The Trust requires the following outcomes:

- A low-carbon catering provision with progressive carbon reductions over the life of the contract in both the on-site catering provision and the wider supply chain i.e. embedded carbon.
- Reduction in food plate and food preparation waste
- A step-change in the environmental sustainability and carbon intensity of catering services

The market engagement process was advertised via a PIN in the OJEU. This launched a period of market sounding. A pro-active market communication plan was implemented involving direct engagement of suppliers and other groups by phone and email. This included service suppliers, manufacturers of catering equipment, trade organisations, the academic community and interest groups such as the Soil Association.

"This market sounding exercise provided a platform to enable the supply chain to inform and shape the procurement strategy, design and specification of a new catering contract for The Rotherham NHS Foundation Trust.
It is also an opportunity to shape new approaches for the NHS and our partners across Europe".

Sue Grundy, Assistant Head of Procurement

The response of the incumbent supplier

It is worth noting the positive and pro-active response of the incumbent supplier to the market engagement process. They immediately began to look at how they could improve the existing service and introduced a series of initiatives to reduce plate waste, leading to approximately 2.5% reduction. They also trialled alternative service models such as the ward hostess model and meal ordering system and made simple but effective adjustments to improve the patient experience. For example plating sandwiches with side salad garnish made the meal more appetizing and attractive and was well received by the patients.

"Previously, we had only ever asked the catering provider for cost reduction. By putting out a positive requirement to the market it encouraged a creative response and showed that we needed to build a different kind of relationship with the supplier of the new contract.
You need to ask for what you want and not assume that better means more expensive."

John Cartwright,
Director of Estates and Facilities.

Through the market sounding process, suppliers and other stakeholders were asked to express interest in the tender and complete a short market response form. The response form helped to standardise responses and get direct responses from the supply chain on the overall approach, innovations that would help to deliver the outcomes and potential barriers and how the Trust could help overcome them. There was a good response to the market sounding from a cross-section of the supply chain and the outcomes of the sounding were analysed by the project team, who overall, were encouraged by the responses. It was clear, however, that potential suppliers needed to engage directly with the Trust to understand and be convinced of their commitment to achieving the outcomes identified.

It was agreed that a market consultation workshop would be valuable to enable suppliers to have direct contact with the project team and hear first-hand about their problems, unmet needs and requirement to overcome uncertainty on the part of the suppliers about this new approach to procurement.

"The purpose of this market engagement is to seek feedback from all parts of the supply chain on the different options that are, or could be, available given the right market conditions, that will enable the Trust to meet its requirements, unmet needs and deliver progressive improvements over the life of the contract"

John Cartwright,
Director, Estates and Facilities.

Prior to the workshop, a briefing note was prepared summarising the findings of the market sounding and identifying key issues and questions that the Trust wished to put to suppliers. The workshop was facilitated by the Resource Efficiency and Environmental Sustainability Knowledge Transfer Network (KTN). A market engagement report was published after the event in the interests of transparency and maintaining a level playing field for suppliers who had not participated.

"Feedback from suppliers throughout the project was that this approach was an extremely positive step forward in the way such services are procured".

Donna Jones, Head of Facilities Services.

Summary of the pre-procurement actions taken in line with innovation procurement good practice:

- Review of current provision and stakeholder consultation on needs
- Establishment of a cross-departmental project team to manage and oversee the preparation and procurement process
- Early market engagement: a PIN was published to launch the market engagement phase and an MSP set out the need and process to suppliers
- Pro-active communication of the market sounding to the supply chain and interest groups and intermediaries
- Wider market development: an EcoQUIP Collaboration and Replication briefing was prepared and circulated to assess the state of the wider market
- Market consultation workshop: a workshop brought together service providers and equipment suppliers with the project team and other internal stakeholders
- Webpage: as well as coverage on the EcoQUIP website, a dedicated web page was created on the TRFT website
- Pro-innovation procurement strategy: the project team agreed a radically different approach to tendering from that normally taken, including pro-innovation PQQ, outcome based specification, a 5+5 year contract, no cost evaluation until best and final offer stage (BAFO).

Pro-innovation Procurement

The market engagement process demonstrated to the project team that there was appetite, capacity and capability in the market for delivering the outcomes, although there were different views on how they could be achieved and the level of investment needed.

Once the project team had considered the supply-chain feedback, the outcome based requirement was developed into an outcome specification and a pro-innovation procurement strategy was developed and agreed by the project team. The aim of the procurement strategy was to enable and support innovation and delivery of the outcomes. It also ensured that the project team was aligned and in agreement before the dialogue process got underway.

Key features of the procurement strategy to enable and support innovation included:

- A 5+5 year contract
- Outcome based specification
- Adoption of the Competitive Dialogue procedure
- Balanced evaluation criteria (quality of service, carbon, innovation, value) with price only being evaluated at the BAFO stage and considered in terms of TCO (total cost of ownership).

> "Suppliers found the process challenging but also stimulating, making them rise to expectations never before encountered within healthcare. Being able to present their case in open dialogue clearly benefitted both them and the Trust, helping to deliver the desired outcome".
>
> Gaynor Whyles,
> JERA Consulting, Project Facilitator

Tendering Process

The tender for 'People centred low carbon catering' was advertised in the Official Journal of the European Community (OJEU) and following an initial pre-qualification questionnaire (PQQ) process that required suppliers to identify their approach to ongoing innovation.

Four qualifying suppliers were invited to a site visit and meeting before being asked to submit a written response based on the outcome specification. The project team carried out individual evaluations of the submissions before these were discussed and final scores agreed in a panel discussion.

Three suppliers scored above the threshold and were taken into a competitive dialogue prior to making a final written submission.

It is clear to us that if we had used simple price based evaluation criteria we would have been forced into a procurement of a service that we didn't want and that would have led to the loss of the fresh cook kitchen facility which we really value'.

Sue Grundy, Assistant Head of Procurement

Outcomes

The new catering contract began mobilization in August 2015. The new service model distinguishes the different patient groups to provide a patient focused nutritionally appropriate meal and service delivery rather than the old 'one size fits all' service. As well as the major service transformation for patients, facilities for staff and visitors have been greatly enhanced and investment by the supplier in refurbishment of the restaurant space secured. The supplier is committed to a programme of on-going innovation over the life of the contract to continually improve quality and reduce environmental impact. A major achievement has been the award of the Soil Association Food for Life Bronze standard and a commitment to achieve the Gold Standard by October 2016.

"The Trust's commitment to patient nutrition and care is at the heart of the catering provision and is an essential and important part of the Trust's care delivery framework. The aim of this project was to implement an innovative integrated solution for the provision of high quality, patient-appropriate meals that are enjoyable, attractive, support patient recovery and is delivered as an integral part of nursing care. We have not been disappointed, as we approach full mobilisation, the benefits in terms of quality, sustainability and cost efficiencies are becoming apparent."

John Cartwright, Director of Estates and Facilities.

Contrast between the old and new service models

Previous model	New model
A 15 year PFI catering contract (one size fits all)	Ward based hostesses provided by the catering contractor
Plated meal service (small and large portion offering)	Fresh cooked bulk meal delivery service and plated at ward level
3 standard set meal service times per day (all courses served at the same ime)	Each course served separately
Next meal ordering	Room style service for selected patient groups
Ward staff assist patients to order meals	Electronic meal ordering system
Paper based menu system	Reduced length of time between ordering and meal delivery of approx. 2 to 2.5 hours
Two-week menu cycle changed twice yearly	Seasonal one-week menu cycle with daily chef specials
Ward provisions are ordered and controlled by ward staff (bread additional milk etc.)	Chilled water and snacks provided to patients via hydration trolley
Water provided to patients at ambient temperature	Individually wrapped snacks, introduction of fruit snacks
Bulk snacks provided for distribution to patients	New coffee shop to be provided, in Rooftop restaurant
	Carbon saving/ energy saving initiatives throughout lifetime of contract, for example eco boxes, ReFood anaerobic digestion and compostable packaging

Benefits Realisation

Reduced environmental impact

The supplier has committed to a 5-year plan of resource efficiency and carbon reduction within the contract including:

- Plate waste reduced to less than 2%
- All food waste to Anaerobic Digestion
- Food for Life Catering Mark by the Soil Association: Bronze standard achieved and Gold standard by September 2016
- Range of eco-initiatives including eco-boxes, herb garden, kitchen garden
- Catering staff behavioural training in resource efficiency to reduce energy and water consumption
- Energy efficient catering equipment including bulk delivery trolleys vending machines, ovens, refrigeration, extractors
- Energy efficiency LED lighting and sensors
- Supply chain initiatives to reduce food miles
- Recycling of 60% of cooking oil
- Progressive reductions in food and packaging waste
- Introducing recyclable consumables such as crockery, napkins

Cost and staff efficiencies

Financial savings to the Trust will be over €1 million in the first five years. The contract has also freed up nursing time for patient care and increased the time for assisted feeding for some patients. A small amount of time has also been freed up from a portering point of view, as the trolleys only leave the central kitchen at lunch and supper time.

Prior to the new service the domestic staff provided the beverage and water jug service to patients. This has now been incorporated into the ward hostess model which freed up a significant amount of time. This time has been reinvested in domestic staff taking on other duties previously carried out by qualified nursing and auxiliary staff colleagues. This has increased the compliance of cleanliness audits (especially commodes) and has given time back to nursing colleagues to be invested in patient care and to support assisted feeding at mealtimes.

Improved service and healthcare outcomes

For patients the service now offers a modern patient-centred and flexible service, allowing patients to choose the size of their meal at the point of service on the ward and with each course being served separately.

An electronic meal ordering system has replaced the paper menus and this has significantly reduced the length of time from meal ordering to service to around 2 hours and patients now receive the meal they ordered every time. The electronic ordering means that meal preferences can be analysed to inform new seasonal menus.

The introduction of a new hydration trolley system has improved the breakfast and beverage experience at ward level with, for example, access to warm toast and hot milk at breakfast time for cereals. The new service model has released nursing time back to where it is most needed; patient care.

For staff a new premium brand coffee shop (Starbucks) has been opened and staff have improved hot and cold "grab and go" options and access to 24/7 hot food through the cook/chill menu is being explored with the supplier. Eco lunch boxes have been introduced where staff receive a discount for re-use rather than use of disposable boxes. The problem of staff spending their much needed breaks queuing for lunch has been overcome by the introduction of Click and Collect on-line ordering and express tills which cut queues and waiting times and portable meal collection points are now provided at dedicated locations throughout the Trust.

The restaurant environment has been refurbished and a new coffee shop area now provides premium seating, a more relaxed atmosphere and access to free Wi-Fi in the restaurant area. The free Wi-Fi has given staff and visitors to the rooftop restaurant a modern technological environment. The creation of a meeting room next to the restaurant area has also given the Trust access to much needed meeting space.

The service is monitored via patient feedback forms and monthly audits are carried out by a hospital governor.

Innovation

As well as product innovation, this project involves considerable service innovation and a strong element of business model innovation in the way that the service is integrated within the ward operations. The contract includes a number of specific targets to be achieved during the period of the contract that will require both product and (additional) service innovation by the selected contractor and their suppliers.

Some of the specific product and service innovations to be implemented:

- Newly developed hydration trolleys have the ability to serve chilled water/ hot drinks and toast that remains crisp
- New energy efficient bulk delivery trollies
- Patient Meal Ordering System (PMOS): meal ordering via hand held tablets to allow collection of data on the most popular dishes, record 'nil by mouth', meal size and food wastage
- Onsite production of fresh cook/ chill menu with potential for development to service local hospitals
- Achievement of the Food for Life, Soil Association Award at Gold level (the supplier has already achieved the Bronze award). The entry-level Bronze award is largely concerned with delivering fresh, traceable food that meets nutritional guidelines. The Silver and Gold awards focus more on use of organic produce, ethical and environmentally friendly food, locally sourced ingredients and steps to offer healthier menus
- Patient plan and passport supporting patients through the dietetic and preferential requirements whilst in hospital and into the discharge process.
- Innovative new crockery to suit the needs of specific patient groups i.e. dementia friendly
- New water jugs to encourage and support better hydration

- Hampers with basic food items for vulnerable patients on discharge from hospital
- ReFood AD: Refood is an anaerobic digestion system that turns waste food into fertilizer for farmers and renewable energy for local premises
- Range of energy saving initiatives including installation of energy sub-meters, replacement of lights in kitchen and restaurant with LEDs, energy efficient equipment including vending machines and ovens
- Behavioural change of staff to increase greater awareness of environmental impacts of catering operations and provide training in resource efficient cooking and dishwashing, 'green driver training' will also be introduced
- Water efficiency savings in partnership with AquaFund
- Reduce number of deliveries and increase local suppliers

Ongoing Monitoring for Progressive Improvements

The contract and outcomes are monitored and reviewed regularly with a commitment to maintain ongoing improvements over the life of the contract:

- Patient experience: feedback forms from patients quarterly
- Annual Patient Led Inspections of the Care Environment (PLACE) relating to food quality and food services
- Energy use monitoring: quarterly review against projections
- Carbon and innovation commitments: quarterly monitoring - annual review
- Supplier performance against KPIs: quarterly monitoring - annual review

"From the start, this project has transformed the relationship with the supplier and we are working in true partnership to maintain progress and improve over the contract term."

Donna Jones,
Head of Facilities Services

"This project has been a massive success. In terms of patient satisfaction and meal wastage, patient satisfaction has never been higher and food wastage never been lower. Staff have also benefitted from seeing patients being served with what they have asked for and the new service model has freed up valuable nursing time to be used where it is needed, caring for the patient".

John Cartwright,
Director Estates and Facilities

The University Hospital of Bologna (AOSP), Emilia – Romagna Region, Italy

Integrated people-centered and environmentally sustainable facilities services: Transforming service delivery through innovation procurement.

The University Hospital of Bologna (AOSP) is located in the heart of the city of Bologna covering an area of 1.8 km^2 and is one of the largest in Italy, comprising 27 separate buildings (or pavilions) with over 1500 beds. The hospital serves an in-patient population of 72,000 per year and handles emergency before arrivals in the emergency department. Large areas of the hospital are dedicated to outpatient services which delivers about 4 million clinical services per year. The hospital's annual management budget exceeds €550 million including €250 million for staff costs and more than €270 million related to acquisitions of goods and services delivered by more than 1,800 suppliers.

The hospital complex comprises 27 separate buildings over 1.8km^2 in the centre of Bologna. Every day around 20,000 people are present inside the hospital complex.

Project Overview

This project concerns the radical transformation of 'soft facility services' in healthcare at the University Hospital of Bologna. 'Soft facility services' refers to all the backroom functions that enable the hospital to maintain high standards of patient care and safety including cleaning, supply logistics, patient movements, laundry and welcoming.

Historically these services have been provided by different suppliers with activities and tasks being carried out by a combination of external and internal staff. Through a consultative process the project team worked with stakeholders across the hospital to understand accurately the current situation, including the gaps and challenges being faced on a daily basis. Once this was clear stakeholders were engaged in defining the unmet needs and developing an outcome based requirement which could be communicated to the market.

The project was driven by three factors: the current contract was due to end, the hospitals participation in the EcoQUIP project and, later on in the project, the new procurement regulations which encouraged new approaches in support of supply chain innovation, in particular early market engagement.

"It was clear to us that a re-thinking of the soft facility services provision was long overdue, both to address the inefficiencies and failings and bring forward innovation in service delivery and in the tools and techniques used".

Marco Storchi,
Support Services and People Care Director

The market engagement process included the publication of a PIN to launch a period of market sounding and a site visit for suppliers. The feedback from the supply chain to the hospitals outcome based requirement indicated that although the integration of services was both feasible and likely to be much more cost effective, the lack of an effective means to manage the interface between internal and external staff was seen as an unmanageable risk. This risk was likely to reduce the attractiveness of the contract and / or add cost to the contract. Suppliers also stressed that the internal IT architecture needed to be able to support the new approach.

The project team acted on this feedback by running a pre-tender trial of the integrated service approach and by bringing together a technology team to ensure that the necessary IT systems were in place and could interface with potential suppliers. These actions helped to design a framework capable of addressing the potential risks of the new approach and demonstrated the viability of the system in operation. This enabled the project team to proceed with confidence to the tendering stage.

A tender for the new service delivery model will be launched by the end of 2016 following the successful conclusion of the pre-procurement market consultation, the integrated service trial and design of the tender documents. The new contract, with an approximate value of €22 million a year, is expected to be fully mobilised by June 2017.

Innovation Procurement

Introduction

The project involved the transformation of soft facility services at ASOP through the use of innovation procurement. In the hospital, soft facility services refers to all the backroom functions that enable the hospital to maintain high standards of patient care and safely and includes cleaning, supply logistics, patient movements, and laundry. The hospital is large with many separate buildings making the effective delivery of soft facility services a challenging and complex logistical operation.

> "In the context of such a large and complex healthcare facility, the delivery of soft facility services for AOSP is an extensive undertaking and one on which the smooth functioning and quality of patient care is extensively dependent".
>
> Mario Cavalli,
> General Director

The organisation, monitoring and management of these services has developed and evolved over a long period of time and is delivered on a daily basis by a large number of people, some of whom are employed by the hospital (in-house staff) and some of whom are employed through a number of out-sourced contracts (external staff). With the current contracts coming to an end, an opportunity arose to review and fundamentally rethink the delivery approach. In addition, the hospital's participation in EcoQUIP, together with the arrival of the new procurement regulations gave the project team access to new procurement approaches.

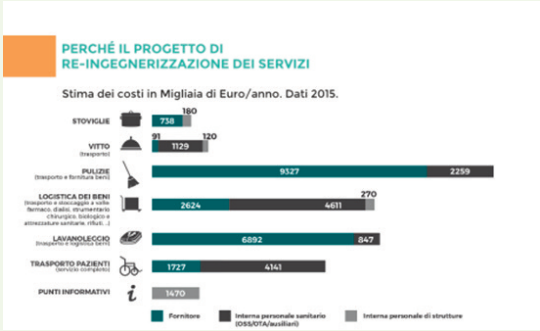
Identification

The identification stage involved an extensive analysis of the existing soft facility services provision and engagement with stakeholders to define the strengths and weaknesses of service provision.

The activities undertaken in the identification stage included:

- Data gathering and analysis of the time different staff spent on aspects of the soft facility services
- Focus Groups on, for example, cleaning, waste collection, linen management, logistics and transport to allow more in-depth analysis of the service activities carried out by core staff
- Workshops to discuss the design of an integrated services model involving personnel office and service managers and representatives of hospital pavilions
- Consultation on the technical specifications for hygiene provisions and new techniques of measurement
- Economic analysis of the current services
- Various meetings and verifications with those directly involved in the service provision, to discuss the design of the service model.

> "In order to estimate the time that nurse aids dedicate to soft facility services, a large data collection campaign started in 2015, and we discovered that, on average, 70% of nurse-aid staff time is dedicated to activities such as transportation of patients and goods, goods receptions and storage in local units and cleaning".
>
> Enrichetta Zanotti,
> Nurses HR Director



The graph shows the facility services economic impact. While the Hospital Management only considered supplier costs as the main driver of the economic impact, the internal organisational analysis revealed a more complex cost structure. This cost structure needs to consider the efforts from the internal personnel.

Through the consultative process, the current situation of soft facilities was shown to be time-consuming, complex to manage and difficult to control and a number of 'grey areas' became evident in the interface between the in-house and external staff with the responsibility for tasks and outcomes being unclear and / or poorly defined. In addition, despite the huge amount of energy dedicated to soft facility services, the culture of the service was out of step with overall progress in the modernization of the hospital. Moreover, in-house staff reported feeling undervalued and as a result, were resistant to change, making service developments, improvements and innovation very difficult.

"Overall, the review of the situation and stakeholder workshops confirmed that the current service delivery was perceived as inefficient and, moreover, there were increasing risks of failures in delivery and patient care".

Marco Storchi,
Support Services and People Care Director.

An example of this lack of efficacy is presented in the graphic below, which is designed with a user-centered approach. The graphic illustrates how services delivery is scattered throughout the 12 hours of the working day. Suppliers are organised in a non-systematic way and, consequently, healthcare professionals have to continuously interrupt their work to interact with the service suppliers.

The outcomes of the identification stage made it abundantly clear to management that, as part of the hospitals operational modernisation programme, the re-design of the service provision was long overdue, both to address the inefficiencies and failings and bring forward innovation, not only in service delivery, but also in the tools and techniques deployed. This thorough preparation provided a strong endorsement of the project internally.

The project team and stakeholders also recognised that the project was an opportunity to improve environmental sustainability, energy efficiency and carbon reduction in line with the hospital's pursuit of these objectives. Emilia Romagna Regional Government is one of the most advanced in terms of sustainability provisions and many local governments are members of the "Covenant of Majors" and have Action Plans for Sustainable Energy. Since 2008 there has been a regional programme for energy saving in hospitals in which AOSP has participated. In addition, AOSP was a pilot hospital in the EC co-financed project RES-Hospitals, which raised awareness among hospital policy makers and technical managers on the benefits of environmental sustainability, energy efficiency and carbon reduction.

Accordingly, environmental sustainability, energy efficiency and carbon reduction were included in the required outcomes of the tender, requiring progressive improvement over the life of the contract.

"It was essential that not only management but also staff understood and appreciated the relevant contribution that hospital services can give to sustainability, from the reduction of chemicals in cleaning, to correct use of water resources, waste management and recycling"

Daniela Pedrini,
Technical Department Director

Service delivery analysis during 12 working hours. Services delivery is organised in a non-systematic way and this has a negative impact on the sanitary effort.

Introducing new approaches to procurement

Innovation procurement was completely new to the hospital and project team. In parallel with the identification stage the hospital staff were introduced to the concept, practice and benefits of innovation procurement and of the necessity to redesign AOSPs' soft facility service provision. Peer learning workshops within the project and expert coaching increased awareness, introduced practical examples, and transferred innovation procurement know-how.

In addition, a peer learning event was organised within the hospital for staff and suppliers involved in or affected by soft services. The event introduced innovation procurement concepts and methodologies, raised awareness about the forthcoming changes in procurement legislation and initiated a discussion on the need for soft services transformation.

By the end of the workshop staff from across the hospital and the incumbent suppliers understood why soft facility services were in need of transformation and that to achieve transformation the hospital would need to adopt new approaches to procurement that had been demonstrably shown to deliver better outcomes in other Member States.

A training event was held with stakeholders to introduce innovation procurement and the pilot project

The identification stage resulted in a clearly defined unmet need for 'integrated people centred services with progressive innovation and development overtime that would lead to the transformation and modernisation of the soft services'.

Key features of the requirement included the integration of multiple services into a single contract with a clearly defined interface with the in-house staff and progressive innovation and improvement. Moreover, the project team had a wealth of data and insights to inform the procurement process and present a credible requirement to suppliers.

"The prior analysis and stakeholder engagement process was a significant undertaking by the project team, but was seen as an essential underpinning for such an innovative and potentially transformative project".

Simona Agger,
EcoQUIP Project Facilitator

An outcome based requirement was signed off by the project team and management before progressing to the next stage of the process: the market engagement.

Outcome based requirement

The tender requests a soft service facility management system structured as an integrated, innovative, and sustainable solution.

It combines the following activities: cleaning and sanitizing, internal waste collection, laundry services, transport and logistics of goods (biological material, medical equipment, medicines, food, office supply and administrative materials, surgical instruments, etc ...) and internal transport of patients as well as welcoming points.

The Hospital will require the following:

- Consideration of the needs of patients, the medical staff, all the operators and users of the Policlinico whilst ensuring the utmost respect for the dignity, welfare and safety of people
- Service delivery to support the prevention of Hospital Acquired Infections (HAI)
- A fully traced service process to provide real-time feedback for effective and efficient service delivery and monitoring of daily practices
- Eco-innovation including service-oriented energy efficiency, water conservation and the reduction of carbon emissions
- Innovation in service delivery, pioneering new approaches for better outcomes and testing new methodologies, products, services and processes.

The hospital aims to select a pro-active partner who can deliver reliable services with continuous improvement and can support a cultural transformation in the delivery of soft services.

In parallel with the detailed analysis and uncovering of the unmet need, the project team also sought to explore with the local agency "Servizio Acquisti Metropolitano" (SAM) how the new innovation procurement approaches could be introduced within the context of the Italian Healthcare Procurement environment.

Project context: The organisation of healthcare procurement in Italy

The way in which tendering operates in the Italian healthcare system significantly influences the way tenders are undertaken and the extent to which innovation procurement practices, such as market engagement, are adopted.

There is a national central purchasing agency, Consip, created in 2001, as a public company of the Ministry of Economy and Finance (MEF), which is its sole shareholder. It operates according to a set of strategic policies, working solely for the Public Administration.

Following the creation of Consip, several regions established their own system and Public Purchasing Regional Bodies were created in 2007, conceptualized with a model of "network systems". Some Regions have also allowed sub-regional Public Purchasing Bodies to be set up. This is the case of Emilia – Romagna that operates thorough the Regional Agency "Intercent ER" and the local procurement office "Servizio Acquisti Metropolitano" (SAM), that serves all the Bologna Hospitals

Other Public Purchasing Bodies, explained that historically there have been considerable regulatory barriers with regards to innovation. Indeed, the regulations specifically favoured those products and services already present in the market.

The EU Directive 2014/24/EU on public procurement was transposed in April 2016 which resulted in article. 65 creating scope for procurement of innovation. However, it is likely that it will be some time before the necessary changes to make use of this provision will take place at a practical and cultural level within the public administration. In this context the EcoQUIP project presents an important test case for innovation procurement in practice.

Market Engagement

A Market Sounding Prospectus (MSP) was developed by the project team, setting out the current situation, the need for transformation and the outcomes the hospital required. A market engagement process was launched via a Prior Information Notice (PIN) in the OJEU in June 2015.

Extract from the PIN

In order to enable a detailed analysis to support the improvement of the better bid design process, a technical consultation with the market is planned. The aim is to stimulatesuggestions and preliminary proposals from potential suppliers of all the services and goods involved, at national and international level.

The supply chain responsed using a market sounding response form. The form invited comments on the outcome based requirement, scope for innovation, potential barriers and advice on what the hospital could do to enable transformation and ongoing innovation in the delivery of soft services. Seven large proviers responded and were then engaged in one-to-one sounding meetings which were documented and lasted on average 2.5 hours.

A market meeting day was held in 9 April 2015, to introduce potential suppliers to the site and provide an open forum to discuss the hospital's requirements and how this could be achieved in practice.

A Market Sounding Prospectus set out the current situation and need for transformation

"The market engagement process enabled us to gather valuable feedback from the supply chain concerning the requirement and barriers to its achievement. Most significantly, potential suppliers highlighted key risks to the delivery of a transformed service."

Tania Igne,
Responsible for Contracts and Administration

The market engagement process provided valuable insights and information from the market perspective. Most significantly, potential suppliers identified two key risks to the delivery of a transformed service:

1. The ability of the hospital to manage the transformation process and create a sound and resilient interface between in-house and out-sourced service delivery staff.
2. The absence of an integrated informative system that could allow analysis on the different soft services in a systemic way.

Service integration trial

As a result of this feedback, the project team concluded that these risks needed to be managed before the new service tender could be launched or there was a significant risk of additional contract costs and a lengthy contracting and commissioning stage that could ultimately fail. Although this decision delayed the tendering process, a risk management strategy was seen as an essential element to ensure overall project success.

The risk management strategy was two-fold: 1) a live service integration trial in advance of the formal tendering the design and the development and testing of an integrated ICT system.

The trial was implemented in a newly built pavilion by the incumbent soft services providers via contract amendments for delivery of a 'service integration trial'.

The first phase of the trial took place between December 2015-September 2016. To maximise learning, the trail is likely to be extended into a second phase which will continue until the start of the new tender. The trial focused on the measurement of the following parameters:

- Number of interruption of sanitary activities due to services
- Number of nurse-aids before the service vs number of nurse aids after the service
- Staff satisfaction through interviews
- Supplier satisfaction through supplier interviews
- Costs
- Services by suppliers and services by nurse–aids

Over this period a team came together to build the necessary system architecture to allow a common and holistic point of reference for hotel services making it possible to have an integrated information platform that identifies what each AOSP unit is asking for and receiving in terms of soft services.

> "The trial proved a valuable learning process for service integration and not only demonstrated the viability of service transformation but also captured important lessons for the implementation of the new contract. Accordingly, a major risk perceived by the supply chain has been managed effectively, enabling the project team to proceed confidently with the tendering process".
>
> Marco Storchi,
> Support Services and People Care Director

Pro-innovation Procurement

The project team began to develop the tender documents and discuss how innovation could be enabled through the process in the context of the Italian procurement hierarchy. For example, the use of competitive dialogue in Italy, at a time when laws and norms were in transition, was found to be to be difficult.

The hospital intends to evaluate the tenders as follows:

- Evidence that cleaning services will be done ensuring the utmost respect for the dignity, welfare and safety of people whilst considering the needs of patients, the medical staff, all the operators and users of the Policlinico
- Examine the methods of service delivery, valuing solutions with the greatest attention to the prevention of Hospital Acquired Infections (HAI);
- Consider the forms proposed to implement fully traced service processes in order to get real-time feedback in support of decisions and daily practices

- Evaluate the implementation of eco-innovation in terms of a service-oriented energy efficiency, water conservation and correct waste handling
- Estimate the measures for reduction of carbon emissions arising from the planned activities
- Achieve the best results by being a pioneer in testing new methodologies, products, services and processes.

Feedback from the supply chain has confirmed that they are ready to adopt a service with these characteristics.

Progressive improvement and innovation

This pilot involved a high value, complex procurement, delivering services that are critical to the smooth and safe running of the hospital, and the resulting contract will be in place for many years. A static and unadaptable contract is unlikely to deliver what is needed, or indeed best value, on an ongoing basis over a number of years. Therefore, throughout the project the team has recognised that progressive improvement and innovation within the life of the contract was important objective.

"Working with suppliers to drive progressive innovation and improvements within a contract is a concept often overlooked in innovation procurement. For large complex service contracts running over many years it provides a valuable tool to ensure that the service keeps pace with developments and continues to deliver what the customer needs. It does however require a fundamental shift in the relationship between customer and supplier".

Gaynor Whyles,
EcoQUIP Coordination Team

AOSP will aim to develop and support a new 'co-creation' relationship with suppliers to deliver a successful integrated soft facilities service. The project team envisages a number of actions to support this, based on feedback from the market engagement process, the service integration trial and discussions with stakeholders:

- Benefit sharing between the supplier and the customer will allow the two parties to share the bilaterally agreed cost savings. The aim will be to deliver progressive savings throughout the life of the contract to be shared between the contractor and AOSP.
- The project team will put in place frameworks to ensure that staff remain fully engaged in the new service provision and continue to raise awareness about user-centred innovation among both the internal and external stakeholders.
- Improvements will be made to organisational procedures to enable a more robust interface between departments and suppliers
- Clearly defined KPIs will be agreed and reviewed regularly to support ongoing innovation and progressive improvements over the life of the contract.
- Stakeholders will be engaged in an ongoing self-evaluation and cost data will be transparent in annual budgets
- The new IT architecture will be used to monitor and feedback on service delivery parameters

"The work of the preparation phase will allow us to confidently pursue progressive service innovation and improvement overtime. The baseline for economic and operational KPIs will serve as common ground for both parties to analyse outcomes and design future improvement steps along the contract life".

Marco Storchi,
Support Services and People Care Director

Conclusions

The overall process took longer than anticipated, although the thoroughness of the preparation is certainly in proportion to the scale of the tender (in the region of €22 million).

The project approach and methods have produced results that can be considered highly satisfactory, specifically the identification of critical risks and stimulating the supply of innovative services, tools and techniques which are expected to be presented in the responses to the outcome specification.

"The design of the tender has been greatly enriched by the depth of the prior analysis of the current situation and the pre-tender trials demonstrated the viability of the new approach, both to potential suppliers and internal stakeholders".

Simona Agger, EcoQUIP Project Facilitator

The project was not without its challenges including the hierarchical organisation of healthcare procurement in Italy and constraints on the use of innovation procurement methods.The challenges can be summarised as follows:

- The complexity and scale tender of the stakeholder engagement
- The introduction of new procurement regulations which, although supporting innovation and market engagement, led to postponements of the Italian EU public procurement directives (still in progress with new integration and operating rules from the Italian National Anti-Corruption Authority - ANAC.
- The need to manage the key risk identified by the market during consultation through the implementation of a service integration trial.
- Sharing the new innovation procurement process with the Municipal procurement office and the Regional procurement agency
- Difficulties

Throughout the project, the project team sought to explore how innovation procurement approaches could be introduced within the context of the Italian Healthcare Procurement environment and be a positive example of what innovation procurement can achieve.

"The process has been an important one for the management team, showing the potential of a more strategic and innovation orientated approach to deliver better outcomes for staff, patients and suppliers".

Gaynor Whyles, EcoQUIP Coordination Team

"The regulatory changes have opened previously closed doors in terms of innovation and procurement practice, most significantly the possibility for non-price based award criteria and of adopting "outcome based requirements"

Rosanna Campa,
Head of Metropolitan Public Area Procurement (SAM).

Reflections on the pilot projects

In each of these case studies a number of notable features were identified by the EcoQUIP coordination team that proved to be important in their overall success. These are summarised below.

Advanced robotic bed-washing created through an innovation procurement

Erasmus MC, Rotterdam, The Netherlands

- The formal 'decision making unit' that was set up established clear roles and responsibilities for members representing the different interests, and ensured that the project was firmly embedded in the organisation and decision making processes.
- The evaluation and award criteria gave equal weight to the carbon footprint of the solution, fit with the needs of the hospital, and price. This enabled the team to value the solutions based on factors other than price.
- A demonstration and refinement of the successful solution was incorporated into the procurement process via a two stage contract, the first being for a demonstration and the final purchase being dependent on the demonstration being successful.
- The supplier and the customer each took an equal share in the cost of the demonstration stage and worked in partnership to refine and overcome technical problems.

Ultra-Low Carbon Energy Solution

Nottingham University Hospitals NHS Trust, Nottingham UK

- Challenging the 'business as usual' solution provided by healthcare energy consultants and challenging the market by asking 'can we do better than this?'
- A two phase market engagement process helped to engage suppliers at an early stage and establish with confidence what innovative solutions could be available given the right market conditions.
- Market engagement demonstrated that a distributed energy solution (rather than centralized energy plant) should be considered and that newly emerging solutions (such as fuel cell CHP) were well suited to the future needs of the hospital.
- The market engagement activities demonstrated a genuine need and drew attention to the healthcare sector as a potential lead market for fuel cell CHP and encouraged new entrants to the UK energy market.
- Participation in study tours of alternative energy solutions gave project leads knowledge of new solutions and confidence in their viability.
- Supporting suppliers of innovative solutions and new entrants to the healthcare market by directing them towards existing public sector framework agreements for energy solutions.
- Publishing an outcome based specification encouraged and enabled innovative solutions, such as fuel cell CHP, to be proposed and a possibility to compete with established solutions.
- Above all, this project could have been de-railed many times by major organisational change, rapid turnover of senior staff, and changes in project leads if it wasn't for the determination and tenacity of the project coordinators.

Photovoltaic Awnings System – providing thermal comfort, making a hospital greener.

Sucha Beskidzka Hospital, Sucha Beskidzka, Poland

- Stakeholders in the hospital were actively engaged in the identification of the problem underpinning the project and determining the requirement in outcome terms.
- The action learning process of the pilot project was supported by awareness raising, training events and study tours.
- Pro-active market engagement by the project team ensured that suppliers were aware of the tender opportunity and understood the 'new' approach to procurement being taken. This meant identifying, emailing and calling potential suppliers.
- Active engagement of other hospitals and policy stakeholders both to introduce the concept and practices of innovation procurement and to create and demonstrate to suppliers that there was a wider market.
- Regulation by the Department of Health on the provision of sun-shading for patients was an important driver for the hospital to invest in a solution and a useful hook to engage other hospitals as a wider market.
- Ongoing monitoring of the solution to demonstrate both the comfort benefits to patients, staff and the economic return from the electricity generated.

People Centred Low Carbon Catering Services for Hospitals

The Rotherham NHS Foundation Trust, Rotherham, UK

- The project team brought together a cross-departmental team from the beginning so that unresolved issues could be aired and overcome and a common view of the future needs agreed among clinical and estates staff.
- The positive response of the incumbent supplier to the market engagement stage was notable in that they immediately began piloting ways to deliver the unmet needs identified in the Market Sounding Prospectus. The Director of Estates noted that beforehand the dialogue with the supplier was only about reducing cost and that the new procurement approach changed the conversation and the approach by both parties.
- After considerable discussion the project team decided that a 5+5 year contract, the second 5 years dependent on delivering against contracted KPIs, would offer both sufficient security for the supplier to invest in the first five years and sufficient incentive to deliver the KPIs and ongoing improvements to secure a second five years.
- Although detailed discussions on pricing were held with suppliers within the Competitive Dialogue, the outline solutions were not evaluated on price until the 'best and final offers' stage, at which point the Trust was confident about the catering model they wanted to adopt. The Director of Estates and Facilities is convinced that if they had evaluated on cost before this stage they would have been forced into accepting alternative models that did not meet their needs.

Integrated people-centered and environmentally sustainable facilities services: Transforming service delivery through innovation procurement

The University Hospital of Bologna (AOSP), Emilia – Romagna Region, Italy

- A detailed analysis and scoping exercise was completed ahead of the market engagement to ensure that the strengths and weaknesses of the current operational model were understood and where possible quantified. This ensured that the project team not only understood accurately the needs but uncovered critical points of service failure that the new contract needed to address.
- An extensive stakeholder engagement process was carried out to ensure that the project was received positively across the organisation and ensured that concerns and issues could be raised in a receptive environment.
- The involvement of the local procurement agency (SAM) from the early stages of the project enabled any concerns about the procurement approach to be identified early in the project.
- A requirement for progressive improvements and innovation within the final contract was stressed from the outset of the market engagement. The scope for ongoing improvement and innovation within a contract is often overlooked.
- In response to feedback from suppliers during market consultation, a pre-procurement trial of the new operational model was undertaken to demonstrate the viability of the new approach to the market and manage risk.

Conclusions

The pilots described in this report present tangible evidence that it is possible to:

- Change procurement practices to deliver better outcomes
- Stimulate the supply chain to bring forward, and invest in, innovative products and services
- Deliver efficiency, quality and sustainability using innovation procurement approaches
- Overcome regulatory, cultural and process barriers

Above all, the EcoQUIP pilots have demonstrated that better and more sustainable does not mean more cost and that innovation procurement delivers.

Experience tells us that, as with any organisational change, the first innovation procurement projects are often a steep learning curve. But the pilot projects show that as new systems and ways of thinking are shared among staff and the benefits of innovation procurement become apparent, a new norm begins to be created. Each of the hospital partners are now well equipped to apply their learning to new projects and indeed already are. For example, at Nottingham University Hospitals six new clinical challenges have been presented to the supply chain in a market sounding exercise and another is in development; the project lead at Erasmus MC is now working to embed the FCP process into procurement practice and has begun a project for the supply of beds and mattresses based on service delivery and outcomes.

The success of the pilots and the project as a whole was not an accident. Not only has the project had the benefit of an excellent team of committed individuals that 'believed in better' and had the skills, experience, knowledge and determination to succeed, the intensive capacity building activities provided a solid basis of support that helped to maintain momentum. However, the partners would also highlight the nature of the funding instrument itself as fundamental to the project's success.

Innovation procurement is still a new and developing tool, and creating capacity and capability will take time and the right support measures and appropriate funding structures. EcoQUIP was supported under CIP as a co-ordination action together with co-financing to support the procurement of the solution that the pilot projects delivered. This mix of funding provided sufficient support to enable partners to participate fully and actively in the essential capacity building and network development actions and to engage experienced local facilitators from outside the procuring organisation (effecting change from within an organisation is notoriously difficult) and the small financial contribution for the hospital partners proved a surprisingly effective incentive.

Moreover, the flexibility of the call meant that rather than directing customers to a particular solution or technology, i.e. picking the answer, customers had the freedom and resource to identify genuine needs as part of the action rather than in advance. Finally, this was a four and a half project – change and innovation takes time.

There are many ways customers can act to enable innovation in the supply-chain. Our suggestion to EC programme officers? In developing calls for projects perhaps consider applying the principles of innovation procurement; avoid over defining the process and the solution, instead focus on the desired outcomes and allow room for innovation and new approaches by the 'procurers'.

In a time of rapid change and escalating challenges it is clear that the healthcare sector needs new solutions to deliver what is needed in a cost effective and timely way, and to make the most of investment in healthcare facilities and services. If these new goods and services are to be available and affordable healthcare organisations will need to become more pro-active managers of their supply chains.

This will mean becoming more strategic in the way procurement activities are undertaken and more active engagement with suppliers. It also means procurement professionals, operational staff and policy leads working together to identify and address unmet needs. To be successful these teams will need the support and backing of their senior managers and leaders. Successful innovation procurement requires leadership that demands and expects solutions; leaders that are unwilling to settle for the status quo and are willing to challenge 'business as usual'. With the backing and support of senior managers, project teams can transform thinking, deliver better outcomes and stimulate real innovation in services and products.

It is clear that innovation procurement requires new thinking and new approaches to procurement. There are now many more case examples and discussion of good practice with a high degree of consensus on the key elements of successful innovation procurement. But to make innovation procurement a reality will require a cultural shift, with the procurement function seen as a valuation strategic tool by senior management, rather than simply an administrative or legal function.

EcoQUIP Final Thoughts

At the final project meeting in October 2016, the project leads for each of the pilots were asked to reflect on their experience and some of their thoughts are recorded below.

"The biggest difficulty was the identification of a genuine need. A lot of time needed to be spent talking and discussing with the hospital staff, uncovering the need and introducing new procurement approaches spent. Once the genuine unmet need was identified progress developed rapidly".

Mateusz Lichón,
Sucha Beskidzka Hospital

"Try to dream and envision the outcomes that are really needed and focus on the impact of the procurement outcome for patient and staff earlier in process and try to measure or at least "guesstimate" the anticipated benefits".

Maarten Timmerman,
Erasmus MC

"Adopt a change management approach, that is ensure awareness, support, commitment, and buy-in and explain the process and benefits over and over again and remember to test your assumptions early on".

Maarten Timmerman,
Erasmus MC

"The project team will ensure that the experience of EcoQUIP is put to good use and to support greater adoption of new procurement approaches. St. Orsola University Hospital is therefore proposing regional events for hospital staff and hospital managers to discuss the importance and the potential of innovation procurement and identify future projects".

Marco Storchi,
The University of Hospital of Bologna

"Make sure you have involved all stakeholders and have clinical engagement from the outset. Buy in is essential, not only from senior executives but also from ward staff and good patient representation on the team will give you quality input and feedback."

Donna Jones,
The Rotherham NHS Foundation Trust

"Stop and reflect throughout the project stages to make sure you are delivering the project brief and not what the contractor wants to deliver. The pro-innovation procurement strategy helps the team to maintains focus".

John Cartwright,
The Rotherham NHS Foundation Trust

"Set robust KPI`s within the contract that ensures the contractor performs throughout the lifetime of the contract and use the KPIs to stimulate ongoing innovation"

John Cartwright,
The Rotherham NHS Foundation Trust

"The project faced many challenges outside the control of the project team, not least major organisation change. But we got there in the end. A major procurement of an energy solution will be based on an outcome specification to be procured in 2016-17. Moreover, the project brought about changes in the supply chain, in stimulating Doosan Babcock (Fuel Cell CHP supplier) to successfully bid to join the Carbon Energy Fund Framework".

Alberto Jaume,
Nottingham University Hospital

Innovation Procurement is now being extended to new areas within the Trust in the form of six supply chain challenges being launched in September 2016 for unmet needs in the clinical environment".

Alberto Jaume,
Nottingham University Hospital

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