ROADMAP FOR THE SMART CITY STAVANGER

Vision, goals and priority areas

Adopted by Stavanger City Council on 12 December 2016

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ROADMAP FOR THE SMART CITY STAVANGER

The roadmap for the Smart City Stavanger points out the desired direction for the development of the smart city, and is a framework for implementation of the work.

The roadmap has been drawn up with broad involvement of both the private and public sectors. More than 250 contributors from the public sector, industry and commerce, organisations, academia and other resource persons have provided input along the way.

THE NEED FOR SMARTER SOLUTIONS

Several concurrent factors are challenging cities worldwide to find smarter and more efficient solutions to important societal challenges:

+ Increasing urbanisation
+ Unsatisfactory infrastructure and inefficient mobility
+ Increased competition for the best minds and the productive, profitable enterprises
+ Greater demands and expectations from citizens
+ Environmental problems
+ Higher technological change rates
+ An increasing proportion of elderly in the population

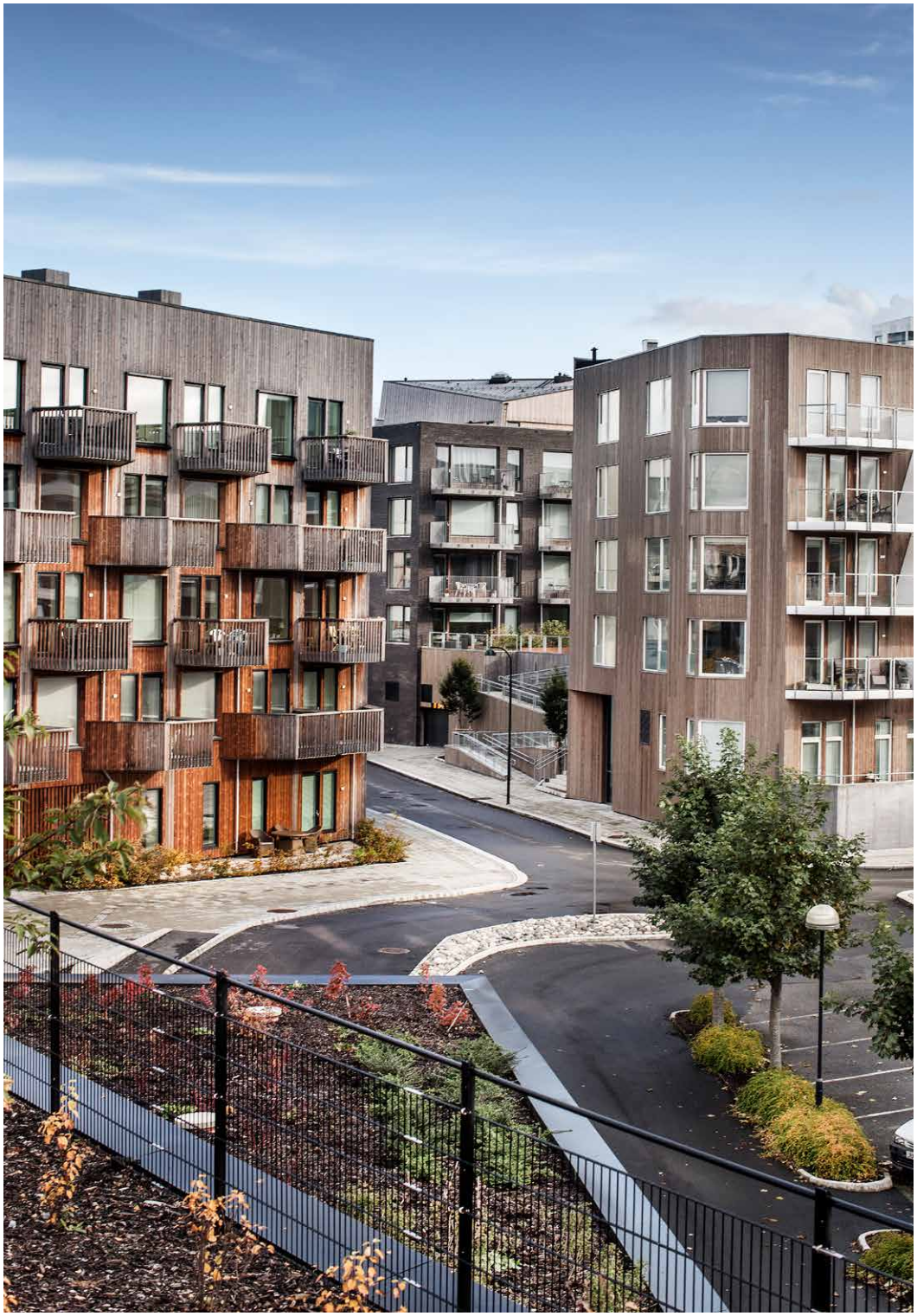
In addition, we have more local and regional challenges in Stavanger that require innovative thinking – both in connection with demographic changes and lower activity in industry and commerce as a result of recession in the oil and gas industry.

PURPOSE

The purpose of the smart city work is to:

+ Strengthen the ability to deal with major societal challenges
+ Develop better and more efficient services for the citizens, and
+ Contribute to new business activity and new jobs
+ Reduce greenhouse gas emissions, and contribute to a more sustainable community development

Our ambition is that this will be a roadmap for Stavanger and the region, which motivates the public, private industry and commerce, as well as academia to participation and shared responsibility – with the goal of making Stavanger smarter together.



WHAT IS A 'SMART CITY'?

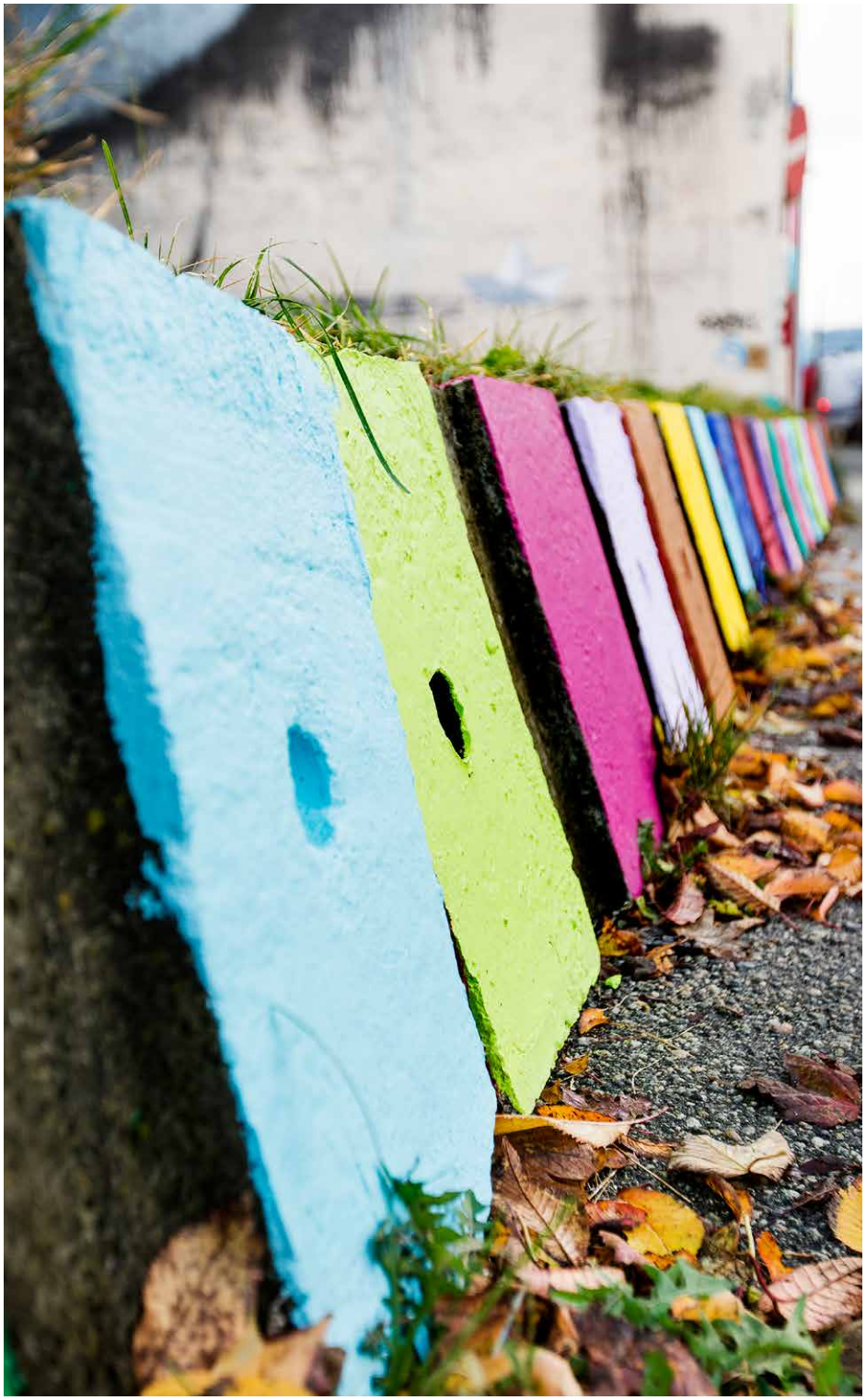
A smart city is based on the citizens' needs, and applies new technology to make the city a better place to live, reside and work.

In the Smart City Stavanger, industry and commerce, the public and academia cooperate as equal parties. The collaboration will help solve important societal challenges in a sustainable and efficient manner, which also gives positive effects for industrial and commercial development.

What is a smart city project?

here are ongoing improvement and innovation projects both under municipal auspices and in industry and commerce. To distinguish these from specific smart city projects, we establish the following criteria, which must always be present for them to be classified as a smart city project:

1. **Technology:** The solutions make use of modern technology to simplify and improve. For instance, using the opportunities inherent in digitisation, automation, large and open data, sensor technology or "Internet of Things" technology
2. **Cooperation:** The projects involve different cooperation constellations across local authorities, industry and commerce, organisations and academia
3. **Citizen involvement:** The projects are based on the citizens' and users' needs, and involve them in the development of solutions



SMART CITY STAVANGER – A JOINT EFFORT!

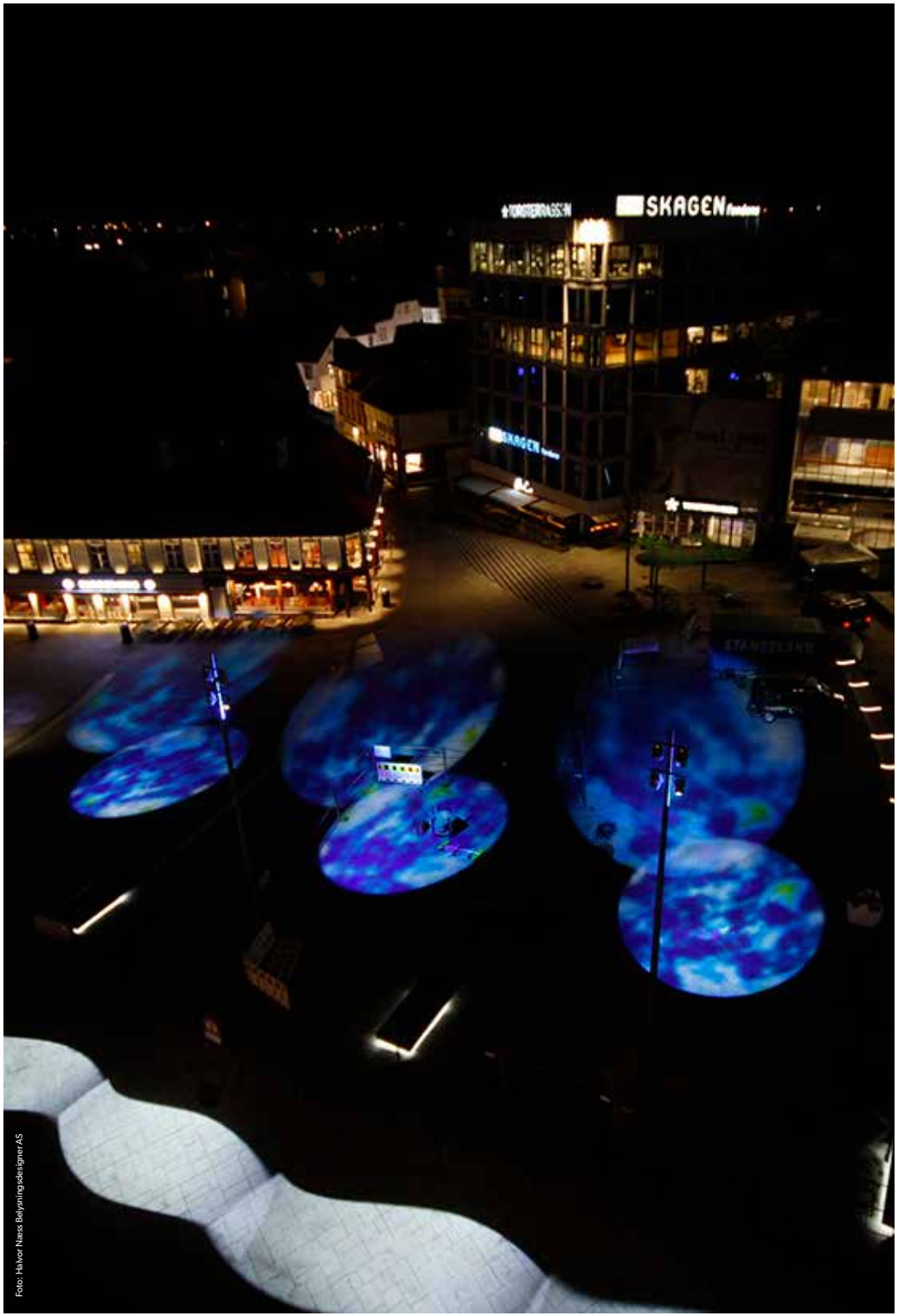
Stavanger City Council has taken the initiative to develop a smart city roadmap for Stavanger. It is important to emphasize that this is not a municipal plan. The smart city initiative is about how **Stavanger as a region can become smarter.** The smart city initiative is about how we together can become smarter. **The objectives are meant to encourage all parties involved in finding new, smart solutions.**

The smart city work is **not limited geographically by Stavanger's municipal boundaries.** If we are to succeed in putting the Stavanger region on the map as a resource centre for innovative and good smart city solutions, it will be because the whole region – neighbouring municipalities as well as industry and commerce throughout southern Rogaland – wants to contribute to different smart city initiatives.

The municipalities may have different roles in the smart city work. From being an initiator, participant or facilitator, to having a completely neutral role, where instead, other actors are responsible for the development of solutions. The main thing is that good measures are implemented in **constructive cooperation with many different actors** – from both the public and private sectors.

The main focus of this document is on **goals and priority areas that can help solve the citizens' needs more efficiently and contribute to innovation and development of industry and commerce.**

An appendix with **examples of possible smart city projects** within the suggested priority areas is also attached to this roadmap. The projects are intended as exemplifications of possible measures – not a basis for decisions on the selection of projects or measures.



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KEY DRIVERS IN THE SMART CITY WORK: TECHNOLOGY

Technology is one of the strongest drivers of innovation – and a cornerstone in the development of smart cities and communities. New technology and digital solutions can help reduce costs through labour-intensive processes being simplified and improved. New business models that create value in new ways will see the light of day, with better services for users and an increasing number of new jobs as a result. Technology and digitisation can also help increase the quality of, and reduce expenditure on, public services through simplification and streamlining.

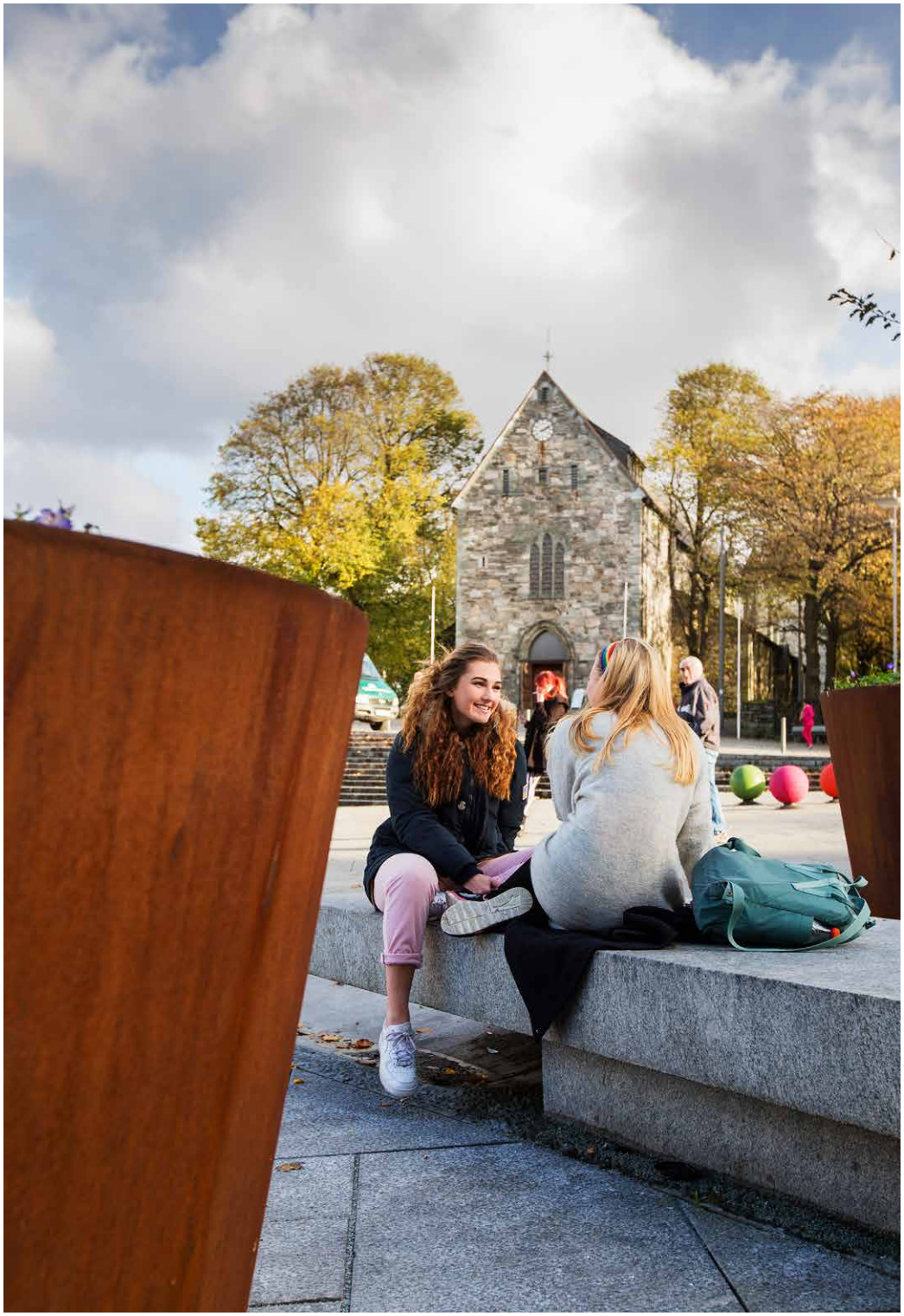
In the Smart City Stavanger, technology will be part of the solution – whether new technology is used or existing technology is further developed.

Data collected in connection with smart city solutions will be handled so that privacy and civil protection are safeguarded in a good way. The responsible organisation – the natural owner of the data, or in case of doubt, the municipality or other public body – shall ensure that such data is not compromised or misused, and that the data is accurate and up to date.

To summarise, technology in a smart city context is a tool for creating economic, social and environmental improvements.

he smart city work may involve different forms of technology, such as:

+ Information and communication technology
+ Nanotechnology
+ The Internet of Things
+ Big data
+ Open data
+ Materials technology



KEY DRIVERS IN THE SMART CITY WORK: COOPERATION

In a smart city, interaction between local authorities, industry and commerce, organisations, academia and the citizens is a basic premise. Focus on the citizens' needs, and good cooperation across sectors, actors and disciplines provide good conditions for developing new and smarter solutions.

We have good traditions when it comes to good cooperation between industry and public actors in our region. This is one of our advantages as a smart city, which we will build on in the smart city work over the years to come.

Cooperation in the smart city of Stavanger will be characterised by openness and trust between equal parties, and a healthy culture of sharing within the framework of good business and management practices.

The smart city work may involve different forms of interaction:

+ Ad hoc or long term
+ Networks and partnerships
+ Different degrees of formalisation
+ Living Labs

KEY DRIVERS IN THE SMART CITY WORK: CITIZEN INVOLVEMENT

Smart communities require citizens who think and act in smart ways. Without the involvement and commitment of those who reside and work in Stavanger, we would miss valuable, creative contributions to the development of better solutions and services. Involvement can take place either before, in order to increase efficiency and accuracy, along the way, for testing and quality assurance, or afterwards, in order to reveal whether a measure gives the desired effects. In all cases, this type of involvement will create greater confidence, and help strengthen local democracy.

Citizen involvement in the smart city Stavanger may take place either as direct involvement or indirectly, by data collection through observations or measurements. The goal must always be to take the citizens' or users' explicit or latent needs as a starting point, and then develop better-adapted solutions for the individual.

Involvement may include citizens in different roles:

+ Users of services, or their families
+ Groups of citizens or users
+ Persons who reside and/or work in the region

VISION FOR THE SMART CITY STAVANGER

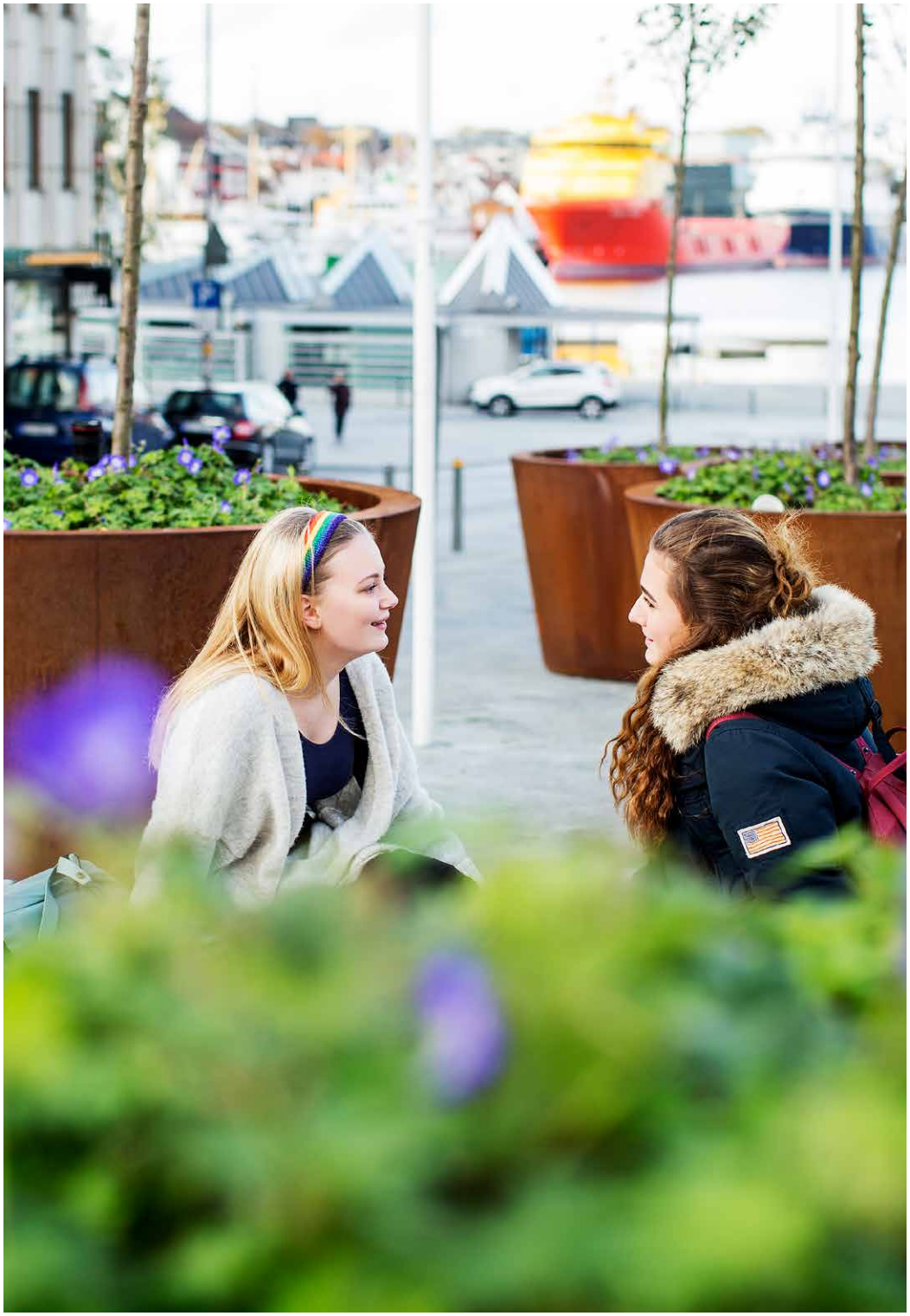
SMARTER TOGETHER

Rationale:

The whole idea of smarter cities and communities is founded on cooperation and interaction across the usual dividing lines in a community. Citizens are invited to participate in innovative projects, and become more involved in decision-making.

Through e.g. sets of data that are made available, and the use of innovative procurement, industry and commerce, local authorities and academia can cooperate in developing solutions that simplify and improve.

It is precisely this positive and important cooperative spirit we wish to emphasize as Stavanger's most important resource in the work with developing new industry and commerce, and giving the city's inhabitants a better and easier everyday life.



GOALS FOR THE SMART CITY STAVANGER

In summary, we want the smart city work in Stavanger to be characterised by:

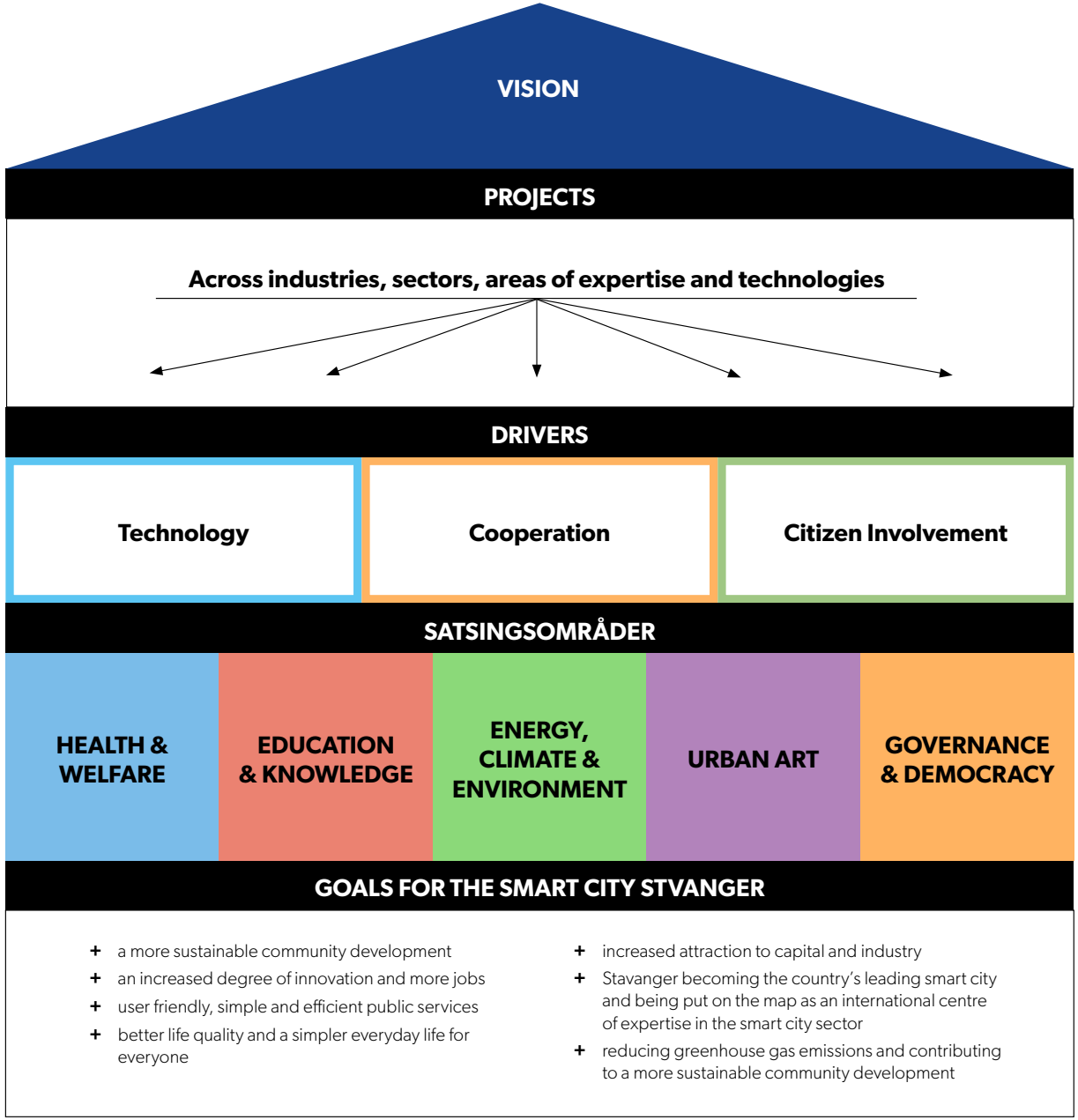
+ Focus on the citizens' needs
+ Openness and transparency
+ Sharing of information and data
+ Equality and mutual adjustment
+ Creativity and involvement
+ Testing and innovation

Use of new technology, cooperation between industry and commerce, public actors and academia, as well as citizen involvement are key drivers in the smart city work.

ILLUSTRATION OF THE SMART CITY STAVANGER

Based on the goals of the Smart City Stavanger, we have selected five priority areas where we believe Stavanger has especially good conditions for developing solutions that benefit the citizens, and form the basis for industrial and commercial development and new jobs.

The priority areas have been selected in the light of input received from industry and commerce, municipal employees, politicians and representatives from research and education.



PREFERRED PRIORITY AREAS

The following five topics have been selected as priority areas in Stavanger's smart city work over the years to come.

1. HEALTH AND WELFARE
2. EDUCATION AND KNOWLEDGE
3. ENERGY, CLIMATE AND ENVIRONMENT
4. URBAN ART
5. GOVERNANCE AND DEMOCRACY

Opportunities for broad cooperation in industrial and commercial development and international commercialisation, climate and environment are given great emphasis in all priority areas.

RATIONALE FOR THE SELECTION OF PRIORITY AREAS: HEALTH AND WELFARE

Stavanger has already made good progress with smart solutions in health and welfare. Selecting this as a priority area means that we build on the work of Norwegian Smart Care Cluster and Pumps & Pipes, among others, and of an emerging supplier industry here in the region, focusing on health and welfare technology. We can also regard the addition of a new hospital at Ullandhaug as an exciting smart city project with good opportunities for industrial and commercial development and innovation.

The demographic development shows that the proportion of elderly will rise significantly over the years to come. To face this development, Stavanger must, among other things, develop and apply technology to develop new solutions that attend to the citizens' needs in a resource efficient manner. We must use the momentum already created, and achieve good projects with cross-sectoral cooperation between industry and commerce, the public sector and academia.

1. HEALTH AND WELFARE

Main direction of the smart city development:

Stavanger will develop technology and services that promote social harmonisation, and contribute to as many as possible having an active life and managing on their own in the best possible way. Focusing on the role of technology.

This will make Stavanger a Nordic leader in management of everyday life and welfare solutions.

Important choices of route in the smart city work:

+ Activating citizens using prevention programs, where technology is included as a key component.
+ Drawing attention to the role of technology in the entire life cycle, from prevention to self-help solutions in the user's own home, and to effective treatment in hospitals/institutions.
+ Seeking to develop solutions that can enable users and their families to take greater responsibility for their own treatment and health.
+ Being a pioneer region in the interface between primary and secondary health services.
+ Creating a showcase for technology application that attracts customers as well as suppliers and collaborating partners.
+ Attracting national and international actors to the region in a goal-oriented way, and interconnecting them in a market-based and efficient ecosystem.
+ Calling for cooperation on the new hospital at Ullandhaug, in order to establish a centre in technology and expertise in 'smart healthcare', cooperating with educational institutions, research and innovation communities as well as a competent supplier industry.

RATIONALE FOR THE SELECTION OF PRIORITY AREAS: EDUCATION AND KNOWLEDGE

Knowledge and education are key building blocks in the efforts to build smarter cities and communities. If we are to succeed in transforming creativity and good ideas into specific innovations, we need curiosity for new knowledge and a variety of skills.

Stavanger's desired position as a resource centre within the smart city sector requires commitment here. Stavanger has the opportunity to put the region on the map as a smart city, since knowledge and education are not priority commitment sectors to a sufficient degree in other smart cities internationally.

Persons with an understanding of technology and ICT expertise will become a very important competitive factor in the years to come, and we want to look at how we throughout the education process, from kindergarten to university, can promote knowledge and use of technology. In addition, the desire for expertise transfer and continuing professional development of the existing knowledge capital here in the region is an important point for Stavanger.

2. EDUCATION & KNOWLEDGE

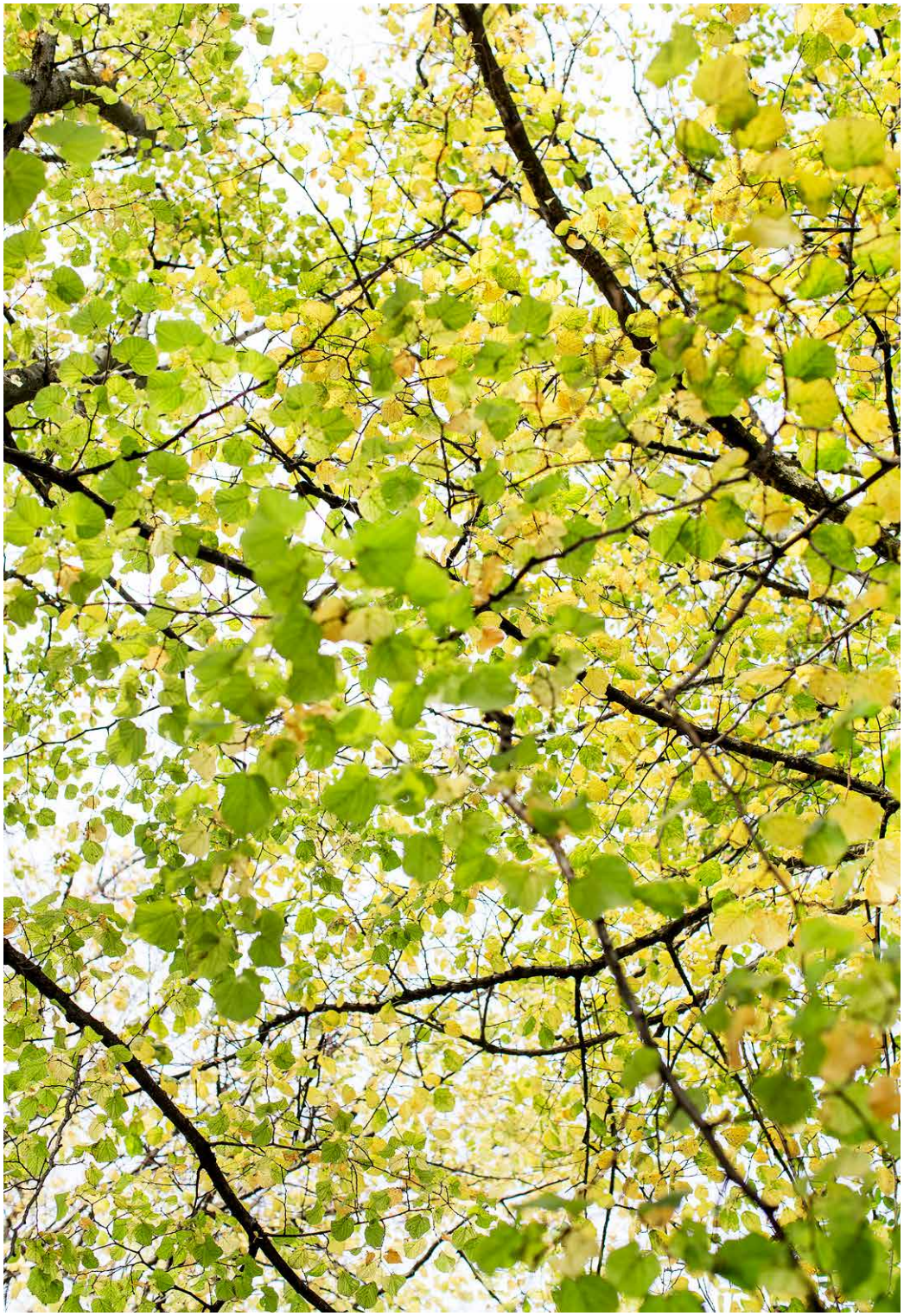
Main direction of the smart city development:

Stavanger will invest in education and knowledge development throughout the education process, through research and in industry and commerce. We will make use of modern teaching methods and technology that stimulate curiosity, desire to learn and creativity.

This will create a competent and diverse workforce for the future, and strengthen Stavanger's innovation and competitive strength.

Viktige veivalg i smartby-arbeidet:

+ Developing the social skills of children and adolescents through focussing on the ability to interact, user participation and creativity in all phases of the education process.
+ Increasing cooperation between schools, cultural institutions, industry and commerce.
+ Increasing parents' involvement as a resource in the education process.
+ Working to increase the capacity and quality of education.
+ and continuing professional development of employees in education and educational institutions in the topics of learning technology and digital pedagogy.
+ Taking initiatives to increase the propagation of ICT tools and technological aids in conjunction with teaching – from kindergarten to the university level.
+ Involving and activating pupils and students to a larger extent in education, by using new digital technologies and tools for interaction and learning.
+ Working to develop skills in coding and programming, starting from elementary school age.
+ Collaborating with industry and commerce in establishing better service provisions in educational up-grading courses that help facilitate digital skills in the enterprises.
+ Developing and applying technological solutions that help increase the citizens' digital skills throughout life.

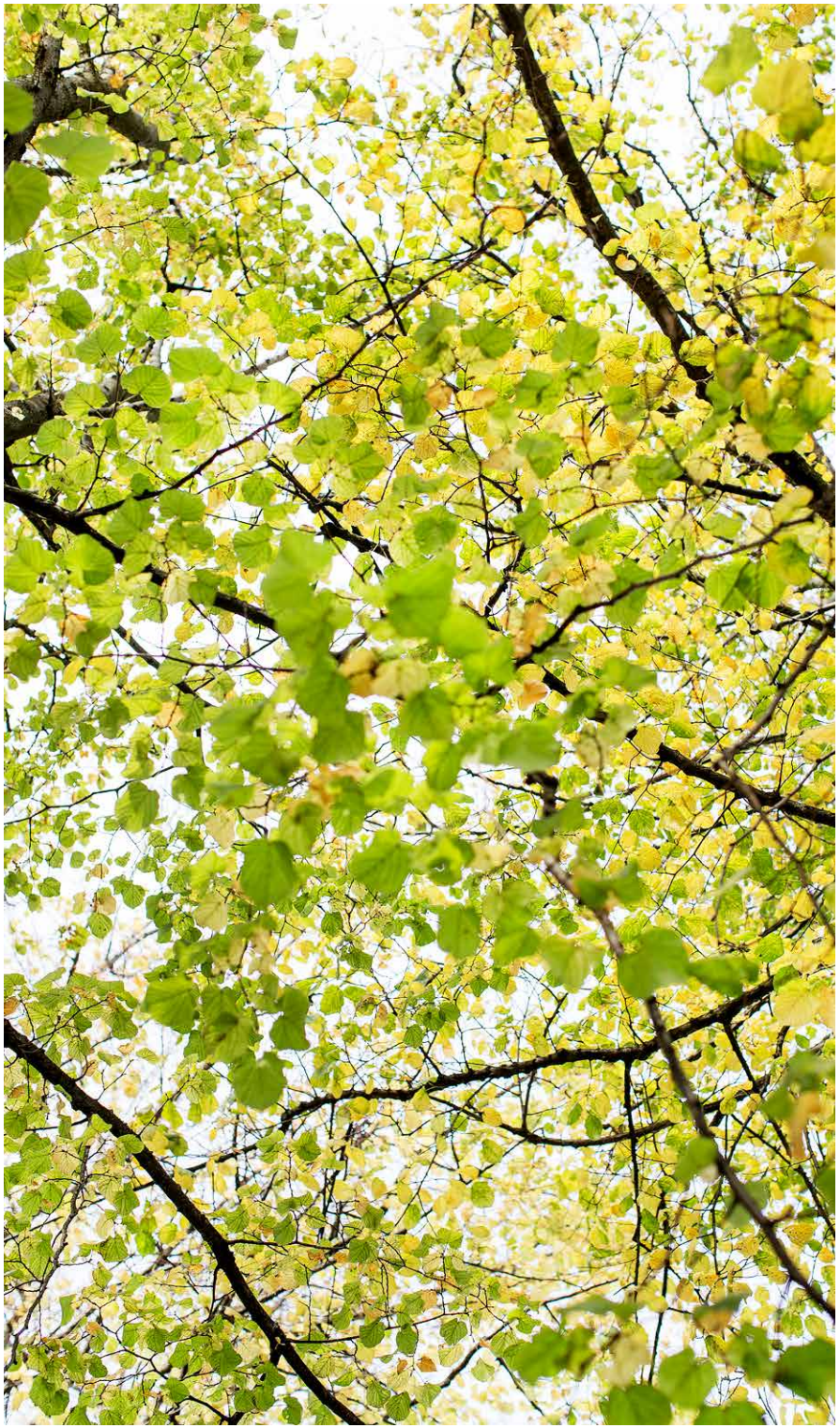


RATIONALE FOR THE SELECTION OF PRIORITY AREAS: ENERGY, CLIMATE AND ENVIRONMENT

Stavanger wants, with its position as an energy capital in Europe, to take an active role in solving the planet's energy, climate and environmental challenges.

We can build on our existing expertise in the energy sector (hydropower, oil, gas), and draw on the region's strong technology communities.

Focusing on energy, climate and environment in a smart city context will give positive effects for industrial and commercial development in this region, and in a macro perspective, provide better answers regarding how to solve the global energy, climate and environmental challenges.



3. ENERGY, CLIMATE AND ENVIRONMENT

Main direction of the smart city development:

Stavanger will develop and apply technological solutions that provide real contributions to the objectives adopted for emissions cuts. The solutions will also make it easier for citizens, industry and commerce to make choices that contribute to a climate neutral city.

In this way, Stavanger will strengthen its position as an energy capital.

Important choices of route in the smart city work:

+ Developing and applying new technology solutions that reduce local emissions of greenhouse gases.
+ Developing and applying new technology solutions that make it easy for citizens to make climate-friendly choices in their daily lives.
+ Developing the region's expertise in energy production, in order to achieve a strong escalation of green energy, while also turning the extraction of non-renewable energy resources in Norway into the most environmentally friendly in Europe.
+ Working to establish new forms of and arenas for cooperation, which make use of the energy industry's expertise base, so that it will be of benefit to new areas of society that are important for climate, energy and environment.
+ Exploring and accelerating new solutions that can ensure a particularly high level of ambition for climate and energy in all major urban development projects.
+ Rapidly applying new and eco-friendly technologies in the transport of goods and people – both on land and at sea.
+ Actively exploring the possibilities of adopting new driverless transport systems.

Kilde: Inspirationfeed

RATIONALE FOR THE SELECTION OF PRIORITY AREAS: URBAN ART

Urban art may be defined in several ways. It has inherent references to art and technology, and to art in public spaces. It is designed in urban spaces, as well as in other physical venues, creating new digital meeting places that are used in communication between citizens, the public and other social actors. The technological dimension of this field of art creates new opportunities for dialogue and participation, and can therefore play an important role in the involvement perspective that is one of the drivers in the development of the smart city.

Urban art has its local roots through events and initiatives such as Nuart, with its strong presence in the urban space, i/o/lab Centre for Future Art, which is an important actor as regards innovative hybrid technology and focus on research, Screen City and Art Republic Media, through an increasing number of experimental performers, project spaces and galleries. The art institutions likewise play a key role as constant markers with responsibility for mediation of art.

Stavanger has an exciting basis for developing the field of art within the smart city field. Urban art can give us a unique profile, and contribute to Stavanger standing out from other smart city initiatives, while it generally means new opportunities to take a position in the field of contemporary art in public spaces.

Kilde: Inspirationfeed

4. URBAN ART

Main direction of the smart city development:

Stavanger will be at the forefront of development of urban art as part of the infrastructure and the public space, where digital technology is included as part of the artistic expression.

Important choices of route in the smart city work:

+ Contributing to innovation at the intersection of art, design, architecture, technology and social life.
+ Establishing infrastructures that show artwork in urban environments, and create urban 'galleries'.
+ Making use of new communication channels and technologies beyond the traditional, which can convey art and culture in order to reach the citizens directly.
+ Creating a clear profile that can be specialised, and arouse enthusiasm and involvement among citizens.
+ Strengthening the foundation for children to develop an interest in art through greater focus on creativity, art and technology in schools.

ATIONALE FOR THE SELECTION OF PRIORITY AREAS: GOVERNANCE AND DEMOCRACY

In the Smart City Stavanger, openness and trust between equal parties, and a healthy culture of sharing within the framework of good business and management practices will be important building blocks.

We already have a tradition of good cooperation between the public and private sectors in the region, which we will build on. The public has an important role as facilitator by encouraging participation and co-creation, in order to give the citizens of Stavanger new and more efficient services.

With the emergence of new technological platforms, the citizens will also expect to be listened to and involved in different types of decision-making to a larger extent. In a smart city context, this is about a revitalisation of democracy and government.

5. GOVERNANCE AND DEMOCRACY

Main direction of the smart city development:

Stavanger will develop technological solutions, and employ the opportunities of digitisation, in order to improve and simplify public services, facilitate interaction across sectors, and achieve greater participation in the community.

In this way, the smart city will give citizens an easier everyday life, and strengthen democracy.

Viktige veivalg i smartby-arbeidet:

+ Stavanger will develop technological solutions, and apply open and big data from across the region to simplify the everyday lives of citizens, and provide the basis for new industrial and commercial development.
+ Developing and applying new models of cooperation-based innovation and interaction across sectors.
+ Giving the citizens greater opportunities for self-service.
+ Making use of citizen dialogue and involvement, in order to include and involve as many as possible of Stavanger's citizens.
+ Establishing a living lab for co-creation and testing of smart city projects.

COMMUNICATION

In order to achieve the objectives of the roadmap, broad involvement is required in the municipality, industry and commerce, organisations, academia as well as the general public. Therefore, broad communication is also required, so that as many as possible understand the aspirations of Stavanger as a smart city – and how they can help develop good solutions. Actors in the region must also strengthen their efforts at influencing the community and lobbying the national authorities.

APPENDIX

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– Ongoing smart city projects in Stavanger, externally managed **30**

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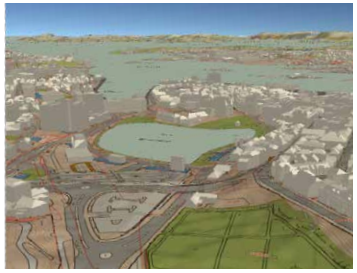
– Governance and Democracy **37**

SMART CITY PROJECTS IN STAVANGER

Ongoing smart city projects
IN STAVANGER MUNICIPALITY

Triangulum

Triangulum is Norway's only lighthouse project in the EU's commitment to smart cities and communities (Smart Cities and Communities in the Horizon 2020 programme). It is a five-year project (2015-2020), and a joint project with the cities of Stavanger, Eindhoven and Manchester and their collaborators (a total of 22 partners). Triangulum is a triple helix cooperation between public actors (Stavanger Municipality and Rogaland County Municipality), industry and commerce (Lyse AS and Greater Stavanger) and academia (University of Stavanger). This innovation and demonstration project will integrate energy, mobility and ICT in new solutions that will help tackle societal challenges, as well as contribute to increased sustainability, through a more eco-friendly urban development, reduction of CO2, greener energy and increased energy efficiency improvement.



GeoViz – pilot project

+ Public-private pilot project for the development of a 3D viewer for urban development plans
+ Especially adapted to be connected to VR technology

Digitisation of parking in Stavanger Municipality

+ All types of parking, i.e. parking lots, parking garages, residential area parking, as well as enforcement, will be digitised and based on the vehicle's registration number.

Automatic measurement of the ratio of fullness in buried waste containers

+ Notification is given automatically through the in-vehicle computer to the driver following a scheduled route according to the registered emptying requirements
+ Cooperation throughout northern Jæren, from Rennesøy in the north to Hå in the south
+ Transportation efficiency

Notification of errors (VOF)

+ A digital system for messages from citizens within technical areas
+ Citizens define their needs

KMD-prosjekt - Cityplanner

+ Public-private pilot project for a new platform for citizen dialogue concerning urban development plans in 3D
+ Facilitates understanding and lowers the threshold for input to urban development plans
+ Cooperation with Norkart, the municipalities of Stavanger and Sandnes

Open data

+ Stavanger Municipality wants to make data open to the citizens, industry and commerce
+ The project Åpne Data will promote citizen involvement, as well as industrial and commercial development

Smart City room at the library (Sølvberget)

+ A meeting place for sharing knowledge, and for involvement in what a smart city is
+ Dialogue with relevant external collaborating partners

Sensor controlled weed control

+ Fleet controlled and sensor controlled
+ Definition of fleet control – records where resources (staff, equipment, vehicles and goods) are located at any time, so that they may be remote controlled (and tracked) in an appropriate manner – for instance by new jobs being assigned on the basis of geographical proximity to the job

Ongoing smart city projects in Stavanger, **EXTERNALLY MANAGED:**

Norwegian Smart Care Cluster (NSCC)

NSCC is a cluster project with approximately one hundred enterprises and public actors as participants. The cluster obtained Arena status in 2014. The cluster has its origins in the Stavanger region, but is open to members from across the country and internationally. The cluster's objective is to contribute to innovation, development and commercialisation of new solutions within welfare technology. The ambition is for the cluster to be a significant actor in welfare technological solutions in Europe by 2020.

Arena Smart Cities and Communities

Approximately 50 different actors in the Stavanger region are working together to become an industrial cluster in Innovation Norway's cluster program. An application will be sent by the cluster in spring 2017. The objective is to develop a Smart City cluster that provides products and services in an international market, and contributes to a restructuring of the private and public sectors. The aim is to establish new cooperative consortiums, involve small and large Smart City actors in co-creation, so that the cluster's home region can become a useful testing ground for wealth creation and innovation.

Lyse

Lyse is owned by 16 municipalities in southern Rogaland. The company has developed a concept of smart electricity meters that also makes it possible to install other solutions for smart homes and welfare technology. The initiative is unified under the brand Smartly. The group has built fibre networks to large parts of the region. Lyse also participates actively in other smart city projects, such as Triangulum and Smart City Ålgård.

Nordic Edge

Several actors in the Stavanger region have joined forces to establish the company Nordic Edge. The company is behind Nordic Edge Expo – an international conference and an exhibition with smart technology as the main topic. The conference was organised for the first time in 2015. In 2016, the conference gathered 2,100 participants and 100 exhibitors. The event is the largest of its kind in the Nordic region and gathers politicians, technologists, entrepreneurs, investors, public employees, journalists, professors, students and others who are interested in good solutions for the future. The company also participates in other smart city projects in the region.

Ongoing smart city projects in Stavanger, **EXTERNALLY MANAGED:**

Norway Pumps & Pipes
Norwegian Pumps & Pipes is an initiative to create a meeting place as a basis for the transfer of expertise between the oil sector and the health sector. Norway Pumps & Pipes aims to develop a professional cooperation between two different sectors: health/medical technology and petroleum technology.

EnablerHub
The companies Delfi Data, Petrolink and Roxel are behind EnablerHub. With experience and knowledge from different industries, the companies have found that they can meet a market demand by establishing a collaboration. The idea has been to unite forces and create a strong and forward-looking smart city environment. EnablerHub will do this by delivering complete solutions to the public and private markets. The company wishes to be a hub in order to deliver integrated solutions in the building of a smarter city.

X2 Labs
X2 Innovation Center is behind an ambitious start-up project called X2 Labs – a startup factory. This is an accelerator program where entrepreneurs, investors and enterprises are invited to collaborate on the creation of new enterprises. One of the main topics of this initiative is Smart City.

IRIS
The Research Institute IRIS has initiated efforts to apply for funding for several planned smart city research projects, among others from the Research Council of Norway's program Research and Innovation for the Cities of the Future (BYFORSK).

HOME-WORK-HOME
The mobility project HjemJobbHjem is a collaboration between Kolumbus, Bysykkelen, the Norwegian Public Roads Administration, the municipalities of Stavanger, Sandnes, Sola and Rogaland County Council. The goal is that all employees in the HjemJobbHjem enterprises will drive 20 percent less to and from work. HjemJobbHjem will inspire and facilitate people leaving their cars at home.

PROJECT IDEAS

On the following pages, we present project proposals that have emerged during the process, both in the ideas workshops and through input from different resource persons in Stavanger Municipality, industry and commerce, as well as from the research sector.

The projects are listed in random order under each of the priority areas. They are not quality controlled, and their admissibility has not been discussed. Nevertheless, the project ideas should be regarded as a good expression of the creativity and willingness to create from which the Smart City Stavanger project as a whole has benefited – with constructive contributions from a wide range of environments. This bodes well for a continued broad involvement in the efforts to fulfil the aspirations outlined in this smart city roadmap.

1. HEALTH AND WELFARE

Projects

a. Establish a break-even analysis that indicates the current status, and will be a basis for subsequent effect measurements

b. Implement accelerator programs in the health and welfare area, with special focus on prevention and self-service solutions

c. Analysis of cash flows within the health sector; where does the money go, and how can we simplify and rationalise?

d. Initiate research projects that create greater understanding of, and contribute to established enterprises turning towards welfare technology

e. Initiate projects for testing new technology in personnel training or to assist in surgery and other health related tasks

f. Regard solutions for universal design in which technology is used to help people, for instance in orienting themselves safer and easier in an urban environment

g. Through Norwegian Smart Care Cluster, establish an international test centre and a Living Lab

h. Enter into dialogue with those responsible for the new hospital at Ullandhaug, in order to identify possible projects where new technology, interdisciplinary collaboration and citizen involvement can help Stavanger get 'the world's smartest hospital'

i. Establish a 'Living my whole life' research project that examines how welfare technology can benefit people of all ages

j. Strengthen the provision of everyday rehabilitation by making use of new technology, and involving users in the development of the service

k. Develop self-service solutions for statutory services that are suitable for simplification and automation, such as messaging and the processing of applications

l. Actively contribute to the development of, and be among the first to apply, the Norwegian Directorate of Health's commitment to a digital platform for citizens' health records (One Citizen - One Record)

2. EDUCATION AND KNOWLEDGE

Projects

a. Establish a break-even analysis of the status in the region, and follow this up in order to measure effects

b. Implement accelerator programs focusing on opportunities for industrial and commercial development in digital learning

c. Establish trials with pupil and student centred learning, where the learners to a larger extent shape their own school day, and are involved in their own learning and assessment processes – both socially and academically

d. Ensure that ICT is an integral tool in all educational pathways at all educational institutions

e. Establish e-courses, MOOCs (massive open online courses) and digital learning tools that everyone, citizens as well as industry and commerce, have access to and can help develop

f. Cooperate with industry and commerce in order to encourage innovation at all levels of the education pathway – including in the form of up-grading courses in higher education

g. Implement studies of how actors in the labour market (the county, including the advisory service, the Norwegian Confederation of Trade Unions, the Confederation of Norwegian Enterprise, the Norwegian Labour and Welfare Administration) together can develop educational programs and apprenticeships with a cross-sectoral approach

h. Work to establish Smart City as an educational program at the University of Stavanger, in collaboration with leading educational institutions internationally

i. Establish an annual international EdTech conference in Stavanger, in cooperation with Nordic Edge – thereby attracting exciting expertise, collaboration and innovation partners for the further development of learning to the city

3. CLIMATE AND ENERGY

Projects

a. Establish a break-even analysis of the current status in the region, and follow this up in order to measure effects

b. Implement accelerator programs in the energy field, regarding the possibilities of alternative energy solutions in different areas

c. Establish a coordinated plan for public charging in the region – faster replacement of the car fleet

d. Contribute to the establishment of a testing and training centre for renewable charging infrastructure, storage and CO2 neutral solutions in collaboration with the University of Stavanger and industry – Smart Energy Lab

e. Establish shore power solutions for cruise traffic in the region

f. Establish a pilot in connection with the Bussvei project, based on a fleet of automated vehicles, carrying people and goods on the basis of an immediate demand (no fixed routes)

g. Make use of sensor technology for monitoring traffic, parking, etc., in order to introduce services that help reduce car traffic

h. Introduce sharing services for electric cars and electric bicycles that help reduce car traffic

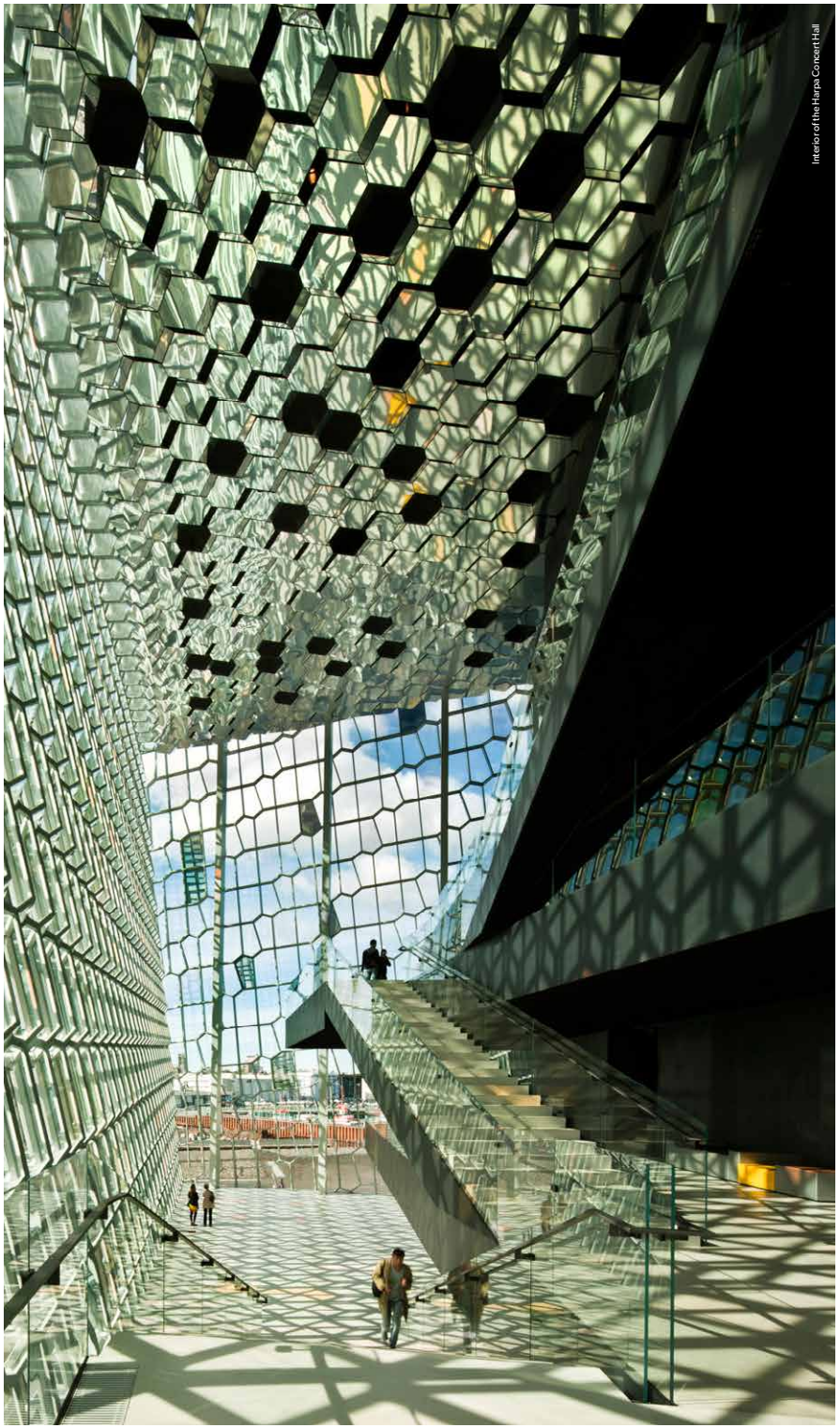
i. Initiate research projects that identify how Stavanger's households can use technology to convert their energy consumption in a more eco-friendly direction

j. Enter into dialogue with the major actors in real estate to establish larger regional projects and urban development projects as smart city projects, where we look at how buildings, indoor environments, outdoor environments as well as infrastructure can be solved with overall measures using smart technology

k. Initiate a project regarding how Stavanger, along with neighbouring municipalities, can develop 'seamless' transport solutions for transport both at sea and on land, where technology is used to achieve efficiency and environmental benefits

l. Develop solutions for better public transport coverage outside of the main routes for public transport ("Last mile")

m. Assess technological solutions that can contribute to more eco-friendly ports


Interior of the Harpa Concert Hall

4. URBAN ART

Projects

a. Establish a break-even analysis of the current status in the region, and follow this up in order to measure effects

b. Implement accelerator programs in urban art, regarding the possibilities for turning technologically based/ inspired art in the urban space into a strategic initiative in Stavanger

c. Initiate projects developing urban sound installations that involve citizens in social interaction

d. Initiate projects developing urban light installations that will illuminate the city's darker areas

e. Projects that invite artists to creative memory management and future visions for and about Stavanger (identity)

f. Smart Art project at Nordic Edge 2017

g. Organise regular debates where urban art / smart art can contribute to a more vibrant and diverse city

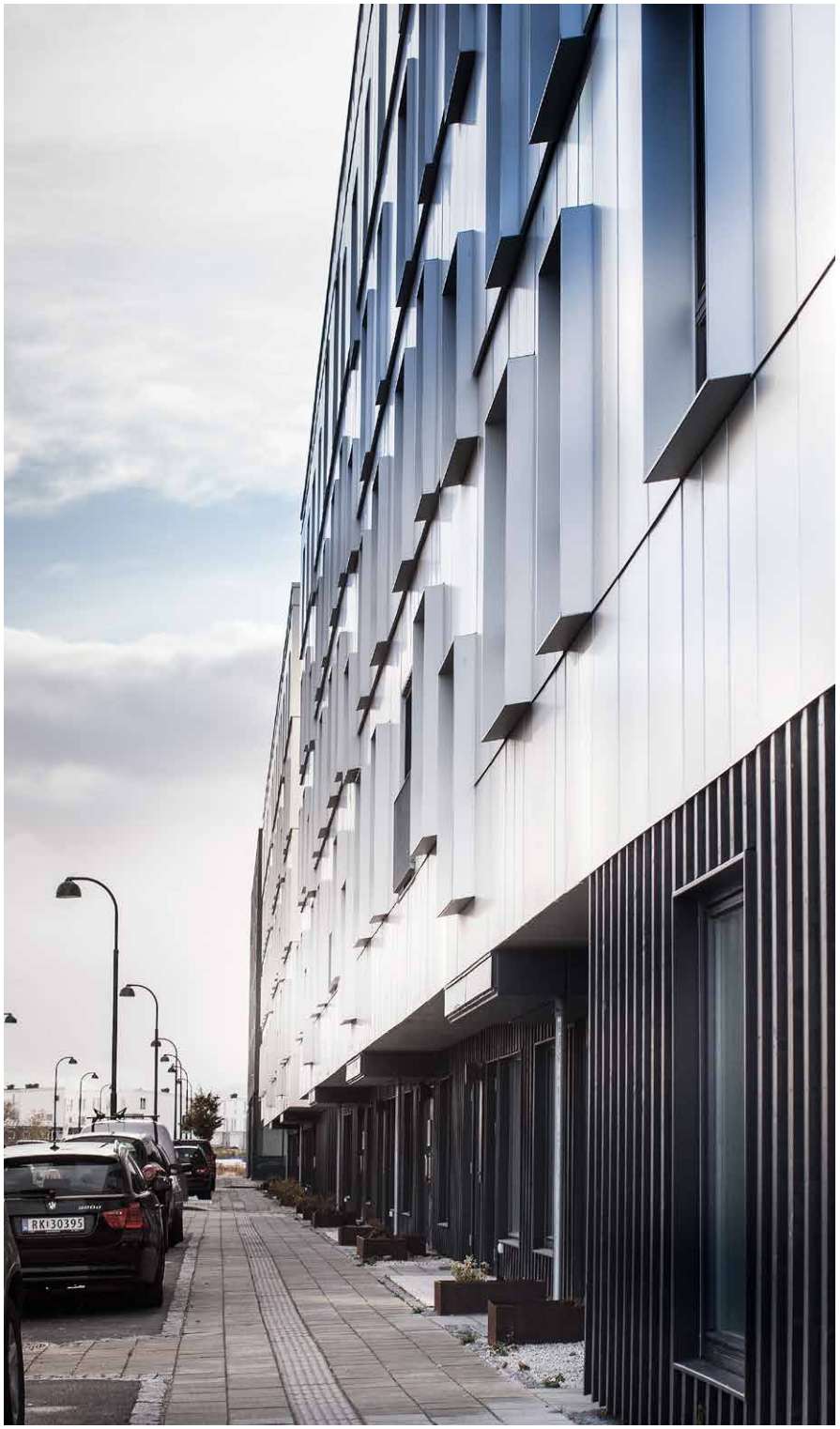
h. Enter into dialogue with different actors in industry and commerce about how smart art can contribute to improving the competitiveness of enterprises by being integrated as part of their products/service provisions.

i. Cooperate with representatives of the street art community about how Stavanger can become an even clearer pioneer in 'public art programmes', which also integrate technology components in the artistic expressions

j. Create spaces for artists creating, using and critically exploring new software and technology in the face of today's urban challenges

k. Base the development of urban art in the local ecosystem through actors that work with futuristic art and new technologies, experimental performers and institutions

l. Involve the citizens so that they can become co-producers of urban art



5. GOVERNANCE AND DEMOCRACY

Projects

a. Establish a break-even analysis of the current status in the region, and follow this up in order to measure effects

b. Inquire into the citizens' attitudes towards new solutions, their desire for real participation, and which tools can be used to increase the degree of citizen involvement

c. Measure/survey public inquiries, in order to automate these demands

d. Make use of 'social listening' as a tool to manage the city in a more intelligent way through monitoring both structured and unstructured (non-sensitive) data about the citizens' behaviour and attitudes

e. 'Digital dashboards' that show the citizens what is going on and exists in their neighbourhood; municipal projects, nature, statistics, history, school overview, building projects, etc.

f. Measures to increase digital skills among the elderly

g. Establish a Living Lab in Stavanger with the objective of involving the citizens in the development of new and improved services, and work as a testing ground for pilot projects

h. Implement pilot projects where specific societal challenges are addressed in accelerator programs and developer conferences with participants from the local authorities, industry and commerce, academia and citizens

i. Assess whether an open 'problem portal', which would invite citizens to provide input into innovative solutions to Stavanger's challenges, might be a good idea

j. Facilitate digitisation of all political meetings, and regard solutions for increased citizen involvement in political processes

k. Use the opportunities inherent in policies for innovative procurement as a tool to foster innovation at the intersection of industry and commerce and the local authorities