

PRACTICAL LESSONS



Innovation-driven procurement
publication

PUBLIC INNOVATION PROCUREMENT IN THE NETHERLANDS

The Dutch government annually spends more than 57 billion euro on products, services and works. The procurement of these things means aiming to get the right quality at the best price. But another objective for many Dutch government bodies is the continuous innovation of products, services and works.

Public innovation procurement is the targeted search for innovative solutions from the market. Because of the immense purchasing power of government, public innovation procurement promotes the innovative force of the Dutch market (within the terms of effectiveness and efficiency of public spending).

The term 'innovation' is often suggestive of radical, high-tech developments. Yet actually, this could not be further from the truth. The modification of an existing product to better meet the demand for it is equally considered to constitute innovation. For example, asphalt has seen many innovations in recent years.

WHAT IS PIANOo DOING IN THIS AREA?

PIANOo provides a stimulus to government bodies to elicit innovation from their procurement procedures. PIANOo brings together experts within the "**Public Innovation Procurement**" expert network, combines knowledge and experience, and gives advice.

PIANOo also advises government bodies on how they can achieve innovative solutions in tenders, for example, in the field of protective clothing, cleaning and transport services. Furthermore, a budget is available for risk assessments and market surveys. PIANOo uses manuals, presentations and articles in professional journals to raise awareness of public innovation procurement opportunities. During themed meetings and in a PIANOo online discussion forum, buyers and procuring parties can exchange knowledge and experiences.

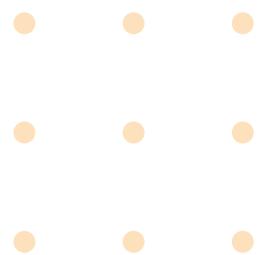


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INTRODUCTION

The role of professional procurement consultants when tendering for innovation is worthy of more attention. With their experience, they can help public authority buyers design their tenders well with a view to obtaining innovative solutions. It is their challenge to fully exploit the possibilities of existing tender procedures for this purpose: by creating space for economic operators with innovative ideas within the framework of tendering rules.

This manual takes six examples to show how early cooperation of procurement consultants with procurers/project leaders can result in innovation. The six examples set out here cover a variety of public contracting authorities, procurement domains and tender types. Prof. Jan Telgen, Chairman of PIANO's Public Sector Procurement Management Unit, believes that these examples are "all innovation gems". On page 30, he uses the six examples to look at the role of buyers during the innovation procurement process. The manual concludes with some practical tips to help buyers increase the role they play in the innovation process.

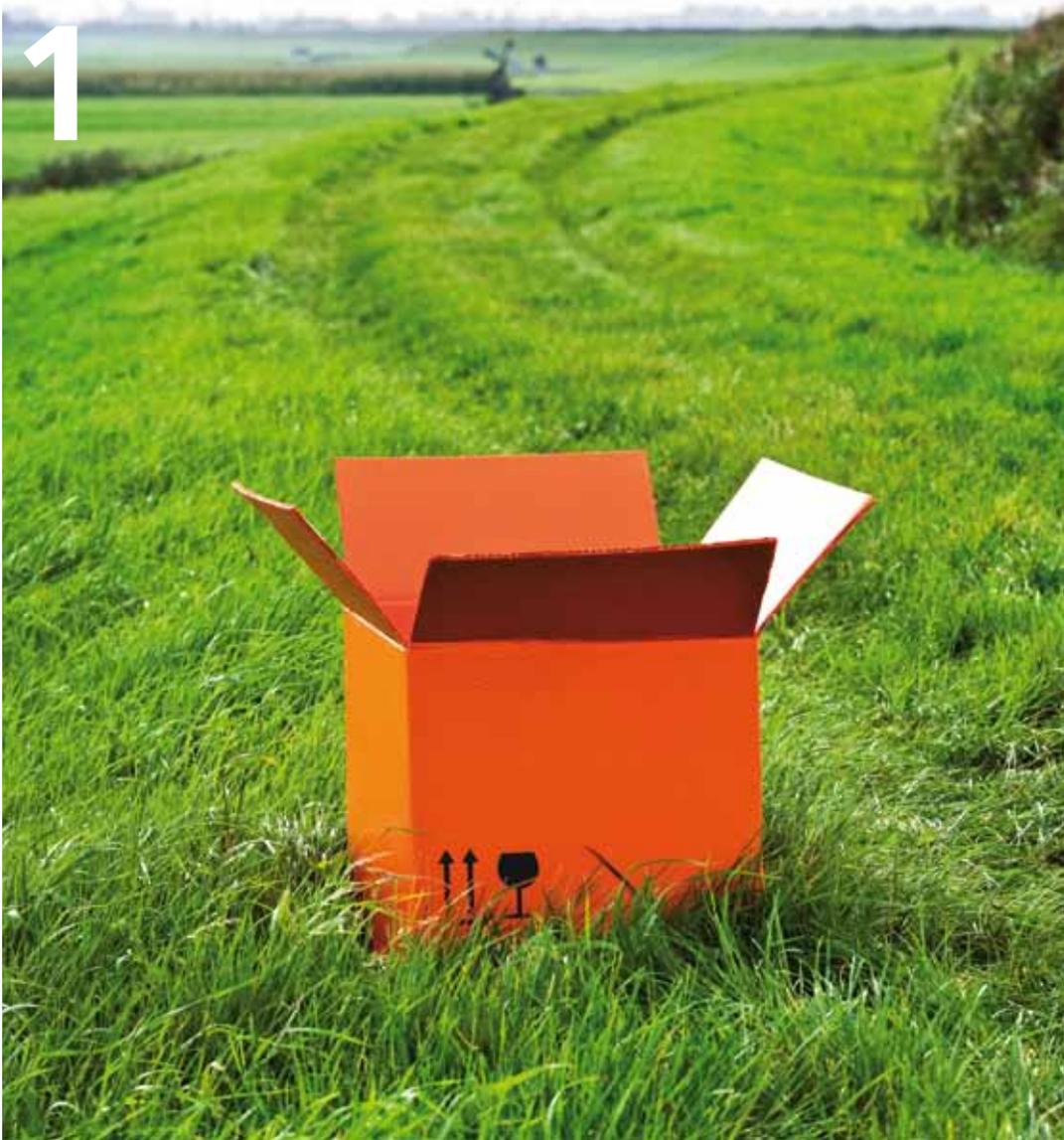
The table gives an impression of the differences between the examples.

Project	Contracting authority	Description/Demand	How tendered?	Status
Digital Dike	DG Public Works and Water Management	Develop measuring equipment to establish at an early stage whether dikes will fail	Tender of development by SBIR ¹	Completed; pilot implementation by Delfland Water Board
Cell Broadcast	Ministry of the Interior and Kingdom Relations	Brokerage function for enabling mobile phones for public warning system	European tender with advance technical dialogue	Service will be operational by 2011
Composite bridge deck	Friesland province	Application of new material type (composite) for movable part of a bridge	Design tendered in a design contest	Taken into service in July 2010
Accommodation for Dutch Institute for Ecology (NIOO-KNAW)	Royal Dutch Academy of Sciences (KNAW)	Most sustainable building in the Netherlands with combined application of existing and new technologies	European tender with advance technical dialogue	Completion planned for late 2010
Statiq Cooling	Government Buildings Agency	New type of building cooling system with sustainable features installed in existing construction used as a prison gym	European tender, the first time this was used within government (launching customer)	Completed
Steel bridges	DG Public Works and Water Management	Design contest	International design contest	Winner announced in October 2009

¹ See description in box on page 6

DIGITAL DIKE

INNOVATIVE FORMS OF DIKE SURVEILLANCE



DESCRIPTION

Tender in the form of Small Business Innovation Research (SBIR) for a development of new technologies for flood defence management and the early detection of weak spots. A invitation in late 2007 yielded 21 proposals, from which the five most promising were selected for a feasibility study. In April 2008, two proposals were put forward for a working prototype to be made. One of the selected prototypes is GeoBeads by Alert Solutions, which was completed in 2009. The other is "Monitoring from Space" by Hansje Brinker BV, which is expected to be ready in April 2010. There is interest from the market for both innovative solutions.

Background

Two incidents gave rise to the Digital Dike project. One involved the sudden failure of a dike (at Wilnis, August 2003) and another where this almost happened (at Stein, January 2004). The importance of a solution is immense; in the Netherlands there are 3,500 km of dikes that have to withstand the waves of the sea, lakes and rivers (primary flood defences). In addition, there are a further 14,000 km of dikes along other waterways (regional flood defences). Moreover, it is expected that in time the impact on dikes will increase as a result of climate change and subsidence.

All these flood defences are subject to regular visual inspection. How can we - apart from increasing the frequency and intensity of inspections - enable early identification of signs that a dike has weak spots? Could recently developed sensor technologies offer opportunities to support visual inspections with the latest accurate data on the state of the flood defences? This question was first received in late 2006 via WINN - the water innovation programme of DG Public Works and Water Management. It arrived on the desk of Louise de Jong from the Data ICT Service (DID) of DG Public Works and Water Management, who acted as project manager. "Following the incidents at Wilnis and Stein, the then State Secretary, Melanie Schultz van Haegen, asked: "Should we not have seen this coming?" This signalled the start of the Digital Dike project."

Tender procedure

The tender was conducted through the SBIR programme (see box on p. 8). On of the conditions of this programme is that a demand in society exists without an adequate solution. The demand from WINN met this condition. For Digital Dike, the budget was sufficient for five feasibility studies and two prototypes. The invitation for bids was based on a very broad Schedule of Requirements: "...the deployment of new detection technologies for the management of dikes and for the early detection of weak spots...".

The selection of candidates for the feasibility study (phase 1) and for the development of a prototype (phase 2) was carried out by an independent assessment committee, which included a number of subject-matter experts.

The Flood Defences Inspection Improvement programme group advised the assessment committee on the selection of the feasibility studies. All submitters of the 21 proposals in phase 1 were given the opportunity to explain their proposal to this committee.

The criteria were (a) the contribution to monitoring and management, (b) the technical quality and the degree of innovation, (c) the economic prospects, and (d) the added value for society and the contribution towards 'sustainable government'. In addition to these criteria, the budgeted costs were also a factor in the selection of the prototypes. The parties could gain extra points by showing a letter of intent from an external financial backer.

The SBIR is designed to help small or new businesses with limited experience in tender procedures to develop, submit and present their proposals. All submitters of the 21 proposals in phase 1 were given the opportunity to explain their proposals to the advisory committee. The project leader and the Agency NL advisors visited each of the five economic operators for the feasibility study in their own surroundings in order to gain a thorough impression of the backgrounds of the submitters and the unique features of their proposals.

In phase 2, a working prototype had to be produced in accordance with the relevant contract. This does not guarantee that the innovative solution will be used; the winners can benefit from the networks of the contracting authority and build on the

PR that comes from winning the contest. For Digital Dike, there was clear interest from the water control boards for the use of GeoBeads, and from the Friesland Water Authority for Monitoring from Space.

Implementation

- The implementation of the SBIR process is commissioned by one or more of the participating ministries in cooperation with Agency NL. Invitations to bid are published on the website of Agency NL.²
- The formal contracting authority is the ministry that commissions the invitation. This will then also be the contractual partner for the businesses that win a contract for a feasibility study or for the development of a prototype. In Digital Dike, this was the Data ICT Service of DG Public Works and Water Management.
- Although not part of central government, the water control boards were involved in Digital Dike as they are responsible for control of the regional flood defences. The water control boards were also represented on the advisory committee.
- A procurement consultant from Data ICT Service was not part of the project team. The Agency NL consultant monitored the process from a tendering perspective. A legal adviser/buyer was involved in preparing the contracts on behalf of the Data ICT Service.

Conclusions

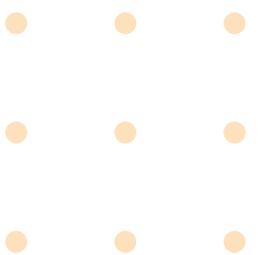
- Digital Dike addressed a societal problem lacking ready-made solutions. Digital Dike yielded two³ marketable prototypes, one of which (GeoBeads) already enjoyed commercial applications and the other (Monitoring from Space) had garnered specific interest.
- Both systems provide an innovative addition to the inspection methods used to date, and which can be used for a variety of purposes. GeoBeads is particularly interesting for use on a smaller scale, for parts of a flood defence where problems are expected. "Monitoring from Space", on the other hand, offers added value when it is used on a regular basis on a larger scale; this is where it proves cost effective. In this sense, the two systems complement each other, even though this was not the initial aim.
- Both prototypes were developed by specially established businesses (start-ups). Both inventions can be used for purposes other than originally intended.
- Hansje Brinker BV, the developer of GeoBeads, has been nominated for the prize of 'most innovative start-up', which is a recognition of the innovative nature of its invention. Alert Solutions (the economic operator of 'Monitoring in Space') has already won two contracts through a 'normal' tender.
- As is common with SBIR, there is no guarantee that the solution will be used, but there is a best efforts obligation to support its use through the networks of the Data ICT Service at DG Public Works and Water Management and the water

² www.senternovem.nl/sbir/hoewerkt_dit_programma/index.asp

³ For at least one of the three other proposals for which a feasibility study was conducted, there is the potential for commercial application.

SBIR

De **Small Business Innovation Research (SBIR)** is a form of tender in which central government puts out a tender for research and development. This ensures that the solutions to demands from society come onto the market. SBIR has three phases. In the first phase, it enables economic operators to conduct a feasibility study for a selected idea. In the second phase, the most promising and innovative ideas are awarded a contract for further elaboration to produce a usable prototype. In the third phase, it is up to the economic operator to take the product or service to market. In this sense, SBIR is one of the pre-commercial forms of procurement. SBIR was originally developed in the US to provide a stimulus for innovation, in particular from small businesses. The Ministry of Economic Affairs has adapted SBIR to the requirements of Dutch and European regulations. SBIR in the Netherlands is open to all businesses. A product or service developed through the SBIR project should essentially also be available in the market to parties other than just the contracting authority in the SBIR process.



control boards. The project played an active role in this, which resulted in a pilot with Delfland Water Board.

- The technologies developed were found to be capable of being used in situations other than dikes, a fact which increases their economic potential.
- If one or both of these businesses were to prove unviable, they could sell the idea to other companies given that they themselves own the intellectual property rights in their innovations (this is a standard feature in SBIR).

There is a definite interest at DG Public Works and Water Management in the new technologies, but it appears to be difficult to implement these technologies within the established working procedures. “To make the transition to day-to-day practice, additional efforts are needed from the regular organisation, particularly from the service departments responsible for dike management,” said Louise de Jong. However, the active approach of the project leader has resulted in a pilot at Delfland Water Board.

Tendering Lessons

- The project leader stated that she would have benefited from more support of an experienced and innovation-focused procurement consultant in her own organization. Someone who is able and willing to think along with the specific requirements when preparing tenders for innovation procurement projects brings added value to the project. Support (legal expertise) was available for the passages in contracts concerning intellectual property, reporting periods and the obligation to submit financial statements. Agency NL also made a major contribution to this SBIR project.
- Buyers could make a greater contribution to the tender if they understood the specific characteristics of public innovation procurement and if they had some insight into the potential users of certain technologies and the state of the market.
- To secure future application in practice, you must get potential users involved as early as possible. For Digital Dike, a great deal of attention was devoted to publicity, in order to make more people aware of the new technologies.
- For Digital Dike, the problem definition was open, but was focused on the subject of ‘data for better dike management’. The subject was an appealing one, which possibly contributed to the success of this project.

CELL BROADCASTING

A NEW WAY TO COMMUNICATE IN CRISIS SITUATIONS

2



DESCRIPTION

Tendering of the NL Alert broker function, a new way to communicate about disasters and threats. From 2011, NL Alert will be made available in addition to sirens (and radio/TV/Internet) to send messages via the mobile phone network to devices with range of the transmitters in the area affected by the disaster. The contract with the economic operator that will support this service was signed in early 2010.

Background

The request from the Ministry of the Interior and Kingdom Relations (BZK) in 2005 was this: are there alternative ways - besides the current capabilities using sirens, radio, TV and the Internet - to alert the public and communicate with them in crisis situations? A further basic requirement was also to increase the ability of the public to help themselves by providing them with more action alternatives. This need not always be "go inside, close windows and doors, and turn on the radio or television" as is the instruction given when sirens are sounded. One disadvantage of sirens is that people with a hearing impairment cannot hear it.

During a stocktake of new technical possibilities, Cell Broadcast presented itself as an interesting candidate for alerting and communicating with citizens in a targeted way in crisis situations. This function - which uses the existing network to send messages to devices within a certain range - is already available as a standard feature in mobile networks. In order to use this as yet unused technology for the purpose of crisis communication, there are many technical hurdles that must be overcome, for instance, in the field of standardisation, deployment within networks, and the settings of mobile devices.

Unlike text messaging, for instance, Cell Broadcast (CB) is a point-to-multipoint solution, i.e. one message can be simultaneously transmitted to many recipients. CB is not congestion-sensitive (the "New Year's Eve Effect") and requires no special request to participate (it is an opt-out system). It is also privacy-proof: the message recipient is not known to the party ordering the sending of the message, i.e. the regional control rooms.

Tender procedure

It was clear from the outset that it would have to be a European tender. Because the tender was for an innovative service, it had to be divided into lots. The consideration to outsource the broker function - an intermediary that ensures that the notified messages are delivered to the correct recipients - was due to the wishes of the network owners to protect the integrity of their network. The broker acts as an intermediary and forms a buffer between the providers of messages and the network owners, and must be trusted by both parties. For this reason, it was decided that this role would be contracted by the Ministry of the Interior and Kingdom Relations.

The tender for the broker function is part of the broader programme to bring about a new alert support system. Other elements include establishing protocols for the submission of messages, the authentication procedure, the security aspects, the translation of target groups into geographic areas, implementation in the networks, etc. The Ministry of the Interior also contacted other European countries to achieve standardisation of the settings for the channels used for CB by the manufacturers of mobile devices.

The programme manager from the Ministry of the Interior, Willy Steenbakkers, was advised on procurement aspects by an external consultant. "Given the innovative nature of CB, we knew we would need a procurement consultant who was flexible and creative, and could think strategically. Moreover, knowledge of the telecoms market was highly desirable. Unfortunately, given the imminent relocation of the Ministry of the Interior, no one matching this profile was available. For this reason, we sought someone from outside the organisation." At an early stage, before the Request for Information (see below), a tender was therefore also set in motion for this posting. The procurement consultant was from then on part of the project team.

Implementation

The first thoughts of the project team at the Ministry of the Interior were to prepare a European tender for the broker function, based on a set of self-written technical requirements. With this in mind, the Ministry of the Interior issued a Request for Information (RfI) before summer 2008, which described the key principles of the required service. This was essentially an invitation to the market to respond: what role do you see for yourself here? It was in fact a form of technical dialogue.

The Ministry of the Interior received seven or eight responses to the RfI, which caused a change of course in the tender procedure. The market operators pointed out that the technology of mobile networks changes at a rapid pace, especially in view of the period of 15 years which the Ministry of the Interior had in mind. Furthermore, some parties would be able to participate in the tender based on functional demand, yet have no significant role in terms of a technically watertight demand. Willy Steenbakkers: "Those responses were critical in our decision not to base the tender on a fully elaborated set of specifications, but instead on a much more functional demand."

The subsequent "Request for Quotation" (RFQ) also resulted in eight responses. This gave the Ministry of the Interior an idea of the cost factor they would have to consider and an understanding of the proven ability of the participating operators. Based on these responses, the Ministry of the Interior identified five parties who it admitted to the final tender procedure as its preferred suppliers. This tender ultimately led to the selection of one operator based on the tendered price.

In addition to the agreement with the party who would act as the broker, the Ministry of the Interior also signed contracts with each of the three mobile network owners in Netherlands. These contracts were not tendered, but were negotiated in a process with all three parties together. The Ministry of the Interior pays them a fee based on their

actual investment and launch costs. Agreements were also reached on the exclusive use of channels for CB. This process was discussed for approval with the Dutch Competition Authority (NMa).

The Ministry of the Interior then applied for a subsidy from the then Ministry of Economic Affairs relating to 'ICT and social sectors', specifically to extend the alert service with the reading aloud of messages for the blind. Furthermore, the project team continued to look for situations where most people have their mobiles turned off, such as during sports activities.

Conclusions and status

- The importance to society of providing citizens with better information in crisis situations, as well as the political desire of the then Minister of the Interior to increase the ability of citizens to help themselves was the motivating factor for the Ministry of the Interior to seek new ways of alerting the public. Until now, there was no business case to do so, which meant that telecoms providers had not picked up on it. The Ministry of the Interior has itself concluded that CB is a suitable technology for alerting citizens in crisis situations.
- Consultation in the market by means of the Request for Information (RfI) led to a functional demand. The advantage of this was that new parties were eligible for the contract. The RfI can be regarded as a technical dialogue.
- End users of the service are citizens. Apart from a live trial in Zeeland province in 2007, the public has not yet been involved in the project. The results of the evaluation among participants were taken into account in the next stages. An information campaign with a theme of "think ahead" will aim to inform them about the new service. From 2011, they will be introduced to the new alert service in combination with the monthly siren test.
- The Ministry of the Interior has decided to buy the intellectual property rights so that the service can be retendered if any party is no longer able to honour the contract.
- In 2009, CB was awarded a prize by the European Emergency Number Association for the most innovative project in public alert services. Furthermore, the number of EU countries that have decided to adopt this technology is growing fast.

Tendering Lessons

- High-quality procurement knowledge in an early stage is essential, because the process demands flexibility and procurement expertise.
- Following the responses from the market, the procurement strategy was changed; the contract was divided into lots in order to create more space for other market operators. This mainly affected the number and the type of parties that qualified for the role of broker. The party that was eventually awarded the contract was not one of the 'usual suspects'.
- Further to his role as a member of the project team, the external procurement consultant was indispensable in the drafting of the contracts. Topics he assisted with included penalty clauses, liability requirements and non-standard intellectual property provisions.

COMPOSITE BRIDGE DECK

APPLICATION OF NEW MATERIALS FOR BOLD DESIGN

3



DESCRIPTION

In 2008, Friesland province launched a design contest for the design of a new, movable bridge in the heart of Oosterwolde village. The province was looking for a special bridge, that would blend in well with the historical features of Oosterwolde. The winner of the contest proposed a bridge with a roadbed made from composite materials. Experience with the use of composite in a movable bridge that carries heavy traffic loads is non-existent. Thanks to the space that the province allowed for innovation, a final design for a highly distinctive bridge is now ready. Construction started in September 2009. The bridge was taken into use in July 2010 for water-based traffic and road traffic.

Background

The main bridge in Oosterwolde is part of a tourist sailing route (the "Turf Route"). The bridge is only manned in the summer period. Initially, it was thought that the bridge only needed major repairs, including the renewal and reinforcement of the bridge deck.

However, closer inspection revealed that the foundation of the bridge was in poor condition. After summer 2007, it was therefore decided to replace the bridge in its entirety. Because the bridge is a landmark for the centre of Oosterwolde village, the architectural design received a great deal of attention; the idea was that it should blend in with the historic importance of the inland navigation route and the buildings of the old centre of the village. That also created an opportunity for the innovative solution ultimately selected: the composite bridge deck.

Tender procedure

It was decided to use a design contest for the tender procedure. Before the tender process got underway, the provincial authorities ordered a visual impact plan in consultation with the local authority's planning department. This plan met with the agreement of the local planning committee and was adopted by the municipal executive of Ooststellingwerf local authority. This plan was to be used to assess the look and feel of the design proposals.

The invitation was aimed at architectural and engineering firms. Turnover and experience were the decisive selection criteria. Lots would be drawn to select five parties to come up with a paid design: a Preliminary Design together with a cost estimate for further development, construction and 50 years of maintenance. The award criterion was most economically advantageous tender (MEAT); the price counted for 20% and the quality of the architectural design for 80%. No restrictions were placed on the type of bridge that had to be designed except that it had to be a movable bridge.

Implementation

The contracts were ready in March 2008 and the contest was published. At that time,

Reinder Lanting joined as project leader. Seven parties qualified during the selection procedure, five of which were chosen to go to the next stage by the independently adjudicated drawing of lots. Of these five, only three eventually submitted designs in September 2008; one party withdrew because, on reflection, they considered the design fee too low, and another party withdrew because of lack of time.

The jury, consisting of a department head from the provincial authority, an urban planner from the local authority and a landscape architect from the provincial authority, chose the design of engineering firm Witteveen+Bos and architectural firm Irs. Vegter as the winner. The price was not the decisive factor, but rather the design itself and the material that was proposed for the bridge deck: composite. The use of new technologies and innovation was seen as an 'expression of our time', which was also one of the award criteria. "The design of Witteveen+Bos appealed to everyone. It is a beautiful, slender bridge that rests on two pylons. The bridge deck moves upwards in its entirety so that when the bridge is raised, road users have a good view of the passing boats as they wait. For shipping, the navigable opening has been made as large as possible."

Witteveen+Bos then developed the Preliminary Design into a Final Design, on which they based their civil schedule of requirements. All works, except the movable part (the bridge deck) were put out to a national public tender based on a RAW-compliant schedule of requirements. Given the innovative and specialised nature of the bridge deck, the construction of this component was individually awarded to an economic operator (FiberCore Europe) that specialises in building composite bridges. To ensure good cooperation between the civil economic operator and FiberCore, the contract documents included a coordination obligation.

Before the bridge deck was raised into place, it underwent rigorous testing so that its actual strength properties could be tested against the design calculations. Lanting: "The composite deck was specifically designed for this project. There was no experience gained from other projects that we could rely on. The movable bridge deck has relatively large dimensions (12.5 x 12.5 metres) and composite had previously never been used in Europe for the specified traffic category (heavy goods vehicles).

Conclusions

- The requirements specified for the main bridge in Oosterwolde resulted in an innovative design thanks to the unique application of new materials. The economic operator of the composite bridge deck expects interest from around the world once the bridge has been installed.
- Because of the free reign that the provincial authority gave for the Schedule of Requirements of the Preliminary Design, it became possible to win with a uniquely designed bridge, which clearly differs from the standard bridges used on provincial waterways.
- For the submitter of the winning design, this tender was a godsend because they

had long been waiting to try out this material in a heavy-duty bridge. This project offered that chance.

- Due to the innovative nature of the bridge, its maintenance period has been extended from 6 to 12 months, and a guarantee period of ten years has been agreed for the bridge deck. The bridge deck itself should enjoy a lifetime of one hundred years.
- For the province, these projects are important in helping to show that they are in favour of sustainability and innovation. This involves above-average attention for communication, which resulted in a number of popular videos on the website www.fryslan.nl/bruggoosterwolde.

Tendering Lessons

- The need for innovation and a process that allows this makes new solutions possible. Such processes require some extra effort from project leaders and buyers.
- The preparation of an innovative tendering process with DC demands a lot of preparation and hence time by the province (including the legal and procurement support). Four rounds of questions were eventually held, along with the information notices.
- The distribution of risks in these types of contracts is a concern, both with the contract partners and within the province itself. A balance should always be sought between risk and innovation

ACCOMMODATION FOR NIOO

NO STONE LEFT UNTURNED FOR A SUSTAINABLE AND SMART BUILDING

4



DESCRIPTION

The Netherlands Institute of Ecology (NIOO-KNAW) conducts marine, terrestrial and fresh-water ecological research, and for its new accommodation in Wageningen it wanted to build the smartest building in the Netherlands. It embarked on an integrated approach to sustainability within the European tendering rules. The development of ideas for this new development project began in 2003. It took until June 2008 before the tender process started. The contract was awarded in February 2009. The building permit was obtained in late April 2009, and one month later the first pile had been driven. The building is opened on October 28, 2010. Two of the three current research centres of NIOO moved into this extremely sustainable building.

Background

NIOO is one of around twenty institutions affiliated with the Royal Dutch Academy of Sciences (KNAW)⁴. It consists of three research centres with accommodation at various locations: in Yerseke, Nieuwersluis and Heteren. In 2004, a final decision was taken to merge the research centres at Heteren and Nieuwersluis at a new site in Wageningen, close to Wageningen University and Research Centre (WUR), which had made the land available under a leasehold agreement.

In late November 2006, the Schedule of Requirements was defined just as a TV programme ('Tegenlicht', by VPRO) aired on Cradle-to-Cradle (C2C) design. The programme was met with great enthusiasm by the Director of NIOO, Ms. Louise Vet, and the project manager, Mr Machiel van der Grift. "We agreed at that time that we would do everything to make the building as sustainable as possible, taking the principles of C2C as our inspiration. These therefore topped the otherwise standard list of sustainability requirements in the Schedule of Requirements," says Van der Grift.

Tender procedure

First, an architect was selected through the European public procurement procedure. The selection was based on the usual criteria, and the award decision was based on an assessment of vision. The former chief government architect, Kees Rijnboudt, was involved in the assessment process. Urban planning and landscape planning criteria were the decisive factors. The tender was won by Claus and Kaan Architects.

In the design phase, consultants from three areas were hired: construction, electrical and mechanical engineering, and building physics. The selection was made in consultation with the architect, on the basis of the Schedule of Requirements. Thoughts on and experience with sustainability were crucial. Furthermore, Michael Braungart, one of the founders of C2C, was also contacted.

⁴ KNAW is the Royal Dutch Academy of Sciences

In late 2008, the construction was subject to a European tender in three lots: the structural component, the mechanical engineering component and the electrical engineering component. As far as possible, efforts were made to incorporate as many sustainability ambitions as possible in the schedule of requirements. The contract award was based on MEAT.

Implementation

The desire to develop a smart and sustainable building proved in practice to be an enormous task. In the design phase, the architect and the consultants were constantly challenged to make the design “even more sustainable”. Project manager, Machiel van der Grift: “It frequently happened that the director came to us with an urgent request to reappraise a solution that had already been comprehensively discussed. Evenings on end, we tried to improve on what we had already achieved. A case in point, for instance, is the choice of timber used for the window frames. If a solution didn’t flounder on objections from the architect, then it would falter on constructional constraints. Or the 2003 Building Regulations would throw a spanner in the works.”

Besides the choice of materials to be used - which had to be capable of being reused after 30 years - the construction was repeatedly the subject of profound discussions. Because of its future use as a laboratory, the building would have to meet strict requirements in terms of vibration and stability. The wishlist for the energy supply and for the on-site waste processing also threw constant new challenges at the designers. The lack of integrated solutions for sustainable construction meant it was constantly necessary to make pioneering efforts and to improve.

At the same time, the proposed solutions placed a heavy burden on the construction process that we could expect. For example, specially finished concrete floors were used, meaning that the usual impregnated additional screed floor was no longer needed. But that meant that the contractor would have to protect the concrete floor from damage during construction. These requirements made it more important to contract a builder who would be open to such innovations.

The winner of the tender for the construction was a builder who could handle a contracting authority that “will continue to develop during performance of the works”. The builder was also happy with the wish to avoid the use of “bad materials”: no metal alloys, such as aluminium alloys, and no polyurethane, sealants, or PVC. The supervisor had been specially selected for his ability to insist on the sustainability ambitions.

Conclusions

- The need for innovation in this case depended to a large extent on the wishes of those directly involved to achieve a building designed in accordance with the principles of C2C. No off-the-shelf solutions are available. C2C-certified materials, for example, are often only available for sale in the US. Furthermore, the use of

the building as a laboratory puts specific demands on the choice of materials, the construction and the energy supply.

- The opportunities to push through requirements such as these in the tendering of the design or construction of the project are limited. During the tender of the construction, the sustainability ambitions related to plant and equipment immediately led to complaints about selection criteria that were not in keeping with the rules.
- Innovative solutions that affect the areas of responsibility of government bodies - such as waste water treatment and energy supply - can give rise to a considerable extra effort needed on the part of the sustainable builder. High-level consultations took place with the responsible water control board and the provincial authority to allow space in the permit conditions for the sustainable solutions that NIOO was advocating.
- The combination of tenacity on the part of the contracting authority and readiness to accommodate on the part of the economic operators have led in this case to exceptionally more innovative solutions to sustainable building issues.
- The title ‘smartest building in the Netherlands’ highlights the never-ending nature of the search for durable solutions. Choosing to work with flexible and cooperation-driven consultants and economic operators is essential.
- Agency NL and NIOO are now assessing the lessons learned from these experiences and the possibilities for sharing these.

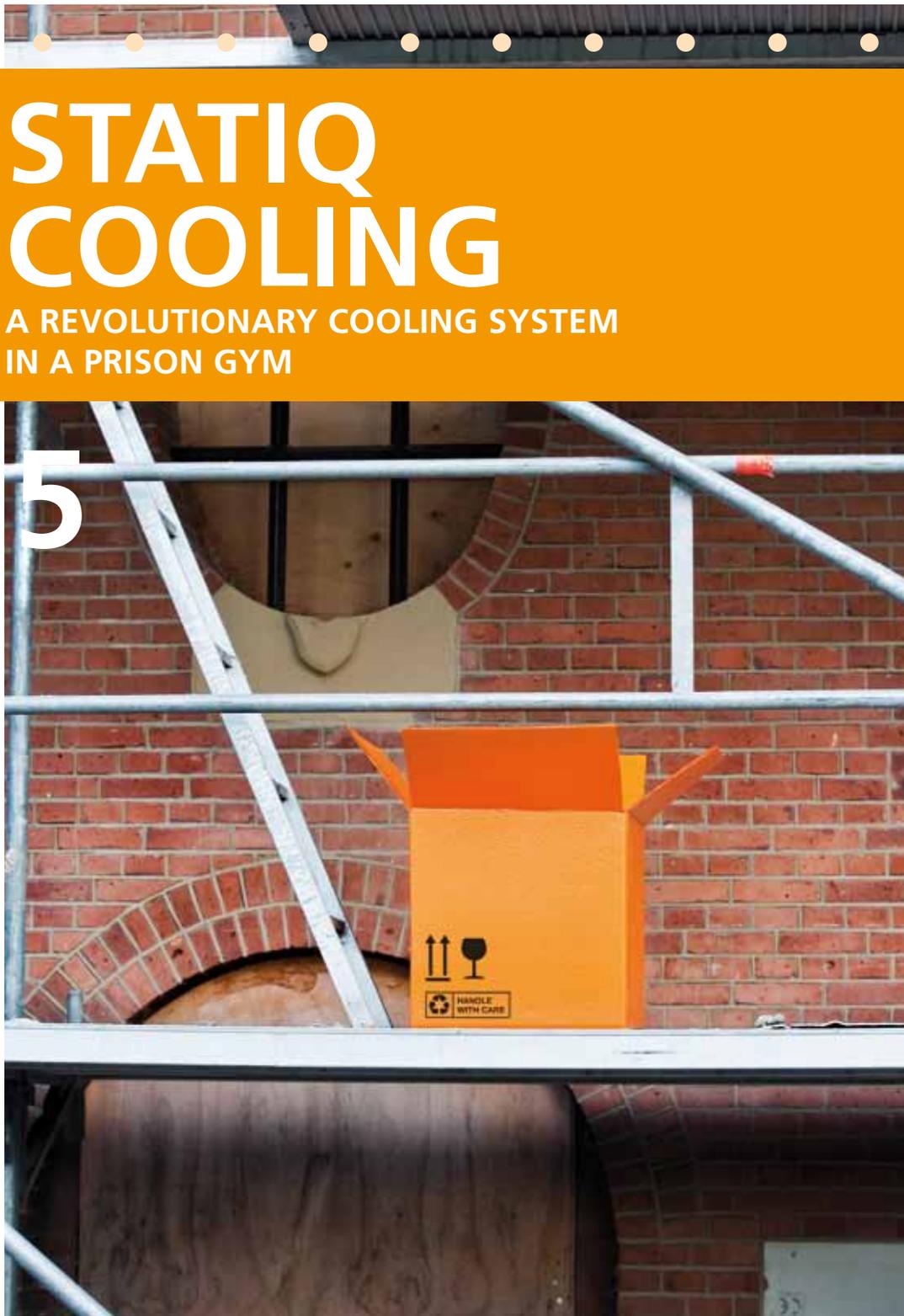
Tendering Lessons

- Specific rules, in this case in the field of construction, can make it difficult to use new materials and solutions. Buyers have to point out to the contracting authority the importance of consulting with the licensing authorities and the builder in order to find the scope for new sustainable solutions and sustainability ambitions.
- Buyers must indicate as early as possible what the consequences of the sustainability ambitions will be, notably requiring more time to find customised solutions. Solutions were subjected to feasibility testing, particularly in the design phase.
- A search for new solutions requires good cooperation with flexible builders and consultants. Buyers can facilitate this by establishing the partnership or by developing the criteria when selecting the right consultant.
- Buyers could facilitate such projects by seeking out the right reference projects. This would avoid confusion for the contracting authority.

STATIQ COOLING

A REVOLUTIONARY COOLING SYSTEM IN A PRISON GYM

5



DESCRIPTION

Noordsingel prison in Rotterdam was the first government-owned building with a cooling system that only uses water and air: Statiq Cooling. This new cooling system works on the principle that warm air is cooled by water which then evaporates. A contribution from the Green Technologies Programme made it possible for the Ministry of Justice to achieve this first, which represents a breakthrough in this form of air conditioning in a non-residential building. The Government Buildings Agency (RGD) advised and facilitated the building user in order to help them achieve the short-term objectives of the Energy Programme 2020 - savings of on average at least 2% a year and 25% within government-owned buildings.

Background

Following a hot summer, the property manager of this government building was asked to think about a solution for the excessive heat in the gymnasium of Noordsingel prison. Since the building had already been put forward as a possible sale candidate, an architectural solution would not be appropriate.

The request ended up on the desk of Stefan van 't Hof, Senior Technical Consultant at the Management Directorate of the Government Buildings Agency. "Coincidentally, I had just attended a presentation about Statiq Cooling. The system seemed just right for the gym. Normally, we do not run any long-term projects, but given the status of the building the issue ended up with us. The user of the building was soon convinced of the benefits of Statiq Cooling."

Tender procedure

Statiq Cooling (SC) still has very limited application. And yet it offers huge advantages over traditional forms of building cooling: it consumes relatively little energy, it uses the outside air, which does not come into contact with the system air, it can work in combination with open windows and doors, the cooling capacity is much greater, and no harmful chemicals are needed. Also, it does not dry the air or make it unpleasant. The only downside is that it does not work during thunderstorms.

Although the up-front cost of buying Statiq Cooling is slightly more expensive (5 to 10%) than conventional cooling systems, this is more than offset by the much lower operating costs. The savings are made from lower energy consumption and also because there is no longer any need for annual certification. The higher purchase cost is probably also the reason why it is not widely used in non-residential buildings: the decision on air conditioning systems is usually taken by the property developer without consulting the prospective user. In the case of Noordsingel prison, it proved possible to obtain a subsidy of 50% of the cost of purchase from the Green Technology Programme.

The role of the Government Buildings Agency was that of initiator and facilitator. The ultimate purchase was made on behalf of Noordsingel prison through a negotiated tender procedure with three installation contractors. The contract was for the installation of the SC system. The Government Buildings Agency was therefore the launching customer for this technology. The tender took place in accordance with the rules.

Implementation

Given the new nature of the system, a monitoring programme has been put in place to keep track of how the system performs in practice. The operational part consists of hygroscopic materials, and the long-term (six years) effects of these have not yet been established. It was therefore decided in this application to use decalcified mains water, rather than water of a slightly lower quality, such as rainwater. The aim of this is to prevent any reduction in the hygroscopic effect as a result of algae growth.

The experiences so far with SC are definitely positive. Apart from cooling in the gym, SC is also used for air conditioning in certain special cells in the prison (observation cells). Other agencies are also interested in use of the system, including some prisons and the municipality of Rotterdam, as part of the Rotterdam Climate Initiative. Stefan van 't Hof plans to allow consultants from the Government Buildings Agency to acquaint themselves with the system, including its technical data. Governments could achieve a considerable amount of their envisaged energy savings by using SC.

Conclusions

- A combination of circumstances meant that use of SC in the Noordsingel prison would be appealing: the fact that the building was not eligible for renovation and the fact that the Management Directorate of the Government Buildings Agency had recently encountered the system.
- The system doesn't require any additional facilities, as part of any air conditioning system. After the sale of Noordsingel prison, it could potentially be reused at some other location.
- The potential of the system was recognised by both parties involved: the technical advisor and the user of the building.
- No time-consuming tendering procedures were required. When specifying new buildings, this system could be incorporated in the schedule of requirements. Installation contractors appeared to encounter no problems with the installation, despite it being new.

Inkooplessen

- Decision makers in the construction process are not easily convinced of the value of innovation if there is nothing in it for them. Buyers must keep these interests in mind when making their recommendations.
- Subsidies can help users to overcome a threshold, by offsetting higher purchase costs. For buyers, it is important to know that these facilities are available.

- Knowledge of innovation needs to be better disseminated among construction consultants. In each discipline, buyers should emphasise the possibilities to explore the market.

RENOVATION OF STEEL BRIDGES

MANY SMART WAYS OF REDUCING TRAFFIC DISRUPTION

6



DESCRIPTION

Of the 274 steel bridges built in the sixties and seventies, many of them are now scheduled for reinforcement and renovation. At the same time, the traffic must continue to flow. So what is the best approach? By launching a design contest, DG Public Works and Water Management provided a stimulus to companies, knowledge-intensive institutions and individuals to think about this question and come up with smart solutions. The prize was € 500,000 for the most innovative idea. The jury received 165 ideas from the Netherlands and beyond. Ten of these were selected for further elaboration, and DG Public Works and Water Management made up to €100,000 available for each of these. On 13 October 2009, the jury chose the winning proposal at a well-attended symposium. It was a proposal that seemed feasible, was closely in line with the current method of reinforcing the bridge deck with High Performance Concrete, yet works a lot faster thanks to the use of prefabricated concrete slabs.

Background

The first steel bridge renovation projects, including the Moerdijk bridge, were successful in a technical sense, but caused a lot of traffic disruption. The Minister of Transport, Public Works and Water Management at the time, and the House of Representatives both agreed that we could not really afford for this to happen. The question was therefore simple: can it be done with less disruption to traffic? It is important given the other renovation projects planned. Fourteen projects are planned in the next five years alone, including the 1974 Galecopper bridge which carries the A12 motorway over the Amsterdam-Rhine Canal near Utrecht: a bridge with a 240 metre span and twelve lanes. The main reason for the extensive renovation work is that traffic has grown much more than expected over the past thirty years, and has also become heavier.

In October 2008, the project manager for “Renovation of Steel Bridges” put the question of reducing traffic disruption to Will René Jansen of Roads to the Future (Wegen naar de Toekomst), the mobility innovation programme of DG Public Works and Water Management. Within a year, he did not just get one response to his request, but ten. “Given the large number of renovation projects, it will pay to find a smarter way to renovate the bridges. It may mean using an alternative reinforcement technology, a traffic engineering solution, a logistical solution, or even a combination of all three. In any case, we hoped that this question would set a great many people and organisations thinking.”

Tender procedure

Just one week after the request had been submitted by the programme manager, the contours of the project had already become clear. It was decided to launch a design contest with an unprecedented sum of prize money and with the greatest possible chance of success. Because of the large sum of prize money, European public

procurement was compulsory; an internal procurement consultant was involved in the procedure right from the start.

Consideration was given to a two-stage implementation process: first collect as many ideas as possible, and then select the best ten for further elaboration. The selection would be made by a jury made up of a great number of people dealing with the practical realities of the consequences of the renovations.

For each of the ten finalists, a sum of €100,000 was made available as a fee for the further development of the project. The winner could count on half a million euro, while they would also retain ownership of their idea. Another half million was made available for every idea that would actually be implemented within five years.

Implementation

In January 2009, the design contest was launched, supported by advertisements in various specialist journals. Two information meetings and an information notice later, the jury received 165 submissions from many people and institutions, including some from outside the Netherlands. This number vastly exceeded the number you would normally expect in a technical design contest, and caused the necessary complications for the jury and their support partners.

Led by former Speaker of the House, Jeltje van Nieuwenhoven, the jury - made up of representatives from Royal Schuttevaer, the Royal Dutch Touring Club (ANWB), the Royal Dutch Transport Association, and the Dutch Construction and Infrastructure Federation, as well as several specialists from Delft University of Technology and from DG Public Works and Water Management - managed to select ten promising proposals worthy of further elaboration. As well as businesses, knowledge-intensive institutions and engineering firms, entries were also received from a good number of home inventors. Because of the strict requirements of the European procedure, their identity was kept strictly confidential, not just for the jury, but also for the outside world.

Between May and September 2009, the finalists worked on further development of their proposal. In that period, they were allowed to individually submit any substantive questions to a panel of experts. The finalists were free to invite others to become involved in the elaboration. They were also asked to present their proposal in the form of a short film. Using a specially developed tool, the jury could gain an understanding of the impact that the proposals would have on traffic disruption. For each of the proposals, the expert panel prepared a SWOT analysis and sent this to the jury. This ultimately led to the selection of one winner: 'Precast HPC Overlaying'.

The selection was exciting until the final moment. Only at the end of the Less Disruption ('Minder Hinder') symposium on 13 October 2009 - which was dedicated to all the finalists - was the name of the winner announced. During the meeting, the invited guests were able to find out about each other's solutions for the first time. Wil René Jansen expects that sharing knowledge with others can only serve to enrich the

harvest further still. "We offered to help companies with assistance in the practical implementation of their solution, should they require it. For example, by finding a suitable site for a pilot. Some finalists have already responded positively to this. In this way, we hope that the contractors who carry out the renovations will then put these ideas into practice. In the end, this is what it is about."

Conclusions

- A European procedure puts constraints on how the design contest can be organised and hence also on the use of publicity.
- The design contest was launched to obtain innovative proposals for the bridge renovation at the insistence of politicians, with the social objective of causing less disruption to road traffic and inland shipping. The relatively high prize sums offered provoked a response from a great variety of parties.
- Participants had maximum freedom in designing their solutions, and the finalists were given plenty of space to further elaborate their proposals. What was striking was that the finalists had paid little attention to risk management in the elaboration of their ideas.
- The contracting authority for the prize made every effort to help bidders make their proposals as strong as possible, not least thanks to an expert panel that was on hand to provide feedback.
- As many interests as possible were taken into account in the appraisal thanks to a broad representation among the jury members. The interests of the potential users were also taken into account.
- The open licensing system of DG Public Works and Water Management was used for the first time in this project, thanks in part to the early engagement of a procurement consultant.

Tendering Lessons

- A procurement consultant was involved right from the start and made a particularly valuable contribution when drawing up the contracts.
- A design contest would appear to be an appropriate means of inviting new ideas, but does demand significantly more effort from the contracting authority and a longer duration for the entire project.
- It remains a challenge to encourage innovative solutions in new tenders for renovation projects. This can be facilitated by involving potential decision makers and users right from the start: in the problem definition and in the implementation of the design contest.
- When providing information on the problem and possible solutions to it, the rules that apply to European public procurement should be taken into account, particularly the confidentiality aspects.

INNOVATION

WITH ADDED VALUE

INTERVIEW WITH JAN TELGEN, CHAIRMAN OF
PIANOO'S PUBLIC SECTOR PROCUREMENT MANAGEMENT UNIT

7

These six examples of public innovation procurement show the possibilities, but also reveal the journey that the quest for innovation entails. How you view these processes from the perspective of the buyer comes to the fore in an interview with Jan Telgen, Chairman of the PIANOO's Public Sector Procurement Management unit and the leading academic in the Netherlands in the field of public sector procurement. "Each one of them is a gem of innovation," he says, referring to the six examples of public innovation procurement. "They show really well how important the role of an experienced procurement consultant can be. Or better: what a good interaction between the buyer and the project manager can lead to."

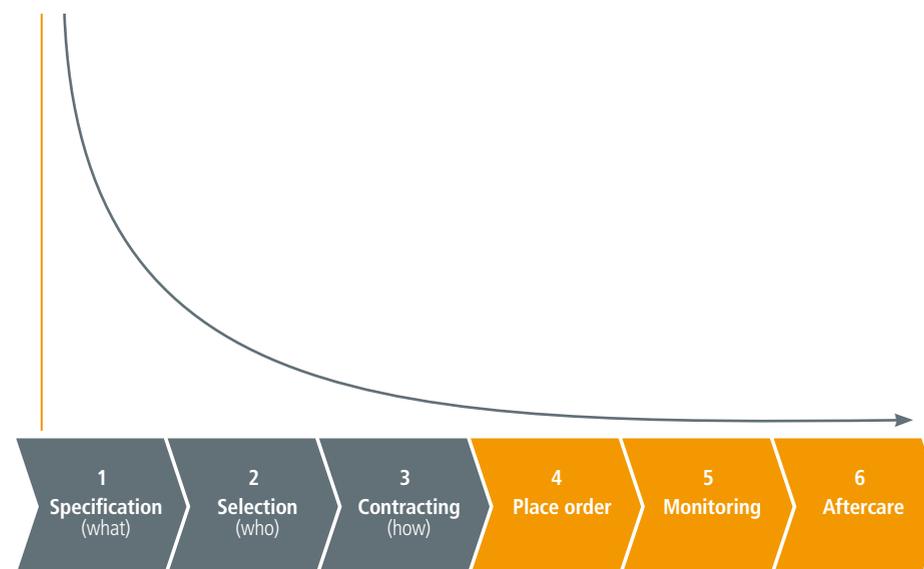
The guiding principle in the evaluation of the six examples is the added value of a procurement consultant during the tendering process (see diagram). "This is greatest at the start of the process and reduces as the implementation proceeds. At the beginning in particular, you can make decisions that greatly increase the chance of reaching innovative solutions. This is something that is sometimes overlooked."

An early start ...

"What I first noticed was that some of the buyers involved in the cases played an important role in drawing up the contracts. That's fairly late in the process. On the other hand, someone commented that the contracts should be ready at the start of the tender process. This really puts the finger on the source of the tension you face as the contracting authority or project manager. You stand the best chance of achieving innovative solutions if you can rely on an experienced buyer right from the outset."

"Of course, the demand you submit to the market is important. There are a number of very different ways you can approach this. Fully open, as in the Digital Dike project, or rather by providing a clear picture of what you want to achieve, as in the Main Bridge project in Oosterwolde. The task of the buyer is to clarify for the project manager what the consequences of a given approach will be on the remainder of the tender procedure. A very important aspect in this is whether the tender should be put out to the market as a whole or divided into a number of lots. By dividing the

Where does procurement influence the quality and cost?



UTIPS, University of Twente Initiative for Purchasing Studies

requirements into two or more lots, you can reach more parties. There may be parties out there who are masters of one of the specialist components, but not both. A good example of this is provided by the Cell Broadcast project, in which an open problem definition was the second choice. The Request for Information - which is essentially a form of technical dialogue - turned out to provide the deciding factor. This is where buyers can prove their worth."

"If you believe that innovation lies mainly in small parts of the contract, then it's better to take this into account early on, when defining the scope. Or if you believe that innovative application depends on the combination of a variety of approaches - such as traffic engineering, logistics and technology in the Steel Bridges project - then you could tender these aspects as separate lots or as three design contest sections, to be set against each other later on in the process. But then you really are already at the cutting edge of procurement."

"At the start of the process, the procurement consultant can highlight the importance of the right way to distribute the risks in the contract. Once these have largely been lumped on the economic operator, his willingness to innovate will have plummeted. If you explicitly want to tender for innovative products or services, it helps if you accept some of the associated risks yourself. When tendering for an existing

innovation, such as Statiq Cooling, you should by contrast assign some risk to the economic operator, because any defects may only manifest themselves once the system has been in operation for some time. This does not necessarily have to be a disadvantage, because you could for instance promise the supplier a proportion of the savings made if they ensure that the system remains fully operational for a specified period of time. Alternatively, you could also stipulate that as the first investor, you will receive extra services. These are a few examples of the influence you can expect from an experienced procurement consultant.”

Must have or nice to have?

“Public innovation procurement requires ‘functional specifications’. Yet in the examples described above, there are cases where an innovative solution was required, and yet the specifications that the solution would have to meet were already reasonably detailed; a case in point is the visual impact plan for the bridge in Oosterwolde. The secret here is to formulate the contract award criteria in such a way that you can reward an innovative solution with more points. The criteria should therefore not be formulated as “must have”, but rather as “would ideally have”. In this example, the use of new materials attracted extra points, making it easier for the Friesland provincial authority to choose the innovative bridge design. This is one of the things that procurement professionals really have to be strict with.”

“Then there’s the question of how to combine the results of the award criteria. Apart from the weightings, you can also look at the extent to which a poor score on a single criterion can be compensated by good scores on another. Just like school reports, a student will be more likely to be allowed to move up a grade with two mediocre scores than a student who flunks one subject and excels in another. You will often want to adopt a model like this when selecting the winner. In that case, a model that allows full compensation is not so smart. You want to avoid a situation where a candidate wins despite scoring poorly on a crucial component. You need a way to discard of poor operators.”

Dividing contracts

“It makes a lot of sense to tender a specific part, for which you expect no competition, separately. For example, if there is only one party that can provide the required level of quality, or because it requires highly specific knowledge. This is what Friesland province did with the bridge deck; NIOO also did something similar by keeping the construction of greenhouses separate from the tender for the new building. Once again, it holds true that it is better to split a job if you expect that you would then have more chance of receiving bids from specialised companies - ones that are well placed to develop innovative proposals for that specific component. As the contracting authority, it is up to you make sure you steer towards the right combination.”

“These are all things you should consider in advance, and for which you need rather subject-matter knowledge. The procurement consultant usually doesn’t have this knowledge at his fingertips, but the procuring party does. Also, the project leader

can ensure the contribution of this knowledge to project members. It is essential that a procurement consultant insists that such knowledge is available in good time, because he or she knows how important it is for the next stages. Yet another reason to hire an experienced procurement consultant at an early stage.”

Consulting and contracting

“A thorough technical dialogue is a good way to organize that knowledge. This is essential, especially if you want the market to come back with innovative proposals. The possibilities for this are broader than many people might think. It’s important to ensure that there is no disparity between the potential candidates or bidders. It’s a myth to suggest that market operators will not reveal their full arsenal during a market consultation. You just need to ensure that competitors cannot pick up the specific findings proposed by someone else and run with them. This means that market consultations must be bilateral. And, for example, promise parties who come up with an innovative proposal a right of veto on the way a certain requirement is formulated in the contract documents. It is perfectly possible to do this in accordance with the rules, if it is announced in advance.”

“At NIOO, a lot of time and energy went into thinking up all sorts of clever solutions. This produces a fairly complicated process. The result is no doubt one that the institution itself fully supports, and that is important too. Yet there are contract types in the world of construction which are likely to increase your grip on the process, while allowing you at the same time to achieve the sustainable solutions you are looking for. You can organise a technical dialogue for each component, and then use the input from the market to tighten the technical specifications. You could do this prior to the design phase, so that the designer could also take this into account.”

Improvements are visible

“Some of the examples could give you the impression that buyers are still seen as people managing contracts for you. We now know that this vision does far too little justice to the professional skill of buyers in public bodies. Of course, their profession is still in development. But a great deal of knowledge is already available and usable, if you manage to hire the right procurement consultant at the right time. In this regard, I am pleased to observe that the broader view of buyers is gradually finding its way through, judging by the important role of buyers in at least some of the examples. This significantly increases the chance that innovation will actually be achieved.”

TIPS FOR BUYERS

8

The examples described in this manual contain a variety of lessons for buyers. The other examples presented by the Minister of Economic Affairs in late 2009 to the House of Representatives also provide a lot of tips for buyers and project managers looking to increase their role in the innovation process. The most important of these are set out below.

1

Ensure that you are engaged at an **early stage** and that you take on a **controlling** role in the entire tender procedure. Stand alongside the project manager as an equal partner. Link knowledge of innovative solutions in the market to a procurement strategy where the smartest procedure is chosen, based on the innovative solution required and the specific market situation. Innovative SMEs can gain better opportunities by dividing a single tender into a number of lots.

2

Ensure that you **are part of the project team** or put together a **procurement team** in which the various disciplines (lawyers, procuring parties, buyers) work together. This allows you to bring diverse objectives together, and you avoid the focus being on correct procedure alone. This requires extensive knowledge of the part of the buyers and, in particular, good communication skills.

3

Identify the risks, assess who is best placed to control them, and find out what this means for the contracts. Consult the procurement team and the market operators about this.

4

Innovation is not important in all tenders. Make sure you **do not lose sight** of innovation. In certain social issues, such as the ageing population and sustainability, innovation is essential in solving problems.

5

Ensure that you are involved in the development of the **innovation strategy** of your organisation. Make sure that elements of the innovation strategy are reflected in the procurement policy that applies to multiple tenders.

6

Take the time needed to **prepare well for the initial stages** of a tender, where:

- consideration is given to the 'outline problem definition';
- market research and analysis is conducted to determine how to approach the market and whether there is a need to encourage innovation with a design contest or SBIR.

7

In the market survey, **look beyond the known products and suppliers** (see the Statiq Cooling example)

8

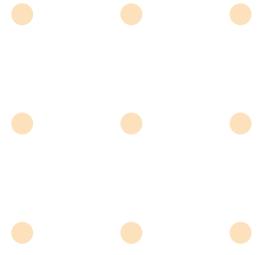
Beware that **specific technical regulations** do not render new solutions impossible. Where necessary, amend the regulations - based on an innovation strategy - or make them less specific.

9

Make sure **contracts are tailor-made**. These could include incentives for innovation during the term of the contract. Public innovation procurement usually requires changes to the standard terms and conditions. Take, for instance, how the intellectual property rights are regulated.

10

Even after the conclusion of the contract, stay involved in the project. Come together with the other parties to make sure that the promised innovations are actually delivered in practice.



COLOPHON

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PIANOo-SERIES INNOVATION-DRIVEN PURCHASING

This publication is intended for government buyers who could play a stronger role in the process of innovation-driven public procurement. For this purpose, Innovation-driven procurement was published by the PIANOo department for public procurement management in four parts, with guidelines and examples, placing the emphasis on opportunities and scope within the rules of public purchasing. It will help government buyers to advise project leaders, civil servants and experts in his organisation.