



AMSTERDAM
INSTITUTE FOR
ADVANCED
METROPOLITAN
SOLUTIONS

Annual Report 2016



Annual Report

2016

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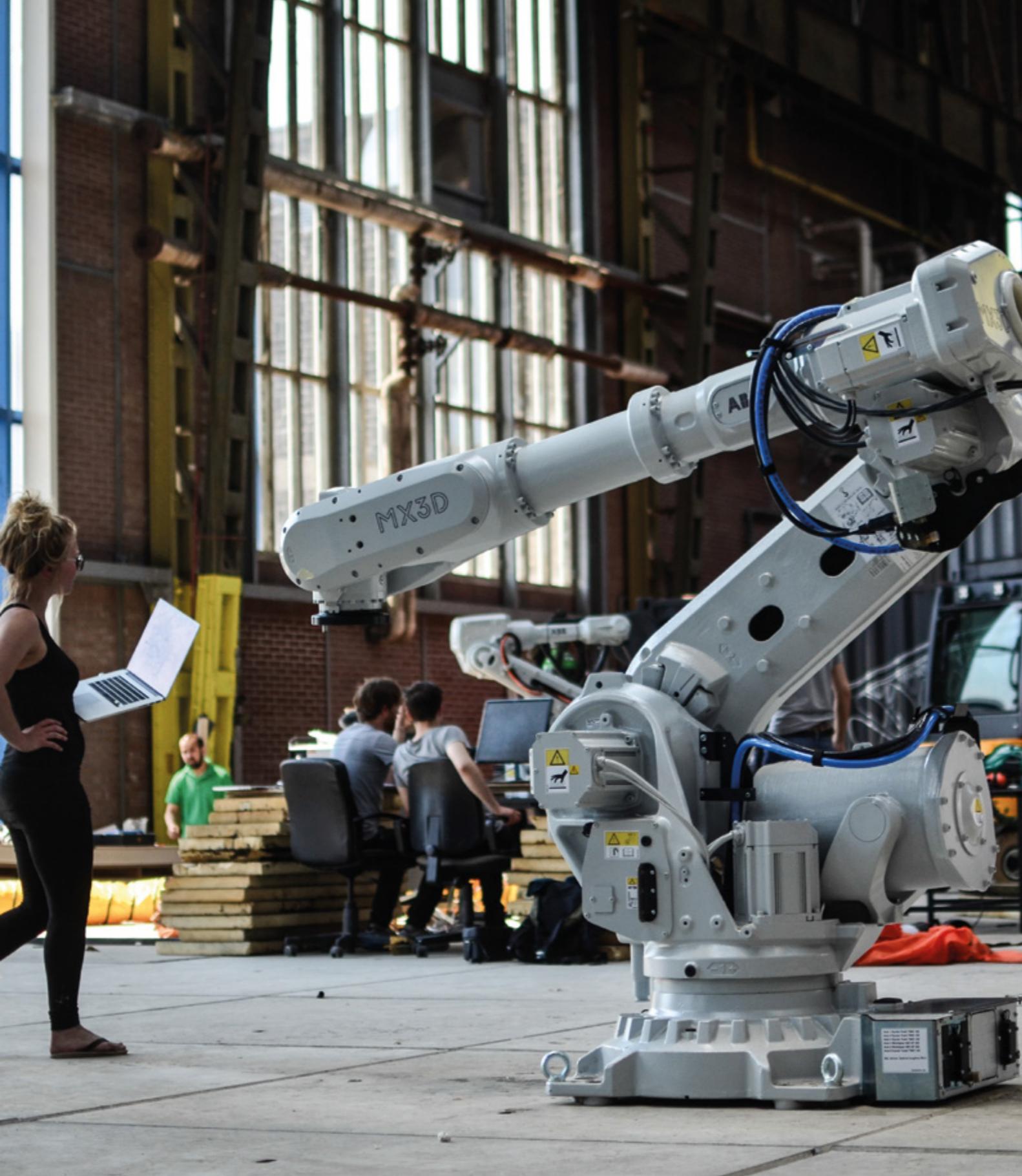
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Introduction

The world is urbanizing at a tremendous rate. Cities increasingly face challenges of sustainability and quality of life, challenges that put our resources, food security, mobility and logistics, water and waste management, health and wellbeing at risk.

Cities need metropolitan solutions, made possible by revolutions in new technologies, research and design methods. But no stakeholder can do this alone; finding metropolitan solutions requires cooperation between knowledge institutes, companies, cities and citizens.

AMS Institute is an internationally leading institute where talent is educated and engineers, designers, and both natural and social scientists jointly develop and valorize integrated metropolitan solutions.

After winning an international tender written out by the City of Amsterdam, AMS Institute was founded in 2014 by Delft University of Technology (TU Delft), Wageningen University & Research (WUR) and Massachusetts Institute of Technology (MIT) in close collaboration with TNO, IBM, Cisco, Shell, Accenture, Alliander, ESA, Waternet, Port of Amsterdam, Amsterdam Smart City, KPN and the City of Boston.

Our mission is to develop a deep understanding of the city – sense the city – to design solutions for its challenges, and integrate these into the city of Amsterdam. Our research evolves around applied technology in themes such as water, energy, waste, food, data and mobility, and the integration of these themes for a prosperous society.

What makes AMS Institute unique is that we valorize our research in practice, using the city of Amsterdam as a living lab: a valuable context for experiments that helps develop and test advanced solutions for challenges in urbanized metropolitan areas around the globe.

The institute's three pillars:

Education: an educational program with innovative Massive Open Online Courses (MOOCs), summer schools, professional training and the upcoming Master Metropolitan Analysis, Design & Engineering (MSc MADE) that targets and attracts top students from all over the world.

Research & Valorization: a dedicated portfolio of projects and programs, defined and executed by an interdisciplinary consortia of knowledge institutes and private companies in cooperation with the City of Amsterdam and its citizen(platform)s.

Value Platform: a platform for storing and combining knowledge, networks and infrastructures (e.g. living labs and data collection), to enable education, research and valorization activities.

Key Figures 2016

Research

Projects awarded



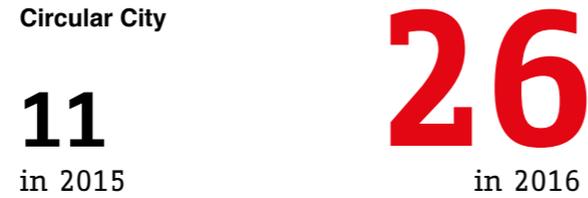
Total value of awarded projects



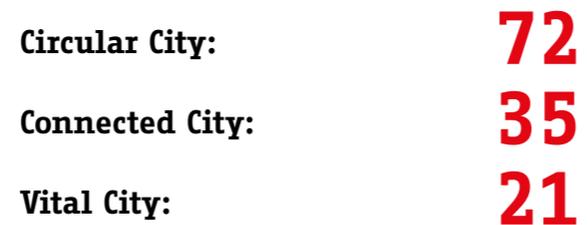
Average turnover projects



Number of running projects

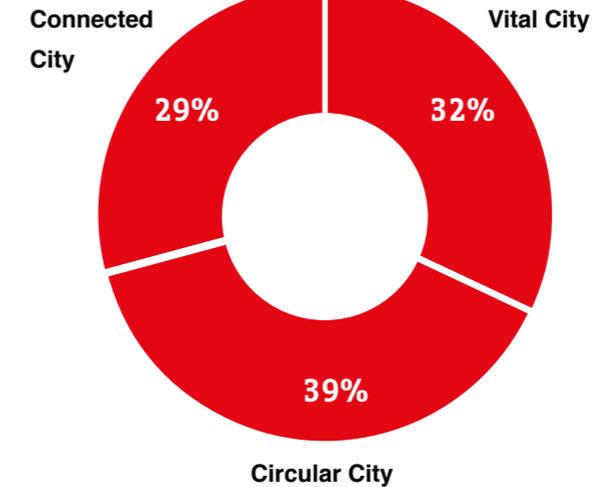


Number of partners we work with

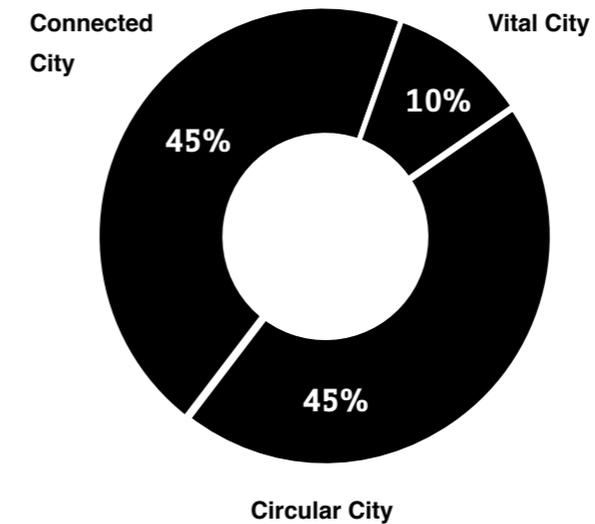


Overview research portfolio

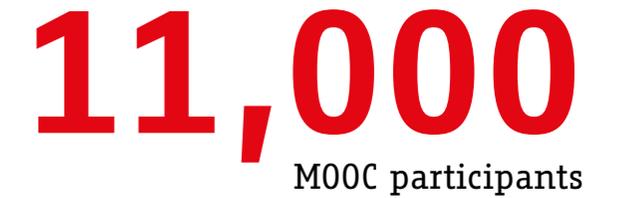
(in #projects)



% of the budget per research theme



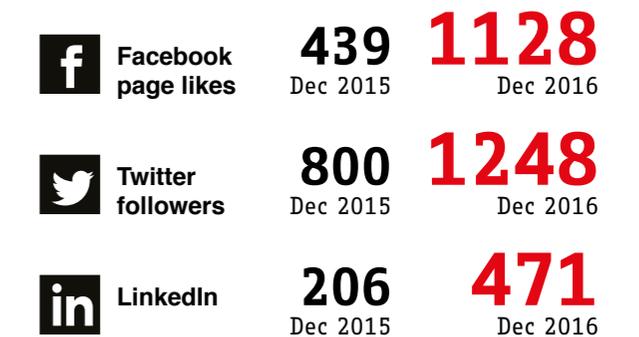
Education



Press

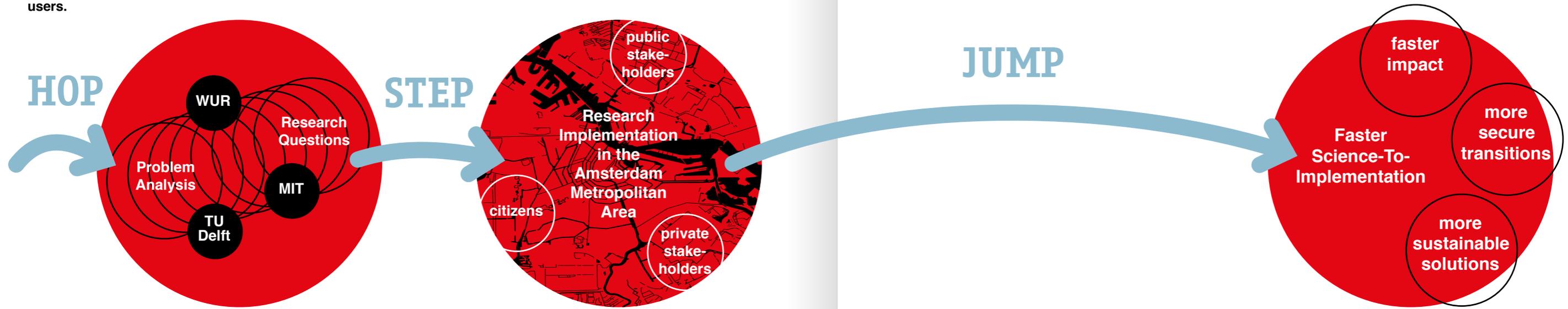


Social media



How we work

AMS Institute is positioned at a unique crossroad between fundamental sciences and the society-wide application of truly innovative solutions for metropolitan challenges. Bringing together the brightest minds in the field, our innovations have a state of the art research core and are tested and demonstrated in pilot projects and experiments throughout the city of Amsterdam. Moreover, all innovations are developed and tested together with local, national and international private and public partners, citizens and its future users.



Hop: First, together with our key stakeholders and AMS partners, we make a problem analysis of specified societal challenges in the metropolitan context and then formulate research questions. At this stage the fundamental science, including modeling and laboratory research within conditioned environments, mostly takes place at the three founding universities (TUD, WUR and MIT), assuring creation of cutting edge science leading to solutions which aim for true paradigm shifts.

We then move on to a new and truly innovative part of the research process: the outcomes of the first phase of the research activities are implemented and validated in real, living environments inside the Amsterdam Metropolitan Area (AMA) within partially conditioned settings, while involving all public and private key stakeholders. This unique in-between **Step** forms the basis of the AMS Institute's focus: assuring potentially breathtaking solutions which are better tuned to the well-known 'double complexity' of real life and urban environments.

We can then take a longer **Jump**: faster science-to-implementation trajectories which achieve a higher impact faster, with more secured and successful transitions to more sustainable, just and resilient futures in this increasingly urbanizing and challenged world.



Directors' Report

We are delighted to report a year of excellent results on our key objectives. After only two years of operations, we are making significant progress in creating a positive impact on the life of citizens through innovative metropolitan solutions.

The average turnover of our research projects increased from €3.4M in 2015 to €5.4M in 2016. We launched our first Massive Open Online Course (MOOC) which truly lived up to its name, attracting almost 11,000 people from 165 countries. And we established our first formal international partnership agreements in Paris with businesses and scientific and educational institutes.

In many ways 2016 was a year of 'firsts' for the institute. In this second year of operation, we have seen the first series of project outcomes, leading to the first scientific publications and a number of solutions. It was a great pleasure to congratulate our first PhD candidate on defending his thesis and to attend the launch of AMS Institute's first spin-out company here in Amsterdam.

If we had to single out one project that truly sets the bar for cutting-edge research in 2016 it would be Roboat. Accompanied by an extraordinary amount of attention from media, academics and businesses alike, this five-year AMS program with MIT as research lead, sets out to design and deploy the world's first fleet of autonomous boats on Amsterdam's canals. Investigating how urban waterways can contribute to the city's functionality and quality of life, this €25M

research project will be exemplary for our endeavor to transform great science into useful technology and business opportunities, by combining top-notch research from multiple fields, real-life testing and collaborations between students, businesses, citizens and (semi-)public parties.

Research & Valorization: expanding our scope and impact

In 2016 AMS Institute continued to accelerate and build up its portfolio of research projects, one of the primary pillars of our organization. We conducted our research with the involvement of a growing number of public and private partners as well as with local and citizens' initiatives in Amsterdam.

In 2016 we intensified our focus on the selection of research projects, building them around three main themes at the core of urbanization challenges: *Circular City*, *Vital City*, *Connected City*, themes we'll elaborate on in further chapters.

Most of the research projects have a duration of one up to four years. Our *Stimulus Projects* however, have a shorter duration. This sub-program consists of a series of small, innovative projects with tangible outcomes for day-by-day urban challenges. The

Extending our cross-border collaboration

Significant international attention and enthusiasm for the topics we work on, and eagerness to learn more about them, underlines the universal relevance of metropolitan challenges and the need to address them. This further strengthens our conviction that many metropolitan problems – for example climate change – can only be solved from an international perspective. We are extremely pleased therefore, to see our international strategy bearing fruit.

In addition to strengthening our ties with MIT and the city of Boston, we're setting out to build up a strong international network of partners with whom we can jointly discuss, research and implement solutions in metropolitan areas. To this end we actively explored international collaborations with parties in Helsinki, London, Stockholm, Seoul, Melbourne, Buenos Aires, Sao Paulo and Paris, among others.

Our main focus for cross-border collaboration in 2016 was Paris. We successfully established multiple collaborations and formalized partnerships with both academic (University of Paris-Est) and private (SUEZ, La Fabrique de Cité, NUMA) institutes during the Dutch trade mission to Paris in March 2016. We also had the pleasure of exchanging thoughts and experiences with a variety of distinguished international guests at our institute this year, including MaaS Global's CEO Sampo Hietanen, MIT's Chancellor Eric Grimson and the (now former) U.S.

Transportation Secretary Anthony Foxx, accompanied by the Mayors of Texas, Portland and South Bend.

Principal Investigators (re)appointed

One of the driving forces in realizing our international ambitions, are our Principal Investigators (PIs). Assisted by our Research Fellows (RFs) this excellent set of professors from MIT, TU Delft and Wageningen University & Research play a leading role in shaping our research, education and valorization portfolio. They are also our ambassadors around the globe, taking care of international contacts in their fields of expertise. In September the term of our first 21 PIs came to an end. After a strict procedure conducted by the three universities, a group of 34 professors were (re)appointed as AMS PIs for the next two years.

First members appointed to AMS Scientific Advisory Committee

To secure and safeguard the quality of the institute, the first four members of our Scientific Advisory Committee were appointed in 2016. The Scientific Advisory Committee consists of high-level representatives from academia and practice, and will ensure a continuous, critical evaluation of the institute's research program, PIs and RFs. In 2017 additional members will be appointed.

Raising our profile

AMS Institute is a young institute that is still working on improving its positioning and branding. In 2016 we set out to further develop and strengthen the institute's





brand strategy and corporate identity, focusing in particular on creating more awareness for the institute and its brand reputation, and expanding and engaging with our (online) community. With a massive total PR value of almost €8M in 2016, we are proud to report that AMS Institute was leading the conversation on our most relevant topics on social media and in national and international established media.

Looking to the future with confidence

We are looking forward to welcoming the first group of master students to the institute for our MSc MADE in 2017 and to continue the success of our summer schools and MOOCs. Plans are in place to extend the research portfolio with more large-scale projects (and an expected turnover for 2017 of over €10M) expand our AMS Data Hub to create even more value from shared data for researchers, students, citizens, governmental parties and companies in metropolitan areas around the world. We are eager to further strengthen our ties with business, scientific, educational and societal partners to keep on excelling in leading projects and programs with practical applications that benefit the city as a whole.

Words of gratitude

It was a busy and highly rewarding year, full of dynamics, progress and initiatives which will both stimulate and guarantee continuity in years to come. As ever, we are grateful for the continuous support we receive from the City of Amsterdam, our core academic partners Delft University of

Technology, Wageningen University & Research and Massachusetts Institute of Technology, as well as from our steadily growing group of (semi-)public and private partners around the world. However, the acceleration we experienced in 2016 would not have been possible without our unfailingly enthusiastic, bright, and dedicated team of people, who have given us an even greater confidence in a prosperous future for AMS Institute, and thus for future cities.

Arjan van Timmeren, *Scientific Director*
Kees Slingerland, *Business Director*

Education



Generating and disseminating knowledge is essential to develop a deep understanding of, and solid solutions for, the cities of today and tomorrow. With Amsterdam as a living lab, the institute's educational activities for current and future professionals, aim to create a perfect environment to develop the research, design and innovation skills essential for a vital, connected and circular (future) city.

At the core of AMS Institute's educational activities is the new master program *Metropolitan Analysis, Design & Engineering (MSc MADE)*. MSc MADE brings together multidisciplinary teams of students in Amsterdam to address questions as: How can we keep our metropolises

connected? How can urban environments safeguard their vitality? How can a circular city be created? This two-year master program is a combination of in-situ and online education. Not only does it provide students with thorough training in academic skills and project work, it also connects to the research portfolio of AMS Institute.

Other educational activities include summer schools, lecture series, professional training and Massive Open Online Courses (MOOCs). The overall aim is to provide innovative education and deliver excellent, interdisciplinary engineers equipped with the theoretical basis and practical skills to tackle the complex challenges metropolitan areas have to deal with.



Education

In 2016 AMS Institute further developed its core educational activities and increased its impact and reach. What makes our approach unique is that we create an inspiring, crossover learning environment: we align our educational activities not just with our growing research portfolio, but also with a network of business and societal partners. Our educational activities are growing and developing according to plan, in terms of student numbers and coverage of the scientific domains of the institute.

Master program Metropolitan Analysis, Design and Engineering (MSc MADE)

The development and introduction of the up-coming, innovative two-year master program *Metropolitan Analysis, Design and Engineering* (MSc MADE) is a key component of our educational strategy. Top students from all over the world will learn to incorporate entrepreneurial and innovative thinking and acting as an essential part of the master program. This trains students to become unique inter- and transdisciplinary analysts, designers, engineers and potentially entrepreneurs in the metropolitan environment.

From September 2017 on, students will follow the MSc MADE program in Amsterdam as a joint degree program by our partners Wageningen University & Research and Delft University of Technology. The strong academic context of the master will be enriched with the living lab activities in Amsterdam that AMS Institute co-develops with a consortium of public and private partners.

In 2016, various checks and balances were performed to formalize the program's academic accreditation.

The Dutch Ministry of Education, Culture and Sciences approved a feasibility study and efficacy analysis. The elaboration of the educational program received academic approval from both universities: judicial, financial, institutional and of the participation bodies. At the end of 2016, we submitted the program to the Dutch Flemish Accreditation Organization (NVAO) for full academic accreditation. The NVAO academic panel will assess the quality of the study program in April 2017.

Massive Open Online Courses (MOOCs)

In 2016, we launched our first Massive Open Online Course (MOOC) *Sustainable Urban Development: Discover Advanced Metropolitan Solutions*. The course was developed for cross-disciplinary academics and professionals in urban development wanting to expand their knowledge, but as there's no enrollment fee or a limit to the amount of participants, anyone with access to internet and an interest in metropolitan solutions could join in. Exceeding all expectations, the MOOC attracted almost double the amount of participants partaking in most MOOCs on edX: almost 11,000 participants from 165 countries – an evident sign of worldwide interest in advanced metropolitan solutions.

The course received excellent evaluations, and altogether created good exposure and further interest for AMS Institute and led to multiple requests for more information and pre-enrollments for the upcoming MSc MADE program. Successful completion of the MOOC is one of the admission criteria for the master that starts in September 2017.

Graduation and thesis projects

The number of students from Wageningen University & Research and Delft University of Technology carrying out their final thesis projects on AMS topics is steadily growing, fueled by the interest and enthusiasm for the cross-over themes offered by AMS Institute. In 2016 a growing number of students obtained an AMS Institute's certificate upon graduation.

MSc courses

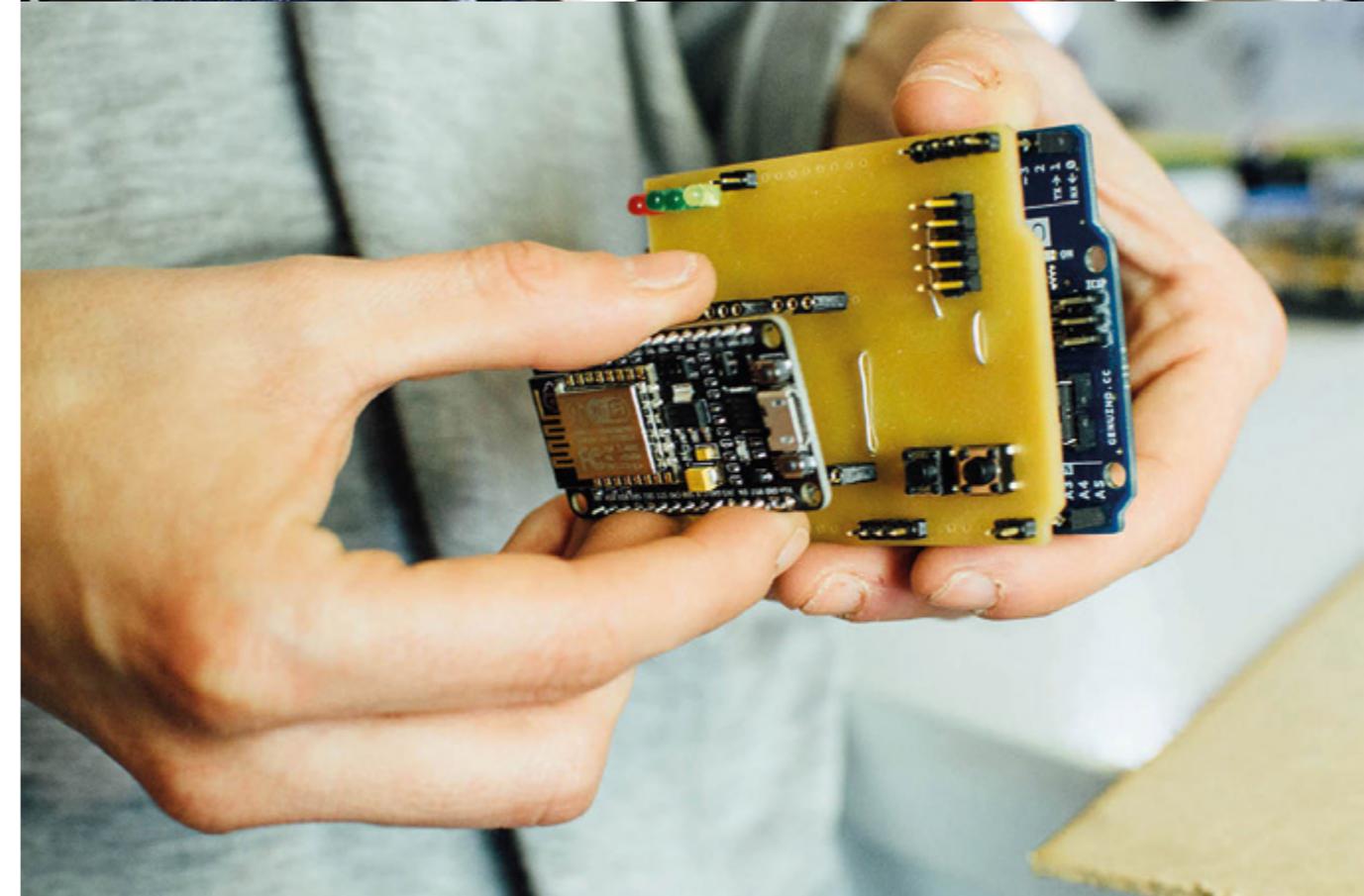
As interdisciplinary activities are a stronghold of the institute, AMS Institute actively provides research cases and is host to a variety of educational courses organized by Wageningen University & Research (WUR) and Delft University of Technology (TU Delft). Examples in 2016 included WUR's course *Urban Meteorology*, *Geo-information Science for Society* and TU Delft's *SWAT* studio on sustainable building technology and design.

PhD supporting courses and Doctoral theses

The PhD summer school Smart Solutions for the Urban Metropole held in July 2016 accelerated exposure for the institute at PhD level. The summer school program was developed in close cooperation with Wageningen Institute for Environment and Climate Research (WIMEK- SENSE), Climate KIC and the University of Bologna. Twenty participants attended this intensive doctoral AMS course, which will run again in 2017. The solutions they proposed were assessed by an expert committee made up of academics and experts from the City of Amsterdam and the City of Bologna.

The first AMS PhD

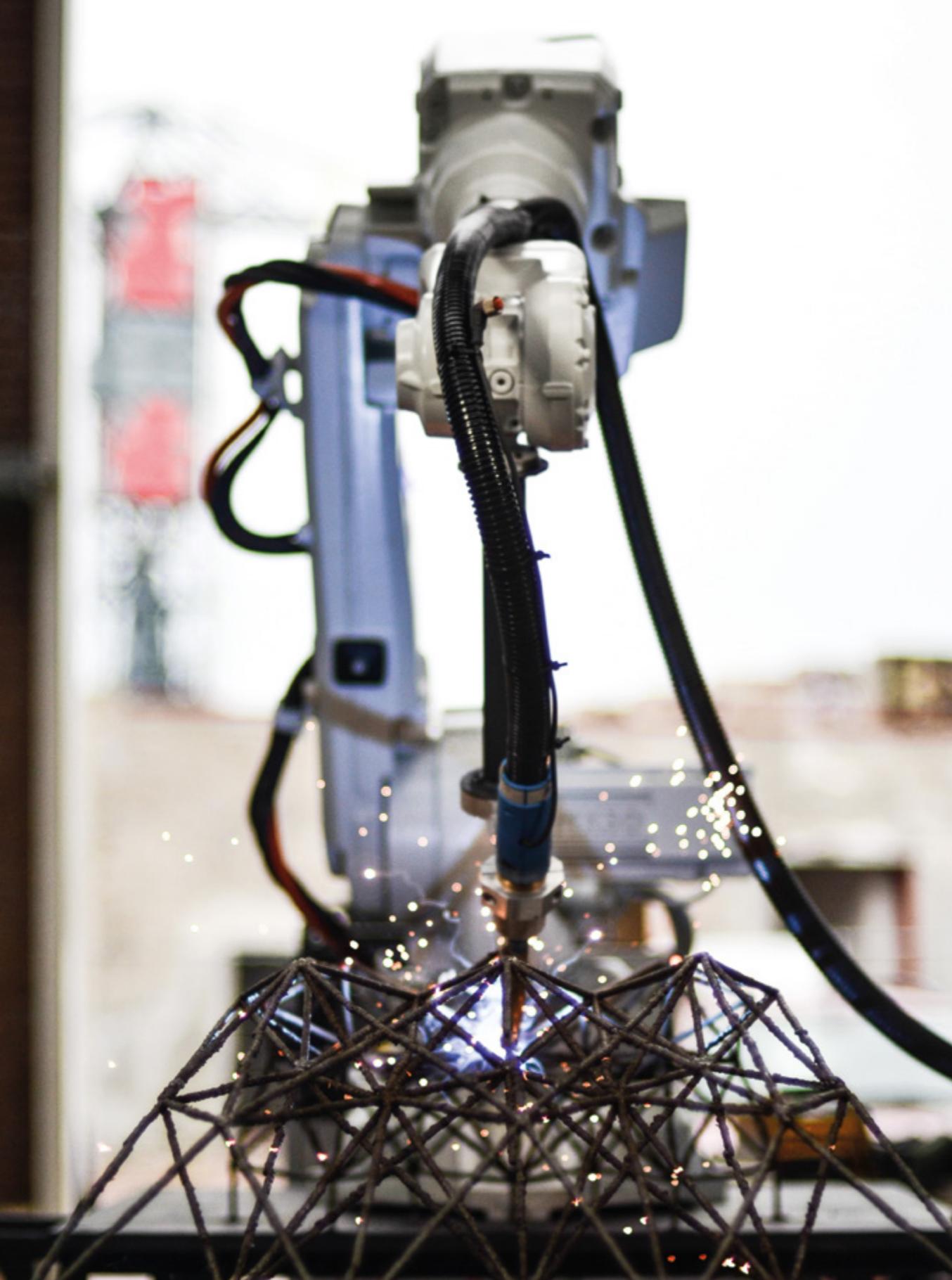
In 2016, the first AMS PhD candidate, Achilleas Psyllidis, successfully defended his doctoral dissertation on Spatial Data Science. Dr Psyllidis: "My dissertation explored the increasing importance and challenges of emerging spatial data sources, for instance geo-enabled social media and location-based social networks, to improve our knowledge about the dynamics of peoples' activities in city regions. The main outcomes of my research include the *OSMoSys* web platform for linked urban-data visualization and the *SocialGlass* web platform for real-time urban-data analytics and geo-visualization. These tools have already been applied in several real-life cases in Amsterdam, at SAIL 2015 and the Amsterdam Light Festival 2015."



Research & Valorization

In 2016 AMS Institute continued to accelerate and build up its research portfolio, reaching an accumulated value of €32M. The core of the research is built around the three main themes: Circular City, Connected City, Vital City.





Circular City

A massive amount of people, information, water, materials, energy, food, and waste, flow through cities and city regions daily. With urban areas constantly changing in size and density, the advancement of technology accelerating, and issues like climate change and resource scarcity becoming more pressing by the day, finding ways to make resource systems and infrastructures responsive, circular and agile is crucial for the cities of the future. The theme *Circular City* focuses on researching, designing and developing regenerative approaches to resource use in the city. This is important from an environmental, economic and social point of view, and pivotal for increasing the quality of life for all citizens in a sustainable way.

Using Amsterdam's metropolitan area as our field lab, AMS Institute is developing new approaches to circular, regenerative resource systems. Together with public and private partners, we work on multiple platforms and projects to develop and exchange knowledge and skills, test innovations and upscale them, to accelerate circular city development.

Within the theme *Circular City*, we distinguish three strongly interrelated subthemes. Each subtheme has its own research priorities, based on the interplay between society, business and science:

Materials & buildings

Cities contain a wealth of materials that can be reused effectively. Regenerative design and use have to be anticipated for both new construction and renovation. Key research questions are: How can we map and reuse materials temporarily stored in built constructions? And how can we streamline the supply, demand and conversion processes of materials, components and buildings?

Nutrients recovery from (waste)water streams

To assure food and drinking water security in cities, innovative concepts for water treatment are essential. Moreover, water treatment processes and infrastructures can play a role in renewable energy, materials and chemicals production. The key research question is: How can we reutilize nutrients, materials and energy better in water flows, and in the integration of wastewater treatment systems, on different scales in urban regions?

Renewable energy systems

The transition to renewable energy sources requires smart infrastructures that are able to deal with increased variability in consumption, storage and production at multiple scales. Cities raise opportunities and challenges in this respect, for instance due to population diversity and density. Key research questions are: How can the transition be made to renewable energy sources in cities, bearing in mind that increased variability? And what are the infrastructural and spatial implications?



"Amsterdam has the ambition to be a frontrunner in the transition towards a circular economy. As the first city worldwide, Amsterdam commissioned an in-depth research into the potential of a circular economy. We learned from the research that the spatial impact of the circular economy is one of the crucial elements for its realization. REPAiR combines both urban planning and management of resources and is therefore unique, challenging and crucial."

Eveline Jonkhoff

Strategic Advisor Sustainability and Circular Economy, City of Amsterdam

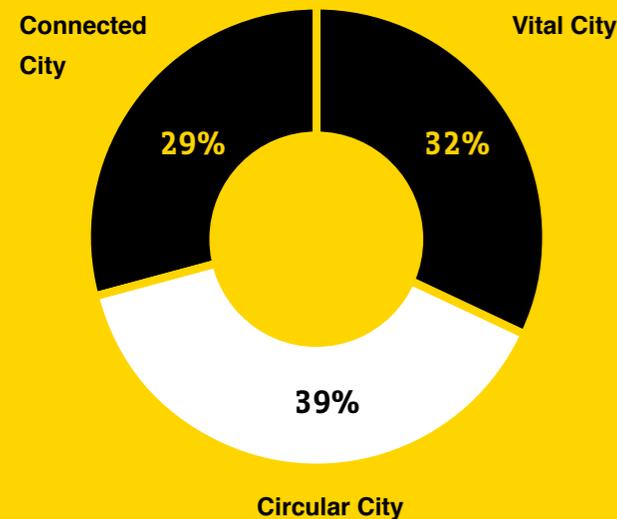
Highlighted Projects

Circular City

In 2016 the *Circular City* theme in our research & valorization portfolio encompassed 26 projects, organized in cooperation with 72 partners and a total value of €16M. Below a selection of projects within the Circular City theme.

Total research portfolio

(in #projects)



URSES+: Uncertainty Reduction in Smart Energy Systems

Aiming to enable a rapid transition to a reliable, affordable and sustainable energy system, *URSES+* contributes to the reduction of uncertainty for actors in the energy chain by developing the knowledge and tools that are needed for smart energy systems.

Project leads (of 8 projects): Prof. Gert Spaargaren (MSc, PhD), Prof. Derk Loorbach (MSc, PhD), Prof. Claudio de Persis (MSc, PhD), Prof. Linda Steg (MSc, PhD), Tamas Keviczky (MSc, PhD), Zofia Lukszo (MSc, PhD), Phoung Nguyen (MSc, PhD), Mathijs de Weerd (MSc, PhD)

Partners (in 8 projects): Shell, Alliander, Waternet, Urgenda, Cooperatief Zuiderlicht U.A., Priva BV, DWA, Tauw BV, Waternet, KWR Watercycle Research Institute, Provincie Noord-Holland, Van Gogh Museum, Amsterdam ArenA, Universiteit Twente, Locamation, National Instruments, DNV-GL, ENGIE, Jedlix, Accenture, ABN AMRO, The New Motion, Greenspread

Research lead: TU Delft, Wageningen University & Research, Erasmus University Rotterdam, TU Eindhoven, University of Groningen

Total project budget: €7.5M

Duration: 5 years

Energy Hub Wildemanbuurt

Could bread and organic waste generate enough energy to fuel a small community? Setting out to start a local bio-based energy cooperation, this project connects citizens with sustainable energy and each other.

Project lead: Rico Lie (MSc, PhD)

Partners: The Beach, Lucas Community

Research lead: Wageningen University & Research

Total project budget: €50K

Duration: 6 months

DCSMART: DC Distribution Smart Grids

Due to the increasing amount of distributed energy resources with stochastic behavior, the electrical power system is facing new challenges. While the distribution grid has traditionally operated with alternating current (AC), nowadays most electronic devices operate with direct current (DC), and all output first needs to be converted. *DCSMART* aims to develop and implement direct current distribution smart grids in cities that eliminate the need for conversion.

Project lead: AMS PI Prof. Pavol Bauer (MSc, PhD)

Partners: Fraunhofer IISB, Direct Current BV, Centre Suisse d'Electronique et Microtechnique SA, TU Eindhoven

Research lead: TU Delft

Total project budget: €2M

Duration: 4 years

BIES: Buiksloterham Integrated Energy Systems

New buildings are being designed to become fossil-free, meet requirements for improved energy performance and to include decentralized renewable energy generation. *BIES* investigated four scenarios for future proof, sustainable, flexible and integrated energy systems for Buiksloterham.

Project lead: Sabine Jansen (MSc, PhD)

Partners: Stichting Stadslab Buiksloterham, Metabolic, EnerGo

Research lead: TU Delft

Total project budget: €85K

Duration: 1 year

3D Printing in the Circular City

Examining, assessing and testing the recycling potential of local plastic waste streams, *3D Printing in the Circular City* investigates how plastic can be reused locally for large-scale 3D printing. The construction site of the world's first 3D printed canal house in Amsterdam is this project's living lab for plastic waste recovery and up-cycling.

Project lead: Prof. Arjan van Timmeren (MSc, PhD)

Partners: House of DUS, AEB Amsterdam, The New Raw

Research lead: TU Delft

Total project budget: €55K

Duration: 1 year

"As a recycling company, AEB wanted to better understand the possibilities of 3D printing with recyclable plastics. The project '3D printing in the circular city' offered us this opportunity in cooperation with very knowledgeable partners."

Marieke van Nood

Strategic Advisor, AEB Amsterdam



REPAiR: Resource Management in Peri-urban Areas: going beyond urban metabolism

A shift towards a more circular economy is crucial to achieve more sustainable and inclusive growth. Helping local and regional authorities reduce waste flows in peri-urban areas, *REPAiR* develops and implements a GDSE (geo-design decision support environment) in living labs in six metropolitan areas. Promoting the use of waste as resource, the GDSE assists in creating integrated, place-based spatial development strategies.

Project lead: Prof. Arjan van Timmeren (MSc, PhD)

Partners: Delta, GeoCol, Municipality of Haarlemmermeer, City of Amsterdam, Ghent Univesity, DiARC UNINA, Naples Federico II, HafenCity University Hamburg, Institute for Regional Studies CERS of HAS, MTA KRTK, Institute of Geography and Spatial Organization Polish Academy of Sciences, Europe Joint Research Centre (JRC), BLOKOM Nonprofit Ltd, Gertz Gutsche Rümenapp Stadtentwicklung und Mobilität GbR, OVAM - Public Waste Agency of Flanders, Campania Regional Authority, Pheno horizon, Bauer Umwelt GmbH, IVAGO Flandres, Stadtreinigung Hamburg.

Research lead: TU Delft

Total project budget: €5.1M

Duration: 4 years

PUMA: Prospecting the Urban Mines of Amsterdam

Copper in cables, aluminum in window frames, gold in telephones: there's a wealth of metals to be found in the built environment. But what will it take to mine the city? Is it worthwhile? *PUMA* investigated the possibilities of mining the city. Developing an interactive map, the project demonstrates where you can find precious materials and offers a guide on how to get them out.

Project lead: AMS PI Prof. Ellen van Bueren (MSc, PhD)

Partners: De Waag, Metabolic, Leiden University

Research lead: TU Delft

Total project budget: €48K

Duration: 1 year





"At Shell, we believe cars are likely to become a part of the urban energy storage and exchange system to zero emissions. That is why we participate in the URSES+ project Car as Power Plant. This challenging engineering project on hydrogen storage and electricity usage will be designed at the location of Shell Technology Centre in Amsterdam. We are looking forward to working together and developing knowledge for this future application of clean energy."

Ewald Breunese

Manager Energy Transition, Shell Nederland B.V.



Connected City

As the number of people living and working in Amsterdam's metropolitan area continues to rise, so do issues of congestion, crowded streets, misalignment of public transport's supply and demand, and air pollution. However, being able to move from A to B efficiently, safely and with no to low negative environmental impact, is essential for a prosperous, healthy and fair urban environment. Setting out to connect the area's people, goods and data both physically and digitally, this theme develops solid solutions for an accessible, seamless, efficient, inclusive and empowering connected city, that eliminates pollution and diminishes negative environmental impact.

Within the *Connected City* theme, AMS Institute focuses on three subthemes: *Urban Mobility*, *Citizen Sensing & Empowerment*, and *Intelligent Urban Infrastructures*.

Urban Mobility

Concentrating on moving through the city, the subtheme urban mobility explores user-driven Mobility as a Service (MaaS) concepts, researches active mode travelling, Intelligent Transport Systems (ITS), autonomous vehicles and brings together mobility data to develop tools for better insights into the (re)design of public space and a better use of existing infrastructure.

Citizen Sensing & Empowerment

The participation of citizens in the process of identifying and solving urban problems is essential for the development of an adaptive and resilient city. Besides diminishing the distance between research and the needs of the city, it accelerates the process of generating social impact. Citizen sensing & empowerment works on innovative ways for enabling the participation of citizens in research projects.

Intelligent Urban Infrastructures

How can high-scale, urban sensor and actuator networks be designed, that work together intelligently, and are able to process complex data, and produce real-time, cross-analyses insights at city scale? Connecting data from different domains and scales this subtheme focuses on development of sensing systems and big-data analytics for city-scale deployments, infrastructures and large-scale applications.

"The collaboration R-LINK allows us to reflect on what we're planning and gives us a chance to be more in touch with the needs and desires of citizens and citizen initiatives with an impact on urban development. The project fits well with municipal policies to engage citizen participation and target local area development."

Hiltje van der Wal

Policy advisor, City of Groningen



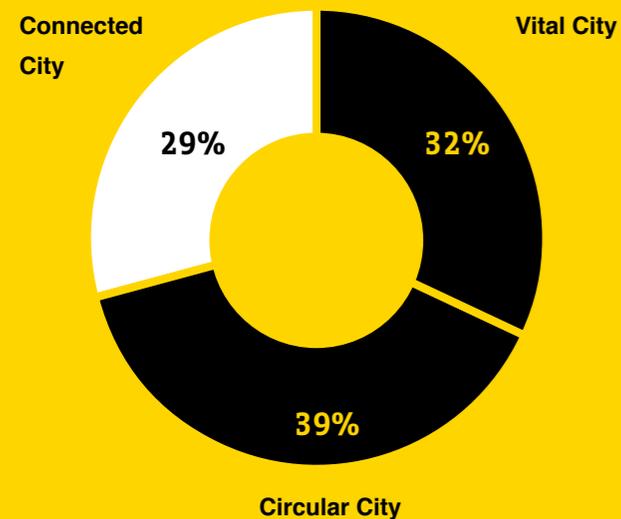
Highlighted Projects

Connected City

In 2016 the *Connected City* theme in our research & valorization portfolio encompassed 15 projects, organized in cooperation with 35 partners and a total value of €15.8M. Below a selection of projects within the Connected City theme.

Total research portfolio

(in #projects)



R-LINK: Redressing Long-term societal challenges through space for incremental urban development, small-scale and bottom-up initiatives to produce New Knowledge for vital and inclusive urban regions

R-LINK explores how small, bottom-up initiatives in urban area development can contribute to solving social issues and help create vibrant and inclusive urban regions. Taking a closer look at how strategic urban ambitions and social challenges can be realized, while simultaneously deploying community-linked incremental urban development through new alliances between public, market participants and authorities.

Project lead: AMS PI Prof. Leonie Janssen-Jansen (MSc, PhD)

Partners: University of Groningen, University of Applied Sciences Amsterdam, University of Amsterdam, Antea Group, Rijckenberg Advies, City of Amsterdam, Marineterrein, PMB, AMEC, City of Groningen, Metabolic, GroenLevenlab, Pakhuis de Zwijger, Tertium

Research lead: Wageningen University & Research

Total project budget: €1.6M

Duration: 4 years

4D Urban Modeling

Taking modeling beyond 3D, this project designs and develops a model that captures urban objects – such as buildings and roads – to their 4th level of detail, opening opportunities for gaining deeper insight into metropolitan issues.

Project lead: AMS PI Prof. Jantien Stoter (MSc, PhD)

Partners: Kadaster, Geonovum, Virtual City Systems, City of Amsterdam

Research lead: TU Delft

Total project budget: €1.8M

Duration: 4 years

ALLEGRO: Unravelling slow mode traveling and traffic

To make the city a more cyclist and pedestrian friendly place, it's imperative that people like city planners are able to make well-informed decisions. *ALLEGRO* researches the movements of cyclist and pedestrians and uses this knowledge to develop tools that give decision-makers a more accurate insight into the behavior of these slow-mode travelers. This helps plan, design and manage the urban environment whilst taking pedestrians and cyclist into account.

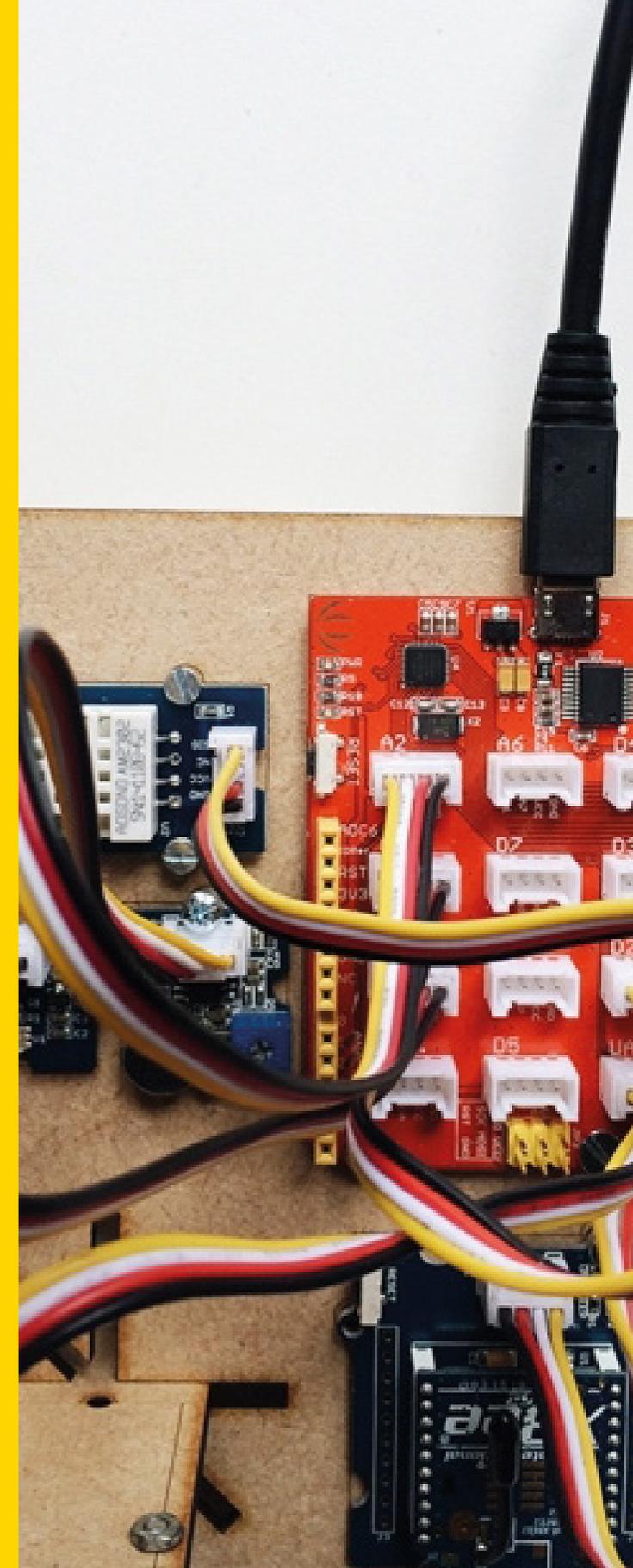
Project lead: AMS PI Prof. Serge Hoogendoorn (MSc, PhD)

Partners: InControl, City of Amsterdam

Research lead: TU Delft

Total project budget: €2.9M

Duration: 4 years





Roboat

Imagine autonomous vessels sailing throughout the city, transporting people and goods, ridding the canals from floating waste, assembling to create temporary on-demand bridges and sampling water to assess its quality. Exploring the rich set of possibilities Amsterdam's waterways have to offer, *Roboat* ushers in a new chapter in the international push for autonomous vehicles, setting out to deploy world's first autonomous fleet for moving people, moving goods, dynamic infrastructure and environmental sensing.

Project leaders: AMS PIs Prof. Carlo Ratti, Prof. Daniela Rus, Prof. Dennis Frenchman, Prof. Andrew Whittle

Partners: Waternet, City of Amsterdam

Research lead: MIT

Total project budget: €25M

Duration: 5 years

Floating Data for Intelligent Traffic Systems

How can Google's traffic data be used to improve traffic management on Amsterdam's ring road? This pioneering project aims to assess the value of this type of data for real-time traffic management and a better understanding of the performance of the road's infrastructure as a whole.

Project lead: AMS PI Prof. Serge Hoogendoorn (MSc, PhD), Victor Koops (MSc, PhD)

Partners: Google, City of Amsterdam

Research lead: TU Delft

Total project budget: €29K

Duration: 6 months

BalanCity: Smart Traffic Load Balancing for Sustainable Cities

Setting out to prevent congestion and peaks of air and noise pollution in urban areas, *BalanCity* combines individual navigation systems with collective data (like current traffic and air pollution data) to develop a smart route planning system that distributes traffic more evenly throughout the city.

Project lead: Matthijs Spaan (MSc, PhD)

Partners: Cygnify

Research lead: TU Delft

Total project budget: €50K

Duration: 1 year



"To have the world's most prominent scientists work on solutions with autonomous boats in this way is unprecedented, and most fitting for a city where water and technology have been linked for ages. This is a fantastic opportunity for Amsterdam."

Kajsa Ollongren

Alderman and Vice Mayor, City of Amsterdam



Vital City

Amsterdam's metropolitan area acts as a magnet for business and people alike. As the Dutch economy is recovering, investments, employment rates and Amsterdam's popularity among start-ups, visitors and new residents have been rapidly increasing. With the number of inhabitants expected to grow more than 10% in the coming decade, the City of Amsterdam has launched an ambitious development plan to build 50.000 new homes.

Although very welcome, these intensified urban dynamics pose huge challenges for the city's vitality. A vital city needs a healthy and active population. A vital city is resilient to climate change and offers its citizens a sustainable food system. These three topics are at the heart of the AMS *Vital City* theme.

In our search for **Healthy urban living**, we investigate how some of the most pressing health challenges – obesity, mental health issues, physical inactivity and the needs of an ageing population – can be influenced by the way we design the city. In 2016, we started to work on the design of public spaces, both in Amsterdam and Paris, where we work together with our French partners La Fabrique de la Cité and Arup.

Our **Urban climate resilience** research looks at how the urban climate system is functioning and how ecosystem services can support adaptation to change. We deal with typical urban issues like exposure to polluted air emitted by traffic, the urban heat island phenomenon, and the storage of precipitation. In 2016, we put a detailed meteorological measurement system in place, which provides key input for our studies on climate adaptation measures and new planning tools.

The **Sustainable urban food system** research was triggered by the many initiatives in this area from residents and businesses, and by the Urban Food Policy Pact, which was signed by 129 mayors in Milan in 2016. We aim to find solutions for new types of fresh food production, improved last mile logistics and reducing the amount of food waste. In 2016, we launched *The Feeding City* research program in collaboration with Flevo Campus partners: City of Almere, Province of Flevoland, and Aeres University of Applied Sciences.



"Not only is water of added value for the visual aspect of the urban tissue, it also contributes to the water storage capacity and cooling effect of the city. Incorporating water into urban design should therefore not be seen as a problem, but as an asset."

Gregor van Lit

Urban Designer, Dienst Ruimtelijke Ordening, City of Amsterdam

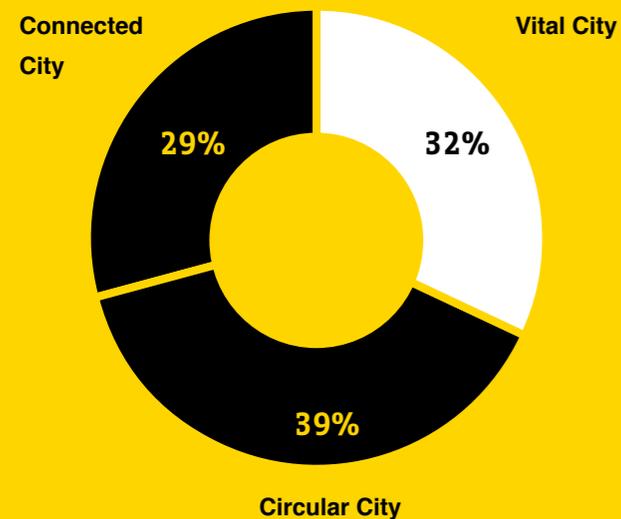
Highlighted Projects

Vital City

In 2016 the Vital City theme in our research & valorization portfolio encompassed 12 projects, organized in cooperation with 21 partners and with a total value of €3.6M. Below a selection of projects within the Vital City theme.

Total research portfolio

(in #projects)



REALCOOL: Really Cooling water bodies in Amsterdam

With climate change expected to incite the frequency and severity of heat waves in temperate climate zones, increasing know-how on cooling cities in these regions is more relevant than ever. Rethinking the use of water bodies for cooling the city of Amsterdam, *REALCOOL* defines how shading, vaporizing and ventilation can be integrated around water bodies to improve the climate in the city.

Project lead: AMS PI Sanda Lenzholzer (MA, MSc, PhD)

Partners: Alterra, Amsterdam University of Applied Sciences, Municipal Health Service Amsterdam (GGD), City of Amsterdam

Research lead: Wageningen University & Research

Total project budget: €3.8K

Duration: 1 year

AAMS: Amsterdam Atmospheric Monitoring Supersite

Amsterdam is facing several challenges concerning the quality of its urban environment. Expanding Amsterdam's meteorological network and monitoring a wide scope of variables, *AAMS* sets out to increase the understanding of local weather, climate and air, to help improve citizens' health, air quality, and local hydrology.

Project lead: AMS PI Prof. Bert Holtslag (MSc, PhD)

Partner: eScience

Research lead: Wageningen University & Research

Total project budget: €1.5M

Duration: 4 years

Green Health Check

Greenery can greatly improve the quality of life in urban environments. Mapping out the spatial challenges, opportunities and benefits of city greenery, *Green Health Check* develops a tool that helps planners, designers and developers optimize the use of greenery for a healthier, more pleasant city.

Project lead: Robbert Snep (MSc, PhD)

Partners: Drain Products Europe BV, Corporation My Earth, Soontiëns Hoveniers, Royal FloraHolland, Iverde, Municipal Health Service Amsterdam (GGD), City of Amsterdam

Research lead: Wageningen University & Research

Total project budget: €264K

Duration: 1 year



A healthy appetite for knowledge

Future of food, feeding the city

Recognizing the great challenges ahead for feeding the growing amount of people in cities, this year 129 mayors from around the world committed to devote more attention to the future of food in their city's plans. Being relentlessly intertwined with almost every aspect in society however, a push towards a sustainable and equitable food system is a highly complex matter to achieve. Working closely with Aeres, the Province of Flevoland and the City of Almere, AMS Institute launched *The Feeding City* this year, a comprehensive research program on the future of food at the Flevo Campus, Almere.

Head start

"A smart food system will enrich the city and really give it a head start. Which is why this theme is one of the main dishes on the AMS menu," says Henk Wolfert, program manager of the *Vital City* theme at AMS Institute. "When Almere's city council approached us, as they were planning to set up a new educational program with food as a specialism, we were immediately keen to get involved as a partner."

Knowledge broker

"Our institute is a kind of knowledge broker: we for example connect researchers, governments, citizens and companies eager for innovation. Generally, those worlds are miles apart. We encourage them to get together and exchange ideas and encourage students to get out into the real world. You always find better solutions when you brainstorm with other people about your problems. To achieve this 'meeting of the minds' we join forces with government bodies, educational institutions, technical businesses, agricultural firms, innovative thinkers et cetera."

Boost for knowledge economy

Almere wants to give the knowledge economy a major boost. Alderman René Peeters explains: "In the next 20 years our city will grow with 50% – an increase of 100,000 inhabitants. Naturally we'd like all these newcomers to contribute to the city's economy. We can only achieve that if we also succeed in attracting academic education and research to the city. We want to boost food production in Almere. If we can produce 20% of our own food, that will bring savings on transport, waste and healthcare. And when it comes to food, we want to promote the connection between the agricultural province of Flevoland and Almere as an example for metropolitan regions all over the world."

Flevo Campus

Set to open in January 2017, the Flevo Campus brings together students, researchers, start-ups and established companies to work on solutions for food and urbanization issues. The initiative is both physical (with research facilities and meeting places) and virtual (online platforms and digital networks). Almere's city council and the regional authorities of Flevoland are working closely with several partners to develop this breeding ground for innovation. AMS Institute will provide the academic research program for the campus and works together with Aeres University of Applied Sciences in setting up its educational program.



Cross-pollination

Flevo Campus is a fertile mix of research, education and entrepreneurship. A melting pot of knowledge and skills where participants stimulate each other to fine-tune their plans, or work in partnerships to come up with entirely new ideas. Companies describe their challenges, the knowledge institutions study the potential solutions, start-ups and seasoned entrepreneurs then open their doors to test ideas, and the students then analyze the results. Start-ups generate ideas and inspiration from a fresh perspective. AMS Institute facilitates the cross-pollination by finding the right match between researchers, organizations and companies for the projects. So, all the organizations involved deliver added value.

Floriade 2022

AMS Institute brings together these visions for the future in the academic program The Feeding City and pours them into an inspiring mold. "We'd very much like to present the innovative prototypes and process improvements which we create in the Flevo

Campus at the Floriade in 2022," says Henk Wolfert. It's not entirely a coincidence that one of the themes of this internationally renowned horticultural exhibition will be 'Feeding the city'. And it's logical that Flevoland, as a green province which plays a leading role in the global agriculture sector, will be hosting the 5-annual event this time.

Keeping a close eye on Almere

Companies, local authorities and knowledge institutions throughout the Netherlands are watching Almere and its innovative plans with great interest. Nina Tellegen, director of the Amsterdam Economic Board: "Innovation knows no borders and we're always on the lookout for innovative ideas. We're seeing a lot of interesting projects in Almere. The topic circular economy, in which food plays key role, will also become more and more important for Amsterdam in the coming years. We're keeping a close eye on developments and will be investigating the opportunities for our metropolitan region."

Combine ingredients in living labs

The institute's research program on the Flevo Campus continues to work on sound solutions for food and urbanization challenges. "Together with students, residents, the local government and businesses we'll be investigating options for future food systems," says Henk Wolfert. "At AMS Institute we test our research outcomes in real-life test beds. This gives us the opportunity to adjust and fine tune them to real-life situations and give innovations a jump-start to really be implemented. We hope to do this at the Flevo Campus too and give solutions for issues raised by urbanization a major push."



International Partnerships

AMS Institute aims to co-develop and apply its outcomes of cutting edge science in practical day-to-day implementation in metropolitan areas around the globe. To support this, active international partnerships and collaborations with other metropolitan areas and their stakeholders is crucial.



International Partnerships

Following the cooperation with Boston in 2015, this year, multiple significant, long-term and above all stimulating collaborations were set up with parties in the city of Paris. These include public and private sector bodies on themes ranging from health and wellbeing to (smart) infrastructures and water management. In 2016 first steps were also taken to extend our international network as far as Asia, Australia and Africa.

Closer partnership with the city of Paris

In March, AMS Institute joined the Dutch economic trade mission to Paris as program leader for the subtheme smart cities. During this visit we had the pleasure of setting up new collaborations with La Fabrique de la Cité, SUEZ Consulting and The University of Paris-Est – with whom Memoranda of Understanding (MoU) were signed - as well as forging bonds with a multitude of other Parisian based parties like Atelier Néerlandais and NUMA.

La Fabrique de la Cité

La Fabrique de la Cité is a privately financed, strategic think-tank dedicated to promoting discussion and leadership on urban innovation. Following a series of content based sessions with the think-tank throughout the year, the topic 'public space' was chosen as the focal point for our joint research in 2017. More specifically, we'll be working on answering the question: how can the design of public spaces facilitate quality of living in terms of safety, wellbeing and health?

SUEZ Consulting

SUEZ Consulting brings 1,400 employees, specialists and experts together in over 100 countries on topics like waste water infrastructure, urban development, governance and public financial management. Together we'll be working on setting up joint projects focusing on making public services more innovative, efficient and sustainable.

The University of Paris-Est

The University of Paris-Est is an association of universities and higher education institutions in the Paris-Est region. Together with several French research organizations and architecture schools, the university has initiated to establish a scientific institute on sustainable urbanism. The approach and set-up the institute is aiming for, is inspired by AMS Institute. If the plan receives state funding (decision is expected in early 2017) then AMS Institute will be one of the key partners in the venture.

Besides these three formalized collaborations, we're also in close contact with several other parties in Paris, like the Atelier Néerlandais and NUMA with whom we hope to establish a strong relationship in 2017.



A growing network of international partner cities

In addition to our international endeavors in Paris, we continued active exchanges and reciprocal involvements with the following cities this year: London, São Paulo, Buenos Aires, Stockholm, Gothenburg, Seoul/Songdo, Singapore, Helsinki, Melbourne and Johannesburg. In line with our international strategy, these cities were selected as key cities based on their high level of environmental challenges (climate-change vulnerability, pollution), societal challenges (population density, infrastructural bottlenecks, food & water security, living conditions), collaboration potential (e.g. active dialogue/ongoing projects) and vibrancy (political, legal & economic environment).





Principal Investigators

One of the driving forces in realizing AMS Institute's international ambitions, are the Principal Investigators (PIs). Assisted by our Research Fellows (RFs) this excellent set of professors from MIT, TU Delft and Wageningen University & Research play a key role in shaping and developing the research, education and valorization portfolio of AMS Institute. Through their extensive networks and expertise, they are AMS Institute's global ambassadors.

In September 2016 the term of the first 21 PIs came to an end. After a strict procedure conducted by the three universities, a group of 34 professors were (re)appointed as AMS PIs for the next two years. An overview:

Vital City

Main AMS topic	Name	Institute	Specialty
Metropolitan Food Systems	Ellen Kampman	WUR	Healthy City Planning
Healthy Urban Living	Maria Koelen	WUR	Health & Society
Urban Climate Resilience	Nick van de Giesen	TU Delft	Water & Resources Management
	Bert Holtslag	WUR	Urban Climate
	Remko Uijlenhoet	WUR	Hydraulics & Quantitative Water Management
	Sanda Lenzholzer	WUR	Landscape Architecture
	Andrew Whittle	MIT	Civil and Environmental Engineering

Circular City

Main AMS topic	Name	Institute	Specialty
Nutrient Recovery	Grietje Zeeman	WUR	Urban Sanitation
	Mark van Loosdrecht	TU Delft	Environmental Biotechnology
	Jan Peter van der Hoek	TU Delft	Drinking Water Engineering
.....			
Urban Energy Systems	Han le Poutre	TU Delft	Intelligent Energy Systems
	Peter Palensky	TU Delft	Intelligent Electrical Power Grids
	Pavol Bauer	TU Delft	DC systems, Energy, Conversion and Storage
	Rolf Kunneke	TU Delft	Economics of Infrastructures
.....			
Urban Energy Systems / Materials and Buildings	Sven Stremke	WUR	Landscape Architecture
	Andy van den Dobbelaer	TU Delft	Climate Design & Sustainability
.....			

Connected City

Main AMS topic	Name	Institute	Specialty
Urban Mobility	Serge Hoogendoorn	TU Delft	Operations & Management of Transport Systems
	Hans van Lint	TU Delft	Operations & Management of Transport Systems
	Jacqueline Bloemhof	WUR	Operations Research and Logistics
.....			
Citizen Sensing & Empowerment	Gerd Kortuem	TU Delft	Internet of Things
	Ekko van Ierland	WUR	Environmental Economy
	Elisa Giaccardi	TU Delft	Interactive Media Design
.....			
Intelligent Urban Infrastructures	Jantien Stoter	TU Delft	3D Geo-information
	Daniela Rus	MIT	Computer Science & Artificial Intelligence
	Geert-Jan Houben	TU Delft	Data Analytics
	Carlo Ratti	MIT	Senseable Cities Lab
.....			

Crossover

Main AMS topic	Name	Institute	Specialty
Governance, Management & Economics	Michel Handgraaf	WUR	Economics of Consumers & Households
	Vincent Gruis	TU Delft	Housing Management
	Ellen van Bueren	TU Delft	Urban Development Management of Real Estate & Housing
	Marcel Hertogh	TU Delft	Integral Design & Management
	Leonie Jansen-Janssen	WUR	Land Use Planning
.....			
Urban Data Management & GIS	Arnold Bregt	WUR	Value Platform / Data & GIS
.....			
Urban Design & Visualization	Kees Kaan	TU Delft	Architectural Design
	Dennis Frenchman	MIT	Urban Studies & Planning
.....			



EUROPE
BY
PEOPLE

FACTORY

TOGETHER WE MAKE THE CITY OF TOMORROW

Communications and Outreach

PCHU 150405 D
12G1

PCHU 150367 D
12G1

HOUSE RULES

AS AN EVENT VENUE, FACTORY HAS ITS OWN HOUSE RULES. BY ENTERING THE PREMISES YOU AGREE TO COMPLY WITH THESE RULES.

- Factory is opened daily from 9 am to 8 pm.
- Starting from May 25, the opening hours will be extended on account of the performances.
- At night, Factory will be closed and only accessible to authorized people.
- During opening hours, Factory is accessible for all ages free of charge.
- Children under 12 have to be accompanied on the premises by an adult.
- Factory is wheelchair accessible and disabled facilities are available.
- The premises of Factory are workplaces. Not all premises are open to the public.
- All participants at Factory work have at their own risk - They do not represent the organization.
- Some of the exhibited appliances and machines can be dangerous. Before entering, please be aware of the applicable rules and follow the instructions of the organization, employees and/or security, fire and others safety.
- The organization is not liable for physical or other damage as a result of entering Factory.
- It is not allowed to bring any other articles to the premises of Factory.
- Respect the particular culture and your fellow visitors of Factory.

- Smoking in public and closed premises is prohibited.
- No alcohol will be sold to anyone.
- Please dispose of your garbage in the designated trash bins.
- Drinking is not allowed on the premises of Factory.
- Aggression or disturbing behavior, including verbal abuse, is not tolerated on the premises of Factory.
- By entering the premises of Factory, you agree to the use of any photographs / recordings for promotional purposes.
- Distributing flyers, and mail is not allowed without prior agreement with the organization.
- The organization is not liable for physical or other damage as a result of entering Factory.
- Respect the particular culture and your fellow visitors of Factory.

PARTNERS & PARTICIPANTS



AMS Institute is developing rapidly. The increasing amount of activities bring along countless opportunities to create awareness, contribute to brand reputation and recognition, and build a strong AMS community. In 2016, AMS Institute was leading the academic and societal debates on several prominent projects, both on social media, as well as in national and international established media, amounting to a PR value of almost €8M.



Communications and Outreach

In 2016 the communication and branding strategy was strengthened further, which will contribute to AMS Institute's profile in the Netherlands and abroad, and help strengthen its partner network. In this section some of the communication activities of 2016 are highlighted.

Branding strategy

In its first years of existence AMS Institute developed with such speed that a re-evaluation and re-focus of AMS Institute's brand identity was necessary. In 2016 we set out to further develop and strengthen the institute's brand strategy and corporate identity, focusing in particular on creating more awareness for the institute, its brand reputation, and expanding and engaging with our (online) community, while supporting further establishment.

A selection of our events

With a series of (inter)national and local events, AMS Institute engages in conversation with the general audience, public stakeholders and business partners. Among the highlights were:

FabCity Campus: April 11 – 26 June 2016

In 2016 The Netherlands presides over the European Union for six months. *FabCity Campus* was the exciting project that turned Amsterdam's Java-eiland into an urban city campus for 11 weeks, championing co-creation, urban innovation and circularity as essential points for EU's Urban Agenda. AMS Institute partnered up with numerous other innovators

to bring together 400 students, professionals, artists and creatives during these 11 weeks. Jointly we worked on, explored and showcased cutting-edge solutions to current urban issues. Besides this the institute hosted a two day Young Professionals Think Tank where 30-45 young professionals from different AMS partner organizations worked together on the theme *Smart Urban Retrofitting*, and hosted a 10-week research program for master students in the city and on the campus.

Partner event/Roboat sessions - 9 December 2016

The press release on *Roboat* in September resulted in a world-wide surge in attention for AMS Institute. To follow up on this huge response, three round table sessions on *Roboat* were organized during our end-of-year partner event. The aim was to pinpoint potential challenges, solutions and approaches concerning *Roboat*. The sessions were attended by representatives of current and potential partners from both private and public institutes. Parallel to these sessions, workshops were organized on the three AMS research themes: *Circular City*, *Vital City* and *Connected City*.

With talks by MIT's Chancellor Eric Grimson, AMS PI and MIT SENSEable Cities Lab's director Carlo Ratti, and representatives of the city, Waternet and AMS Institute, this partner event was designed to give our current and potential partners an opportunity to meet and mingle, and gain in-depth knowledge on AMS topics.

Press

Communications and media reach were carefully monitored throughout the year. In 2016, we received 8,644 mentions in external media compared to 354 mentions in 2015. This rise was due in particular to the communication efforts during the Roboat press release.

The Roboat press release on 19 September, communicating the first research program to be initiated in collaboration with MIT, generated a media value of more than €7M. The announcement was picked up by both national and international media, saw publications in print as well as online media, and was featured on (inter)national TV and radio. This excellent media attention was an important boost for the brand awareness and visibility of AMS Institute.

Social media

The online network on social media outlets grew steadily throughout the year. Several events caused a continuous engagement and additional followers with and for AMS Institute's online networks.

On 26 January 2016, the MOOC (Massive Open Online Course) Sustainable Urban Development started. The course, developed by Wageningen University & Research and TU Delft, attracted almost 11,000 participants which resulted in an extra boost of our following base.

Roboat was a trending topic on social media, totaling over 7,000 mentions on Twitter, which included power tweets from SkyNews, BBC Click, Yahoo, and the Verge.

Our Twitter following base has grown from 800 followers at the start of 2016 to 1248 followers at the end of 2016. Our Facebook following base shows an even bigger rise, growing from 439 followers at the start of 2016 to 1128 followers at the end of 2016. LinkedIn shows a steady growth from 206 followers at the beginning of 2016 to 471 followers at the end of 2016, but has the smallest following base in absolute numbers.



"In 2016 AMS Institute strengthened its international network, especially by starting the MIT Roboat project. Together with the further development of the education program, including the launch of a successful Massive Open Online Course, and many new innovative research projects AMS Institute brings new technology and talent to Amsterdam."

Bram de Vos

Managing Director Environmental Sciences Group, Wageningen University & Research and AMS Board Member

Board Report

The Board of AMS Institute – founded on August 26, 2014 and registered at the Amsterdam Chamber of Commerce (KVK 854305610) – consists of four representatives from the two founding partners Delft University of Technology and Wageningen University & Research, each with two persons.

In 2016, the composition of the AMS Board was as follows:

- Prof. Peter Russell (MSc), Chairman, TU Delft
- Paul Althuis (MSc), TU Delft
- Prof. Huub Rijnaarts (MSc, PhD), Wageningen University & Research
- Bram de Vos (MSc, PhD), Wageningen University & Research

The Board was supported by Kenneth Heijns (MSc), executive secretary.

The Board met seven times in 2016 to discuss and steer the general development of AMS Institute and the long-term strategy of AMS Institute. The Board made decisions on a broad range of topics including:

- Annual report 2015, quarterly reports 2016, budget and annual plan 2017.
- AMS research projects and programs including SCRIPTS, R-LINK, STAD, Smart Urban Isle, SPACERGY, Gov4SDI, RESS, Green Health Check, 4D Urban Modelling, DC Smart Grids, WeSense, REPAiR, Realcool, Broodnodig, AAMS and the projects within the framework of the AMS Stimulus Program. The overall project portfolio reached a total of 59 projects with an accumulated value of €32M.

- Launch of the multi-year Roboat program, after an intensive period of preparation together with core academic partner MIT.
- Appointment of AMS Principal Investigators from its core academic partners, to help shape and propel the Research and Valorization portfolio.
- Appointment of members of the Scientific Advisory Committee.
- The education portfolio, together with TU Delft and Wageningen University, including the successful completion of the feasibility study and efficacy analysis as part of the formal process for accreditation and launch of MSc MADE, the first AMS MOOC and subsequent online offerings, and the AMS summer schools.
- Internationalization agenda, including a selection of cities based on metropolitan challenges, the presence of relevant colleague scientific institute(s), existing connections with the City of Amsterdam and potential for research and education programs.
- Further development of the value platform, including the development of a framework for industry collaboration and an AMS Data Hub for storage, analysis and use of city data.



Scientific Advisory Committee

To secure and safeguard the quality of the institute, the first four members of our Scientific Advisory Committee (SAC) were appointed in 2016. The SAC consists of high-level representatives from academia and practice and will ensure a continuous critical evaluation of the institute's research program, PIs and RFs.

The AMS SAC is a formal body which advises the AMS Board on the scientific strategy, including the Research and Valorization themes and the overall research portfolio. In 2016, the members of the SAC were:

- Prof. Michael Batty (MSc, PhD), Professor of Planning at University College London
- Prof. Karel Luyben (MSc), Rector Magnificus of Delft University of Technology
- Cécile Maisonneuve, Chairman of La Fabrique de la Cité
- Prof. Arthur Mol (MSc, PhD), Rector Magnificus and Vice President of Wageningen University & Research

In December 2016, the SAC convened. Following a presentation by AMS' Scientific Director Prof. Arjan van Timmeren on the current research & valorization portfolio and the overall strategy, the SAC discussed the validity of the research themes, public sector and industry involvement, entrepreneurship and technology innovation, living labs and research infrastructure, global outreach, and the great value of an international PhD alumni network. As such, the SAC provided the AMS Board with a valuable reflection on the scientific core of AMS Institute, industry collaboration and an AMS Data Hub for storage, analysis and use of city data.

The SAC was supported by Kenneth Heijns (MSc), executive secretary.

Image References

On the cover:

Urban mining steel map of Amsterdam, AMS PUMA research with Leiden University, TU Delft, Waag Society & Metabolic.

P6, P17 bottom, P22, P28:

3D steel printing in MX3D's lab on NDSM.
Pictures by Joris Laarman for MX3D

P12:

Kees Slingerland & Arjan van Timmeren with Cécile Maisonneuve, at AMS – SUEZ – La Fabrique workshop.
Pictures by Julia Gunther for AMS Institute

P17 top:

Amsterdam's Mayor Eberhard van der Laan and Dutch Minister for Education, Culture and Science Jet Bussemaker during their visit to FabCity.
Pictures by EU2016 NL

P18:

Kees Slingerland (top) and Amsterdam's CTO Ger Baron (bottom) during partner workshop at FabCity.
Pictures by Julia Gunther for AMS Institute

P25, P40:

Urban AirQ Sensors, inside and out.
Pictures by Waag Society 2016

P26, P48:

Roboat in future action.
Renders by MIT SENSEable City Lab

P30:

Scrap tubes, future resource?
Picture by Barta IV

P35, P37:

AEB Amsterdam to 3D Printing in the Circular City.
Picture by The New Raw

P43:

De Ceuvel from above.
Photographer Unkown

P45:

Inside the AMS BOCS device.
Picture by AMS Institute

P46:

Walking around Amsterdam.
Picture by Rich Bowen

P52:

Map of Amsterdam.
Graphic by Matterhorn Amsterdam

P55:

Day 403 – Summer.
Picture by Simeon Berg

P56, P58:

Artist Impression Floriade - Street of the Future.
Impressions by MVRDV

P60:

Guide to the future.
Picture by Arden

P62 top:

PI Carlo Ratti at December's AMS Roboat event.
Picture by Maartje Meesterberends

P62 bottom:

The King and Queen of The Netherlands, the directors of AMS Institute and SUEZ
Picture by Stephanie Knibbe

P65:

Amsterdam's Alderman & Deputy Mayor Kajsa Ollongren and Utrecht's Alderman, Jeroen Kreijkamp during the Economic Mission to Paris.
Picture by Ministerie van Buitenlandse Zaken

P72, P77:

Design & The City Workshop.
Picture by Sebastiaan ter Burg

P80:

Traveling light.
Picture by Arden

