INNOVATION PROCUREMENT AS PROJECTS
Jillian Yeow and Jakob Edler*

ABSTRACT. Public procurement is a complex process. This complexity increases considerably when the procured product or service is an innovation, which often addresses new needs, requires different skills, takes on higher risks and thus demands organizational change. In this paper we argue that because of those demands procuring innovation necessitates the use of advanced project management techniques and an intelligent multi-step project design. We underpin this argument by presenting a case study of the procurement of an innovation within the UK National Health Service which had stalled for many years but then was successfully completed by using those project management techniques. We highlight the different processes needed for the procurement of innovation compared to standard, business-as-usual procurement, and we suggest the management of procurement as multi-step, multi arena projects as a strategy for innovation procurement.

INTRODUCTION
According to the European Commission, public procurement makes up 17% of the European Union’s (EU) GDP (European Commission, 2010, p.16), and around 12% across all OECD countries (OECD, 2011). In 2009 it accounted for £220bn of annual public expenditure in the UK (OGC, 2010). In Europe and within the OECD a

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broad debate has unfolded to use public procurement as an innovation policy tool, and many countries now have adopted concrete public procurement instruments of various kinds to spur innovation (Izsak & Edler, 2011; OECD, 2011). The basic idea is that public demand, when oriented towards innovative solutions and products, has the potential to deliver an improved and more efficient public service, and at the same time generate further innovative dynamics and benefits for society and the economy more broadly (Edler & Georghiou, 2007; Edler, 2010). However, as many studies have shown, public procurement of innovation faces a set of challenges that often impedes innovation.\(^1\) Public procurement is a complex process, further complicated by the need for it to serve multiple objectives and policy agendas. It has different (and sometimes conflicting) purposes and value for the various stakeholders involved. Moreover, public procurement is budget-driven and bound by legal rules and strict procedures at various levels.\(^2\) Procuring innovation complicates the picture, as a range of specific capabilities is needed to identify and specify the concrete need, to understand the potential solutions and to adopt this solution into organizational practices (Edler & Uyarra, 2012). Furthermore, innovation procurement entails all sorts of risks for all stakeholders involved, often impeding innovative solutions (Tsipouri et al., 2009).

In this paper, we consider the use of project management as a strategy for the procurement of innovations that do not yet exist. We suggest the "projectification" of the procurement process when dealing with innovation as a way of overcoming capacity, capability and resource issues as well as containing and managing risk.

We begin our argument by looking at the public procurement of innovation literature, and then explore the concept of projects and project management. We then illustrate the case of the procurement of an innovation in the UK NHS and discuss the notion of procurement as projects. Last but not least, we consider the limitations of the case and explore further research possible in this area.

PUBLIC PROCUREMENT OF INNOVATION (PPol)

The Basic Idea of PPol

Public procurement typically refers to the purchase or acquisition of goods and services by government or public sector organizations.
We refer to public procurement of innovation as the commissioning and procuring of goods or services that are new to the purchasing organization and enable a novel service to citizens or enable a more efficient or effective delivery of that service.

The recent policy debate about using public procurement systematically as a tool for innovation policy builds on much older claims about the importance of public demand to spur innovation. In fact, some authors have argued that the traditional supply side policies, supporting the generation of innovation rather than the demand for it, are less effective than focusing on improving the demand conditions to enable and mobilize demanders to ask for or adopt innovative solutions (Rothwell & Zegveld, 1981; Geroski, 1990; Edler & Georghiou, 2007).

The basic premise is to generate multiple effects of public procurement of innovation (PPoI). Public buyers that are able and willing to ask for and accept innovations not only improve the service provision and/or make public services more efficient, but also stimulate the economy. Research has shown that demanding consumers are important for stimulating and sustaining competitive and innovative firms (Porter, 1990; Anderson, 2007). Clear signals in favor of innovation incentivize innovation and reduce uncertainty for innovators (Schmookler, 1962; Mowery & Rosenberg, 1979). Public buyers may signal needs that are not unique to them, but shared by other public buyers or even private buyers. Thus, the public sector, by articulating their demand, can stimulate the development of a market by formulating new needs for which there are no existing solutions on the market. Moreover, public (and private) customers often provide important input to the innovation process (Von Hippel, 1986; Prandelli, Sawhney & Verona, 2008), contributing to the productivity and competitiveness of firms and markets (Allman et al., 2011).

Relevant Forms and Types of Public Procurement of Innovation

It is important to understand the various ways in which innovation procurement can be carried out. Edler and Georghiou (2007) distinguished between general procurement practice, which serves to satisfy the day-to-day needs of the public buyer, and strategic procurement practices, which is explicitly conducted to target innovation, to do things differently. There is a further difference between direct procurement, whereby the public buyer is the (only)
user, and procurement that is also targeted towards creating private uptake once the public buyer has purchased a first batch (catalytic procurement) (Edquist, Hommen & Tsipouri, 2000). Obviously, these different modes of procurement have different implications for the market effect of public procurement of innovation.

Even more important for our purposes is the distinction of two types of PPoI: (1) responsive procurement of a novel service or product that is offered by suppliers to the market and (2) procurement that triggers the development of a new product or service, necessitating a clear definition of functional specificities to spur innovation creation by suppliers. The former can catalyze the diffusion of innovative solutions while the latter can help to create new solutions and thus new markets.

Our core argument in this paper is about the need to use project management techniques for complex procurement of innovation. We thus focus on public procurement that makes a supplier innovate to provide the novel solution that is not yet on the market. This innovation triggering demand clearly adds layers of complexity and risk. To demand an innovative solution that not yet exists on the market necessitates that the need of the (public) buyer is very clearly defined and clearly signaled to the market. Often, investment in research and development is needed to generate the innovation. Pre-commercial procurement (PCP) is a way in which public organizations can procure the first step, i.e. to test the feasibility of a design that fulfills the need.

PCP of innovation is the purchase of R&D services to develop an appropriate design and prototype. It is exempt from normal (EU) procurement rules and thus allows procurers to have more freedom in selecting, defining and interacting with potential suppliers to determine what they want and get (Edler & Georghiou, 2007). By doing so, solutions can be co-developed, and risk reduced and shared between procurers and potential suppliers. Figure 1 illustrates one type of pre-commercial procurement, as designed in the context of the European Commission (2007). It shows how the process of pre-commercial procurement itself can be further differentiated into different phases, in all of which procurers interact with potential providers of solutions. The outcome of the pre-commercial procurement, i.e. a design or prototype that best fits the need of the
procuring agency, is often used to specify the tender for the subsequent commercial procurement process.

A final typology that is important for our argument rests on a distinction according to the nature of the good and/or service to be procured. Kraljic’s (1983) purchasing portfolio model is commonly used to determine what purchasing/procurement strategy might be employed, based on the extent of profit impact and supply risk involved. Uyarra and Flanagan (2010) further developed a typology based on Kraljic’s model and Storper’s (1997) work to consider innovation procurement in terms of market needs and the extent of the production process (see Figure 2). Consequently, based on their typology they suggest several implications in terms of innovation, type of product, dominant user–supplier interaction, procurement practices and barriers, and the spatial organization of procurement.

**FIGURE 1**

Types of Procurement at Different Stages of the Product Life Cycle

FIGURE 2
Typology of Innovation Procurement

Specialized Production Process | Standardized Production Process
---|---
Dedicated market | Adapted procurement (e.g., customized software, social services)
  Experimental procurement (e.g., specialized technical equipment) |  
Generic market | Efficient procurement (e.g., office supplies)
  Technological procurement (e.g., waste management, transport) |  


Obstacles of PPoI

If the benefits of procuring innovation are so clear, why then has its potential failed to be realized? One reason for that is, as Uyarra and Flanagan (2010) pointed out, that in the case of innovation, procurers are often faced with multiple (and sometimes) conflicting demands beyond that of the procurement itself. Some analysts (e.g., Potts, 2009) even argued that there is a clear opposition between innovation and efficiency, because the goal of efficiency is inconsistent with the goal of innovation; even saying “the rational pursuit of efficiency denies the very existence of innovation” (p.36). While this clearly goes too far, since – for example – process innovation often is the most suitable way to achieve efficiency gains, a tension between different rationales is obvious, posing a challenge for coordination and decision making.

Another barrier to the procurement of innovation is the lack of coherence in the way the public sector’s needs are translated to the market. It is important to define a clear set of needs towards which innovative efforts can be directed (Geroski, 1990). Edler and Uyarra (2012) further highlighted that sufficient planning, defining and
communicating needs, and market engagement early in the procurement process are crucial to spur innovative solutions from the market.

The way in which procurement is organized also poses certain obstacles to PPoI. It is critical to define a future need and turn it into technical specifications for a concrete tender process, take it through the procurement process and then adopt the acquired innovation in the organization (Edler & Uyarra, 2012). To do all this, it is important that those who hold the budget within the organization are actively engaged with all relevant stakeholders, including those who deliver the service, end users and, importantly, procurers. Similarly, Edler et al. (2005) found that good internal coordination and suitable interfaces between the organization and the market contribute to successful PPoI.

The literature has also considered that a potential lack of leadership, capacity and resources in the procurement function is a barrier to PPoI. The discrepancy between the capabilities held by procurers and the skills required for procuring innovative solutions is a potential barrier to PPoI. As noted by Rothwell and Zegveld (1981), whereas relatively little in-house competence is needed when procuring off-the-shelf goods for the lowest possible price, greater competence (of procurers) is required to encourage suppliers to innovate. Cousins, Lawson, and Squire (2006) also found that purchasers with high skill levels and knowledge have a significant impact on financial performance and operational efficiency in terms of quality improvement, design and reduction of lead times. Consequently, strong and competent procurement professionals are needed, not just to carry out the procurement (process) competently but to understand how procurement fits in with the rest of the organization’s activities. However, it has been suggested that in the lower echelons of governance and decentralized systems, there may be a shortage of procurement professionals and as such the lack of skills for innovative purchasing is a particular challenge (Uyarra, 2010; OECD, 2011). This can further contribute to a risk averse culture already endemic in public agencies and “act as a barrier to the adoption of appropriate innovative, reactive and proactive supply strategies” (Cox, Chicksand & Ireland, 2005, p. 1). In particular, the buying organization associates risk with the perceived higher entry costs of an innovation and the uncertainty around whether the
solution can be successfully developed and subsequently adopted by
the organization. Internally, the incentive structure is skewed; it is
often the procurement function that bears the consequence of
procurement failure but successful adoption will be attributed to a
different stakeholder. As such, reducing risk aversion and sharing risk
can strengthen the effectiveness of PPoI (Aho, Cornu, Georghiou &
Subira, 2006; Tsiouri et al., 2009).

To spur innovation, buyers must firstly specify the need which the
innovation is to satisfy. This means that they need to possess the
competence to identify and articulate the need and translate it into
effective demand for a specification according to which suppliers
then can produce, and also have the competence to carry out the
procurement. Vinnova (2009) suggested that this competence
includes technical competence of the innovation as well as
competence to manage the procurement process. This whole process
is usually left to procurement professionals. However, in many cases,
the procurers are not the users of the innovation and so may not fully
understand the need of the innovation. This may result in the
production of a tender specification that does not satisfy the needs of
the innovation.

PROJECTS AND PROJECT MANAGEMENT

Main Principles of Project Management

Modern project management, characterized by the use of a
temporary grouping of people to focus on delivering specific
objectives within a limited timeframe and budget, is traditionally used
to manage very large projects that require dedicated teams and,
more often than not, the collaboration of several sponsoring
organizations (Turner, 2009). Nonetheless, in recent years the use of
projects and project management techniques has gained popularity
as a way of coping with the challenges of managing in a complex
world (Cicmil & Hodgson, 2006), and applied to projects even on a
smaller scale. A project is often defined as “a temporary endeavor
undertaken to create a unique product or service”, which has a
definite beginning and end, and is for a specific objective or purpose
(PMI, 2004, p.vii). Consequently, project management is “the
application of knowledge, skills, and techniques to execute projects
effectively and efficiently” (PMI, 2012). Importantly, the Project
Management Institute (PMI) considers project management as a
strategic competency for organizations as a way to link project results to business goals. Projects are often deployed where the objective of the project differs from the usual business of the organization (Lockyer & Gordon, 2005).

According to the PMI, project management draws on nine “bodies of knowledge”:
- Integration,
- Cost,
- Human resources,
- Scope,
- Quality,
- Communications,
- Time,
- Procurement, and
- Risk management.

A key purpose of project management is to manage risk and uncertainty through the coordination of all the other elements (Turner, 2009). As such, projects are usually divided into several project phases to be better managed. The project is thus broken down into a series of deliverables, i.e. a tangible, verifiable work product. Additionally, a project team should include all the key and relevant stakeholders so that all opportunities and risks faced can be identified and addressed.

**Project Management and Procurement**

As seen above, procurement is one of the main knowledge areas that contribute to project management. The Project Management Book of Knowledge (PMBoK) (PMI, 2004), which presents a set of standard terminology and guidelines for project management, devotes an entire chapter to Project Procurement Management, in which the processes required to acquire goods and services (from outside the performing organization) are described. In particular, the focus is on what to procure and when (in the project life-cycle), and if doing so, how to solicit and select the required products, and manage the contract and relationship with the seller. As such, the procurement process or function is often considered **within** a project context, for which the aim is to “acquire hardware, software, processed materials, services or combinations thereof…. necessary
for the completion of the project” (Lockyer & Gordon, 2005, p. 41). This is a common way of viewing procurement in the context of project management, and several authors have stressed the need to manage procurement effectively to ensure the vital success of projects (Nissen, 2004; Lockyer & Gordon, 2005). Here, procurement is considered as one element of a project that needs to be managed, along with all other project resources.

Project Management in Public Procurement

The Office of Government Commerce (OGC), a former UK agency responsible for central procurement, refers to a project as a unique set of coordinated activities, often involving a procurement process with definite starting and finishing points, undertaken by an individual or team to meet specific objectives within a defined time, cost and performance parameters as specified in the business case (OGC, 2010). The use of project management techniques in public procurement is not new; project management has been used mainly in the procurement of large complex systems as mentioned above, e.g. in defense procurement or when procuring large IT systems. Complex procurement is defined as “one where the specification is difficult to define or is complex or innovative, the procurement is high risk, competition is restricted to a limited market, the contract will be based on unusual commercial models, or where the procurement involves spend in a number of categories” (p. 14) and where specialist advice would be required for such procurements (HM Treasury, 2010). In this case, procurement is viewed as a major project, which requires project management mainly to manage the risks involved (as a by-product of complexity) and to bring in specialist expertise as needed. Such major or complex procurements are usually one-off or very infrequent purchases. They also often possess the greatest risk and often invoke strong public scrutiny. As such, it is often the scale and cost (and associated risks) of such purchases that determines to some extent its need to be project-managed. It is important that risk in such procurement is adequately managed and this is often done through project management techniques. The OGC (2008, p. 20), until February 2011 responsible for “improving VFM (value for money) by driving up standards and capability in procurement”, played a strong role in ensuring the successful delivery of major projects, and developed an approach to project and procurement management known as the Gateway™ process to do so.
Therefore, here we see two ways in which projects and procurement are related – procurement as one (vital) part of a project that needs to be managed (along with all other project resources), which we refer to as procurement in projects; and complex procurement as the project itself that is to be managed, which we will refer to as procurement as projects. In this research, we focus on the second definition.

The public sector procures a wide range of products and services using many different approaches, processes and techniques. A large proportion of procurement in the UK is generally and typically managed as a routinized, operational process as part of day-to-day business, where the focus is on achieving value for money whilst being efficient and effective (in delivering public services), and so the use of procurement through category management is common. However, the OGC, in their guide “An Introduction to Public Procurement” suggest that authorities should “run their procurements as projects,” and suggests that these could be one-off (projects) or interlinked and forming a programme to deliver a set of business change outcomes (OGC, 2008). While there are clear benefits to applying project management techniques in procurement activities, the benefits are more clearly felt in certain circumstances, e.g. in large and overly complex procurement, but also if novelty, re-organization and market intelligence are needed, i.e. when innovation is procured. Furthermore, projects should complement the operations of an organization.

Challenges of PM in PPol

**Providing and Coordinating Different Skills and Functions**

As already mentioned, a project consists of a set of coordinated activities undertaken by a team (or individual) to meet specific objectives, within a defined period of time, budget and performance parameters. Projects are divided into several phases for better management control, both of resources for each particular phase as well as for linking into the operational performance of the organization. As such, there is a need for a range of different skills and functions to undertake the various tasks and activities associated with the project, and a mechanism for coordinating the various resources and activities. Through the provision and
coordination of different skills and functions, some of the challenges of PPoI can be overcome.

Most importantly, there is a need for project leadership and management; one without the other is likely to produce poor results. Typically the project manager has responsibility for both, but leadership is not limited to the project manager.

Projects that are part of an organization will be influenced by the organizational context in which it operates, and the project team must be aware of how the organization’s systems affect the project (PMI, 2004). Similarly, there are usually multiple stakeholders involved in any project; these are individuals (or functional units) whose interests are affected by the execution and/or success of the project. It is therefore important to identify who the stakeholders are, determine their needs and expectations of the project, and manage and influence those expectations accordingly. Stakeholders typically include the customer (user), the sponsor, senior management and suppliers.

A project life cycle will help determine what technical work needs to be done in each phase and who should be involved in each phase. For example, in the procurement of innovation, there is a need to understand the market as well as the needs that an organization has for a particular product or service (that does not yet exist). Therefore, there is a need for individuals who can conduct market scanning activities (externally) and needs analysis (internally). The project team will also need to have procurement expertise, and any other necessary related skills and expertise pertinent to the project. These skills and functions can be drawn both from within the organization and externally to form a temporary project team to carry out the tasks.

Overcoming the Challenges of PPoI

There are several challenges in the public procurement of innovation as discussed in the previous section; project management can help overcome some of these challenges. The procurement of innovation often addresses new needs, but in doing so often requires different skills and takes on higher risks. As such, several challenges of PPoI exist; the lack of specific capabilities to identify and specify the concrete need (of an innovation), to understand the potential solutions and adopt the appropriate solution into the organization.
Project management can help overcome some of these challenges through its ability to identify, analyze and respond to project risk, and to bring in the necessary resources to overcome some of the deficiencies of capabilities.

While procurement as its most basic purpose was once associated with “purchasing”, the term has evolved as the function of procurement has become increasingly important to an organization, and is now often held in terms of its strategic position and encompasses the decisions that are integral to an organization’s success. Additionally, this study considers that like in complex projects, the procurement of innovation equally requires specialist skills, competencies and resources to be successfully enacted.

There is an argument to be made that for procurement projects, the procurement manager would also be the project manager; for example, Nissen (2004, p. 247) noted that “if a project manager is not managing procurement, then he or she is only management 50 percent or less of the project as a whole.” This research will show that this is not necessarily always the best option.

METHODS

This paper presents a case study of the procurement of an innovation within the UK National Health Service (NHS), the NHS Blood and Transplant (NHSBT), with the help of the NHS National Innovation Centre (NIC). The purpose of this case study is to show that the use of advanced project management techniques and an intelligent multi-step project design has enabled the successful completion of this procurement which had previously stalled for many years.

Semi-structured interviews were conducted with key stakeholders involved in the entire procurement process, i.e. the project to procure a new donation chair. This included the project managers from NHSBT and NIC, the Assistant Director of Nursing and the Procurement Manager in NHSBT, and the supplier. In total, eight interviews (individual and group) took place with six key individuals in NHSBT and NIC. Interviews with other key actors within the Department of Health provided supplementary data and context setting. This was further supported by secondary data such as
government reports and organizational documents. Data was collected between October 2010 and December 2011.

RESULTS/ CASE FINDINGS

Background

NHSBT is the only UK provider for organs, and is responsible for supplying and collecting blood and components in England and North Wales. For many years, the Blood Donation Directorate had tried and failed to procure a new blood donation chair that was fit for its purpose. They needed something that was fitting of a modern environment and satisfied all the health and safety issues and concerns. While several other chairs with different designs existed in the market, none of them “hit the mark” or was suitable in one way or another for the organisation. The Assistant Director of Nursing searched the market internationally and trialed several different existing products to find one that would best fit their requirements but all were not suitable (see Table 1). This failure was partly due to the fact that NHSBT searched the market with a vague understanding of their needs (which were not correct) and could not find what they wanted. Ultimately, following a traditional procurement route, i.e. purchasing “off-the-shelf,” that did not work; a lack of clear

| TABLE 1  
The Problem/ Unsuitability of Existing Chairs on the Market |
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<tr>
<td>- Many chairs were too heavy to be easily transported and setup (even using trolleys)</td>
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<td>- Set-up and dismantling of chairs was complex and had a high risk of entrapment or injury from sharp edges</td>
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<tr>
<td>- Mattresses were frequently not impermeable and so they failed infection control requirements</td>
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<tr>
<td>- The height of the armrest made performing venepunctures difficult</td>
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<td>- Movement of donor was complicated and often required more than one member of staff to assist in both donation and recovery positions</td>
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<tr>
<td>- The angle of the donors’ legs was incorrect.</td>
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<td>- Chairs did not have integrated workstations allowing staff to safely label packs and store consumables.</td>
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articulation to the market of its need had ultimately resulted in several failed procurement attempts, which wasted time, money and resources, and ultimately the failure to acquire a new chair to meet their changing needs could have impacted on their service delivery efficiency. The multiple needs that the chair had to satisfy made it difficult to just go out to market and purchase something off the shelf. The organization also tried to work with their incumbent supplier to design a new chair but to no success. One solution was to get a bespoke design, but the organization was concerned about going down this route as it had never done it before and thought it was risky and costly. The procurement team did not understand why the user needs could not just be written into a specification and let a supplier come forward to provide it. There was skepticism that there was no off-the-shelf product to buy as the organization had never found itself in this position before.

In 2009, the Assistant Director of Nursing learned about another Department of Health initiative known as Design Bugs Out. In particular, she became aware of the National Innovation Centre (NIC) and its role, and considered that they might be able to assist in getting a bespoke chair designed and built. She approached NIC to get help and advice on how to get the process started on designing a bespoke chair for NHSBT. It became evident that looking for existing products in the traditional way was a clear mismatch of need and process; the new process used, as will be described in detail below, was more functional and need oriented.

The NIC was part of the NHS Institute for Innovation and Improvement and was established in 2004 as part of a wider initiative to address the issue of the NHS being a late and slow adopter of innovation. Their role was to work with innovators to develop a product or process innovation, and subsequently work with NHS customers to get that innovation adopted and used. As such, procurement per se was not within their remit, but they had been granted special powers by the Secretary of State for Health, which enabled them to design and support pre-commercial procurement to support the generation of innovative solutions. NIC considered two paths to the development of technological innovation that can benefit the health sector – reactive and proactive paths. The reactive model aimed to “receive” innovative ideas and solutions from industry, which the NIC then supported through awarding funding for further
development or establishing contact with other experts or the NHS for collaboration or to conduct trials. The proactive model sought to develop a solution for a need and requirement which the current marketplace could not meet.

In this case, the NIC used a pre-commercial procurement (PCP) process through the proactive model. Through separating the design phase and the procurement phase of the new donation chair, this approach allows the issue of multiple R&D contracts for a competition for the best designs, establishes a close interaction between the public agency and those working on a solution, and leads to sharing the risks and benefits. Given the large amount of money spent on previously unsuccessful procurements of unsuitable chairs, using a PCP approach would allow NHSBT to firstly specify requirements that wholly met their needs; secondly, enable the design of a chair fully to those requirements, and thirdly, test a prototype and run a procurement exercise on a small volume first before undertaking on a large volume procurement exercise and rolling it out throughout the entire organisation.¹¹

In terms of risk management, the PCP process does not avoid the risk of failing to design a solution (e.g. not be developed properly or tested as unsuitable in the real environment); however, the cost of failure is limited to the R&D service and thus is only a fraction of a commercial roll-out undertaken without prior prototyping and testing. Without a testing phase, there was the risk that NHSBT could spend significant amounts of money procuring a product that did not suit current working practices or required significant changes to the status quo, which would meet resistance of staff and impact on job satisfaction as well as service delivery. Prototyping and testing on a smaller scale before rolling out also reduces procurement risk and cost.

However, the idea to follow this process was not well received within the organization and the Assistant Director of Nursing met with resistance to get approval for the procurement of this new chair. To overcome this, it became clear that this “project” had to be more than just another procurement exercise. It was decided to establish the need to get chairs as a strategic change project, and the change programme board approved the initial prototype and testing phase. A business case for the large volume contract was then written and approved by the NHSBT board.
The next section will present the case using the five-stage model of NIC’s proactive model, namely:

- D1 – Define the need,
- D2 – Design the solution,
- D3 – Develop the solution,
- D4 – Demonstrate the benefits of that solution, and
- D5 – Distribute the solution.

The Case

**D1 – Define the Need**

In August 2009, NIC held a requirements workshop attended by industry manufacturers, designers, donor carers, clinicians, finance, quality and senior managers. The aim of the session was to “define the need” and resulted in a ranked list of requirements specification, ranging from those that were essential to those that were “nice to have” (see Table 1 for summary of requirements). These needs were then considered against published literature and results in a formal needs assessment document, which helped to determine whether the procurement should still go down the traditional procurement route or if NIC would engage in a PCP. A review of the existing solutions was also conducted at this stage. Based on the evidence, NIC concluded that there was no technology already available on the market that

<table>
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<th>Requirement Description</th>
<th>Essential</th>
<th>Desirable</th>
<th>Nice to have</th>
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<tbody>
<tr>
<td>Functional Requirements</td>
<td>22</td>
<td>9</td>
<td>6 (1)</td>
</tr>
<tr>
<td>Operational Issues</td>
<td>2 (3)</td>
<td>8 (3)</td>
<td></td>
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<tr>
<td>General Design and Appearance</td>
<td>3</td>
<td>1</td>
<td></td>
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<tr>
<td>Cleaning and Maintenance</td>
<td>3</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Logistics and Transport</td>
<td>7</td>
<td>3</td>
<td>2</td>
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Note: Numbers in parenthesis indicate the requirements at a lower level of a previous main requirement and only applicable if that main requirement is met.
could meet NHSBT’s need. Therefore, NIC proceeded to the D2 stage of the process – designing the solution.

**D2 – Design the Solution**

NIC approached two design houses with the new specification on behalf of NHSBT, and each was invited to produce several designs for a donor chair that would meet the requirements as specified. NHSBT then commissioned one design from each company to be turned into a prototype that would be tested.

**D3 – Develop the Solution**

The prototypes were delivered in January 2010 and tested at a NHSBT test centre for two weeks (see Table 3 for a description of the test centre). During this time, significant problems were encountered with one of the prototypes and the decision was made not to continue with its development. The other prototype tested well; the testing

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**TABLE 3**

Session Environment Design Authority (SEDA)

| NHSBT set up a Session Environment Design Authority (SEDA) as an outcome of this project, to have overall responsibility for the control of all procurement initiatives that impact on the session environment. A new Session Environment Test Centre was set up in Bristol, in order to facilitate the functional testing of the prototype, but also where any future potential changes to the blood donor session environment as a result of new equipment could be trialed. This ensured that only tested changes were introduced to operational activity and lessons are learned before implementation, which minimizes disruptions to actual sessions, and ensures staff and donors receive the most efficient service possible. This was an innovation within the organization as previously there was no such precedence for testing new equipment and the impacts it might have on the donation session. This was partly because the organization had, up to now, not procured any new or specialized products that would significantly impact on work processes. Most procurement was off-the-shelf with minimal impact on the status quo. |
(conducted by the NHSBT project manager with several staff and donors) identified some minor changes that were needed to improve its usability and operability, and a modified prototype was commissioned from the remaining design house. Additionally, the test environment highlighted the need for a way to transport a set of chairs to a donation environment, and the company also undertook the design and production of a prototype trolley system. Additionally, a cushion pad was also commissioned to enable the chair to be used for component donation (which could take up to two hours and so required increased comfort for donors).

**D4 – Demonstrate the Benefits**

The modified prototype chair and accompanying trolleys were delivered in June 2010 and subjected to rigorous testing with two collection teams. This stage allowed the benefits of the chair to be demonstrated and validated in the clinical environment. Feedback was collected to compile a business case to justify a larger volume purchase if the trial proved successful. After some further modifications, the chair and its parts were successfully validated in September 2010.

**D5 – Distribute the Solution**

Once the prototype was validated, NHSBT went about conducting the procurement for a small-scale order. An OJEU for the manufacture of the chairs and trolleys was published in October 2010. This was followed by an award of tender in June 2011 and resulted in the first delivery of chairs in September 2011 that was trialed by three teams around the country over 12 weeks. This was a success, and the final delivery for the full order of the chairs was fulfilled in December 2011, and the new donor chairs were rolled out to all teams.

The D1 and D2 stages of the process were run by a project manager from NIC; stages D3 to D5 were managed by an NHSBT project manager and supported by the Procurement Manager and the Assistant Director of Nursing. Each had an integral role to play in contributing to the successful procurement of a new donor chair. This will be explored in more detail in the Discussion section.
DISCUSSION

In this section, we discuss the findings in relation to the claims made in the literature in order to understand the conditions, structures and processes that are conducive to procuring and successfully applying innovation in the public sector. We consider some key lessons to be learnt in the approach of PPoI differently to normal procurement and the application of project management techniques to overcome obstacles.

Skills, Knowledge and Capabilities in PPoI

As the growing literature on innovation procurement has shown, procurement of innovation often addresses new needs, and in doing so requires different skills from normal procurement, and expertise from a wide range of functions. A dedicated project brings together the relevant (human and material) resources to undertake a temporary endeavor to achieve specific goals or outputs; in the procurement of innovation. This points to the engagement of skills and functions beyond procurement itself, and thus “it is important to design organizations with an integrated process for identification of needs, a process for the formulation of specifications as well as the ability to handle the procurement process” (Vinnova, 2009). As the NIC also confirms, “the skills and techniques of project planning and control are intended to manage resources alongside, separated from, or even operating against, the natural flow of the organization’s (normal) activities” (NIC, 2011, p.1).

In the case of NHSBT, the skills and knowledge its procurers possessed were insufficient to adequately undertake PPoI. The skills set of the procurement function in the organization would not normally be an issue as they rarely undertake complex procurement projects; the majority of their procurement activity is “normal” and occasionally they may outsource, i.e. procure, the provision of services, for example certain IT hard- and software services, rather than procuring and managing it themselves. For the wide range of standard goods and services the procurement function possesses a sufficient range of expertise. However, innovation procurement requires more specific skills and functions, far beyond the capabilities of the procurement function; procurement professionals cannot possess all the relevant skills and (market and technical) knowledge
about all the different types of products and services that they may procure.

Therefore, it appears more efficient to have a procurement function that concentrates on its core capabilities and brings in the necessary expertise when “specialized” procurement, PPoI, needs to be conducted. It is important that NHSBT could draw upon expertise from others who have an understanding of the market and technical specificities of products, whether within the organization or externally, and also bring in additional skills and resources to manage the process of procuring innovation. The knowledge that the NIC brought to the table relating to PCP and the way it could be approached was integral. As the case shows, when it is about identifying and specifying the requirements in detail to procure something that does not yet exist, to set in place consultations with the relevant stakeholders, and to scan the market for what can be delivered, those who conduct general procurement are overwhelmed, not only by a lack of content and market knowledge but also in terms of process knowledge beyond normal procurement. This was evident from the initial reaction of the organization and the procurement function, which did not want to and could not carry out PCP when initially faced with it. Given the skills and even more the knowledge needed to procure innovations in such complex settings, it is not realistic to arm procurers with the full arsenal of commercial skills, but rather to allow for flexible, tailored project approaches to combine exactly the skill set needed.

PCP is often thought to be “triggered by procurers identifying the need to find a solution to a specification problem for which they don’t find ‘commercially ready’ solutions on the market yet” (PRO INNO Europe, 2006, p. 1); however, our case demonstrates that it is more reasonable to assume that the need is expressed by those functions inside an organization that are responsible for providing the service. In our case, it originated from the user, the Assistant Director of Nursing, who struggled to find the right solution suitable for the organization, and it was only through serendipitous interaction with others outside the organization (but still within the NHS) that she became aware of the possibility to design and procure a bespoke chair in this way. From a traditional procurement perspective, the PCP approach was considered risky and expensive, and could not guarantee the result of getting a new chair that worked, and so met
with severe resistance. Only the inclusion of a specialized organization to support the PCP helped the Assistant Director of Nursing overcome the initial doubts and resistance of traditional procurement in-house and provided support for going down that route.

The “Projectification” of PPoI

The role of procurement within organizations has changed significantly from a transactional and commercial orientation to one oriented towards strategy and focused on delivering value (van Weele & Rietveld, 1998; Zheng et al., 2007). Complex procurement is often project-managed and the case suggests that, like complex procurement, the procurement of innovation may be enacted successfully through the application of appropriate project management techniques. Despite procurement being increasingly seen as strategic, existing evidence reviewed by Zheng et al. (2007) suggests an uneven picture in relation to procurers’ influence over corporate level strategic decisions or make-or-buy decisions, and in managing relations with suppliers. This suggests a mismatch in what the role of procurement purports to do and what functional role it actually carries out in an organization.

Unique one-off, strategic procurement is intended to achieve an unusual outcome and therefore requires different management skills. Projects are unique and allow for specific and carefully coordinated structures and processes; organizations are not set up to achieve the specific requirements of the projects they initiate within their normal operations. The case points to the need for different processes and approaches for the procurement of more strategic and specialized procurement compared to standard, business as usual procurement. Doing so helps to overcome some of the traditional barriers to procurement often experienced which exist because procurement is only thought of in the conventional way as already previously shown.

Out-of-the-box procurement of innovation further needs a clear leadership, capacity and resources. Related to the importance of leadership, the role of “champions” has been identified in securing the success of certain innovations, such as the introduction of digital signal process hearing aids into the NHS as reported by Phillips, Knight, Caldwell and Warrington (2007). A champion is a “charismatic individual(s) who throws his or her weight behind an innovation, thus
overcoming indifference or resistance that the new idea may provoke in the organization” (Rogers, 1995, p. 414). Champions can make the difference between the success and failure of an innovation within an organization; they are typically powerful individuals high in the management of an organization.

In this case, the champion was the Assistant Director of Nursing, who became increasingly frustrated at the inability of her organization to procure a suitable chair for the organization’s needs, and once having found a suitable way to tackle the problem, was determined to see it through. Although initially faced with resistance internally, she was eventually able to enroll the procurement manager and various senior members of the management team into getting on board. Furthermore, she was willing to take the risk and put her reputation and credibility on the line if the project did not work out. Schon (1963) argued that “a champion is required to identify the idea as his or her own, to promote the idea actively and vigorously [...], and to risk his or her position and prestige to ensure the innovation's success” (cited in Howell & Higgins, 1990, p. 317). It has been noted that when (innovation) champions are ‘techies’, nothing happens. Innovation champions must be managerial or have strategic authority to enable change. Being responsible for the care and safety and experience of donors, she foresaw the benefits that the procurement of the new chair would bring; however, she had neither the skills nor inclination towards understanding the details of procurement. Furthermore, the amount of time and resources she could commit to the cause was limited given the current role and responsibilities she already had. Thus, her main role was to initiate the project, to inspire different, separated functions within the organization. Most importantly, she installed a project manager for the day-to-day management of the processes throughout all its various phases.

The project manager was responsible for the initiation, planning, execution and evaluation phases of this “procurement” project, through the management of the stakeholders and the project team. He identified and controlled project risks and issues, managed the tasks and resources available, controlled any changes that emerged and ultimately delivered the project objective, i.e. a new donation chair. It was indispensable to approach the procurement as a project, bringing a team of relevant people together within the organization to deliver the new product within a given timeframe and budget, under
the direction of a project manager, not a procurement manager. The project manager provides continuity and control throughout all the stages of the project life-cycle as one key point of contact while relying on the other stakeholders within the project – the procurer, the users, senior management, and the supplier – to give him the relevant expertise and advice to bring the project together.

However, despite the importance of the new project structure and the champion and project manager being responsible for it, it was important that the role of the procurement professional was not trivialized; the “procurement” of a new donation chair was not limited to just the final purchase at the end of the process itself. Even when the traditional procurement function was skeptical about the process, it needed to be involved early on in the process of procuring innovation, not only to advise on legal matters but also to take over in the later stages when “normal” procurement occurs. We argue that a very competent procurement professional, which Cousins, Lawson and Squire (2006) term a “strategic purchaser”, can contribute fully to an organization’s performance through their understanding of how procurement fits in with the rest of the organization’s activities and coordinating their role in a strategic way with other stakeholders, rather than just merely through gaining more knowledge and skills.

The case shows that the use of a project manager and relevant project management techniques to undertake this procurement contributed to enabling its success. Essentially, it was important to approach the procurement of this new chair as a strategic change initiative; it was more than just another regular procurement to take through the normal processes and channels as it also had wider impacts on service delivery.

Procurement refers to “the process whereby public sector organizations acquire goods, services and works from third parties (OGC, 2008, p. 3). As such, it is important that the procurement of a new donation chair was not confined to only the stage at which the chair itself was purchased and obtained; the process began before that and encompassed several phases including at least three procurement exercises (procurement of the prototype, a small-scale and final large-scale order) and other related activities that impacted on the procurement exercises, e.g. defining the needs of the chair, commissioning its design, and the related testing stages between the different procurement stages. This also includes the opportunity for
feedback loops and testing with internal users in the design phase. While procurers could handle the legal technicalities at a later stage, the project delivered the technical specifications based on the interaction between user and producer and the testing and validating of the chair in a working environment in the PCP process. Therefore, it is suitable to consider the whole procurement process of PPoI as a project and managed as such.

Therefore, a project management approach was integral to break down and link the various stages to ensure that the procurement and its associated changes in work practices of staff and service delivery would be successfully achieved and the risks associated with each phase could be adequately managed and overcome. Delegating this task to a procurer would not only be ineffective given the need for the specific skill set, it would also reduce the procurement resources available to the organization. Similarly, while the users may have a strong impetus and desire to see the project come to fruition, they also may not have the relevant project management skills and, more importantly, often will not have the spare capacity to undertake such a large endeavor. In this case here, while the Assistant Director of Nursing was highly motivated to ensure this project was a success, she did not have the spare capacity to commit her time to this cause. Having a dedicated project manager ensured that there was someone with a focused responsibility that had the time and resources to carry out the various tasks (and keep the project to scope, time, cost and quality), and involve the related stakeholders at relevant times.

Project Management and Early Engagement

The evidence from this case also points to the need for early engagement of all relevant stakeholders in the procurement process to increase the accuracy of designing and specifying requirements that are relevant for the procurement. As the literature review on obstacles of PPoI has pointed out, a lack of early engagement not only with the relevant internal stakeholders but also with the potential suppliers leads to poor articulation of needs and a poor understanding of the competencies in the market and subsequently presents an obstacle to PPoI. Identifying the true needs of a procurement is crucial; NHSBT previously carried out tenders with what they thought were their “needs,” only to realize that the procurement did not deliver what was really needed. Thus, integrating the relevant stakeholders, particularly users, early on in the
procurement process is important to ensure that what is delivered is what is wanted. Furthermore, early engagement of the procurement function also ensured that the entire process complied with the legal requirements, which was the main concern of the procurement function.

Through the project management framework employed, NHSBT could conduct test sessions with the prototype in a live environment with the users to ensure that any changes made would reflect the relevant work practices, and assess what impacts on work practices the innovation might have. The process also highlighted the difference between legal technicalities of the procurement and the technical specifications of the product itself, which were previously conflated. These differences came to light through the enactment of the D1 stage and have already been discussed.

**Knock-on Effects of PPoI for Future Procurement**

While not the focus of this paper, this case is a good example of how PPoI can trigger innovative activity and behavior in the buying organization. As a result of this procurement project, NHSBT set up SEDA (see Table 3), which would replicate the process undertaken in the procurement of the donation chair for all future user-defined needs, e.g. other pieces of the kit to attach to the chair. This shows that the procurement of innovation has facilitated learning in NHSBT.

**CONCLUSION**

This study has considered the procurement of innovation as projects and as something that should be project managed, with dedicated resources and capabilities beyond the procurement function, fully bounded within a temporary project context with deliverables, start and end dates and budget. This case highlights the importance of approaching one-off innovation procurement differently from standard, business-as-usual, procurement. It demonstrates ways in which barriers of conventional procurement might be overcome so as to be applicable to the procurement of innovation. The procurement of a new donation chair met with several significant and challenging barriers previously because a conventional approach to normal procurement was employed. However, the needs that this chair aimed to satisfy were so highly specific that no existing product in the market could fulfill, and therefore required a different approach
to procuring an innovative solution. Additionally, the use of project management techniques to manage the various stages of the whole acquisition process, including the procurement stages, helped to overcome various obstacles associated with PPoI as well as issues of scarce resource allocation that organizations face when implementing over and above business-as-usual.

Procurement professionals who deal with conventional procurement on a regular basis rarely have the competency or capacity to deal with innovation procurement or understand innovation if they rarely or never come across it in their day-to-day role. Similarly, those who do have a remit for innovation may not fully grasp procurement rules and legislation. Furthermore, the users that the innovation benefits are not usually involved in the procurement process and often not even in the design stage, and procurement professionals are often involved too late in the process. Project management allows all the different stakeholders to come together in a coherent way from an early stage to ensure that the (design and procurement) specifications are drawn up in such a way that the key needs of all groups are met, that the product (or service) procured is fit for purpose, and change that benefits the organization as a whole is enabled.

It is important to note that our findings only relate to the procurement of innovation; we looked at a specific case of how the barriers to PPoI were successfully overcome. However, there are wider lessons to be learnt as there are more general problems to overcome and wider opportunities for such an approach. Relating back to Uyarra and Flanagan's (2010) work, this case is an example of experimental procurement at the early stage. However, it moved between segments and was undertaken as adapted procurement in the later stage.

Nonetheless, it is essential to note that it is not about project management in the procurement of innovation as such, but about asking for innovation. Asking for something that does not yet exist requires different skills and different time scales, and wider interaction compared to normal procurement; in the end, a radical approach to PPoI is needed.

Innovation as a policy tool has come to the fore and gained interest from practitioners, policy makers and academics in recent years. While the literature on PPoI has identified many problems
related to its success, up to now there has been no systematic concept of how to overcome those obstacles. Intelligent project management as discussed in this case could be one way forward.

NOTES
1. For an overview of those studies, see http://ec.europa.eu/environment/gpp/pdf/compilation%20case%20studies.pdf.
2. In the UK, this includes EU level Procurement Directives.
3. To ensure accountability to taxpayers.
4. However, this is in the section on complex project procurement.
5. At the time, they were using donation beds and donors lay down to give blood. The use of donation beds is still common.
6. Blood donation was conducted in a variety of locations and environments, e.g. mobile sessions, donor centers, blood mobiles, and would also be either whole blood or component donation sessions. Therefore, some of the requirements for the new chair related to ease of mobility, storage, transport, comfort and safety for those using it (both the donor and the staff). Improving faint rates was also high on the agenda; research has found that collecting blood in a horizontal position was not good clinical practice.
7. Purchasing an existing chair on the market that did not wholly meet its needs would mean significant compromises to NHSBT standards and strategic objectives around donor safety.
8. The aim was to obtain a new donation chair that improved faint rates and made the blood donation experience more pleasant to donors as well as to staff. There were also health and safety requirements, and comfort considerations (for both donors and staff).
9. The Design Bugs Out initiative was launched in August 2008; its aim was to bring together designers, manufacturers, clinical specialists, patients and frontline staff in the NHS to make hospital furniture and equipment that prevents and reduces healthcare associated infections (HCAIs). The project led to the development of 11 pieces of furniture and equipment, 4 of which went through commercialization. For more information, see
10. A Review of Arm’s Length Bodies by the Coalition government concluded that NHSI would be abolished in 2012. Since January 2012, NIC has become an independent mutual organization, ICONIC.

11. Previously, this type of testing was rarely considered or even done in NHSBT; typically, a product (or service) would be purchased and rolled out throughout the organization, which was costly and may not be suitable in the end.

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