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# **NORDIC CITIES BEYOND DIGITAL DISRUPTION**

**– A NOVEL WAY TO DEVELOP CITIES**

**#smartcity #urban #transformation #renewal #foresight #cocreation #testing  
#smartups #services #energy #retrofitting #startup #walkability #nordic**

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<http://smartretro.demoshelsinki.fi/>



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# **NORDIC CITIES BEYOND DIGITAL DISRUPTION**

**– A NOVEL WAY TO DEVELOP CITIES**

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# NORDIC CITIES BEYOND DIGITAL DISRUPTION

**“We bring together actors that shape urban space and its building stock with startups”**

**URBAN DEVELOPMENT** is not the same as it used to be. In many cities in the Western world, urbanisation continues, while compromising on a building stock in dire need of renovation. Radical changes in structures of economy and work, our need to drastically cut our greenhouse gas emissions, the emergence of the sharing economy, and many other strong drivers are changing the way we live, faster than ever before.

This report is one of the products of a Nordic project called Smart Retro. It demonstrates how built environment actors can use emerging trends to their advantage – steering the development of our cities in a desirable direction. In our framework, cities are pushed onto a new path of success by improving their inhabitants’ experience of the urban space through incorporating a new wave of smart urban services in the existing built environment.

**“Cities are pushed onto a path of success by improving the experience of the urban space.”**

Smart urban services are essential to new urban development, as they improve quality of life. Many urban areas – both structural buildings and services and urban activity – are dilapidating. Smart urban services provide new jobs and make cities more livable: the strongest urban vitality often derives from the engagement of locals, the existence of good services and suitable infrastructure.

Furthermore, the sustainability requirements of the coming years dictate that greenhouse gas emissions must be cut by a large margin and that resource efficiency needs to be radically improved. Smart urban services enable us to harness the available resources in new ways, and, thus, carry great potential in helping us reach those targets.

In contrast to many smart city projects that focus on building new, Smart Retro takes the existing stock of buildings and infrastructure as its starting point. Building entirely new stock does not address the challenges and needs of our existing cities: in 30 years’ time, the majority of urban dwellers will still live in neighbourhoods built in the 20th century. Smart solutions must therefore be integrated in the existing built environment.

Creating a smart city using existing built environments requires experimentation that brings together incumbent actors, who control and shape the urban space and its building stock (such as city governments, real estate companies, construction companies and retail), with startup companies, who work on new digitally driven services. In the Smart Retro project we conducted a number of practical experiments with the goal of creating a new model for urban development in the digital era.

This report is comprised of three sections. The first section provides an account of how Nordic cities currently operate and what challenges they face in developing further. It also outlines a theoretical framework for the conceptualisation of urban change. The second section offers three backcasting scenarios, which shed light on what the coming decades could offer cities and their old and new practices. Section three gathers lessons learned from experimentation work conducted through acceleration and matchmaking of startups and traditional urban actors. A final chapter summarises and provides nine recommendations for actors of the built environment.

# PRAISE FOR NORDIC CITIES BEYOND DIGITAL DISRUPTION

*I think this is the key way to go.....rather than thinking of Songdo as the model.*

– **Saskia Sassen**, Robert S. Lynd Professor of Sociology at Columbia University, author of *The global city: New York, London, Tokyo*.

*I agree with everything I read. I am grateful that you (and apparently others) believe that the your existing urban structure and building stock form the foundation for growth. Ah, how we humans have evolved!*

– **Jeff Speck**, City Planner & Urban Designer, author of *Walkable City: How Downtown Can Save America, One Step at a Time*.

*I love the idea of Nordic Cities Beyond Digital Disruption because of its approach of our cities largely already being built, certainly in the western world. We need a 21st century solution for 21st century cities.*

– **Dan Hill**, Associate Director at Arup

*Nordic Cities Beyond Digital Disruption provides an innovative approach to thinking about smart cities and digitalisation by focusing on retrofitting the existing building fabric.*

– **Savvas Verdis**, Infrastructure Economist at Siemens, Senior Research Fellow at LSE Cities

*That's super cool. Especially interested in your test-bed approach.... Many of the solutions conceived, prototyped, tested and refined within your testbeds will have global application, spurring civic entrepreneurship whether or not that was the intention.*

– **Jase Wilson**, CEO, Neighborly

*The broad take of the Nordic Cities Beyond Digital Disruption offers tons of knowledge and inspiration to succeed in this endeavour – going far beyond the misconception that building is just about concrete.*

– **Bernhard Huber**, Municipal Councillor, Solna, Sweden

*I truly believe Smart Retro is a promising and important project. We see so many interesting initiatives in cities today. But most of these are small scale and independent and never reach the broader mass.*

– **Anna Viggedal**, Researcher, Ericsson

*Nordic Cities Beyond Digital Disruption is an excellent example of the city of ideas. The future city is the outcome of everybody's right to urban life, an urban life that is not only meaningful but also playful, filled with creativity and dialogue,*

– **Peter Ache**, Professor, Nijmegen School of Management, Radboud University

*It's smart, well-written, and beautiful. I look forward to learning more about the next steps and hearing whether it results in changes at all scales.*

– **Rolf Pendall**, Director, Metropolitan Housing and Communities Policy Center at Urban Institute

*The Smart Retro Futures Report accomplishes what very few publications anywhere have: it connects existing built environments, new economic and community models and digital technology, and traces through how we can use them together across macro-to-micro scale initiatives to address the challenges of the 21st century. An eye-opener for me, and a report that I'll be sharing widely.*

– **Della Rucker**,  
Managing editor, *Engaging Cities*.  
Author of *Crowdsourcing Wisdom: a guide to doing public meetings that actually make your community better*.

*The built environment has great inertia against change. This is an obstacle against necessary change – i.e. urban sustainable development. One Window-of-Opportunity-reducing inertia is the smart application of ICT. This gives better control of e.g. energy and ventilation systems. ICT also enables new forms of information exchange and of persuasion on sustainability issues – between residents and with real estate owners, energy providers and other local actors.*

– **Örjan Svane**, Professor Emeritus in Urban Sustainable Development in KTH

*[The report] echoes many of my thoughts and demonstrates clearly that 'bits and atoms' coming together can make a difference. Co-production is a term that is in the air here in Leeds, but we are much further behind than you!*

– **Rachael Unsworth**, Geographer in Future Directions, Lecturer of Urban Geography, University of Leeds

# SECTION 1: A NOVEL WAY TO DEVELOP CITIES

**THE FOLLOWING SECTION PUTS URBAN TRANSFORMATIONS IN THE CONTEXT OF WHAT IT TAKES TO BE A SUCCESSFUL CITY IN TODAY'S WORLD. THROUGH A GLANCE AT HISTORICAL AND PRESENT-DAY EXAMPLES, IT ILLUSTRATES THE POTENTIAL OF NORDIC CITIES AS FORERUNNERS OF URBAN CHANGE. IN THIS SECTION, THE READER WILL FIND A FRAMEWORK FOR URBAN TRANSFORMATION, ALONG WITH A SUMMARY OF THE FACTORS THAT POTENTIALLY HINDER CHANGE IN CITIES.**





# THIS IS NOT A SMART CITY

**URBANISATION** is one of the most important megatrends to shape global society of the 21st century. However, urbanisation puts a strain on the quality of life in cities, as well as the management of big infrastructure systems, such as city traffic and energy usage.

The Smart City approach is the paradigm of urban development in the 2010s. It promises to combat these challenges with new technological solutions; information technology can help to bring about new kinds of co-operation and to enable the interweaving of different city elements (energy, buildings, transportation and users). In this way, infrastructure can be used more efficiently with fewer resources, and the growing needs of cities can be satisfied.

The stories of places like Songdo in South Korea or Masdar city in Abu Dhabi fit the classic Smart City mold: technologically highly advanced, newly built cities, planned in a top-down manner by leading architects and technology companies. Great exhibitions of advanced technology, and destinations for experts of urban development from all parts of the globe.

This, however, is not the reality in which most of us urban-dwellers live: our cities are old.

A substantial number of neighbourhoods in Europe were built between the 1950s and 80s. Around one-third of the Finnish, Swedish and Danish residential building stock was built between 1946 and 1970, with around one-fifth erected in the 1970s. These buildings comprise a significant part of their country's wealth, but are now in dire need of renovation. The populations of these neighbourhoods are becoming impoverished and demographically biased, as many areas are overlooked by the middle class and well-to-do families despite their good urban location and decent access to public transport.

In the past, problems like these were solved by improvements in infrastructure: large-scale investments in state-of-the-art energy and water supply systems, train and subway networks, wider streets and avenues, and replacement of existing building stock. Today, however, such projects face many economic and political obstacles that make their execution difficult. This is why countries like Sweden, Germany or Italy won't build smart cities in the style of Songdo or Masdar City.

How, then, can we increase, or at least conserve, the future value of the capital embedded in our built environment? What besides for renovation is required to bring about better energy efficiency, or a cleaner appearance of buildings and public spaces?

We now need newer, more innovative and smarter ways to manage urban growth. The

**"Renovation projects hold great potential for the revitalisation of local economies."**



urgent need for renovating the ageing mid-20th century building stock opens a window of opportunity: renovation projects allow for improvement of the technical performance, and also hold great potential for the revitalisation of local retail and service economies, thus enabling sustainable lifestyle changes.

This is complemented by another phenomenon. Emerging trends such as energy scarcity, disruption of retail, digitalisation, emergence of the sharing economy, alongside many others, will fundamentally alter our urban areas. With the right kind of action, however, these trends can be harnessed to better serve the interests of neighbourhoods, companies and individual inhabitants.

These emerging drivers of change promise to transform our cities in ways that are quite different from the powers that shaped them in the early 20th century:

- Instead of building houses and neighbourhoods from scratch, there will be more renovating and retrofitting of the old.
- Instead of creating new physical and resource-heavy structures there will be more services and products operating within the digital realm.
- Instead of centralized top-down reforms there will be processes operating in a distributed, bottom-up manner.

- Instead of planning and traditional processes there will be engaging visions, experiments and proofs of concepts.

**"Emerging trends such as energy scarcity, disruption of retail, digitalisation, emergence of the sharing economy, alongside many others, will fundamentally alter our urban areas."**



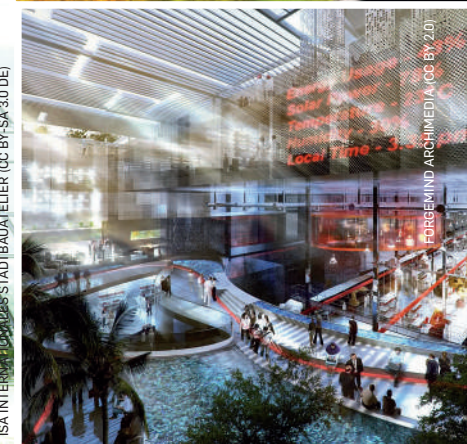
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# THE NEW NORMAL OF URBAN GROWTH

**CITIES ARE NOT LIKE** they used to be. Cities all over the world are repurposing themselves and building new narratives of their future success. While the rest of society defines progress in increasingly economic terms, cities have started thinking more about their population and their capacity to create a flourishing environment (yes, also in economic terms).

The 20th century city was dominated by big industrial structures and functional planning that separated production, housing and services into distinct zones. An urban region would be defined by one trailblazing company, public function, or field of industry that gave the city a reason to exist and provided employment to its inhabitants, something around which everything else revolved. Earlier, that role typically belonged to large manufacturing companies, later it belonged to universities and high-tech hubs.

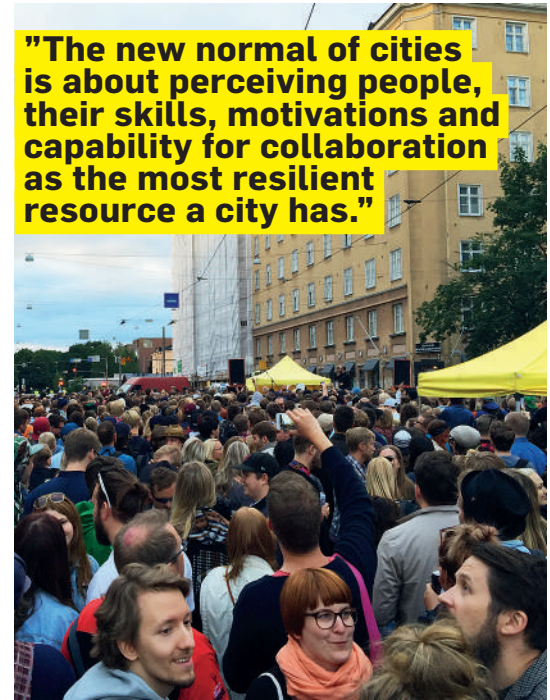
The new normal of cities and urban change perceives people, their skills, motivations and capability for collaboration as the only lasting and sustainable resource a city possesses. Factories, offices and companies can decide to re-lo-

cate practically overnight. However, if people experience a steady stream of good and inspiring things around them and share confidence in that they can always create or find something new regardless of the existing employment structures, the city will continue to flourish. Different actors can promote a sense of progress and a good atmosphere, but this is always co-created – not planned or served.

At the same time, cities are just like they used to be. Cities are places for human interaction, commerce and enjoyment. In cities we encounter most of the human-made wonders and feel the presence of other people. It is fair to say that this *layer of city 2.0*, cities as arenas for collaboration and spontaneous togetherness of people, has become increasingly important during the young 21st century.

Built structures have a special role in either expanding or restricting this emerging strength of cities. While the symbol of a successful society used to be a factory or a university in the heart of the city, that time is gone. Instead of looking backwards, we should be looking towards building and planning the physical and

**"The new normal of cities is about perceiving people, their skills, motivations and capability for collaboration as the most resilient resource a city has."**



governance-level prerequisites for the flourishing society of the future. We can change buildings, streets and urban spaces to meet the needs of the future. We can discover new methods to better connect the built environment with new forms and arenas of human collaboration. We can change business models to help capture more value from the already existing building stock. We can make our cities better and more future-proof. This report demonstrates how this can be done.

## Six meganarratives that define the new normal of cities

### 1 Walkability

**WALKABILITY MEANS** people friendly. 20th century planning aimed to make cities liveable, but in practice gave priority to industrial structures, cars and functional flows of masses. In the 21st century, cities are once again designed for people and made to human scale (“people friendly”). Aesthetic qualities have re-emerged as priorities – walkability and human friendly spatial proportions are now leading design principles.

### 2 Urban cores as an asset

**THE PAST TWO DECADES** have seen a renaissance of city centres in Western societies. Cities have increased walkability, built flats and revitalised local services. City centres are not important only as commercial hubs, but as venues for urban life and for enjoying the company of other people. The city centre, not campuses, malls or residential areas, is the key to making a city attractive.

### 3 Changing work and production

**SOCIETY IS MOVING** from full-time employment and industrial structures of production towards society where people divide their time between several jobs or pursue careers as entrepreneurs. In the future, factories, public institutions and retail will employ many fewer people than they did in the past. Mixed-use environments will become common, as homes, cafés and co-working spaces replace offices, even factories.

### 4 Digital consumption and sharing

**DIGITAL COMMUNICATION** is radically changing the ways we use cities. It gives rise to new services, events and other forms of collaboration in the urban space: e-commerce, sharing economy services like Airbnb, pop-up events like Restaurant Day, and new forms of peer-to-peer communication. E-commerce and the sharing economy may eventually push many established forms of retail and services out of business.

### 5 Circular economy

**CITIES ARE RESPONSIBLE** for 70% of human-induced greenhouse gases and consume the majority of energy and natural resources. To minimize this impact, new technologies and business models are used to make better use of existing buildings, spaces, vehicles and renewable sources of energy. The emergence of a circular economy, collaborative consumption and distributed energy production will radically change urban space.

### 6 People-Public-Private

**LOCAL COUNCILS** retain control over zoning and planning, but have lost much of their capacity to develop urban space on their own terms, due to the open global economy. Cities’ success depends on investments by private companies, and on people’s motivation to reclaim, inhabit and spend time in the urban space. City officials are desperate to find ways to engage other stakeholders and to form a shared future vision.



# RETROFITTING SMART CITY

KIRMO KIVELÄ (CC BY-NC-SA 2.0)



**NORDIC CITIES** have almost all the ingredients needed to become global models of 21st century human-scale urban environment:

- In the Nordics, cities are well designed. The Nordic tradition of planning and building cities emphasises diverse needs of human scale.
- Infrastructure in Nordic cities is reliable, skillfully designed and well maintained.
- Nordic countries and cities have adopted high standards and ambitious goals in climate neutrality and resource efficiency, with a focus on cleantech and forerunner technologies.
- The emphasis on information and communications technology (ICT) solutions and a rich business ecosystem of mobile and internet startups provide a good starting point for smart city development.
- There is a high level of engagement by citizens, along with active social movements and a high level of education.

The way Nordic cities are developed is quite different from the development of cities in most other regions of the world. Because of their already high standards, they are not likely to be rebuilt on a large scale. The vast majority of the existing building stock and infrastructure will be there for the rest of the current century: the

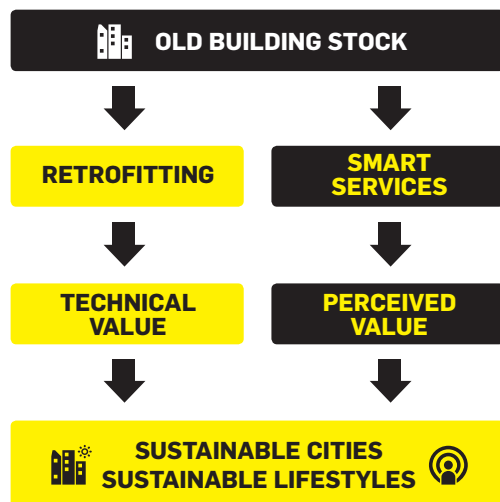
**"Nordic cities aim at an ambitious transition: carbon neutrality, a high quality of life, and globally competitive businesses."**

renewal rate is low and is unlikely to rise.

Therefore the Nordic version of Smart City will turn the old built environment into 'Smart Retro', building on and around structures dating back to the 19th and 20th centuries. The focus is on urban infill, retrofitting and placemaking (or repurposing) of buildings and urban space that have lost their former use.

Yet these ways of activating urban spaces won't be enough to turn old neighbourhoods into attractive areas of a human scale. They also need services that make everyday life smoother and enhance social interaction between inhabitants. From what we know about the direction of change today, it is evident that most of these services will be mainly digital. Smart city and digital tools will be embedded in old, or 'retro' structures.

This approach provides a good basis for development: the efficient infrastructure, highly educated populations and widespread use of new technologies in the existing neighbourhoods of Nordic cities make them receptive to new



**Figure 1.1** Retrofitting adds technical value to the old building stock. While this type of upgrading is necessary, it is not usually enough to raise the perceived value of a neighborhood. What is required in addition are services and functions that enhance smoothness of everyday life and bring about a sense of progress. Both retrofitting and smart services are needed in the development of sustainable cities that enable sustainable lifestyles.

concepts. These areas already possess a potential customer base for new services, and their inhabitants are used to utilising the urban space in service consumption.

Nordic cities aim at an ambitious transition: to become carbon neutral whilst maintaining a high quality of life for all citizens, as well as flourishing, globally relevant and competitive businesses. The sustainability goals of Nordic cities are the basis for their ‘design principles’ for investment and planning of new areas. But investments in the existing built environment are required: housing and mobility need to be technically updated to a more energy and resource efficient level, at which they encourage people to adopt sustainable patterns of behaviour.

The greatest untapped potential lies in digital services. These are needed to convert these technical changes into better quality of life in

**"Digital services are to show people that life in cities can be smoother and quicker."**

cities. The new services should enable life in cities to be smoother and quicker, and allow for more time for things that people truly value: family, motivating tasks, and enjoyable leisure. They help people save time in daily activities like commuting and shopping, or reduce the costs of housing, mobility or home appliances and other material goods.

Startups that produce these services are called smartups. They provide scalable smart services that produce a better urban living experience, engage consumer users and at the same time significantly decrease the level of energy and resource consumption.



ALEKSI NEUVONEN (CC BY-NC-SA 2.0)

## Components of retrofitting smart city

### RETROFITTING



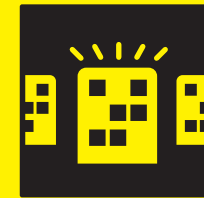
### URBAN SERVICES



### PLACEMAKING



### URBAN INFILL



**Figure 1.2** Turning old neighbourhoods into smart cities requires four types of renewal activities: retrofitting to upgrade old buildings, startups that provide smart services to satisfy the everyday needs of inhabitants, placemaking initiatives that invigorate public spaces and bring people together, and urban infill to increase user volume and urbanity of a district.

**To read the full story,  
go to <http://smartretro.demoshelsinki.fi/> on 6th November!**



## **SECTION 2:**

# **THREE SCENARIOS FOR THE FUTURE OF SMART CITIES**

**THIS SECTION SHEDS LIGHT ON THE UNCERTAINTIES OF THE FUTURE. THE THREE ALTERNATIVE SCENARIOS CONSTRUCTED HELP GRASP HOW THE WORLD MIGHT CHANGE OVER THE COURSE OF THE NEXT 25 YEARS, AND WHY NORDIC SMART CITIES CAN ACHIEVE SUCCESS AMIDST BIG POLITICAL, SOCIAL OR TECHNOLOGICAL CHANGES.**

# GOAL-DRIVEN SCENARIOS

**BACKCASTING SCENARIOS** depart from a goal (such as, for example, emission reduction targets). This goal or criterion determines the set of acceptable future end states of a long-term transition. There may be several acceptable end states, which means that the goal can be attained in different ways.

The goal for these scenarios is: **attractive, open, flourishing and just cities within planetary boundaries.**

‘Planetary boundaries’ here refers to the carrying capacity of the planet: by our target year cities and their inhabitants need to consume substantially less natural resources and their activities need to emit at least  $\frac{2}{3}$  less greenhouse gases than they do now.

This will require zero energy buildings, energy efficient vehicles, electric transport and the use of 100% renewable sources in energy production. Recently these technical solutions have become mainstream and provide a solid platform for the leap towards low-carbon society.

Technical solutions on their own are not enough. If we still commute longer distances, live in bigger flats, buy bigger fridges and wider screens, eat more meat and fly frequently to distant locations, none of the efficiency gains from

technology will be enough. We also need behavioural change.

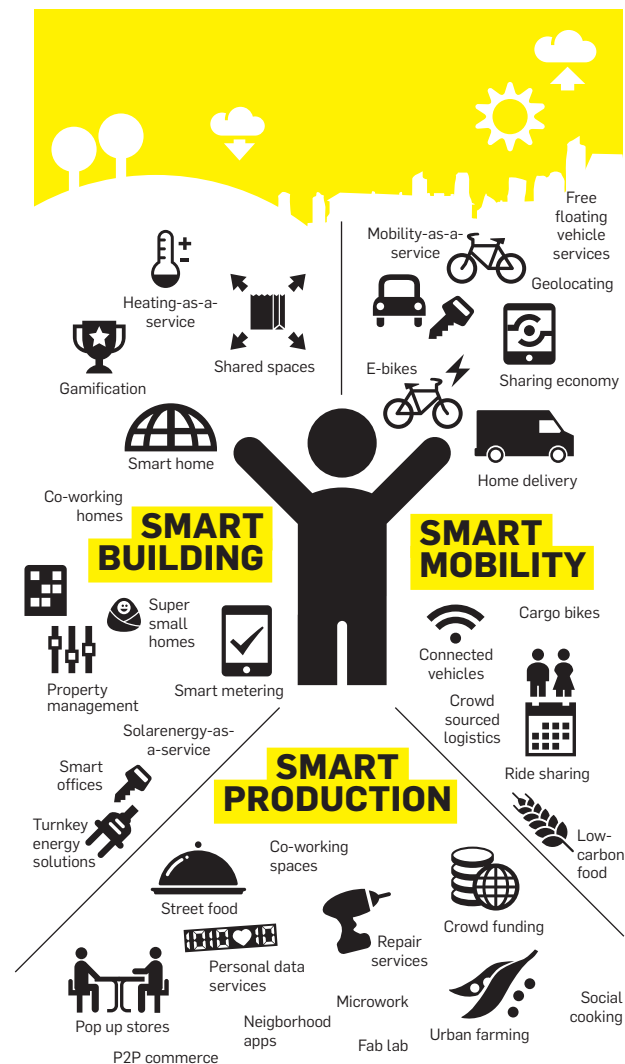
It is apparent that individuals will not make these changes (sacrifices, even) unselfishly, motivated by our need as a society to reduce our resource intensity and GHG emissions. There are different ways to persuade people to change their behaviour. Bans, regulations and price incentives are often considered efficient, but only go so far. In addition to this, there need to be other benefits: a smoothly running everyday life, more exciting experiences, new opportunities for business, or a sense of achieving things together. These are only reached through the clever design of services, environments and objects.

## Smart services make urban futures look exciting

**THE THREE SCENARIOS** describe what ageing Nordic cities may look like in the future. Special attention in these scenarios is given to new types of urban services.

For the past half-century, the central functions of our cities – housing, mobility, work

**Figure 2.3** Emergence of smart urban services will change the way we work, move, and live in cities.



# BAGARMOSSEN 2015–2040





# BAGARMOSSEN 2015

1. The main square by the subway station, including a playground and residential buildings with shops and restaurants on street level.
2. The main square with shops and market tents. There are many business spaces with big windows and doors facing the square, making it possible to integrate them in the public space.
3. A grocery store and locals by the main square. There is a range of shops for everyday needs in the centre.
4. Garages and parking spaces of a residential building on Emågatan Today. The scene gives a closed impression, but has the potential of being the venue for different activities, such as a bike kitchen and other workshop rooms, small stores, pop-up events and workspaces.
5. Residential buildings and parking lots seen from the walkway on Byälsvägen. The space between the buildings and the street is a potential place for urban infill, with open space for workshops, stores, workspaces, cafés and greenhouses.
6. A peek through a portal into one of the courtyards by Rusthållarvägen. In addition to hosting playgrounds and acting as meeting points for the inhabitants, these courtyards have the potential to become sites for small-scale agriculture.
7. Street and parking spaces in front of buildings on Rusthållarvägen. The suburb is designed to be easily accessible by car, and substantial space is dedicated to parking. Perhaps in the future it will be a site for urban gardening.
8. A small garden for edible plants, cared for by Bagsödarna, next to the subway station. It is a locally initiated project that started with the participatory process Boendedialogen in 2012 as a way to revitalise the area.
9. A pop-up bike repair shop in a freight container by the main square in Spring 2015. It proved a success, and after the summer it moved into an old garage.





# GLOBAL DEAL IN BAGARMOSSEN

**THE HIGH GLOBAL PRICE** on carbon gave Stockholm-based companies a chance to thrive in the growing global market for resource-efficient solutions. Already in 2016, the city of Stockholm planned to make Bagarmossen and its surrounding area a testbed, building on the neighbourhood's innovative potential arising from its engaged, diverse and innovative inhabitants. Bagarmossen was the perfect place to test ICT solutions for sustainable behaviour in the built environment.

The municipality invested heavily in startup incubation and set up an organisation to help startups get started. Being part of their program ensured a stable start with economic help, including work spaces to rent in creative combined workshops, and showrooms in various locations in the city. Bagarmossen itself held about ten different locations ranging from prime shop fronts to garages and basements.

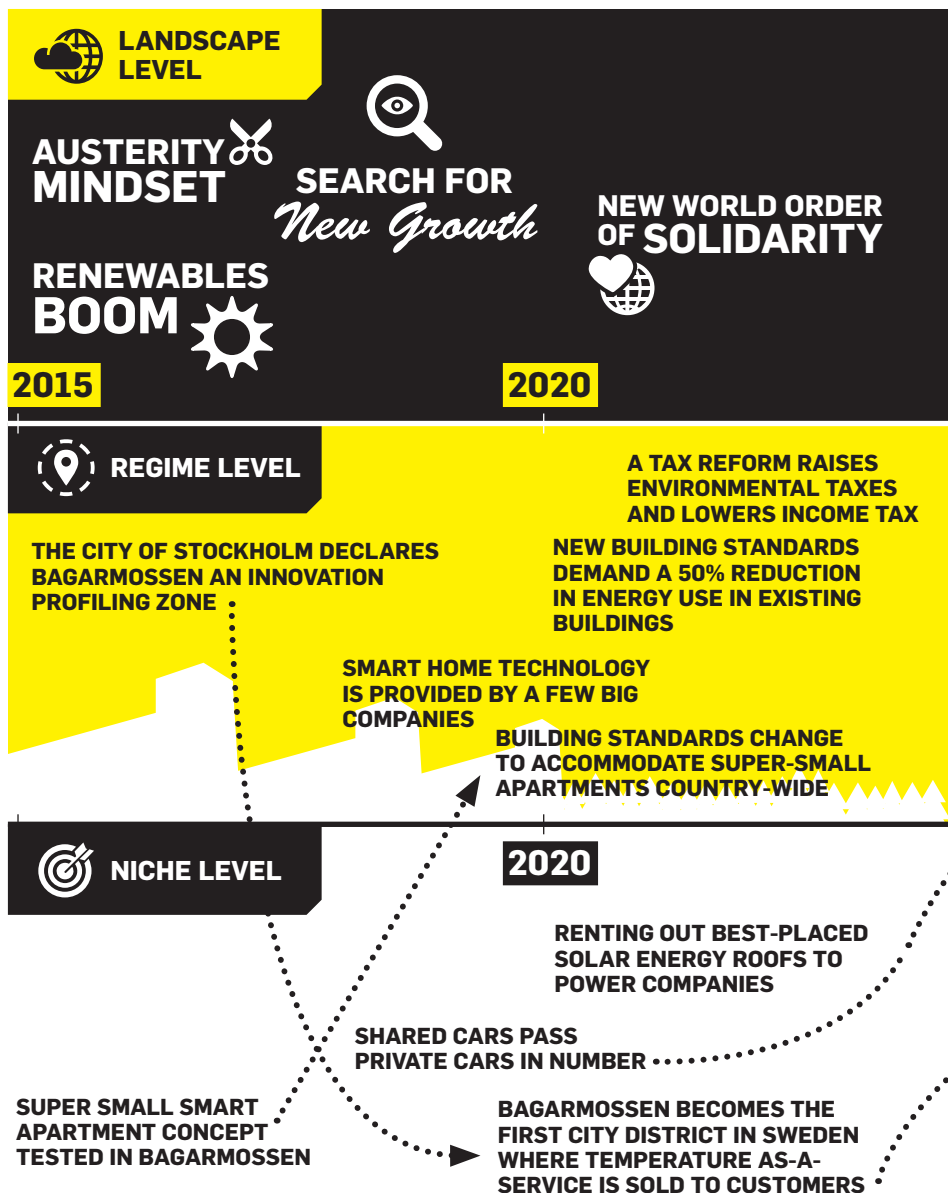
To reach global emissions goals, Stockholm made large investments in its public transit system with the aim of creating a dense and walkable green city. New solutions were found and realised through new financing systems and changes in regulations on the national and organisational level.

A lively job market developed in the region, with a constant need for new people and new skills. Many people work either as employees or as freelancers in the ecosystems of large multinational companies. New professions are

evolving and merging with each other. For example, digital health is a field that combines healthcare, life sciences, ICT and gaming. Diverse local services provide work for many, even when some traditional service jobs have disappeared.

The centre of Bagarmossen saw the appearance of commercial spaces used as showrooms for local products and mixed multiuse spaces for working and meeting, relaxing and playing. 3D printing workshops have replaced the old photo, video and mobile stores. As e-commerce soars, traditional retail companies have managed to maintain their market share by introducing home delivery systems combined with higher visibility in pop-up showrooms in ground floor business spaces. Consumption is mainly done in systems of circular economy, such as renting and as-a-service models, delivered either by big multinational corporations or by very local small-scale companies.

The old building stock has been improved through additions of small integrated applications that translate the material world into data and enable the gamification of energy savings and resource efficiency. As an example, smart home applications connect old heating systems to the cloud with a small and easy installable device, making it possible to vary the heating in different rooms and at different times.





**GLOBAL PRICE ON EMISSIONS**

**CIRCULAR ECONOMY**

**GREEN GROWTH**

**GREEN JOBS**

**HIGH TRUST ON NATION STATES**

**GLOBAL EMISSIONS HAVE DECREASED BY 50%**



**2025**

**2030**

**2035**

**2040**

MAJOR MANUFACTURING BUSINESSES ADOPT AS-A-SERVICE BUSINESS MODELS

THE AMOUNT OF PARKING SPACES IN STOCKHOLM HAS DECREASED SIGNIFICANTLY

A NUMBER OF NEW HOUSING AREAS CONNECT THE FORMERLY SEPARATE SUBURBS OF BAGARMOSSEN, SKARPNÄCK AND KÄRRTORP

EMPLOYMENT AND INHABITANT FIGURES IN STOCKHOLM GROW QUICKLY

**STOCKHOLM IS RANKED AMONG THE TEN MOST LIVABLE CITIES IN THE WORLD**

STOCKHOLM IS GRANTED AN AWARD FOR SUCCESSFUL COMBINED INVESTMENTS IN INNOVATION AND ELIMINATION OF SOCIAL SEGREGATION, TITLED CITY DISTRICT OF THE WORLD



**2025**

**2030**

**2035**

**2040**

A MAJOR 3D-PRINTING CHAIN STORE OPENS A BRANCH IN BAGARMOSSEN

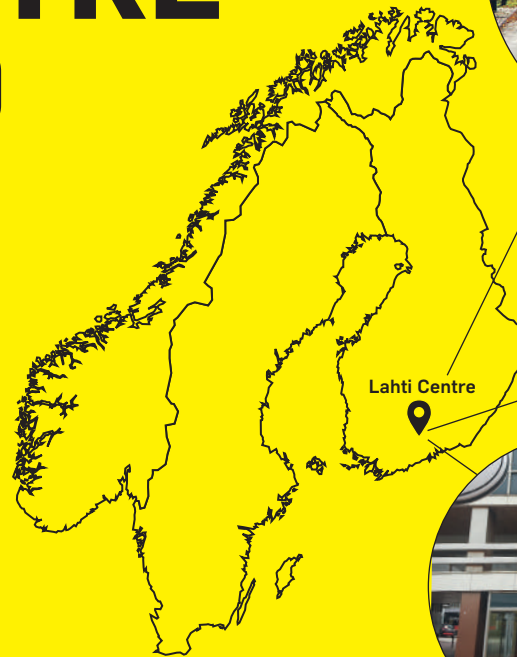
ENERGY COMPANIES START USING BAGARMOSSEN AS A TESTBED FOR GAMIFICATION APPLICATIONS AIMING TO REDUCED ENERGY USE

A THRIVING MARKET FORMS FOR SHORT-TERM RENTAL CONTRACTS FOR WORKING SPACES

**To read the all three scenarios on Bagarmossen,  
go to  
<http://smartretro.demoshelsinki.fi/>  
on 6th November!**



# LAHTI CENTRE 2015–2040



**To read the full scenarios,  
go to <http://smartretro.demoshelsinki.fi/> on 6th November!**

# **SECTION 3: TESTBEDS AND BUSINESS MODELS FOR URBAN RENEWAL**

**THIS SECTION GATHERS LESSONS LEARNED FROM THE SMART RETRO EXPERIMENT OF MATCHING SMARTUPS AND TRADITIONAL ACTORS AND OF ACCELERATING NEW URBAN SERVICES THROUGH THESE COLLABORATIONS. IT INTRODUCES FIVE OF THE TESTBED CASES UNDERTAKEN IN THE SMART RETRO PROJECT. THE CONCLUSIONS FROM THESE EXPERIMENTS ARE PRESENTED IN THE FORM OF BUSINESS MODEL CANVASES FOR DIFFERENT ACTORS IN THE BUILT ENVIRONMENT. THEY HIGHLIGHT THE ACTIVITIES THAT PRODUCE VALUE BOTH TO BUSINESSES AND CONSUMERS.**

# SMART RETRO MODEL – BUILDING THE MISSING LINK THROUGH CO-CREATION AND TESTING

**TRULY NEW VALUE** is born in the field of services connecting the digital and physical world. The value is economic – perceived or experienced: they offer us more comfortable, easier, cheaper and/or interesting urban life. For example, after six months of launching, a startup called Wolt offers home deliveries from 200 existing restaurants in Helsinki, a city until recently with a notoriously poor level of home deliveries other than pizza and kebab. From the point of view of local restaurants, Wolt increases their customer flows. Airbnb has opened access to a far greater variety of interesting holiday accommodation than was previously affordable to most. It also offers the residents an opportunity to monetize their temporarily unused spaces.

Except for the few most famous services, the volume is still modest compared to the big moves and money in the traditional value chain of the built environment, such as the construction business, the real estate development, or utilities. Most of the interesting startups introduced in the table on the page 57 are still tiny.

However, the rules of value production in the traditional chain are changing. The shopping centres do not automatically fill in with the more classic retail chains. In many, tenants change often and spaces stand empty for longer times. The retrofitting business is growing fast-

er than that of construction but the margins in retrofitting are lower. Additionally, in this traditional value chain, digitalization is in its infancy, almost inexistent. Atoms do not meet bits. The reallocation of assets is needed but it is stiff.

The volume of new services interacting with digital and physical is still modest due to infancy as well as other important players. Most physical services and goods such as housing, transportation and vehicles cannot be replaced by digital substitutes to the degree that communications and entertainment have been. Facebook and other similar services can be said to have replaced postal services and media to a degree, but Airbnb will never replace property



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services and construction. People will always live somewhere and that place needs to have a roof of some sort, and be heated and cooled. People will most likely want to move from A to B and back, and they will eat one form of food or another. All this consumes energy and other natural resources; digital will not replace physical, but these two will join and exchange qualities.

Having the players of the digital and physical world work together and exchanging qualities is not simple. When it comes to collaboration from startup to corporate, or startup to public sector, the size, volume, business logic, and the ways of working are all different.

In Spring 2014, Smart Retro project was initiated by 14 partners from three Nordic cities, Lahti in Finland, Stockholm in Sweden and Oslo in Norway to build the missing link between the big players of built environment and the startups providing new services, the link between the atoms and the bits, the physical and the digital.

Smart Retro project has been a big experiment of building the connection and initiating co-creation between startups and established public and private organisations. Next we introduce the steps of building the link.

**"As a result of Smart Retro collaboration, we ran a test with a startup. Cooperation has been amazingly inspiring and instructive. I have learnt that ideas should be tested quickly."**

– Marko Laaksonen,  
Retailer, K-Citymarket Paavola

	SMART RETRO BIG PARTNERS
CITIES & OTHER PUBLIC BODIES	City of Lahti, the 9th largest city in Finland with 103 000 inhabitants and 5500 employees. <a href="http://www.lahti.fi">www.lahti.fi</a>
	FutureBuilt Oslo, a Norwegian national ten-year programme (2010-2020) with a vision of developing carbon neutral urban areas and high-quality architecture. <a href="http://www.futurebuilt.no">www.futurebuilt.no</a>
	Stockholm Business Region Development, Stockholm's marketing and business promotion company in co-operation with 52 municipalities in the Greater Stockholm Region. <a href="http://www.investstockholm.com">www.investstockholm.com</a>
	Nordic Innovation Fund funds Nordic projects that boost innovation and competitiveness in the Nordic business sector and lead to commercial and sustainable development. <a href="http://www.nordicinnovation.org/nordicbuilt">http://www.nordicinnovation.org/nordicbuilt</a>
CONSTRUCTION & REAL ESTATE	Citycon, Citycon is a leading owner, manager and developer of urban grocery-anchored shopping centres in the Nordic and Baltic regions. <a href="http://www.citycon.com">www.citycon.com</a>
	Granlund, a Finnish design, consultancy and software company with core expertise in energy efficiency. <a href="http://www.granlund.fi">www.granlund.fi</a>
	Infill, company of urban repair and densification building urban housing on small plots of land and transforming existing buildings and city structures. Infill is a part of Aspelin Ramm. <a href="http://infill.no">infill.no</a>
	YIT Corporation, the largest residential construction company in Finland and the largest foreign one in Russia, aiming at being a leading European developer, builder and service provider. <a href="http://www.yitgroup.com">www.yitgroup.com</a>
HOUSING	Stockholmshem, a public housing company since 1937, owned by the city of Stockholm. The second largest housing company in Sweden, with 50 000 tenants. <a href="http://www.stockholmshem.se">www.stockholmshem.se</a>
RETAIL	K-citymarket Paavola is a department store since 1971 in Lahti City Centre. It is a member of Kesko and is run by an independent entrepreneur. <a href="http://www.k-citymarket.fi/kaupat/lahti-paavola">www.k-citymarket.fi/kaupat/lahti-paavola</a>
	Kesko, one of the biggest trading sector companies in Finland managing retail store chains and producing services for them. Kesko and K-retailers form the K-Group with 45 000 employees. <a href="http://www.kesko.fi/en">http://www.kesko.fi/en</a>
RESEARCH & EDUCATION	Centre for Sustainable Communications (CESC) of KTH Royal Institute of Technology is an interdisciplinary research environment, conducting innovative research on ICT for sustainability. <a href="http://www.cesc.kth.se">www.cesc.kth.se</a>
	Demos Helsinki, a Nordic think tank helping organizations, companies and communities to succeed in the future. The leader of Smart Retro programme. <a href="http://www.demoshelsinki.fi">www.demoshelsinki.fi</a>

RESEARCH & EDUCATION	KHiO, Oslo National Academy of the Arts, Norway's largest college of higher education in the field of arts and design. <a href="http://www.khio.no">www.khio.no</a>
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	SMART RETRO SMARTUPS AND ENTREPRENEURS
ENERGY	Fourdeg, optimising and managing heating energy of from a single flat to district heating network <a href="http://www.fourdeg.fi">www.fourdeg.fi</a>
	Greenely, a mobile app visualising a household's energy consumption using research-based algorithms, <a href="http://greenely.com">greenely.com</a>
MOBILITY & LOGISTICS	CityCarClub, a car-sharing service, <a href="http://citycarclub.fi">citycarclub.fi</a>
	PiggyBaggy, a crowd-sourced delivery service by Coreorient <a href="http://hello.piggybaggy.com">http://hello.piggybaggy.com</a>
FOOD	Urban Fruit Initiative, a hyper-local products made from surplus fruit, <a href="http://fruitinitiative.firebaseio.com">fruitinitiative.firebaseio.com</a>
RETAIL & CLOTHES PRODUCTION	Moral Guard, a personal digital conscience for consumers to help shop according to their values, and a tool for business to know their customers, <a href="http://moralguard.com">moralguard.com</a>
	Remarket, a curated online marketplace for second-hand clothing, <a href="http://remarket.fi">remarket.fi</a>
	Nurmi Clothing, a design clothing company with highly transparent and sustainable production chain, <a href="http://www.nurmiclothing.com">www.nurmiclothing.com</a>
WORK	Generation Ungdom, hyperlocal domestic services by unemployed youth, <a href="http://generationungdom.com">generationungdom.com</a>
	Hoffice, Network of free co-working places in people's homes, <a href="http://hoffice.nu">hoffice.nu</a>
COMMUNITY	Meido, a digital housing tool and social network for housing companies, <a href="http://meido.fi">meido.fi</a>
	Nappi Naapuri ('Nifty Neighbour'), a map based social media for connecting and helping with the people in the neighbourhood. Developed by Yhteismaa. <a href="http://nappinaapuri.fi">nappinaapuri.fi</a>
	Represent, an website and app helping people to have their say on things that matter to them locally, regionally, and globally and to connect it to decision-making <a href="http://www.represent.cc">www.represent.cc</a>

**Table 3.2** Smart Retro partners, startups and entrepreneurs



# FIVE TEST CASES

## Would you bring home your neighbour's groceries, too? – Online deliveries by PiggyBaggy

**TEST PARTNERS:** K-Citymarket Paavola, Kesko and PiggyBaggy by Coreorient

**WHEN CITYMARKET PAAVOLA** in the Lahti City Center launched its “Order & Pick-up” service for online orders, it decided to offer a delivery option with PiggyBaggy, a peer-to-peer delivery platform developed by Coreorient. The two companies had first met in Smart Retro Innovation Camp in Lahti.

In a short time, 100 enthusiastic citizens had registered to do the deliveries. During the testing period, the delivery was free for customers and Citymarket paid a 5 € fee for the volunteer drivers. The first delivery was made by a 17-year old scooter driver to a mother of two small children. During the 2-month test, 43% of Citymarket's online orders were brought home by PiggyBaggy. “We now have no doubt at all that the grocery deliveries couldn't be made with PiggyBaggy,” says retailer Marko Laaksonen after the test.

During the test, acquired knowledge was quickly turned into adjustments in the service: first it was required to register as a driver in the shop, later it could be done online to lower the threshold. Also, a new option to make orders by telephone was introduced to meet the needs of those seniors not familiar with online ordering.

Coreorient highlighted that through the test they learned a great deal regarding marketing, especially on community-based marketing. To spread the news on the new service, Coreorient communicated actively in local Facebook groups and Citymarket offered coffee and cake with info on the service for 500 Citymarket customers. The City of Lahti's SIIRI, advice and service centre for elderly, also informed its customers of the service. “After finishing the delivery pilot, we got several angry phone calls from senior citizens. They were missing the service. Which of course is positive,” tells Harri Paloheimo, the CEO of Coreorient, the company behind PiggyBaggy.



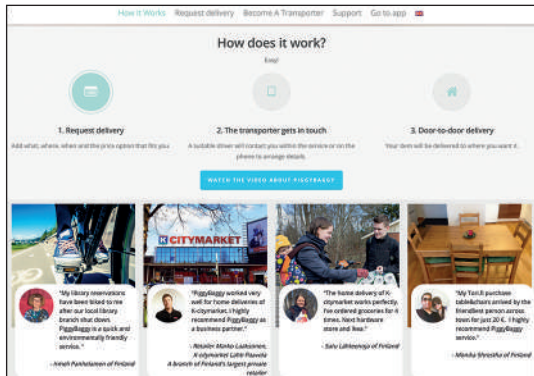
PERTTILOUHELAINEN / ETELÄ-SUOMEN SANOMAT

In addition to important learnings for the development of the service concept, the test has brought another kind of value: a large potential customer from abroad has become interested in PiggyBaggy and the test with Citymarket brings credibility to the negotiations. Also continuing the service in K-Citymarket Paavola is being negotiated.





OUTI KUITTINEN (CC BY-NC-SA 2.0)



## USER PERSPECTIVE

### Tuulikki, 75, Lahti

**TUULIKKI** is an active retired math teacher and a craft enthusiast, who lives alone in the Lahti City Centre. K-Citymarket's online orders with Piggybaggy's delivery service came in hand for Tuulikki after a knee surgery. She couldn't carry heavy shopping bags or drive her car to the supermarket.

She found out about the service in the local newspaper article. "This is like made for me I thought!" laughs Tuulikki. Mainly thanks to the home delivery of the groceries she was able to follow her physiotherapist's advice to stay home for the recovery period. "My children, who live elsewhere, were very relieved when they heard I had found this service."

She made the orders online. "I didn't use the phone order option, I think it's easier online where you can see things."

Tuulikki was astonished by how smoothly and accurately the Piggybaggy delivery worked and how genuinely nice and helpful the drivers were: "They didn't seem to have any rush but had time to chat as well. When they saw me at the door with my crutches, they offered to carry the bags inside or even to put the items in place in the kitchen! I guess only social people take this kind of job."



HEIDI VALIMÄKI (CC BY-NC-SA 2.0)



**To read the full story and the recommendations,  
see <http://smartretro.demoshelsinki.fi/> on 6th November!**

**8 MANAGE EXPERIMENTS EFFICIENTLY.** Cities need to commit to and take responsibility of experiments. However, it can be advantageous to leave implementation to the hands of other, more agile actors and organisations, and to find the right model for experimental cooperation.

**9 CREATE A PLATFORM FOR EXPERIMENTATION.** Carrying out experiments as collaborative projects has many advantages. Ideally, an experimental project should involve a big consortium of both startups and bigger organisations. A big pool facilitates matchmaking: it makes it easier to find test users, and minimises the risk of failing merely due to clashing personal chemistries, for example.

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**"I think this is the key way to go.....rather than thinking of Songdo as the model."**

– Saskia Sassen,  
Robert S. Lynd Professor of Sociology at  
Columbia University,  
author of *The global city:  
New York, London, Tokyo.*

**"I agree with everything I read. I am grateful that you (and apparently others) believe that the your existing urban structure and building stock form the foundation for growth. Ah, how we humans have evolved!"**

– Jeff Speck,  
City Planner & Urban Designer,  
author of *Walkable City: How Downtown  
Can Save America, One Step at a Time.*

**"*Nordic Cities Beyond Digital Disruption* provides an innovative approach to thinking about smart cities and digitalisation by focusing on retrofitting the existing building fabric."**

– Savvas Verdis,  
Infrastructure Economist at Siemens,  
Senior Research Fellow at LSE Cities

**"I love the idea of *Nordic Cities Beyond Digital Disruption* because of its approach of our cities largely already being built, certainly in the western world. We need a 21st century solution for 21st century cities."**

– Dan Hill, Associate Director at Arup

**"That's super cool. Especially interested in your testbed approach....Many of the solutions conceived, prototyped, tested and refined within your testbeds will have global application, spurring civic entrepreneurship whether or not that was the intention."**

– Jase Wilson, CEO, Neighborly

**"The broad take of the *Nordic Cities Beyond Digital Disruption* offers tons of knowledge and inspiration to succeed in this endeavour – going far beyond the misconception that building is just about concrete."**

– Bernhard Huber,  
Municipal Councillor, Solna, Sweden

**"*Nordic Cities Beyond Digital Disruption* is an excellent example of the city of ideas. The future city is the outcome of everybody's right to urban life, an urban life that is not only meaningful but also playful, filled with creativity and dialogue."**

– Peter Ache,  
Professor, Nijmegen School of Management,  
Radboud University