

Fredrikstad – a Smart City Strategy for Citizens

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Ladies and gentlemen, thank you for this opportunity to learn about Ostrava smart city visions and work. I must say I am impressed, particularly by the smart city efforts you have made.

My presentation will focus on the Smart Fredrikstad strategy. As you know, the smart city concept has been around for at least 10 years. However, the concept of a systematic and politically backed smart city strategy can be said to be a novelty, at least in Norway. Fredrikstad was among the first five cities to create such a strategy.

It is difficult to find a precise definition “smart city” that is precise and that is short enough to remember by heart. In Fredrikstad, we have come up with this:

“A smart city uses digital technology and innovative methods to improve life for citizens, in order to make the city more productive and sustainable”

Of course, you will find that such a definition will overlap with other cross-sectoral focus areas, such as digitalisation, climate action, circular economy, and others. Somehow - that’s in the nature of most work that transcends sectors.

If any one word in our definition could be said to be more important than the others, it would be the word “sustainable”. We have to develop and run the city in such a way that we leave it in good shape for future generations. Where businesses always need to focus on the balance sheets for next month, a city has to focus on the balance sheet for the generations to come.

As Norwegians, we’re proud that it was a previous Norwegian prime minister - Gro Harlem Brundtland - who came up with the very concept of “sustainable development”. The Brundtland Report, published in 1987 by the United Nations World Commission on Environment and Development, coined the term "sustainable development" and defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Both cities and state agencies in Norway tend to focus on the UN sustainability goals when creating smart city strategies.

The Smart Fredrikstad strategy was adopted by the city council in March this year. The city council also added a financial package of above 50 million Czech Republic Korunas. 50% of the funding is to be spent on internal municipal projects, the other half on external projects.

Therefore - our focus is on sustainability and ensuring that our city is a good place to live. However, an overarching goal of the city is to include all areas of society in the smart city work.

As most cities we need to contribute to value creation through new and future-oriented business. We believe that the smart city approach can help companies find new business models, and hopefully some create smart services and products that will let the municipality focus on core public services.

We also believe smart solutions are core to meeting targets for the climate and environment. According to the C40 Cities network, cities consume over two-thirds of the world's energy and account for more than 70% of global CO2 emissions. To us, it is obvious that how we develop the city will count in the larger combat against climate change. In order to achieve this, it has been important to connect and integrate our smart city strategy with the other most important plans and strategies for the city.

The concrete targets of the strategy are as follows:

- Strengthen our ability to change in order to meet the great societal challenges of the day: Climate change, sustainable development, demographic changes and the digital transformation.
- Make municipal operations more productive and sustainable, increase security and service response time.
- Develop attractive citizen services (public as well as private), ensuring focus on user needs.
- Contribute to increased value creation and increased employment locally and regionally.
- Be the leading city in Norway in facilitating digital infrastructure for businesses (for example IoT and broadband).

The main drivers identified by the strategy are:

- Sustainability (social sustainability, economic sustainability and sustainability of the climate and the environment)
- Co-operation across societal arenas (public, private, academia, NGOs and citizens), scientific and service sectors, business sectors, municipal silos, and across local, regional, national and international borders.
- Technology and data (IoT, digitalisation, standardisation and open data)

Considering that our strategy was adopted in March this years, it is early days. Nevertheless, we we have made some important advances. First, we started to build an IoT infrastructure. As the more technically inclined will know, several competing technologies can be used for communicating data from sensors to computers. The telecom companies are now rolling out their "Narrowband IoT" solution, which will have the same coverage as mobile phones. The cost structure of NB-IoT will be a challenge since each device will need a sim-card.

A popular competitor to the telecoms' solution is called "Long Range Wide Area Network" - or LoRaWAN. There are no subscription costs. In addition, with just eight small antennas we have

been able to cover the entire municipality of 286 square kilometers. We do not know of any other city in the Nordics that has full coverage like this. In addition, we are now cooperating with two neighboring municipalities, setting up similar coverage for them. We also recently purchased a new controlling facility for all 12.000 public streetlights. As part of this acquisition, an alternative IoT-network based on Zigbee technology will be set up, also covering the entire city.

An IoT infrastructure is comprised of a radio network, sensors and other devices, and the computer hardware and software used to process, store and analyze data. Our IT department is now working on testing sensors and software in various areas:

- Counters for measuring traffic (cars, bicyclists and pedestrians)
- Sensors for monitoring air and noise pollution
- Sensors for beach water temperature
- Sensors for indoor climate in public buildings
- Sensors for checking water levels in sewage and creeks

Apart from learning from the experimentation, all these small and big projects are helping us to raise awareness internally across silos in the organisation about what IoT is and how it can be used. It also brings us into contact with business and scientists and is already leading to co-operative projects in areas such as health services and electric consumption.

One of the projects the strategy calls for is a smart city lab. During 2019, we will set up a lab in the city centre. The purpose of the lab is twofold:

- Firstly, we want to create a showroom where all of Fredrikstad's smart city solutions are on display, or can be presented. A place where our mayor can bring visiting delegations from other cities, where a business can bring potential customers, or where a university professor or a K12 teacher can bring students.
- Secondly, we are inviting local businesses, the university and NGOs to co-locate with the municipal smart city office in order to create an environment where common projects can be worked on, and productive chaos can lead to new opportunities for all.

In 2019, we are also creating an informal smart Fredrikstad network for anyone interested in smart city development, whether they represent an employer or just themselves as citizens.

As mentioned, we will be spending our funding 50/50 on internal and external projects. We expect the internal projects to increase understanding of, and focus on, smart city development across sectors in the city administration. As for the external projects, we will launch calls for cooperation projects in different focus areas where applicants will have to match our funding. We are likely to focus on calls that use, build on, or add to building the IoT infrastructure and ecosystem.

In principle, if you live in a really smart city, you don't really notice it. It is not about flying cars, or ads that follow you as you walk down the street. In a really smart city, things just work, and your quality of life is so good that you have few things to be annoyed about. In a really smart city the city administration has been able to maximise that value of the taxes you as a citizen pay.

Let me round off with a concrete project that we implemented in August this year. The municipal Health Watch is a service to people living at home who need care of some kind. We created a response centre with 12 nurses, in order to monitor and service all citizens with home health care needs - not only in Fredrikstad but also in three neighboring municipalities. The Health Watch will receive and process signals from safety alarms and other welfare technology devices installed in homes. Typically these alarms that are triggered by the citizens themselves, or by sensors in their kitchens, bathrooms or in their beds. Combined with an online electronic patient journal, the nurses can much better and faster evaluate the needs of each warning. In many cases a phone call with someone who knows your condition and alarm history can solve a problem? That means a lot less driving around the city, which again means help to more people and less climate pollution.

I hope my presentation was useful and gave you insight into how we work on smart city in Fredrikstad. It would be interesting to know how we can learn from Ostrava in the future, and how we can help share the results of our work over the years to come.