

# Workshop on Smart and Sustainable Solutions in Stockholm Royal Seaport

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**Abstract**—This is the report on the workshop on Smart and sustainable solutions in the eco-district Stockholm Royal Seaport, held at the 2<sup>nd</sup> International Conference on ICT for Sustainability in August

**Index Terms**—Sustainability, urban development, ICT.

## I. INTRODUCTION

In September Stockholm Royal Seaport (SRS) Innovation in collaboration with KTH organized a workshop with the theme “*Smart and sustainable solutions in Stockholm Royal Seaport*”. The workshop, held in conjunction with the ICT4S international conference, tried to address questions surrounding key challenges and opportunities in employing ICT as a means towards urban innovation. Experts presented the various ICT solutions embedded in the Stockholm Royal Seaport project and shared their experience on various challenges facing the large scale implementation of these solutions. Panel and group discussion focused on tackling the obstacles and identifying key opportunities both locally and globally.

Anna-Karin Stoltz Ehn, the head of SRS Innovation, presented an overview of the evolving needs of the City of Stockholm, the vision to create a vibrant, creative and living city raising the important question “*How can we fulfill the needs and vision for the citizens of Stockholm?*”

## II. LONG TIME ENVIRONMENTAL PLANNING

Tomas Gustafsson, sustainability strategist at SRS Innovation, highlighted the great focus on sustainability issues that has been a hallmark of the Stockholm region. Having the honor of receiving the first European Green Capital Award in 2010, the City of Stockholm’s ambitions for environmental issues span over 40 years. The future vision of the city aims to accommodate the projected growth in the region focusing on becoming fossil free by 2050 and providing integrated sustainable solutions to achieve them. Here Hammarby Sjöstad and Stockholm Royal Seaport, with strong environmental focus, play a significant role in leading the way towards a more sustainable future.

## III. ICT FRIENDLY CITY DISTRICT

Stockholm Royal Seaport is one of the newest and the largest urban city development project in Stockholm. The overall sustainability goal is to make the new city district fossil free and adapted to climate change considerations. In addition to the ambitious sustainability goals various state-of-the-art ICT solutions are being tested out to influence the user behaviors towards more sustainable alternatives.

## IV. ENTERING THE INTERCONNECTED SOCIETY

Amy Rader-Olsson from Royal Institute of Technology, KTH, who was the workshops moderator, stated that the growing rate of urbanization presents new challenges and requires state-of-the-art innovative solutions to address them. This coupled with the rapid pace of climate change requires a paradigm shift in the way we build cities and use resources such as energy, water and materials. At the same time we are entering a networked society where most of our infrastructure is already connected. This presents a great opportunity to provide integrated solutions in influencing our behaviors towards a more sustainable society. It also has the potential to provide new business opportunities contributing to a green economy.

## V. SMART ENERGY PROJECT

The Smart Grid and Active house project, which is a joint collaboration between Fortum, ABB, Ericsson, Electrolux, KTH and several building developers is a step towards this direction. Johan Ander, the program manager mentioned the importance of awareness driven change in behaviors.

*“We all have an energy behavior but lack awareness which makes change more difficult. Focusing on demand response principle with connected household appliances, electric cars and local renewable production, the system will respond to peak load, price and CO2 emissions signals thereby, shifting the load and preventing emissions from marginal energy generation.”*

In addition, providing the end user with visualization and home automation possibilities will result in energy savings and greater awareness of the energy use. This will enable

managing and monitoring the grid in a much better way. The Active homes with home automation, visualization technologies and smart white goods will facilitate user behavior change, therefore contributing to energy efficiency and emissions reduction in the overall system.

*“One of the key challenges is to find the right balance between automation and letting people make the decisions”*, Johan Ander commented and also pointed out as a challenge.

## VI. DEVELOPMENT OF ICT REQUIRES ADAPTED BUSINESS MODELS

Swedish ICT’s Smart Living Group Manage, Claus Popp Larsen shed light on some of the key challenges related to achieving an interconnected society.

*The present ICT infrastructure exists in the form of several vertical structures but in order to unleash the full potential of the “Internet of Things at home” there is a need for a common horizontal structure.*

He mentioned that at present the infrastructure isn’t being shared and creating a common infrastructure will enable cost savings and stimulate innovation growth while being better for the environment. The key hurdles in achieving this are not technical but rather lack of trust and effective business models.

Jörgen Rhodin, head of Ericsson Innovation Russia echoed these thoughts and pointing out that while most of the infrastructure we have built is connected there is a mishmash of ICT infrastructure. Mr. Rhodin also discussed several areas in which Ericsson is working with to achieve a networked society.

## VII. REAL-TIME DATA ENABLES SMART DECISIONS

Hossein Shahrokni from the Royal Institute of Technology KTH presented the Smart City SRS project. The project aimed for the citizens, aims at a bottom up information flow paradigm and enables the end users to understand the system consequences of decisions thus providing greater insight into the impact of every day habits and actions.

## VIII. PANEL DISCUSSION

### A. Business models are essential

During the panel discussion, the moderator of the workshop Amy Rader Olsson, asked the experts about the key challenges facing the integration of ICT in cities. There was consensus amongst the expert speakers that despite the great potential of these solutions and technology being in place, there are several organizational and structural challenges that still exist for large-scale implementation. First and foremost there is a need to provide strong and effective business models. This is necessary for innovation diffusion and implementation in larger society.

Strong business models will ensure the continual improvements in the infrastructure and bringing new ideas and solutions.

### B. Triple helix-model enables innovation

The participants also concluded that another obstacle is the difficulty in getting the different stakeholders on board, there is a need to strengthen the collaboration between research, business and administrative parts and projects such as the SRS Innovation can provide a great platform to achieve that.

Participation and long term perspective from the City of Stockholm is a step in the right direction and platforms such as SRS Innovation can help facilitate the process. Stockholm Royal Seaport offers a great playground to test new solutions in smart living where end user education and awareness are key aspects. The speakers stressed that regulation of technologies shouldn’t be done by the cities but should rather be allowed to evolve in order to prevent technologies lockins.

In the breakout session, the participants of the workshop focused their discussion on related projects and experiences from around the world, scalability of the solutions to other parts of the city and the role the City of Stockholm can play in addressing the challenges.

### C. Suggestions to high-light ICT

Participants agreed that concepts from Stockholm Royal Seaport are possible to implement in other areas in Stockholm but are more difficult to implement in other big cities in the world due to their size and their segregated population and different social levels. It was suggested that Stockholm Royal Seaport should compete with other smart sustainable urban development initiatives in the world in terms of sustainability.

Another suggestion was to introduce a sustainability index in the stock market in Stockholm since it’s located in Stockholm Royal Seaport. The important role of grassroot level initiatives in bringing change was also brought up. The need for including ICT in the planning process of smart sustainable cities and inclusion of industrial groups was stressed. Issues related to the deregulation of ICT infrastructure and ownership of common infrastructure were also discussed.

At the end, the moderator, Amy Rader Olsson summed up the discussion by pointing out that it is important to understand how large systems interact with each other and how technology interacts with humans.

*“The problem isn’t at the technology level but rather there is a need to figure out how it can be scaled up. Institutional response to signals should be effective and help create support structures for technology”*, she said.

Projects like Royal Seaport provide a learning platform and test-bed where these solutions can be tested and calibrated for scaled up implementation both locally and globally. It also offers lessons in changing organizational structures to maximize collaboration and innovation development.