

INTELLIGENT PUBLIC DEMAND

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ABSTRACT

Recent work has pointed towards a new age of innovation that is emerging and affecting both the public and private sector. To survive, companies must respond to finding solutions to global challenges, such as climate change and poverty, as well as participating in solving the welfare challenges that are prominent in particular in the western world. At the same time, the public sector must become more innovative in order to deal with the economic pressure on welfare services, and lack of warm hands. Intelligent public demand is identified as one of the solutions to these identified challenges.

This article is based on the recently published report by FORA, *Intelligent Public Demand and Innovative Public Tenders*. By interviewing 40 people in public organizations in UK, Finland, US and the Netherlands the study conducted an analysis of leading organizations and their experiences of using intelligent public demand to solve major societal challenges.

Two distinct findings emerged from the study: (1) major societal challenges and the desire to create a more innovative society means that intelligent public demand and innovative public procurement will play an important role in future innovation policies; and (2) further it is believed that countries especially in Europe can learn from the experiences described in this study and find inspiration to prioritize the use of intelligent public demand and innovative public procurement.

INTRODUCTION

Finding solutions to major global and societal challenges will be one of the most important drivers for innovation in the future. This applies to issues such as the climate challenge, the need for clean drinking water, disease and pov-

erty in developing countries and welfare challenges in developed countries. Few, but leading private companies have committed themselves fully to addressing some of these future challenges. They have created innovative organizations focused on finding new ways

to solve some of humanity's problems and at the same time they are profitable private companies.

There are also exciting new examples of NGOs and charities that are organized as innovative private companies where earnings do not accrue to shareholders but are reinvested in social solutions.

Also the public sector needs to become more innovative. Future welfare challenges can only be overcome in the coming decades, if new ways to produce and deliver welfare services are created.

Innovation in the private sector often takes place in innovation alliances between companies and experts from research institutions and often involving users in the innovation process. The results are often individual solutions, where customers and companies create value together.

It will be important for the future welfare system, that public organizations and institutions become part of the open innovation alliances of tomorrow. One way to do this can be by introducing intelligent public demand.

The purpose of this paper is to discuss experiences with intelligent public demand from countries that are considered advanced in this field and who have already obtained some initial experiences.

WHAT IS INTELLIGENT PUBLIC DEMAND?

Public private innovation (PPI) is the newest form of public private interac-

tion and it is about public and private partners who jointly explore and develop new innovative solutions.

Public private innovation and intelligent public demand is the same phenomenon. However, intelligent demand is more than just public private innovation. If innovation partnerships are to be described as intelligent public demand they must be part of an overall systematic innovation process, ranging from identification of a social problem to implementing the new solution.

Intelligent public demand can be divided into 4 key elements.

Firstly, a societal challenge needs to be identified in a field, which will generate the necessary understanding and support to launch a demanding process of innovation by private actors. Innovation involves risk and the solution may not be known in advance, hence it is not an entirely easy matter to pick out the areas where it makes sense to experiment with intelligent public demand, and where the public sector is willing to take a chance.

Secondly, once a societal challenge is selected the next step is to achieve a deeper understanding of the causes of the problem and explore how the problem can be divided into elements that make it possible to launch concrete innovation processes.

If this is achieved, the third step will be to set up innovation teams with the right skills for solving the problem. Often multi-disciplinary innovation teams are needed, and it is rarely clear who the right partners can and should be. Therefore access to special search processes or to knowledge networks will be needed in order to combine innovation teams with the appropriate skills.

Finally, it is crucial that concrete innovation processes are arranged so that the solutions that are a result of the processes are useful for the government and actually ends up being implemented.

While these 4 elements seem to make up an innovation process that is recognized by countries working with intelligent public demand, there are also several barriers that need to be overcome at each step. These barriers will be discussed later in this paper.

DATA AND METHODS

In the report, *New Nature of Innova-*

*tion*¹, intelligent demand and smart regulation are highlighted as policies that can meet future innovation policy challenges.

The report identifies Finland, Netherlands, UK and U.S. as countries that are advanced in respect to new innovation policy considerations on intelligent demand and smart regulation.

The experiences with intelligent demand in the 4 countries are described in the study, *Intelligent Public Demand and Innovative Public Tenders*², and are the basis for data collection in this study.

In all 4 countries key figures within the ministries responsible for innovation policy has been contacted for pointing out designated public organizations and/or private institutions working with intelligent public demand. Desk research of organizations and activities in the designated institutions has also been carried out.

Semi-structured interviews have been conducted with a total of 40 people. The people who were interviewed have been asked to explain the structure and work of their organizations. They were also asked about their experiences in overcoming the challenges or barriers to intelligent public demand outlined above. Finally, they were asked about the existence of other barriers to intelligent public demand.

EVALUATION OF DATA

There are relatively few examples of intelligent public demand around the world, but especially the UK seems to have interesting experiences both with the development of welfare technology and user involvement.

This is the case for the Technology Strategy Board in particular, which has been asked by the UK government to carry out a number of projects which will promote private sector involvement in the development of new technology for new welfare solutions.

It also applies to the Design Council, funded by the British Government. The Design Council has launched several projects for the renewal of welfare services by using new design methods. Service design can provide knowledge about how the meeting between technology and users can be optimized in order to better achieve the full benefits of technological opportunities.

Finland has tried to break new ground with systemic innovation of the entire welfare area. The work is grounded in the Finnish Innovation Fund, SITRA. Finland has also interesting experiences with the use of public procurement to stimulate new innovative welfare solutions.

In the U.S., NASA and DARPA have extensive experience with technology exchange between the private and public sectors, especially technology exchanges between small and medium sized businesses and entrepreneurial firms.

It is estimated that NASA is the organization which has the most experience with unconventional but effective ways to use private companies for technology development for public use - a technology development which also forms the basis for development in the private sector.

Although NASA basically works with the exchange of space technology, the assessment of methods and experiences can also be used for development and dissemination of welfare technology.

The study *New Nature of Innovation* had a particular intent to screen for policy initiatives that signaled new policy praxis within a very broad area of innovation and not just new welfare solutions. The screening was not perfect and the detected cases were not investigated and described in depth, and hence some countries might have been overlooked.

The report *Intelligent Public Demand and Innovative Public Tenders* made a more thorough screening of experiences with new welfare solutions based on new technology and especially interesting experience in getting private companies to develop technology for use in public. The screening was carried out in the UK, Finland, Netherlands and the U.S. On the basis of the screening a number of the most promising projects will briefly be described, and one project from UK, which is considered to be the most comprehensive case of the study, will be described more in depth in the following.

RESULTS

The U.S. has a long tradition of public private cooperation in defense equipment and aerospace. It began in the

1950s and has mainly focused on developing advanced technologies for the U.S. defense and space program. But there are also numerous examples of technology developed for defense and aerospace, which have been applied in the rest of society. The most spectacular example is the Internet, originally developed for the U.S. defense so different computer systems could communicate with each other.

The U.S. also has a long experience with a program of collaborative research between the public and small businesses - Small Business Innovation Research - SBIR program. All federal institutions with research budgets are required to spend 2.5 per cent of their research budget to purchase technology from small and medium sized enterprises.

UK and the Netherlands have been inspired by the American experiences and have taken similar approaches and launched programs to develop new solutions to both global challenges and welfare challenges.

Finland is also experimenting with new forms of public private innovation. Here the inspiration is not so much the American experience, but rather the work of the OECD and the experiments initiated by the EU Commission³.

None of the countries so far are so advanced that they have carried out major projects that make it possible to describe and evaluate the combined effect of new ways of conducting public private innovation. But there are contours of new ways of doing it.

One can distinguish between intelligent public demand, starting with the major societal challenges - Grand Challenges - and intelligent demand, which is based on more definite concrete problems.

In the Netherlands the government has initiated programs that are based on major societal challenges.

The Dutch government has set up Innovation Platforms with the Prime Minister as chairman. The government has asked businesses and universities to contribute with suggestions for social challenges, which require new solutions, and in areas where the Netherlands have the competences and strengths to develop new solutions.

The Innovation Platforms divided the

many proposals into 6 prioritized areas - Key Areas. The Government invited the business sector and knowledge institutions to form networks that could establish the necessary cooperation to solve the challenges. The government has also established a number of innovative programs that will be the driving force behind the innovation networks⁴. The Dutch Ministry of Finance coordinates the work between the ministries involved in the projects, which is about finding new solutions to societal challenges. The 4 priority areas: Security, Energy, Health and Water.

The Dutch government has also introduced a Small Business Innovation Research (SBIR) program based on the American model. The program will promote public institutions' use of intelligent public demand. Originally it was intended that the program would require all state institutions to spend a specific amount of their budget on problems that could form the basis of public private innovation - so-called innovative public procurement.

The UK government has ordered all ministries to develop strategies for innovative public procurement. However, the tenders have not yet had the widespread success that the government had hoped for, but there are interesting examples such as the UK's National Health Services and the Home Office.

One of the challenges of innovative public procurement is to get the right companies and knowledge institutions to come together in innovation alliances. Experiences from the UK shows that the Knowledge Transfer Networks established by the Department for Business, Innovation and Skills play a key role as intermediary between public authorities, companies and knowledge environments. A similar role is also carried out by the Design Council. The UK government has also provided the Technology Strategy Board (TSB) resources to launch more extensive experimentation with intelligent public demand. TSB is an independent organization at arm's length from the government and TSB has a 3-year budget of 1 billion pounds.

The board at TSB consists of representatives from business and knowledge institutions. The Board has established Innovation Platforms where major

societal challenges are discussed and examined whether the challenge can be divided into sub problems that can form the basis of public private innovation.

When a problem is identified TSB cooperates with the specialized knowledge networks, KTNs to form the right skilled innovation alliances which can apply for grants to solve the problem. The selected innovation team is put in touch with a steering committee with representatives from ministries, companies and scientific institutions.

Initially the focus was on developing new technologies for climate, environment, safety and flexible transport systems. But innovative platforms to come up with solutions for elderly and disabled people to become more self-reliant have also been created- Assistant Living and an innovation platform for the reduction of risk of infection - Detection and Identification of Infectious Agents.

In Finland, the independent innovation fund SITRA just created a design laboratory, Helsinki Design Lab (HDL), which will investigate how to use service design and design thinking to come up with proposals for solutions to societal challenges. Helsinki Design Lab has in the summer of 2010 conducted 3 pilot projects: Marginalization of boys in primary school, How elderly people can stay longer in their own homes, and The reduction of CO2 emissions in society.

The Finnish Funding Agency for Technology and Innovation TEKES, has a program where municipalities and public institutions are eligible to hire private consultants for advise on the launch of innovative public procurement.

The Finnish Ministry of Economic Affairs and Employment has recently published a new Finnish innovation strategy - Demand and User-Driven Innovation - Framework and Action Plan.

The strategy announced that Finland should increase the use of innovative public procurement and find ways to increase the use of intelligent public demand. TEKES has thus been instructed to make suggestions about how the Finnish technology programs to a greater extent may be based on the solution of social problems and

demand-driven innovation. Technology Strategy Board
 The Technology Strategy Board (TSB) in the UK has developed a model for intelligent public demand, which is perhaps the most comprehensive case in the study. The model consists of 4 stages (see figure 1 below):

- Study phase
- Innovation Platform
- Development phase
- Implementation

At the first stage social challenges are identified and prioritized, and it is decided which challenges should become subject to continue the innovation process. At TSB, the Governing Board determines whether a challenge can qualify for the next stage.

At the second stage, an innovation platform is launched. The overall responsibility for the work on the innovation platform is handled by a member of the TSB's management team, who forms a team of TSB employees, responsible for activities on the platform. The aim is to come from the complex socio-economic challenge to concrete problems that can be tendered.

Along this process brainstorming sessions with experts are organized and working groups with individuals who have specialized knowledge in the field are set up. The intention is to gain a deeper understanding of the problem and a possible division of the problem into distinct sub problems. Societal challenges are often complex problems that cannot be solved by one single project. Therefore the challenge needs to be divided into several concrete sub problems that can be tendered to right skilled project groups. It is a great challenge to ensure that the most skilled knowledge and the most relevant experts participate in the activities at the Innovation Platform. TSB has over the years built up an extensive knowledge of British businesses and knowledge environments. TSB also works closely with ministries and other organizations, such as the Design Council.

To find the right experts and partners for the innovation platforms TSB draws on a number of UK Knowledge Transfer Networks (KTN), which are built on the initiative of the Ministry of Business, Innovation and Skills (BIS). When work on the Innovation Platform has led to a concrete problem that

can be tendered, it is up to TSB's Managing Directors Board to decide on the budget and the steering committee for the project. The steering committee may consist of representatives from the TSB, ministries, companies and knowledge institutions.

It is obviously very important that a tender from one of TSB's innovation platforms reaches all relevant parties to form the necessary innovation alliances. It is a task in which the KTNs play a crucial role.

There are several examples that KTNs have been very active in disseminating information on procurement from TSB to members and played a leading role in shaping innovation alliances that have applied for the projects.

The last stage in TSB's overall innovation process is the implementation. It is of great importance that the public institutions responsible for the addressed issues on the Innovation Platform are following the process all the

way through.

Representatives of public institutions can participate in working groups on the platform and in specific steering committees for specific innovation projects. The intention is obviously that the representatives for the "users" are welcome to influence the implementation process with their knowledge, attitudes and needs.

DISCUSSION

It has been a starting point for the study that there are a number of barriers to overcome before intelligent public demand can be introduced. The study has focused on how different institutions are trying to overcome the barriers.

It has been a part of the study to test whether the expected barriers were a hindrance to intelligent public demand and whether there were additional barriers. The anticipation was that there could be challenges in all stages of the process for intelligent public demand

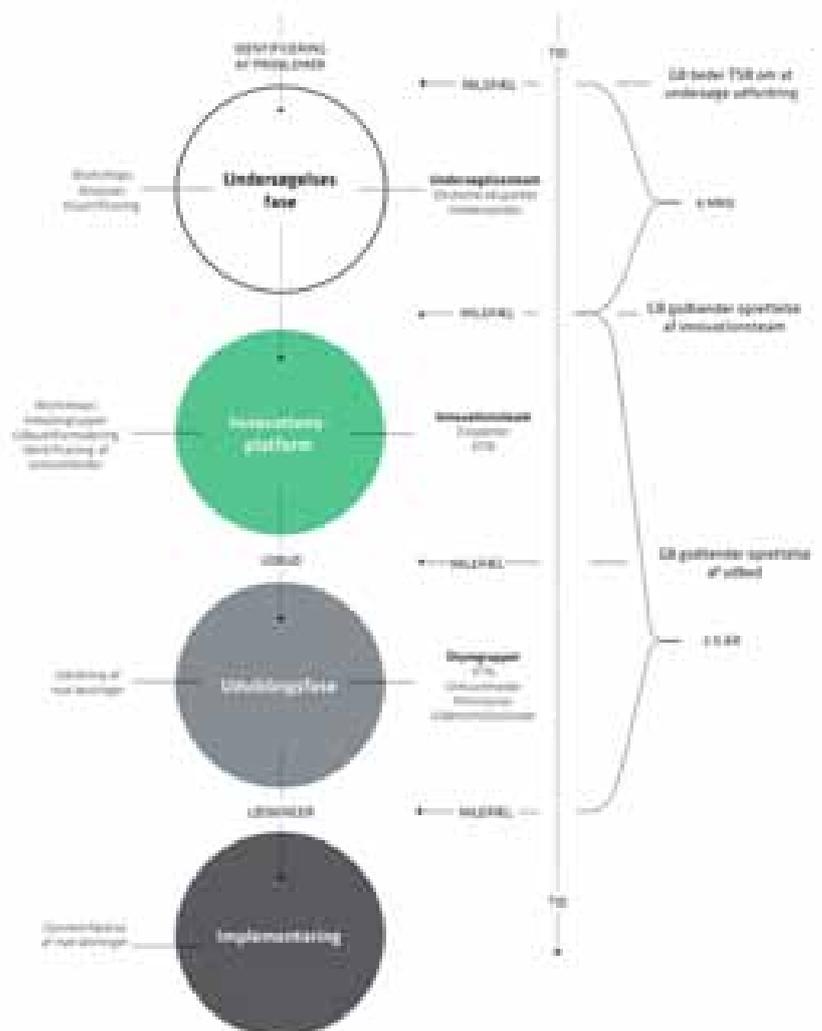


Figure 1. Technology Strategy Board – Innovation Program
 Source: Intelligent Public Demand and Innovative Public Tenders, FORA (2010).

and that tradition and culture in public and private organizations also could be a barrier.

Five barriers have been identified:

- Tradition and culture in public and private organizations
- Identification and prioritization of societal challenges
- Managing the process from challenge to concrete, specific issues/problems
- Identification of innovation teams
- Implementation of new solutions

All public bodies have a specific mission and one or more specific tasks to solve. Public organizations strive to have the best knowledge and skills for the job, and therefore it is not easy to acknowledge that external persons may have the capacity to develop new and better ways to solve the problems. Many public authorities have a control function towards the private sector, which leads to a natural distance between the public authority and the private sector. This can be a barrier if the public authorities want to invite the private sector as partners to explore and develop new innovative solutions. There may also be cultural barrier in the private sector. It can be difficult for private companies to understand and work within the boundaries of the public sector where the services offered must fulfill standards that are normally not required of private companies.

Innovation is by definition uncertain. You can plan to solve a specific problem, but you may not know if there is a solution to the problem or what the solution will be. This kind of uncertainty can easily be handled in the private sector where much development can take place behind closed doors. This is not the case in the public sector, which can lead to public authorities being more reluctant to engage in radical innovation projects. It may also be difficult for private companies to understand the conditions that apply to public innovation.

The study showed that one way to change the culture of public organizations is by a top down approach where the government outlines a strategy or policy for introducing intelligent public demand, and thereby forces ministries and other public organizations to go in the desired direction.

If a public organization decides to introduce intelligent public demand the

first barrier is to identify issues where it seems likely that intelligent public demand may lead to new solutions. It requires knowledge of both technological opportunities and new services, which the public organization does not necessarily have and it is not easy to obtain.

Furthermore there is often a priority issue. How many resources are to be spent on finding new solutions? And if there are several important issues that could be relevant to solve, which ones are to be given priority?

The starting point for intelligent public demand is a complex societal challenge to which a solution is not obvious. The public organization must gather teams with the right skills to manage processes that make it possible to get from a complex overall societal challenge down to specific problems for which it is possible to find practical solutions.

The next barrier is to put together the right innovation teams. In private companies it is common to form innovation alliances, because often it is simply not possible for a single company to have all the skills needed in an innovation process in house.

But also for private companies it may be hard to find the right innovation partners. It is therefore an important element in innovation policy of today to create an environment that promotes networking and better opportunities to create innovative alliances.

The final barrier to new solutions based on intelligent public demand is how they actually end up being implemented. Innovation processes are lengthy and expensive. Private companies would not spend resources on public innovation, if there were no prospects of a sufficient demand for a new solution.

Furthermore, the market may be too small for a solution to be commercialized, but there may also be uncertainty about the size of the market because there is rarely given any assurance in advance that a new solution will be implemented.

On the other hand the public organizations cannot decide whether a new solution can be implemented when it does not know the solution. This might be one of the most important barriers to intelligent public demand.

The study has showed a number of cas-

es of how public organizations in EU and US have overcome these barriers. The most significant case is the Technology Strategy Board (TSB) in UK who has designed a coherent model for intelligent public demand to solve major societal challenges. The TSB model sees to overcome all the identified barriers as presented under results in the previous sections.

In summary, it is considered that the need to find solutions to major societal challenges and the desire to create a more innovative society means that intelligent public demand and innovative public procurement will play a big role in future innovation policies.

It is further believed that countries especially in Europe can learn from the experiences described in this study and find inspiration to prioritize the use of intelligent public demand and innovative public procurement.

ACKNOWLEDGEMENTS

This paper is based on the report, *Intelligent Public Demand and Innovative Public Tenders*, FORA (2010). The report is written by Jørgen Rosted and Anne Dorthe Josiassen.

For the report a total of 20 organizations were visited in UK, Finland, Netherlands and US, and more than 40 people were interviewed. The study has received information on specific projects, but also about the difficulties and considerations that have occurred during the processes of introducing intelligent public demand. Finally the study has received interesting evaluations of the various initiatives and programs. We appreciate the openness and assistance we have received which has been crucial to the preparation of the report and the present paper.

NOTES

¹FORA (2009), *New Nature of Innovation*

²FORA (2010), *Intelligent Public Demand and Innovative Public Tenders*

³<http://www.oecd.org> http://www.copenhagenlivinglab.com/sites/default/files/PreCo_Brochure.pdf

⁴Ministry of Economic Affairs, November 2009, *Innovation Programs - The driving force behind the innovation network*